6.2.4.3 Preliminary Options

Of the three conceptual options reviewed, two options remain. The preliminary options for biosolids management are:

- **BM 1 Current Practice – Beneficial Use/Landfill**
- **BM 3 Beneficial Use – All Biosolids**

Each of these is briefly described in the sections that follow.

BM 1 Current Practice – Beneficial Use/Landfill

This option entails the continuation of a diversified program of biosolids management practices, including beneficial uses, that enhances the environment, provides a reliable means of ultimate disposition of the biosolids, is cost-effective, and complies with all regulatory requirements.

The majority of current beneficial biosolids uses involve agriculture. These include:

- Land application of Class B biosolids cake
- Lime stabilization and land application
- Composting and land application
- Composting and production of soil amendment products

The Sanitation Districts are currently in the process of implementing the first phase of a state-of-the-art composting facility called Westlake Farms, which is scheduled to begin operations in 2013. This will provide an additional degree of reliability relative to biosolids beneficial use beyond what currently exists.

Landfill co-disposal with municipal solid waste would likely be curtailed given that the Puente Hills Landfill is scheduled for closure in 2013.

BM 3 Beneficial Use – All Biosolids

In this option, all biosolids would be beneficially used. There would be no provisions for use of a landfill for biosolids co-disposal. As a result, the number and diversity of beneficial uses would have to be such that there is sufficient beneficial use capacity under a variety of future scenarios without any potential for interruption of service.

A number of challenges exist in regard to service reliability. Third parties operate many of the current beneficial use sites. While the Sanitation Districts have contractual agreements with these parties, the potential exists that one or more of these parties could default on their obligations to accept and beneficially use biosolids. The locations of these beneficial use operations tend to be in remote areas located at a significant distance from the site of biosolids generation, the JWPCP. Weather or other circumstances that interfere with biosolids transport could disrupt planned beneficial use options.

6.2.4.4 Level 2 Screening

The screening parameters for the BM program component area are:

- Resource reuse
- Sustainability

- Regulatory compliance
- Public acceptability
- Operational flexibility and reliability
- Cost effectiveness

The application of the Level 2 Screening Parameters is shown in Table 6-22.

Table 6-22. Comparison of Preliminary Options to Level 2 Screening Parameters

	Resource Reuse	Sustainability	Regulatory Compliance	Public Acceptability	Operational Flexibility and Reliability	Cost Effectiveness	Score	Ranking
BM 1 Current Practice – Beneficial Use/ Landfill	+	+	0	+	+	0	+4	1
BM 3 Beneficial Use – All Solids	+	+	0	+	-	0	+2	2

6.2.4.5 Options Eliminated Through Level 2 Screening

Of the two Preliminary Options developed for biosolids management, one is eliminated from further consideration:

BM 3 Beneficial Use – All Solids: This alternative is virtually identical to the other remaining option, BM 1 Current Practice – Beneficial Use/Landfill, except that BM 3 lacks the ability to utilize a landfill. This lack of diversity substantively impacts the screening criterion of operational reliability. On this basis, this option was eliminated.

6.2.4.6 Viable Options

Of the two preliminary options evaluated, one remains. The only viable option for biosolids management is:

- **BM 1 Current Practice – Beneficial Use/Landfill**

This option represents the continuation of current practices, which emphasize the beneficial uses of biosolids, while maintaining the ability to use landfilling.

6.2.4.7 Level 3 Screening

Only one viable option remains, so it is not subject to any further screening.

6.2.4.8 Viable Options Eliminated

No viable options were eliminated.

6.2.4.9 Ranked Feasible Options

The only feasible, thus top-ranked, option for biosolids management is:

- **BM 1 Current Practice – Beneficial Use/Landfill**

6.2.5 WRP Effluent Management (WE)

6.2.5.1 Conceptual Options

The primary objective of WRP effluent management is to identify outlets for the recycled water produced at the WRPs. The systems must be:

- Reliable: Able to consistently manage effluent from all flows generated
- Compliant: Achieve all pertinent regulatory requirements

In addition to these characteristics, the effluent management approaches considered as options should be able to accommodate future flow increases tributary to a facility, enhance the environment, and foster resource reuse.

The LACAWRP effluent management system is self-contained (i.e., all effluent is reused for irrigation) and, therefore, is not reviewed further. The remaining five WRPs' primary means of effluent management consists of regulated, surface water discharges to the San Gabriel River or its tributaries. In addition, all plants provide effluent for beneficial reuse. The level of reuse fluctuates based on demand, which can vary depending on the WRP, the time of day, and the time of year.

WE 1 Current Effluent Management Systems

This conceptual option represents a continuation of the current practices for effluent management, which include a combination of surface water discharge and reuse. No major changes to either the discharge locations or protocols employed are included within this option.

WE 2 All Reuse – No Surface Water Discharge

In this conceptual option, all surface water discharges from the WRPs would be eliminated. This would entail significantly increased levels of water recycling, with emphasis on approaches that are not weather dependent. This option would include evaluating the potential for water recycling associated with:

- Landscape irrigation
- Agricultural irrigation
- Industrial processes (e.g., cooling water)
- Recreational impoundments
- Groundwater recharge – spreading
- Groundwater recharge – injection
- Seawater barrier creation – injection

The highest WRP flows correspond with wet weather events. During these conditions, a number of the reuse alternatives are not available to accept flows. The reclamation alternatives not affected by wet weather events, in many cases, are likely to require higher levels of treatment at the WRPs, as well as additional facilities for treated effluent storage, conveyance, and reuse.

WE 3 All Surface Water Discharge – No Reuse

In this conceptual option, all current reuse of WRP effluent would be discontinued at the earliest feasible date. This would require the renegotiation of current agreements and eliminating from consideration any future arrangements to reuse WRP effluent. All effluent disposal would take place using current, approved surface water discharge locations.

6.2.5.2 Options Eliminated Through Level 1 Screening

Three conceptual options for management of the effluent from the WRPs were reviewed. Of these, the following two approaches were eliminated from further consideration.

WE 2 All Reuse – No Surface Water Discharge: This option would require the reclamation and reuse of all WRP effluent. The recycled water demand to permit acceptance of all effluent during the full range of seasonal events (e.g., extended wet weather periods) does not exist, and, therefore, would not provide for a reliable means of effluent management. Without adequate management capabilities, the system capacity to meet the needs of the growing JOS population could not be achieved. The Sanitation Districts are also dependent on the parties reusing the recycled water and the water retailers to develop reuse opportunities. Despite over four decades of aggressively marketing recycled water, over half of the recycled water produced is not reused and is discharged to receiving waters. Therefore, planning for complete reuse of all WRP effluent is not practicable or responsible. The costs for additional treatment, as well as conveyance, could also decrease the relative cost effectiveness of this approach. Elimination of this option does not preclude continued growth of the existing, robust program of recycling and reuse within the JOS.

WE 3 All Surface Water Discharge – No Reuse: This option would require the termination of all existing agreements to provide recycled water. In addition, no action would be taken to capitalize on future recycled water reuse opportunities. The feasibility of doing so, and associated legal ramifications, would need to be carefully evaluated. This approach would also contradict the Sanitation Districts' current policies, as well as those of the state of California, relative to water recycling and reuse. It would not accommodate emerging reuse opportunities. In a water-limited region such as Southern California, the public would consider any type of exclusion of reuse and recycling as wasting a potentially valuable resource. Associated negative publicity and political impacts could detrimentally affect the Sanitation Districts as well.

6.2.5.3 Preliminary Options

Of the three conceptual options examined, one remains. The only preliminary option for WRP effluent management is:

- **WE 1 Current Effluent Management System**

This approach is consistent with the Clearwater Program goal and objectives. This option entails the continuation of existing practices that incorporate a combination of surface water discharge and reuse. While the amount of effluent managed and/or consumed by reuse is likely to increase in the future, surface water discharge capabilities would be retained. The ability to discharge to surface waters provides necessary flexibility in managing the effluent. Many of the current and future reuse opportunities may involve third parties and associated facilities and contractual agreements. The Sanitation Districts have limited control of third parties.

6.2.5.4 Level 2 Screening

Only one preliminary option remains, so it is not subject to any further screening.

6.2.5.5 Options Eliminated Through Level 2 Screening

No options were eliminated through Level 2 Screening.

6.2.5.6 Viable Options

The only viable option for WRP effluent management is:

- **WE 1 Current Effluent Management System**

6.2.5.7 Level 3 Screening

Only one viable option remains, so it is not subject to any further screening.

6.2.5.8 Viable Options Eliminated

No viable options were eliminated.

6.2.5.9 Ranked Feasible Options

The only feasible, thus top-ranked, option for WRP effluent management is:

- **WE 1 Current Effluent Management System**

6.2.6 JWPCP Effluent Management (JE)

6.2.6.1 Conceptual Options

The primary objective of the JWPCP effluent management system is to provide outlets for the wastewater treated at the JWPCP. The systems must be:

- Reliable: Able to consistently manage all effluent flows, including peak storm flows
- Compliant: Achieve all pertinent regulatory requirements

In addition, the effluent management approaches considered as options should be able to accommodate future flow increases and reuse at the JWPCP.

Currently, JWPCP-treated effluent is managed entirely by means of ocean discharge; no reuse of JWPCP effluent currently takes place. Two approximately 6-mile long onshore tunnels convey effluent from the plant to a manifold structure located beneath Sanitation Districts-owned property at Royal Palms Beach, located near White Point on the Palos Verdes Peninsula. The 8-foot diameter tunnel was constructed in 1937, and the 12-foot diameter tunnel was constructed in 1958. Neither of the tunnels has been inspected in over 50 years. Inspection of the tunnels is not possible due to their overall length, limited access, lack of hydraulic separation between the tunnels, and the large quantity of daily effluent flow through the tunnels. For the same reasons, repair and rehabilitation of these tunnels, should it be warranted, is not possible. Furthermore, both tunnels cross an active seismic fault (the Palos Verdes Fault), but neither was constructed to modern day seismic standards and neither have been retrofitted since being built.

From the manifold, effluent flows can be distributed between four ocean outfalls with diameters of 60, 72, 90, and 120 inches that were constructed in 1937, 1947, 1957, and 1966, respectively. The 90- and 120-inch outfalls are used daily, and the 60- and 72-inch lines serve as backups. The 90- and 120-inch outfalls extend approximately one and a half miles offshore to a depth of about 200 feet below sea level. All four ocean outfalls consist of reinforced concrete pipelines constructed on the seafloor with a series of ports (diffusers) at their discharge depths. Unlike the tunnels, there is access to the ocean outfalls for detailed inspection and, if needed, repair and rehabilitation.

JE 1 Existing Ocean Discharge System

In this conceptual option, the existing tunnel and ocean outfall system would be used. There would be no major changes to the facilities or their mode of operation, but the existing ocean outfalls would require rehabilitation. With such an approach, there is very limited activity required and as a result, little in the way of cost and permitting associated with this option's implementation. However, the integrity of the two existing onshore tunnels cannot be verified, and the risk of failure of this critical infrastructure link is not abated with this option.

JE 2 New Ocean Discharge System

In this conceptual option, a new ocean discharge system – comprising an onshore tunnel, an offshore tunnel or seafloor pipeline, and a diffuser – would be constructed. The new system would have the capacity to accommodate all current and projected future flows. This option provides redundancy to critical aging infrastructure (the two existing onshore tunnels and four ocean outfalls), thereby increasing overall system reliability. Any new system would have its diffuser located in an area that would meet or exceed the performance of the existing diffusers with respect to environmental protection and public safety. Construction of this option would allow the existing tunnels to be inspected and repaired as necessary. This option would also include rehabilitation of the existing ocean outfalls.

JE 3 Modified Ocean Discharge System

In this conceptual option, a new onshore tunnel would be constructed between the JWPCP and the existing manifold structure at Royal Palms Beach. The new tunnel would tie into the existing outfalls. Once connected, the modified ocean discharge system would have the capacity to accommodate all current and projected future flows. This option provides redundancy to critical aging infrastructure (the two existing onshore tunnels), thereby increasing overall system reliability. Construction of this option would allow the existing tunnels to be inspected and repaired as necessary. This option would also include rehabilitation of the existing ocean outfalls.

JE 4 Reduced Ocean Discharge

In this conceptual option, flows to the existing ocean discharge would be substantially reduced. Advanced treatment facilities would be constructed at the JWPCP, and the advanced-treated effluent would be diverted for indirect potable reuse via groundwater recharge. The reduction in ocean discharge would need to be of sufficient magnitude to allow for dry-season inspection and repair of the two existing tunnels, one at a time. With one tunnel still in service, the other could be rehabilitated as needed. This option would also include rehabilitation of the existing ocean outfalls.

6.2.6.2 Options Eliminated Through Level 1 Screening

Of the four conceptual options developed for management of effluent from the JWPCP, the following option was eliminated from further consideration.

JE 1 Existing Ocean Discharge System: Continued use of the existing ocean discharge system represents the most simplistic approach to effluent management. The reason for its elimination relates to this option's inability to remove the existing tunnels from service, inspect their condition, and make repairs or rehabilitate them as needed. This element of the aging infrastructure of the JOS has not been inspected in over 50 years. Without the inspection of this critical component of the JWPCP effluent management system, the overall system's reliability would remain in question. Also, the existing tunnels both cross the Palos Verdes Fault, but neither was built to modern day seismic standards. Any system failure could lead to long-term violations of discharge standards and detrimental impacts on both the environment and public health. Furthermore, the existing onshore tunnels are also limited in terms of their 675-MGD hydraulic capacity. They are not capable of handling the estimated 927-MGD peak wet weather flow associated with the 400 MGD of average daily flow projected for the JWPCP by the year 2050.

6.2.6.3 Preliminary Options

Of the four conceptual options reviewed, three remain. The preliminary options for JWPCP effluent management are:

- **JE 2 New Ocean Discharge System**
- **JE 3 Modified Ocean Discharge System**
- **JE 4 Reduced Ocean Discharge**

A more-detailed description of each of these is provided in the subsections that follow.

JE 2 New Ocean Discharge System

In this preliminary option, a new ocean discharge system would be constructed. The major elements of a new system would include:

- Onshore tunnel
- Tunnel shafts
- Offshore tunnel or seafloor pipeline
- Riser and diffuser

The new onshore tunnel would extend from the JWPCP to the shoreline. A number of factors were considered in the development of tunnel alignments. These included:

- Locating the tunnel within public right-of-way
- Minimizing the tunnel's overall length
- Accommodating the required turning radius for non-linear sections
- Positioning the required tunnel shafts in acceptable locations

A large number of possible onshore tunnel alignments exist that would satisfy the baseline criteria.

Tunnel shafts include the working and access shafts used in the construction of the tunnel, as well as subsequent reconfiguration of the shafts for their use in operation and maintenance of the system. For the purposes of evaluating this option at this stage of the program-level alternatives analysis, it is assumed there would be two tunnel shafts. One shaft would be located at the JWPCP. This JWPCP shaft would initially function as a working shaft and would ultimately be converted to an effluent feed down shaft to the tunnel. The second shaft would be located near the shoreline, and its primary function would be to provide supplemental ventilation during tunnel construction. Ultimately, the second shaft would be converted to an access and isolation point for future operation and maintenance.

The selection of an alignment for the offshore tunnel or seafloor pipeline would be dependent on the onshore tunnel alignment and location of the outfall diffuser. The offshore alignment could be constructed using a variety of techniques including:

- All seafloor pipeline
- All offshore tunnel
- A combination of seafloor pipeline and offshore tunnel

For the purposes of evaluating this option at this stage of the program-level alternatives analysis, it is assumed the marine conveyance facilities would consist of a combination of seafloor pipeline and offshore tunnel.

The primary factor in selecting a location for a riser and diffuser relates to the achievement of water quality objectives. Other factors considered include:

- Adequate depth and distance from shore: Performance must meet or exceed that of the existing diffusers
- Favorable currents: Avoid locations that may affect the shore
- Sufficient space: Ability to locate the diffusers, including room to site future diffusers
- Geotechnical stability: Locations with limited potential for significant movement during seismic events

For the purposes of evaluating this option at this stage of the program-level alternatives analysis, it is assumed the diffuser would be located in an area on the southern edge of the Palos Verdes Shelf (PV Shelf) or the San Pedro Shelf (SP Shelf). This places the new diffuser south and east of the existing ocean outfalls and satisfies the listed criteria.

JE 3 Modified Ocean Discharge System

In this preliminary option, a new tunnel would be constructed between the JWPCP and the existing manifold structure at Royal Palms Beach. The major elements of a modified ocean discharge system would include:

- Onshore tunnel
- Tunnel shafts
- Existing ocean outfalls

A number of factors were considered in the development of the onshore tunnel alignments. These included:

- Locating the tunnel within public right-of-way
- Minimizing the tunnel’s overall length
- Accommodating the required turning radius for non-linear sections
- Positioning the required tunnel shafts in acceptable locations

A large number of possible onshore tunnel alignments exist that would satisfy the baseline criteria.

Tunnel shafts include the working and exit shafts used in the construction of the tunnel, as well as subsequent reconfiguration of these facilities for their use in operating the system. For the purposes of evaluating this option at this stage of the program-level alternatives analysis, it is assumed there would be two tunnel shafts. One shaft would be located at the JWPCP. This JWPCP shaft would initially function as a working shaft and would ultimately be converted to an effluent shaft to the tunnel. The second shaft would be located near the existing manifold structure at Royal Palms Beach and would function as an exit shaft for the tunneling equipment. Ultimately, the second shaft would be converted to an access and isolation point for future operation and maintenance.

The existing ocean outfalls would be used for diffusing JWPCP effluent. Recent inspections, physical testing, and a hydraulic analysis determined that the three largest outfalls have the structural integrity and capacity to last well beyond 2050.

JE 4 Reduced Ocean Discharge

This preliminary option would substantially reduce the discharge of effluent through the existing ocean discharge system so as to allow for tunnel dewatering, inspection, rehabilitation, and repair as needed. Flow reductions would be achieved by diverting a portion of the JWPCP effluent for reuse.

The only reuse application that could potentially accommodate the amount of treated effluent necessary to support this option is groundwater recharge. Groundwater recharge would be implemented through the use of spreading basins and, possibly, direct injection for the Central and Main San Gabriel Basins and direct injection wells for the West Coast Basin. During wet weather events, when JWPCP flows are peaking, spreading basin capacity is significantly reduced or unavailable. Therefore, tunnel inspection and repair work would need to be conducted during the dry season.

Currently, the JWPCP provides a secondary level of treatment, along with disinfection, to influent flows. A more advanced level of treatment would be required for groundwater recharge. The advanced level of treatment assumed would consist of microfiltration and reverse osmosis (MF/RO), ultraviolet disinfection, and advanced oxidation. Storage for peak diurnal flow attenuation would also be necessary.

This option would need to be implemented within the next 10 to 15 years in order to address the aging infrastructure concerns of the two existing tunnels in a timely manner. By 2025, it is estimated that the average daily flows at the JWPCP would be 335 MGD. This approach is predicated on the assumption that the two existing tunnels can be hydraulically isolated from each other. Based on a diurnal peak flow factor of 1.4 at the JWPCP, a peak flow capacity of 170 MGD in the 8-foot diameter tunnel, and 20 percent brine reject, this option would require approximately 250 MGD of advanced treatment (producing approximately 200 MGD of MF/RO permeate for groundwater recharge and 50 MGD of brine reject to be discharged to the one tunnel still in service) and 27 million gallons (MG) of storage volume.

The advanced treatment, storage, and groundwater recharge facilities would need to remain in operation during the entire planning period in order for the existing JWPCP ocean discharge system to have sufficient capacity to accommodate the projected 2050 average daily flows of 400 MGD and associated peak wet weather flows of 927 MGD.

6.2.6.4 Level 2 Screening

The screening parameters for the JE program component area are:

- Available land/right-of-way
- Institutional feasibility

- Regulatory compliance
- Public acceptability
- Operational flexibility, reliability, and familiarity
- Cost effectiveness

The application of the Level 2 screening parameters is shown in Table 6-23.

Table 6-23. Comparison of Preliminary Options to Level 2 Screening Parameters

	Available Land Right-of-Way	Institutional Feasibility	Regulatory Compliance	Public Acceptability	Operational Flexibility, Reliability, and Familiarity	Cost Effectiveness	Score	Ranking
JE 2 New Ocean Discharge System	0	0	+	0	+	-	+1	2
JE 3 Modified Ocean Discharge System	+	0	+	0	0	+	+3	1
JE 4 Reduced Ocean Discharge	0	-	0	+	-	-	-2	3

6.2.6.5 Options Eliminated Through Level 2 Screening

Of the three preliminary options for JWPCP effluent management, one was eliminated from further consideration.

JE 4 Reduced Ocean Discharge: This option would entail diverting a sufficient amount of flow from the existing ocean discharge system to allow for the inspection/repair of each of the existing tunnels during the dry season. The diverted flow would receive advance treatment before being conveyed to the Central, West Coast, and/or Main San Gabriel Basins for groundwater recharge. There may be enough property available at the JWPCP for approximately 250 MGD of advanced treatment facilities and 27 MG of storage tanks. However, this option would require numerous rights-of-way within major thoroughfares for very large diameter pipelines to convey recycled water to groundwater recharge sites. While increasing the use of recycled water would likely receive public acceptance on a conceptual level, the localized traffic and access disruption due to extensive pipeline construction would likely result in short-term, localized opposition. This option would be very dependent on the numerous inter-agency agreements for groundwater recharge and court-imposed groundwater management plans. Therefore, the institutional feasibility of this option is highly questionable. In addition, the successful procurement of environmental permits would present challenges; regulatory approval would be required for a new groundwater recharge project. The greatest concerns regarding this option relate to constructability, operational flexibility, reliability, and familiarity. Hydraulically separating the two existing tunnels while both are flowing full each day would be a complex undertaking. Then, tunnel inspection/repair work would ensue while sufficient flow is diverted to the advanced treatment facilities for groundwater recharge. The tunnel inspection/repair would need to occur during the dry season when flows are typically lower. However, there would always be the risk of a severe unseasonal storm event that could overwhelm the advanced treatment facilities. In which case, a portion of the secondary-treated JWPCP effluent would need to be diverted directly to the Wilmington Drain, which would be a violation of the

JWPCP discharge permit. This option would also require the operation of a completely new treatment system to enhance the JWPCP's effluent quality. In addition to being different than the existing plant facilities, the advanced treatment facilities are operationally complex. This lack of familiarity and system complexity would reduce the options' overall operational reliability. This option would also be expensive, even taking into consideration the market value of the recycled water produced. In addition to the capital costs of the treatment, transmission, and recharge facilities, there would be considerable energy costs associated with advanced treatment and effluent pumping. Even if all of these impediments could be overcome, it would be very difficult to implement this option by 2025. Only approximately 100 MGD of groundwater recharge capacity has been identified as being potentially available within this timeframe, which represents just half of what would be necessary to make this option viable.

The Sanitation Districts worked with the Metropolitan Water District of Southern California (MWD) during formulation and evaluation of this option. In October 2010, the MWD adopted its Integrated Water Resources Plan 2010 Update to address the challenges associated with the recent declines in the availability of imported water. With respect to pursuing a regional recycled water project, the MWD report only commits at this time to pursuing low-risk, low-cost "foundational actions" (e.g., feasibility studies, legislative efforts, and research) undertaken with the aim of reducing the implementation time of a recycled water project to reach full production, if deemed necessary in the future. If in the short run a significantly large reuse market materialized for JWPCP effluent and/or additional groundwater recharge capacity is identified, the viability of this option would merit reassessment.

6.2.6.6 Viable Options

Of the four preliminary options examined, two remain. The viable options for JWPCP effluent management are:

- **JE 2 New Ocean Discharge System**
- **JE 3 Modified Ocean Discharge System**

6.2.6.7 Level 3 Screening

The screening of the two remaining options consisted of a project-level alternatives analysis, which is detailed in Section 6.3.

6.2.6.8 Viable Options Eliminated

No viable options were eliminated.

6.2.6.9 Feasible Options

The feasible options for JWPCP effluent management are:

- **JE 2 New Ocean Discharge System**
- **JE 3 Modified Ocean Discharge System**

Unlike the other program component areas of the alternatives analysis, the feasible options for JWPCP effluent management were analyzed in greater detail at project level to determine their rankings. This project-level analysis is presented in Section 6.3, and the ranked feasible options for JWPCP Effluent Management are identified in Section 6.3.4.3.

A summary of the JOS program-level alternatives analysis is shown on Figure 6-2.

6.3 Project Analysis by Project Elements

Within the various program component areas evaluated in connection with the program-level JOS alternatives analysis, the two feasible options for JWPCP effluent management consisted of implementing either a new ocean discharge system or a modified ocean discharge system. This section provides an analysis of project element options for the ocean discharge system alternatives related to a new or modified ocean discharge system.

6.3.1 Alternatives Development and Analysis Process

The approach employed to evaluate the project is similar to that undertaken for the program-wide assessment of the JOS. First, the overall project was divided into five project *elements*. Conceptual and preliminary options for each project element were screened to determine the viable options. The viable options from the project elements were then combined to formulate viable project alternatives, which were evaluated to determine a set of ranked feasible project alternatives. The highest ranked feasible alternative was identified as the recommended project. This process is depicted on Figure 6-3. Finally, as previously shown on Figure 6-2, these ranked feasible project alternatives for JWPCP effluent management were combined with the feasible program alternatives to arrive at a recommended plan for the Clearwater Program.

Parsons Water and Infrastructure, Inc., in association with Jacobs Associates and Black & Veatch, provided much of the technical support for the project-level alternatives analysis. Their input is documented in the Professional Design Services for the Preliminary Engineering of the Joint Water Pollution Control Plant Tunnel and Ocean Outfall Feasibility Report, dated September 2011.

6.3.2 Study Area

The initial step in the project analysis was to develop a study area. The study area represents the conceptual boundary within which various physical project elements could be sited.

The three criteria used as the basis for the development of the study area were:

- Minimize interferences with discharges from other publicly owned treatment works (POTW) outfalls in the area, namely those of the city of Los Angeles and the Orange County Sanitation District
- Stay within the edge of the continental shelf – either the PV Shelf or SP Shelf
- Use as direct a route as practicable between the JWPCP and the ocean diffuser area
- Avoid Marine Protected Areas (MPAs)

The subsequent formulation and assessment of options and alternatives were consistent with these criteria.

On the basis of the criteria used for establishing the project study area boundaries, the area under consideration for a new or modified ocean discharge system is shown on Figure 6-4. This 90-square-mile study area is fan shaped with its apex positioned at the JWPCP. On the westerly side, the fan extends southward from the JWPCP to the existing ocean outfalls. On the easterly side, the fan extends from the JWPCP to the intersection of the Palos Verdes Fault and the SP Shelf.

JOINT OUTFALL SYSTEM – MAJOR PROGRAM COMPONENT AREAS				
CONVEYANCE/TREATMENT (CT)	**SOLIDS PROCESSING (SP)**	**BIOSOLIDS MANAGEMENT (BM)**	**WRP EFFLUENT MANAGEMENT (WE)**	**JWPCP EFFLUENT MANAGEMENT (JE)**
CONCEPTUAL OPTIONS – BY PROGRAM COMPONENT AREA				
1. JWPCP Expansion 2. WRP Expansion – Existing 3. WRP Expansion – New 4. WRP Expansion – Existing & New	1. Centralized Processing at JWPCP 2. Processing at Source Plants 3. Centralized Processing – New Site	1. Current Biosolids Management Practice – Beneficial Use/Landfill 2. Landfill Disposal – All Biosolids 3. Beneficial Use – All Biosolids	1. Current Effluent Management Systems – Reuse & Surface Discharge 2. All Reuse – No Surface Discharge 3. All Surface Discharge – No Reuse	1. Existing Ocean Discharge System 2. New Ocean Discharge System 3. Modified Ocean Discharge System 4. Reduced Ocean Discharge

LEVEL 1 SCREENING – PROGRAM OBJECTIVES

Provide adequate system capacity to meet the needs of the growing population

Provide support for emerging recycled water reuse and biosolids beneficial use opportunities

Provide for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of aging infrastructure

Provide a long-term solution for meeting water quality requirements set forth by regulatory agencies

PRELIMINARY OPTIONS – BY PROGRAM COMPONENT AREA				
CT	**SP**	**BM**	**WE**	**JE**
CT 2A-F WRP Expansion – Existing	SP 1 Centralized Processing at JWPCP	BM 1 Current Biosolids Management Practice BM 3 Beneficial Use – All Biosolids	WE 1 Current Effluent Management Systems	JE 2 New Ocean Discharge System JE 3 Modified Ocean Discharge System JE 4 Reduced Ocean Discharge

LEVEL 2 SCREENING – PROGRAM COMPONENT AREAS SCREENING CRITERIA				
CT	**SP**	**BM**	**WE**	**JE**
Conveyance System Impacts Treatment Plant Impacts Regulatory Compliance Public Acceptability Operational Flexibility Cost Effectiveness	Treatment Plant Impacts Institutional Feasibility Regulatory Compliance Public Acceptability Operations Familiarity Cost Effectiveness	Maximize Resource Reuse Sustainability Regulatory Compliance Public Acceptability Operational Flexibility & Reliability Cost Effectiveness	Maximize Resource Reuse Sustainability Regulatory Compliance Public Acceptability Operations Familiarity Cost Effectiveness	Available Land/Right-of-Way Institutional Feasibility Regulatory Compliance Public Acceptability Operational Reliability Cost Effectiveness
VIABLE OPTIONS – BY PROGRAM COMPONENT AREA				
CT 2A-E WRP Expansion - Existing (SJCWRP)	SP 1A Continue Use of Existing Solids Processing Systems	BM 1 Current Biosolids Management Practice	WE 1 Current Effluent Management Systems	JE 2 New Ocean Discharge System JE 3 Modified Ocean Discharge System

VIABLE ALTERNATIVES (PROGRAM)

CT 2A : SP 1A : BM 1 : WE 1 : JE 2

CT 2A : SP 1A : BM 1 : WE 1 : JE 3

LEVEL 3 SCREENING – ALTERNATIVES EVALUATION CRITERIA

Project-Level Alternatives Analysis - see Figure 6-15 for detailed evaluation of JE component area

RANKED FEASIBLE ALTERNATIVES

HIGHEST RANKED	Alternative 4:	CE 2A : SP 1A : BM 1 : WE 1 : JE 3
	Alternative 1:	CE 2A : SP 1A : BM 1 : WE 1 : JE 2A
	Alternative 3:	CE 2A : SP 1A : BM 1 : WE 1 : JE 2B
LOWEST RANKED	Alternative 2:	CE 2A : SP 1A : BM 1 : WE 1 : JE 2C

ENVIRONMENTAL ANALYSIS (EIR/EIS)

JOINT OUTFALL SYSTEM RECOMMENDED PLAN

FIGURE 6-2

CLEARWATER Program

Master Facilities Plan Program-Level Alternatives Screening Process

Source: Sanitation Districts of Los Angeles County 2011

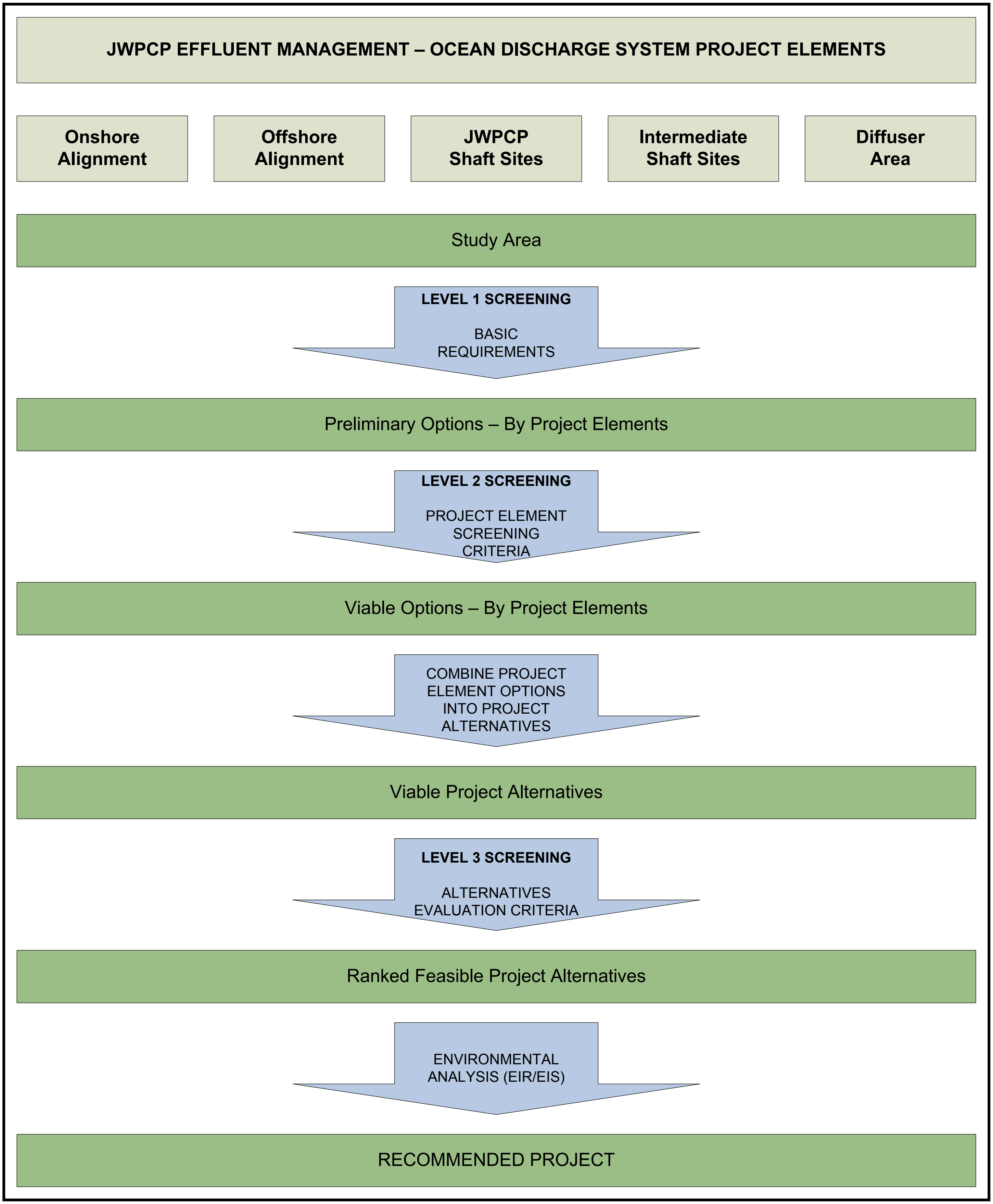


FIGURE 6-3

CLEARWATER Program

Master Facilities Plan
Project-Level Alternatives Screening Process

Source: Sanitation Districts of Los Angeles County 2011

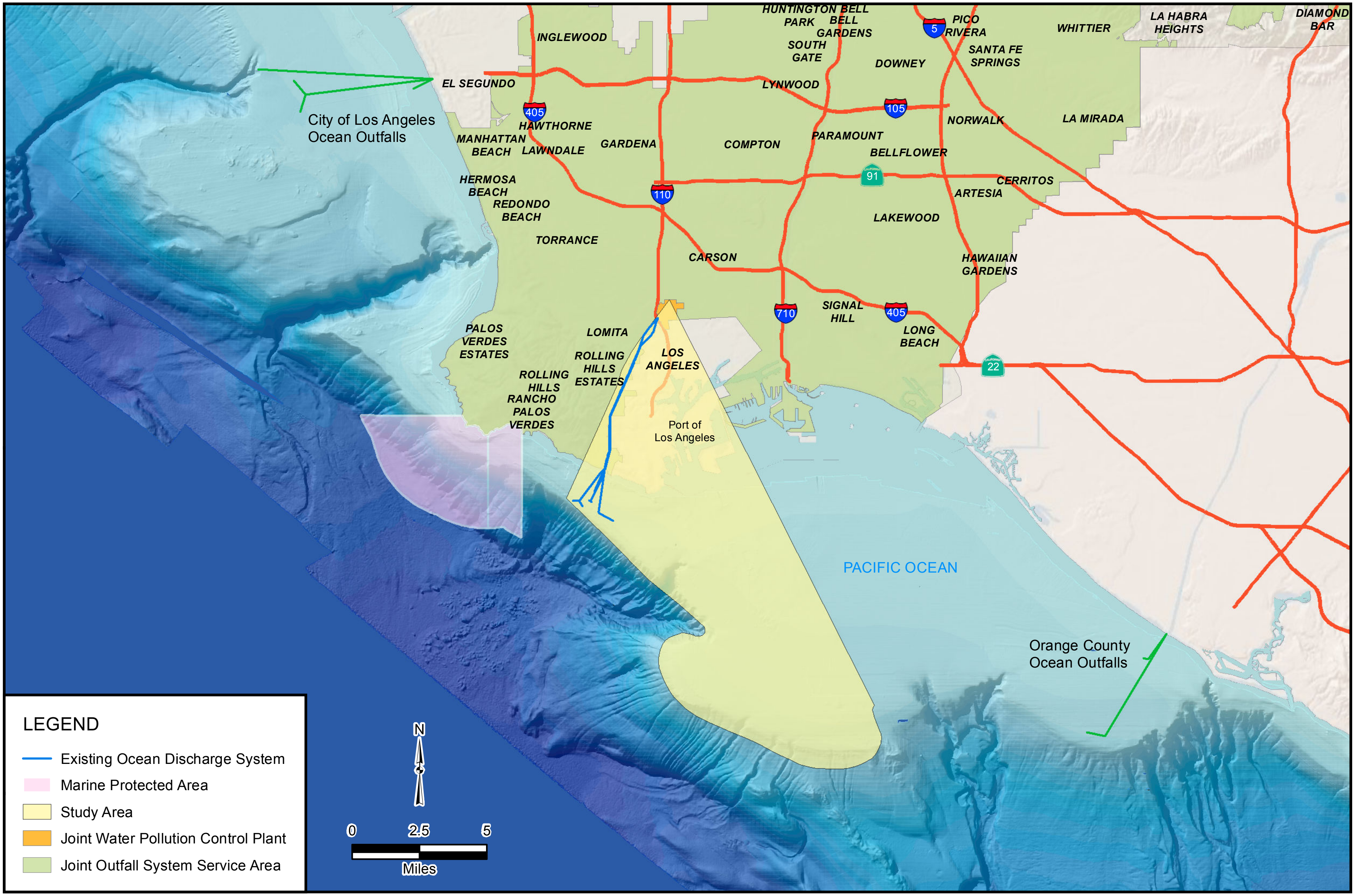


FIGURE 6-4

CLEARWATER Program

Study Area for a New or Modified Ocean Discharge System

Source: Sanitation Districts of Los Angeles County 2011, LA Dept of Public Works 2011, CA Dept of Fish & Game 2011, OC Sanitation Districts 2011, Thomas Bros 2011, ESRI 2011

6.3.3 Evaluation of Project Elements

For the purpose of initial options formulation and assessment, the ocean discharge systems examined were divided into five project elements based on primary functionality. These are:

- Onshore tunnel alignment
- JWPCP shaft site
- Intermediate shaft site
- Diffuser area
- Offshore alignment

The initial development and evaluation of options was compartmentalized within these five project elements through the viable options stage. At that point, the viable options were combined into comprehensive discharge system alternatives.

6.3.3.1 Onshore Tunnel Alignment

The onshore alignment would begin at the JWPCP and end near the coast. The onshore alignment would be approximately 6 to 7 miles in length, ranging in depth from approximately 70 to 450 feet below ground level. Due to the depths of excavation that would be needed, open-cut trenching for the onshore alignment was deemed infeasible. Therefore, the onshore alignment would be constructed as a tunnel using a tunnel boring machine (TBM). This approach avoids the complication of open-cut trenching, including traffic and business disruptions as well as impacts on existing utilities and other underground facilities.

Preliminary Options

The Level 1 screening criteria used for the development of the conceptual options for the tunnel alignment were:

- Existing easements or public rights-of-way would be used to the maximum extent practicable
- The routing must allow a sufficient turning radius for the TBM (approximately 800 to 1,000 feet)
- The overall length of the alignment should be minimized

On the basis of these criteria, 23 conceptual options for an onshore tunnel alignment were originally identified. One of these options was an alignment that parallels the existing tunnels. However, the 68 current easements would not permit construction of a new tunnel, and a parallel tunnel alignment just outside the existing easements would require approximately 1,060 new easements. Therefore, this conceptual option was eliminated, and a total of 22 options were carried forward for an onshore alignment. The preliminary options for onshore tunnel alignments are:

- **Wilmington Blvd – Port of Los Angeles**
- **Frigate Ave – Port of Los Angeles**
- **Figueroa St – Port of Los Angeles**
- **Frigate Ave – China Shipping – Harbor Blvd**
- **Figueroa St – China Shipping – Harbor Blvd**
- **Frigate Ave – John S Gibson Blvd – Harbor Blvd**

- **Figueroa St – John S Gibson Blvd – Harbor Blvd**
- **Figueroa St – Harbor Regional Park – North Gaffey St – Harbor Blvd**
- **Frigate Ave – John S Gibson Blvd – Pacific Ave – Cabrillo Beach**
- **Figueroa St – John S Gibson Blvd – Pacific Ave – Cabrillo Beach**
- **Figueroa St – Harbor Regional Park – North Gaffey St – Pacific Ave – Cabrillo Beach**
- **Frigate Ave – John S Gibson Blvd – Pacific Ave**
- **Figueroa St – John S Gibson Blvd – Pacific Ave**
- **Figueroa St – Harbor Regional Park – North Gaffey St – Pacific Ave**
- **Frigate Ave – John S Gibson Blvd – South Gaffey St**
- **Figueroa St – John S Gibson Blvd – South Gaffey St**
- **Figueroa St – Harbor Regional Park – North Gaffey St – South Gaffey St**
- **Frigate Ave – John S Gibson Blvd – Capitol Dr – Western Ave**
- **Figueroa St – John S Gibson Blvd – Capitol Dr – Western Ave**
- **Figueroa St – Harbor Regional Park – North Gaffey St – Capitol Dr – Western Ave**
- **Figueroa St – Harbor Regional Park – Navy Fuel Depot – Western Ave**
- **Lomita Blvd – Western Ave**

The preliminary options for onshore tunnel alignments are shown on Figure 6-5. These alignment designations reflect the major streets under which each tunnel option is located.

Viable Options

A total of 22 preliminary options for an onshore tunnel alignment were identified. Level 2 screening parameters used in the assessment of these options were:

- Minimize exposure to major geotechnical faults
- Ensure compatibility with intermediate shaft site locations
- Reduce the number of easements required
- Favor overlapping alignments with shorter overall lengths

On this basis, the 22 preliminary options were reduced to 8 viable options for the onshore tunnel alignment. The options that did not have an appropriate intermediate shaft site and were, therefore, eliminated included the alignments along Harbor Boulevard, Pacific Avenue, and Cabrillo Beach. The Figueroa Street alignment that extends to the Port of Los Angeles was eliminated because it runs parallel and in close proximity to the Palos Verdes Fault zone. This alignment also potentially interferes with the West Turning Basin of the Port of Los Angeles. The alignments that begin on Frigate Avenue and continue to South Gaffey Street and Western Avenue were eliminated because the majority of the alignments are identical to the Figueroa Street alignments that follow the same path, and the Frigate Avenue alignments are longer.

Of the 22 preliminary options reviewed, eight remain. The viable options for onshore tunnel alignments are:

- **Wilmington Blvd – Port of Los Angeles**

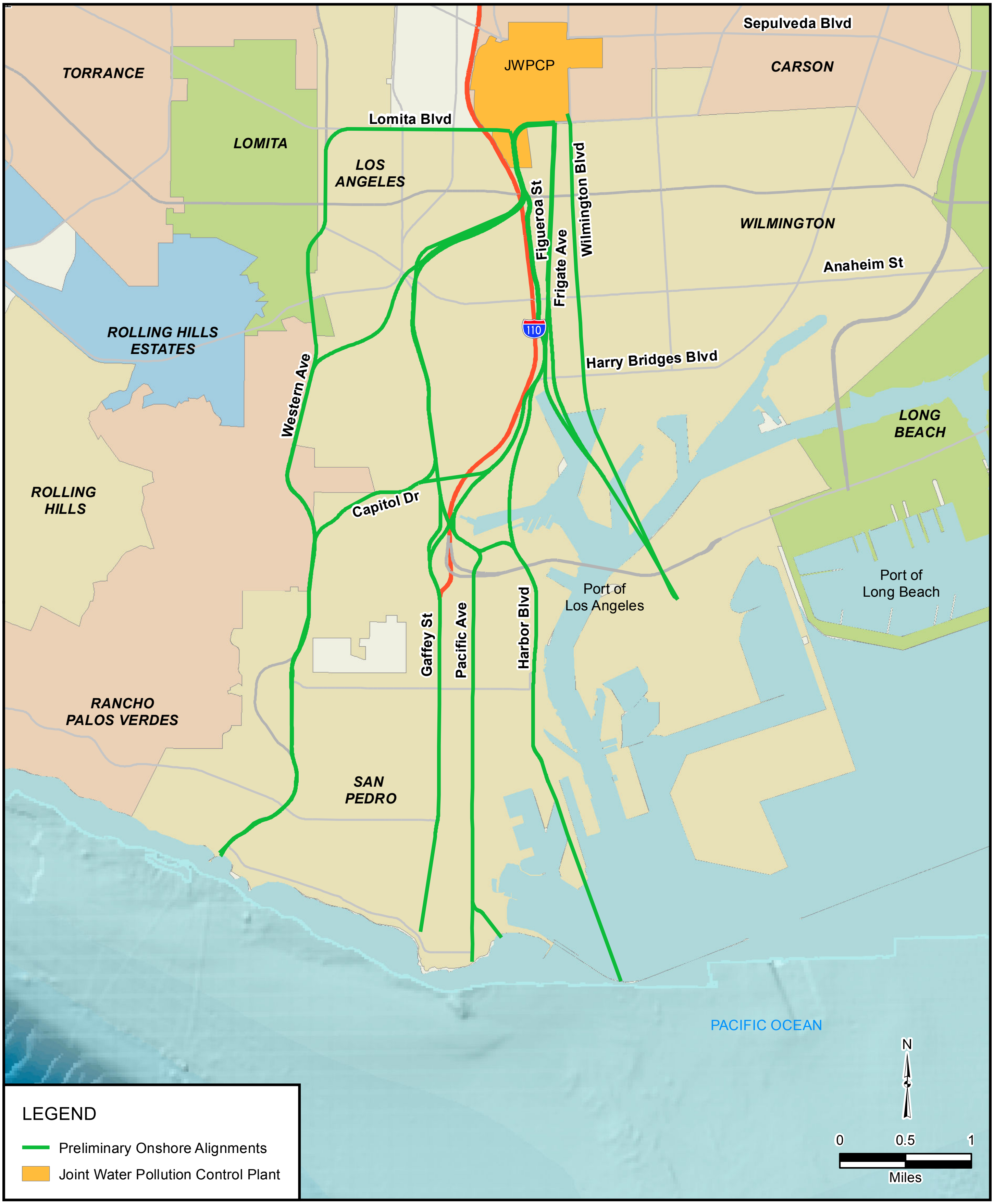


FIGURE 6-5

CLEARWATER Program

Preliminary Onshore Alignments

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

- **Frigate Ave – Port of Los Angeles**
- **Figueroa St – John S Gibson Blvd – South Gaffey St**
- **Figueroa St – Harbor Regional Park – North Gaffey St – South Gaffey St**
- **Figueroa St – John S Gibson Blvd – Capitol Dr – Western Ave**
- **Figueroa St – Harbor Regional Park – North Gaffey St – Capitol Dr – Western Ave**
- **Figueroa St – Harbor Regional Park – Navy Fuel Depot – Western Ave**
- **Lomita Blvd – Western Ave**

These viable options for onshore tunnel alignments are shown on Figure 6-6 and carried forward for the development of viable project alternatives in Section 6.3.4.1.

6.3.3.2 JWPCP Shaft Site

For all alternatives, one end of the tunnel would be at the JWPCP; therefore, a shaft site would be required at the JWPCP to facilitate tunnel construction. The shaft site at the JWPCP would be classified as a working shaft and would require sufficient access and area to permit the insertion of the TBM, ancillary equipment, tunnel segments, and personnel, as well as the continuous removal of excavation materials that originate from the tunneling process. Tunneling would take place over a period of years and, therefore, the working shaft would be an active construction site over this time. Ultimately, the shaft would function as the connection between the existing facilities and the new or modified ocean discharge system.

Preliminary Options

Level 1 screening parameters for location of a JWPCP shaft site are:

- The majority of the site must be within the confines of the JWPCP property boundaries
- The location must avoid conflicts with current facilities or planned future facilities
- The minimum area requirement is 8 acres
- The geometry of the area must be roughly rectangular to square
- The area must be relatively flat
- There must be access for equipment, ventilation systems, and personnel, as well as long-term access for excavation material removal on a continuous basis

On the basis of these criteria, two options were identified. The preliminary options for a JWPCP shaft site are:

- **JWPCP East shaft site**
- **JWPCP West shaft site**

The preliminary options for a JWPCP shaft site are shown on Figure 6-7.

Viable Options

A total of two preliminary options for a JWPCP shaft site were identified. Level 2 screening parameters used in the assessment of these options were:

- Compatibility of location with current land use

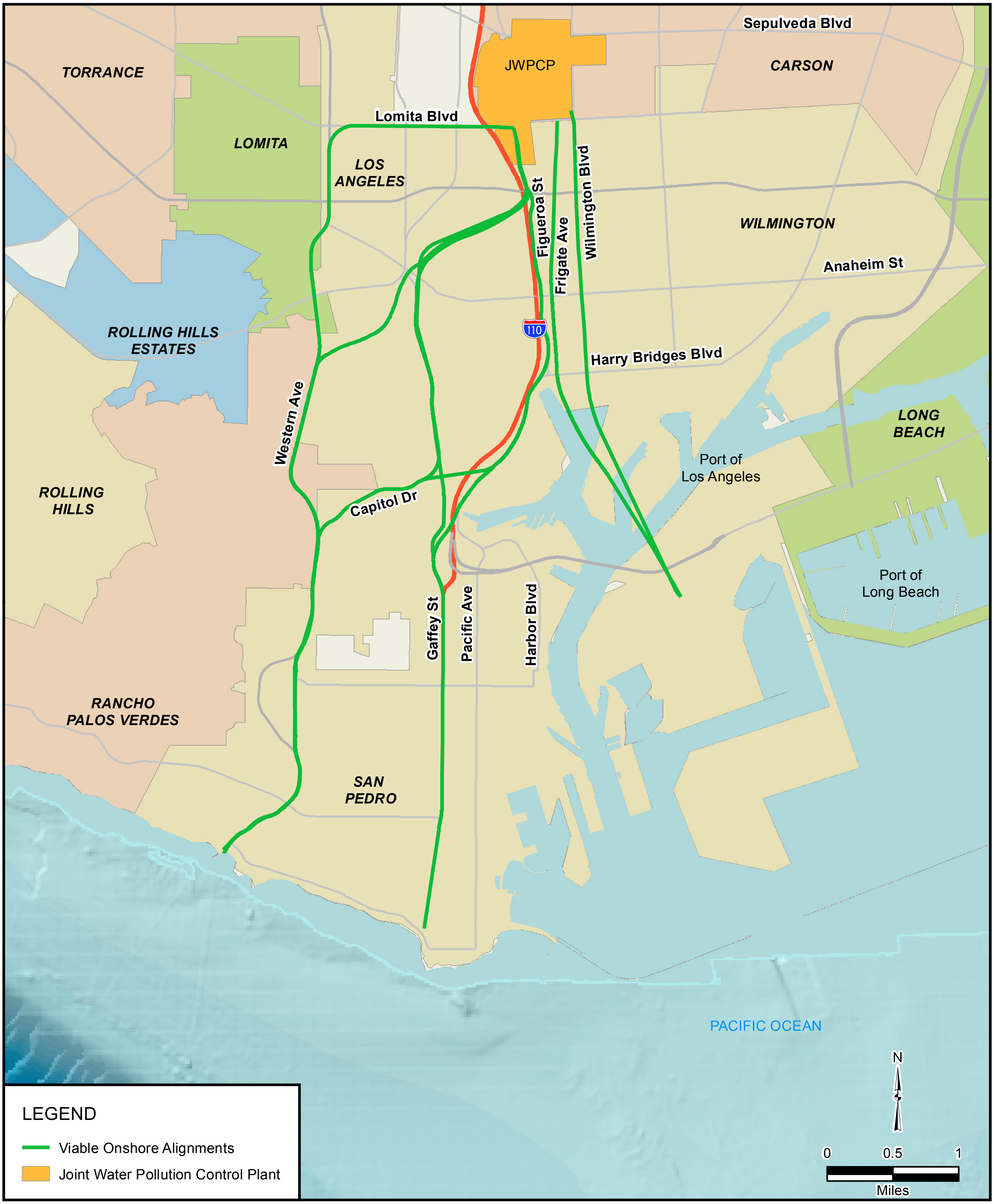


FIGURE 6-6

Viable Onshore Alignments

CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

FIGURE 6-7

Preliminary Viable JWPCP Shaft Sites

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

CLEARWATER Program

- Avoidance of major environmental concerns based on a preliminary assessment
- Avoidance of major impacts on public use facilities
- Institutional constraints relative to use

Both of the proposed shaft sites at the JWPCP were compliant with the screening parameters. Therefore, the viable options for a JWPCP shaft site are:

- **JWPCP East shaft site**
- **JWPCP West shaft site**

These viable options for the JWPCP shaft site were carried forward for the development of viable system alternatives in Section 6.3.4.1.

6.3.3.3 Intermediate Shaft Site

An intermediate shaft site, depending on available area, access, and project requirements, would fall into one of three categories:

- Working Shaft: A working shaft site would be used for approximately 4 to 8 years as the aboveground staging area for the tunneling construction and support system activities. The working shaft would serve as the entry point for construction workers and as the exit point for all of the excavated material.
- Access Shaft: An access shaft site would be used primarily for supplemental ventilation during tunnel construction. It would also be available as an entry and exit point for construction workers, TBM maintenance, and removal of salvageable portions of the TBM at the project's conclusion. The access shaft site would be approximately 0.5 to 3 acres.
- Exit Shaft: An exit shaft site would be used for the removal of the TBM and have a land requirement of approximately 1 to 4 acres.

Preliminary Options

Level 1 screening parameters for location of an intermediate shaft site are:

- Area requirements depending on type of shaft
- Relatively flat
- The geometry of the area must be roughly rectangular to square
- Public land
- Close proximity to onshore tunnel alignment

On the basis of these criteria, the following 13 locations were identified as preliminary options for an intermediate shaft site:

- **Navy Fuel Depot**
- **Peck Park**
- **Averill Park**
- **White Point Nature Preserve**
- **Field of Dreams**

- **Fort MacArthur**
- **Angels Gate Park**
- **Point Fermin Park**
- **Port of Los Angeles (3)**
  - **Trans Pacific Container Service Corporation (TraPac)**
  - **Los Angeles Export Terminal (LAXT)**
  - **Southwest Marine**
- **Royal Palms Beach**
- **Cabrillo Beach**

The preliminary options for intermediate shaft sites are shown on Figure 6-8.

Viable Options

A total of 13 preliminary options were identified for an intermediate shaft site. Level 2 screening parameters used in the assessment of these options were:

- Avoidance of sites that have incompatible land uses such as landfills, military land, and other lands that entail national security
- Avoidance of sites that present significant environmental concerns such as those designated for conservation or that support endangered species
- Avoidance of sites that are currently used for public recreational activities such as parks, beaches, and athletic fields because the shaft site would use a considerable portion of the available recreational area.
- Avoidance of sites that may be contaminated to the degree where remediation is required
- Consideration of input from local jurisdictions and the general public with respect to shaft locations

The Navy Fuel Depot was eliminated due to the potential for contamination, disruption to the function of the Navy facilities, and potential impact on the Palos Verdes Peninsula Land Conservancy plans for coastal sage brush habitat preservation. Peck Park, Averill Park, and Point Fermin Park were eliminated from consideration based on the conflicts with the public recreational uses of these facilities and public input. The White Point Nature Preserve was eliminated from consideration due to its biological significance and public input. The Field of Dreams was eliminated due to its prior use as a landfill, its heavy recreational use, and public input. Fort MacArthur was eliminated due to its interference with current use and concerns raised by the Air Force over national security. Cabrillo Beach was eliminated due to the potential for extended beach closures and public input.

Of the 13 preliminary options evaluated, five remain. The viable options for an intermediate shaft site are:

- **Port of Los Angeles – TraPac (access shaft site)**
- **Port of Los Angeles – LAXT (working shaft site)**
- **Port of Los Angeles – Southwest Marine (access shaft site)**
- **Angels Gate Park (access shaft site)**

FIGURE 6-8

CLEARWATER Program

Preliminary Intermediate Shaft Sites

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

- **Royal Palms Beach (exit shaft site)**

The viable options for an intermediate shaft site are shown on Figure 6-9 and were carried forward in the development of offshore alignments described in Section 6.3.3.5 and the viable project alternatives in Section 6.3.4.1.

6.3.3.4 Diffuser Area

The diffuser area is where effluent would be discharged to the ocean. The length of the diffuser would depend on a variety of factors including projected flows and discharge depth. An underlying criterion for the proposed diffuser is that it should perform as well as the existing diffusers. To attain this criterion, initial parameters of distance from shore, discharge depth, and bathymetry profile were established. In addition, the diffuser area had to avoid the existing ocean outfalls and be located in a geotechnically stable area. Locations for a diffuser area that had sufficient length to construct a diffuser at a fairly constant bathymetric contour (same depth) were preferred over locations where the diffuser would need to be constructed at varying depths.

Preliminary Options

Level 1 screening parameters for the development of potential diffuser areas are:

- The new ocean outfall system must perform equal to, or better than, the existing ocean outfall system with respect to achieving water quality objectives
- The location and discharge should be such that it does not significantly influence other POTW outfalls
- The diffuser must be located in a geotechnically stable area with respect to slope stability and potential lateral movement
- There should be a somewhat consistent slope to the area with relatively straight contours

Based on these criteria, the following four locations areas were identified as preliminary options for a diffuser area:

- **Diffuser Area A:** Off Point Fermin on the PV Shelf, adjacent to the location of the Sanitation Districts' existing ocean outfalls
- **Diffuser Area B:** East of the San Pedro Sea Valley
- **Diffuser Area C:** On the southern edge of the SP Shelf
- **Existing Ocean Outfalls**

The preliminary options for a diffuser area are shown on Figure 6-10.

Viable Options

Four separate locations were identified as preliminary options for a potential diffuser area location. Level 2 screening parameters used in the assessment of these options were:

- Areas situated where favorable ocean conditions exist to decrease the potential for water quality impacts on sensitive receptors
- Sufficient length and space to accommodate the construction of a diffuser system that could accommodate JWPCP flows beyond the 2050 projections

FIGURE 6-9

Viable Intermediate Shaft Sites

CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

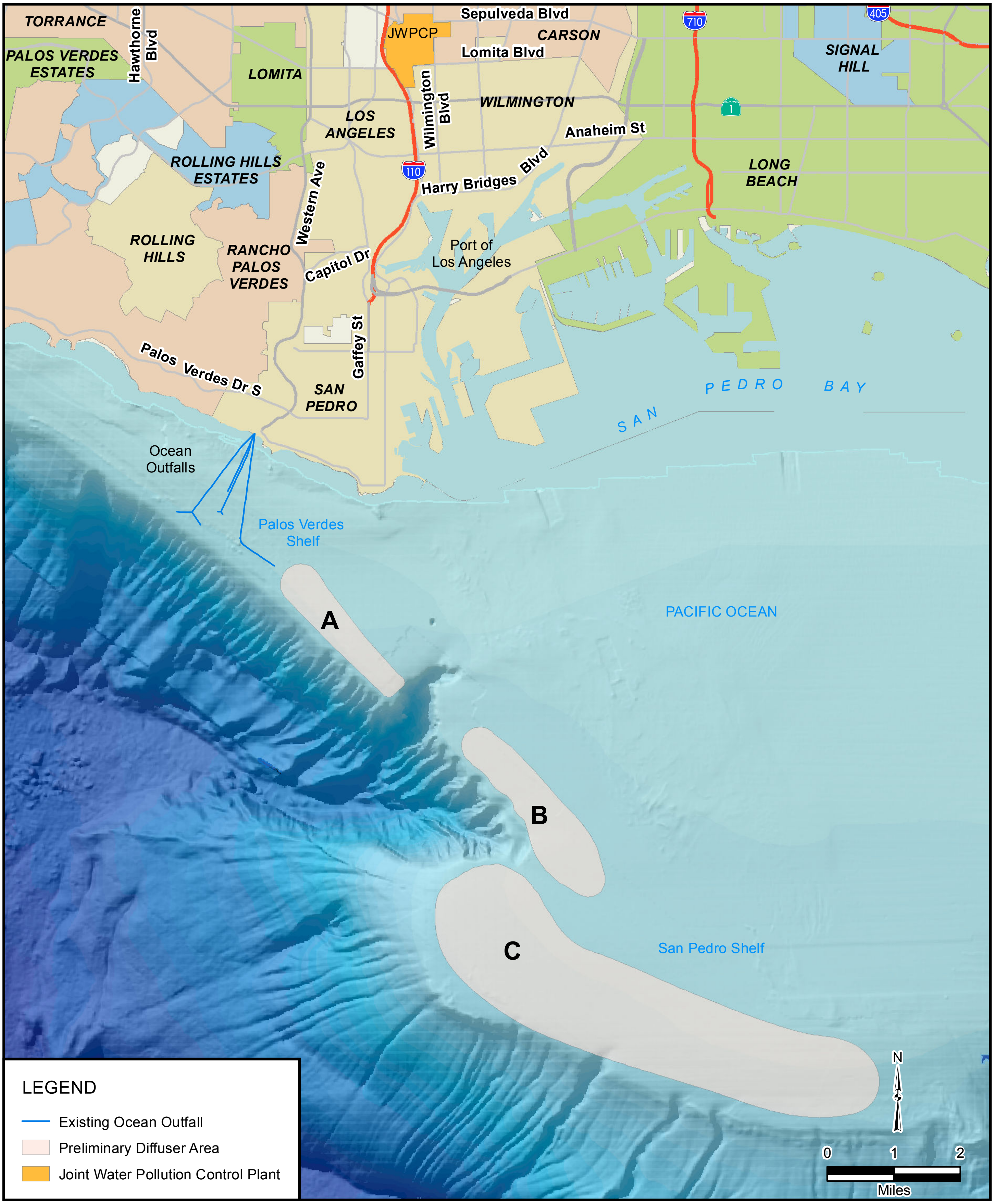


FIGURE 6-10

CLEARWATER Program

Preliminary Diffuser Areas

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

On this basis, Diffuser Area B was eliminated from consideration because of its location within active shipping lanes, proximity to the shoreline, potential for water quality impacts due to shallower depth and poor initial dilution, unfavorable currents, and insufficient area to accommodate the diffuser length that could be required.

Of the four preliminary options evaluated, three remain. The viable options for a diffuser area are:

- **Diffuser Area A (hereinafter referred to as PV Shelf)**
- **Diffuser Area C (hereinafter referred to as SP Shelf)**
- **Existing Ocean Outfalls**

These three diffuser area locations, shown on Figure 6-11, were carried forward as viable options and used in the development of offshore alignments described in Section 6.3.3.5 and the viable system alternatives in Section 6.3.4.1.

6.3.3.5 Offshore Alignment

The offshore alignment would connect an intermediate shaft site to the diffuser. The alignment could consist of a tunnel or a combination of a tunnel and a seafloor pipeline. Because each offshore alignment is dependent on the locations of the intermediate shaft site and the diffuser area, preliminary options for the offshore alignment were established after the viable options for the intermediate shaft site and diffuser area were determined.

Preliminary Options

Level 1 screening parameters for the development of potential offshore alignments were:

- Viable intermediate shaft site (working, access, or exit)
- Viable diffuser area
- Tunnel only or a combination of tunnel and seafloor pipeline

The remaining viable options for intermediate shaft sites included three in the Port of Los Angeles, one at Angels Gate Park, and one at Royal Palms Beach. Because all onshore alignments through the Port of Los Angeles end at the LAXT shaft site, it would serve as the origin of all offshore alignments through the Port of Los Angeles. Beginning at the LAXT shaft site, an alignment could continue through Pier 400 to the east of the Palos Verdes Fault into the ocean and cross the fault in the ocean, or the alignment could cross the Palos Verdes Fault within the port and continue through the Southwest Marine shaft site into the ocean. The Angels Gate shaft site would serve as the beginning of any offshore alignment through that shaft site. The Royal Palms shaft site would be an exit shaft connecting to the existing ocean outfalls and, therefore, would not serve as the start of an offshore alignment. In determining preliminary options for the offshore alignment, only the LAXT and Angels Gate shaft sites would be considered for the origin of the offshore alignment.

Combining the two shaft sites, the two viable diffuser area locations, and the type of alignments (tunnel or combined tunnel and seafloor pipeline) resulted in the following 12 preliminary options for offshore tunnel alignments:

- **LAXT through Pier 400 to PV Shelf (tunnel)**
- **LAXT through Pier 400 to PV Shelf (combined)**
- **LAXT through Pier 400 to SP Shelf (tunnel)**

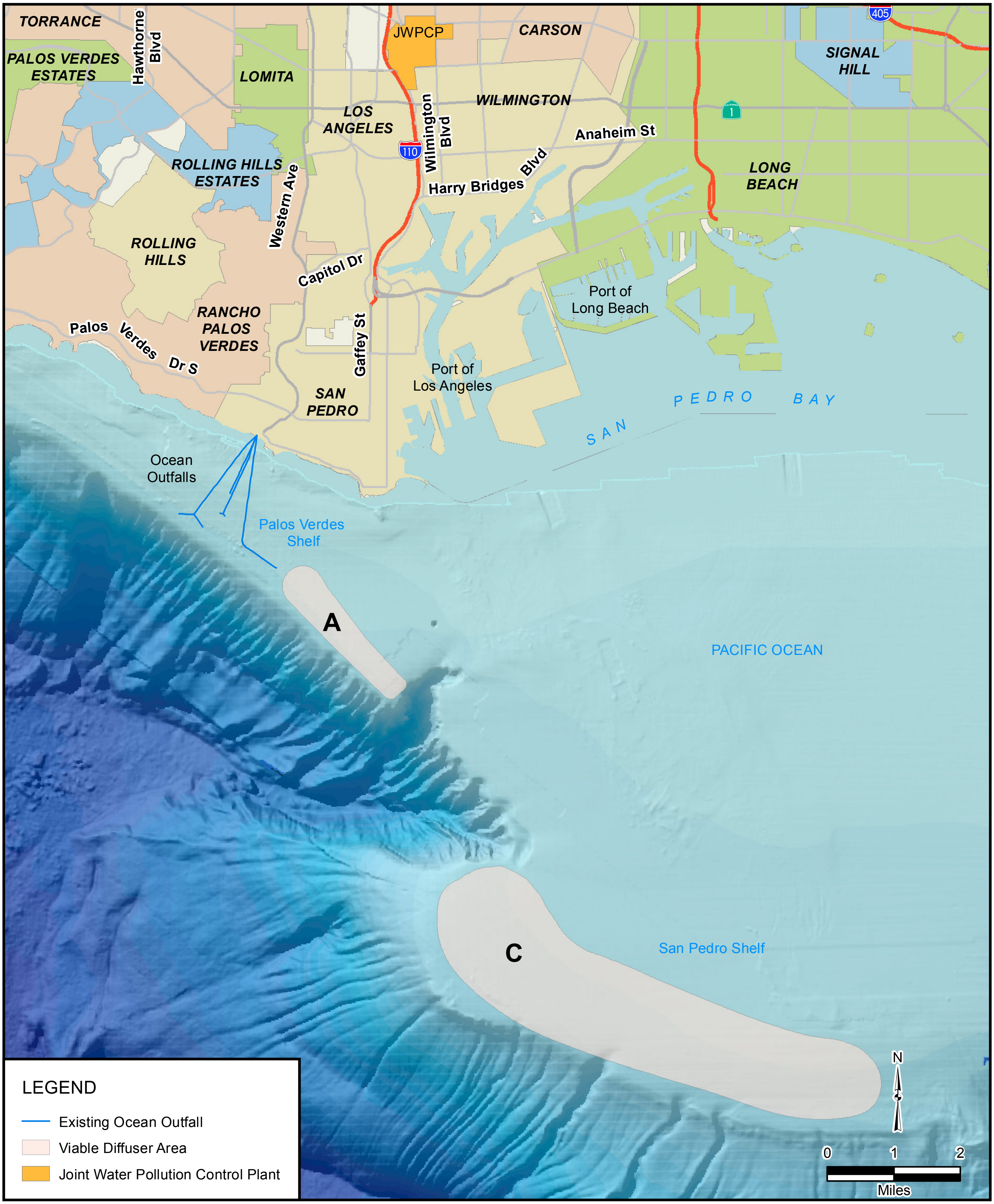


FIGURE 6-11

Viable Diffuser Areas

CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

- **LAXT through Pier 400 to SP Shelf (combined)**
- **LAXT through Southwest Marine to PV Shelf (tunnel)**
- **LAXT through Southwest Marine to PV Shelf (combined)**
- **LAXT through Southwest Marine to SP Shelf (tunnel)**
- **LAXT through Southwest Marine to SP Shelf (combined)**
- **Angels Gate to PV Shelf (tunnel)**
- **Angels Gate to PV Shelf (combined)**
- **Angels Gate to SP Shelf (tunnel)**
- **Angels Gate to SP Shelf (combined)**

The preliminary options for offshore alignments are shown on Figure 6-12.

Viable Options

Level 2 screening parameters used in the assessment of the 12 preliminary options for an offshore alignment were:

- Maximum depth of riser is 200 feet of water
- Maximum length of submarine tunnel in rock is 10 miles
- Maximum length of submarine tunnel in soil is 4 miles
- Minimization of costs
- Minimization of marine impacts
- Avoidance of crossing the Palos Verdes Fault in the ocean

All options with combined tunnel and seafloor pipeline were eliminated because construction of a seafloor pipeline would increase the cost and marine impacts. The options that went from LAXT through Pier 400 to both the PV Shelf and the SP Shelf were eliminated because they would cross the Palos Verdes Fault in the ocean and would require an extensive amount of seafloor pipeline, which would increase the cost and marine impacts. The option that went from Angels Gate to SP Shelf was eliminated because it exceeded the maximum length of tunnel drive. Of the 12 preliminary options evaluated, three remain. The viable options for an offshore alignment are:

- **Angels Gate to PV Shelf (tunnel)**
- **LAXT through Southwest Marine to PV Shelf (tunnel)**
- **LAXT through Southwest Marine to SP Shelf (tunnel)**

These three offshore alignments were carried forward as viable options and used in the development of viable system alternatives in Section 6.3.4.1.

6.3.4 Development and Screening of Project Alternatives

6.3.4.1 Viable Alternatives

The next step in the alternatives development and assessment process for a new or modified ocean discharge system was the generation of viable alternatives. As previously described, viable options for

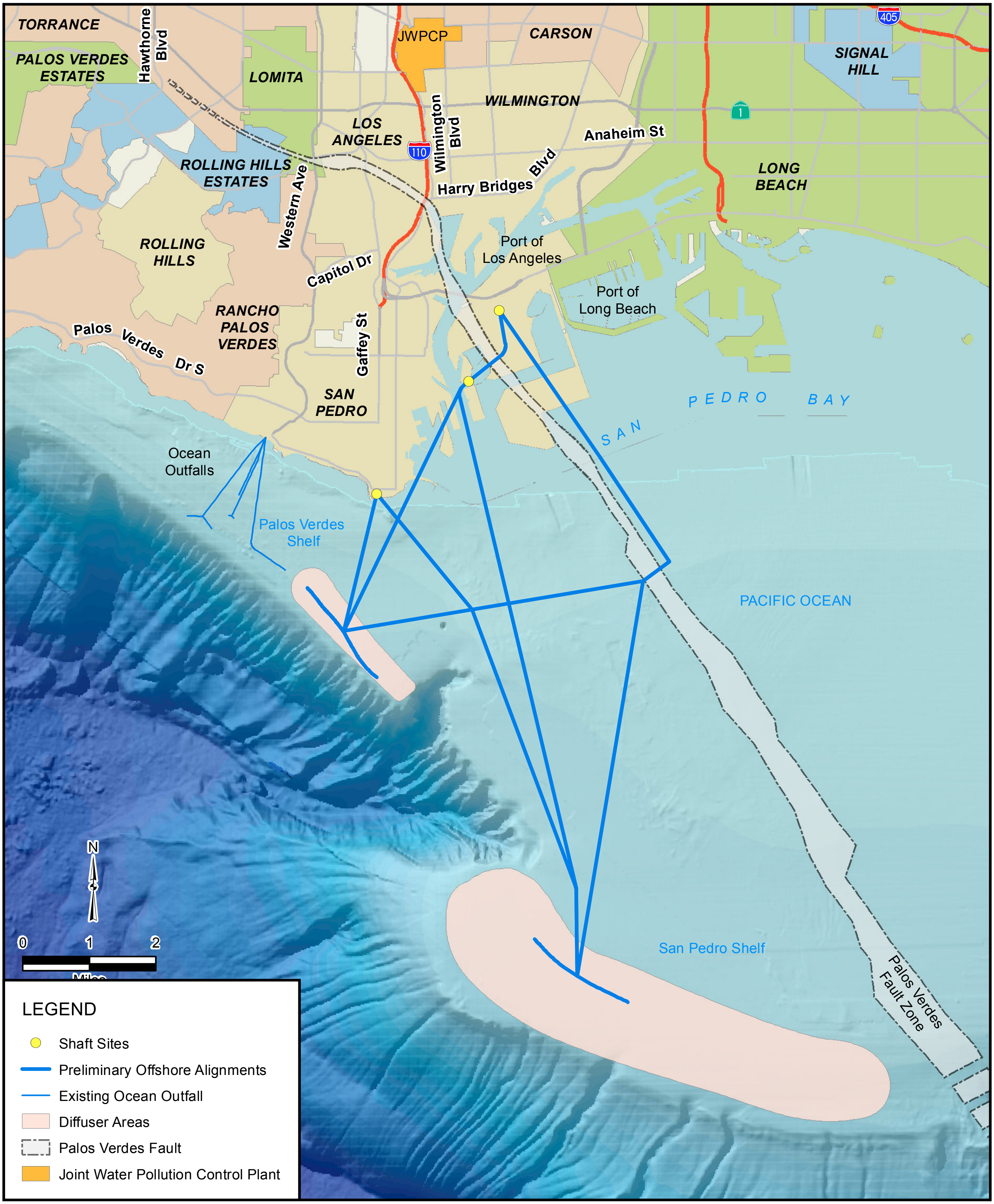


FIGURE 6-12

Preliminary Offshore Alignments

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

each project element area were identified. These viable options were then combined into viable alternatives for a new or modified ocean discharge system.

Various permutations of viable options from each project element were amalgamated into viable alternatives that are logical and practical in terms of the resulting functionality (e.g., a viable intermediate shaft site would only be paired with a viable onshore alignment if the shaft site were adjacent to the alignment).

The number of viable options for each project element is as follows:

- Onshore alignment (8)
- JWPCP shaft site (2)
- Intermediate shaft site (5)
- Diffuser area (3)
- Offshore alignment (3)

Logically combining these various options into comprehensive alternatives resulted in a total of 10 viable alternatives for an ocean discharge system. These 10 viable alternatives can be further categorized as either new ocean discharge systems or modified ocean discharge systems. The viable project alternatives for each category are listed in Table 6-24 and Table 6-25, respectively, and shown on Figure 6-13.

Table 6-24. Viable Alternatives: New Ocean Discharge System

JWPCP Shaft Site	Onshore Alignment	Intermediate Shaft Sites	Offshore Alignment	Diffuser Area
JWPCP East	Wilmington	TraPac, LAXT, Southwest Marine	LAXT through Southwest Marine to SP Shelf	SP Shelf
JWPCP East	Frigate	TraPac, LAXT, Southwest Marine	LAXT through Southwest Marine to SP Shelf	SP Shelf
JWPCP East	Wilmington	TraPac, LAXT, Southwest Marine	LAXT through Southwest Marine to PV Shelf	PV Shelf
JWPCP East	Frigate	TraPac, LAXT, Southwest Marine	LAXT through Southwest Marine to PV Shelf	PV Shelf
JWPCP West	N Gaffey – S Gaffey	Angels Gate	Angels Gate to PV Shelf	PV Shelf
JWPCP West	Figueroa – S Gaffey	Angels Gate	Angels Gate to PV Shelf	PV Shelf

Table 6-25. Viable Alternatives: Modified Ocean Discharge System

JWPCP Shaft Site	Onshore Alignment	Intermediate Shaft Site	Diffuser Area
JWPCP West	Figueroa – John S Gibson – Capitol – Western	Royal Palms	Existing Outfalls
JWPCP West	Figueroa – Harbor Regional Park – North Gaffey – Capitol – Western	Royal Palms	Existing Outfalls
JWPCP West	Figueroa – Harbor Regional Park – Navy Fuel Depot – Western	Royal Palms	Existing Outfalls
JWPCP West	Lomita – Western	Royal Palms	Existing Outfalls

6.3.4.2 Level 3 Screening

The next step in the alternatives development and assessment process for a new or modified ocean discharge system was the Level 3 screening of viable alternatives and determination of ranked feasible alternatives to carry forward for detailed environmental analysis in the associated EIR/EIS.

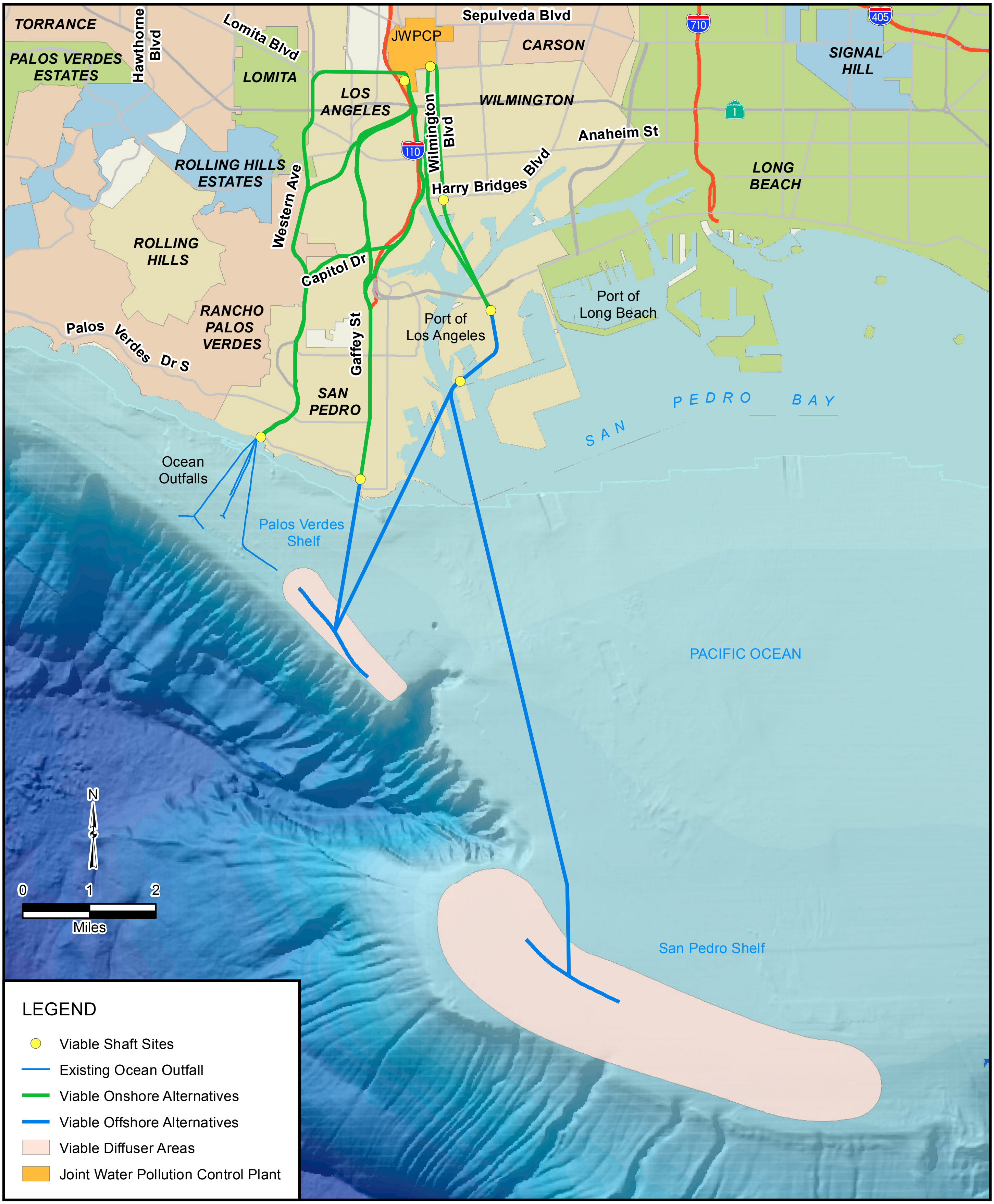


FIGURE 6-13

CLEARWATER Program

Viable Alternatives for a New or Modified Ocean Discharge System

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

The Level 3 screening process employed a multi-criteria decision support software tool to facilitate the overall assessment effort. The software provided the flexibility to investigate a wide range of evaluation approaches and allowed for a sensitivity analysis of outcomes. The steps in assessing the viable alternatives and determining the ranked feasible alternatives were as follows:

- Determine screening parameters, parameter weights, and guidelines for application of criteria
- Disaggregate viable alternatives into project elements and determine importance factors to apply to each project element in scoring compilation
- Score the project elements of each alternative with respect to the screening parameters and apply importance factor weights
- Compile aggregate weighted scores for each alternative by applying screening parameter weights and totaling the weighted element scores
- Carry forward top scoring alternatives as ranked feasible alternatives for detailed environmental assessment

Screening Parameters and Weighting

Viable alternatives were evaluated with respect to their relative ranking against a set of screening parameters. The criteria and relative weights used in the assessment process are listed in Table 6-26.

Table 6-26. Screening Parameters and Weighting

Screening Parameter	Weight (Percent)
Environmental Impacts	20
Public Input	15
Operational Considerations	10
Constructability	15
Long-Term Uncertainty	20
Cost Effectiveness	20

The assigned weights reflect the Sanitation Districts' assessment of the relative importance of each of these parameters in the decision-making process. The screening parameters were selected and defined so as to provide measurable, comprehensive, and independent results. Each option was scored on a system from zero (worst) to ten (best). Each of these parameters is briefly discussed in the paragraphs that follow.

Environmental Impacts

Environmental impacts consider both the short-term (construction) and long-term (operational) impacts related to the subject alternative. This parameter takes into account both the extent of construction and the sensitivity of areas affected. The scores for this parameter range from zero, for a high degree of impacts and a high level of mitigation required, to ten, for limited impacts and no mitigation required.

Public Input

Public input considers the relative degree of public acceptance anticipated for the subject alternative. This includes views of individuals and community groups collected as part of a public outreach program. If documented public input was unavailable, public perception was anticipated or inferred. The scores for this parameter range from zero, for a high degree of public opposition, to ten, for positive public perceptions and support.

Operational Considerations

Operational considerations deal with the benefits the subject alternative provides to the ongoing operation of the JWPCP. Operational flexibility, redundancy, and anticipated O&M and monitoring costs are among the factors evaluated in this category. The scores for this parameter range from zero, for no flexibility and high O&M and monitoring costs, to ten, for a high degree of flexibility and low O&M and monitoring costs.

Constructability

Constructability considers the relative ease or difficulty of constructing the facilities for the subject alternative. For instance, would construction require methods that are commonly used or would it require innovative techniques? Seismic design is considered in this category, as well as the hazards that may be encountered during construction. Institutional feasibility, an indication of the Sanitation Districts' control over a given alternative, is also considered. The scores for this parameter range from zero, for highly complex construction methods, state-of-the-art technology, many hazards, and dependence on third-party approvals, to ten, for relatively easy, standard construction, limited hazards, and greater Sanitation Districts' control.

Long-Term Uncertainty

Long-term uncertainty considers the impacts of future events and changes in conditions that may occur but cannot be predicted (e.g., future flows and regulatory requirements). Areas such as seismic vulnerability and the ability to access and repair the elements of the subject alternative are considered as well. Asset reliability and expansion potential are also considered in this category. The scores for this parameter range from zero, if future significant events and conditions would require significant effort or changes, to ten, if future significant events and conditions could be handled with relative ease or no changes.

Cost Effectiveness

Cost effectiveness considers the capital costs associated with the implementation of the subject alternative. The scores for this parameter range from zero, for the most expensive alternative, to ten, for a no-cost alternative.

Project Element Importance Factors

Some of the project elements play a greater role in the development of the alternatives or have greater importance than the others. Each project element was assigned an importance factor based on the Sanitation Districts' assessment its relative importance. Subsurface project elements, particularly the offshore tunnels, were generally deemed less important than surface project elements with respect to overall potential project impacts. The importance factors for each project element are shown in Table 6-27.

Table 6-27. Project Element Importance Factors

Project Element	Importance Factors (Percent)
JWPCP Shaft Site	25
Onshore Tunnel Alignment	15
Intermediate Shaft Site	25
Offshore Alignment	10
Diffuser Area	25

Viable Alternative Scoring

To determine an aggregate score for each alternative, the project elements were first scored with respect to the screening parameters, and the importance factors were applied. The results were then multiplied by the screening parameter weights and totaled. The aggregate scores for the viable alternatives are presented in Table 6-28, along with the relative rankings.

The scores reflect the relative superiority of the modified ocean discharge alternatives (the last four alternatives listed in Table 6-28), particularly with respect to environmental impacts, public support, and cost. The lower, closely grouped scores for the new ocean discharge alternatives (the first six alternatives listed in Table 6-28) reflect the tradeoffs between siting a shaft site within the Port of Los Angeles or Angels Gate Park and constructing a diffuser on the SP Shelf or the PV Shelf. For example, the public strongly opposes siting any kind of shaft at Angels Gate Park and prefers a new diffuser area on the SP shelf because it would be further offshore and deeper than a new diffuser area on the PV Shelf. However, a diffuser area on the SP Shelf would be very difficult to construct and expensive given its distance offshore.

Table 6-28. Viable Alternatives Scoring Summary

Alternative	Aggregate Weighted Score	Relative Ranking
Wilmington – LAXT – SP Shelf	5.63	5
Frigate – LAXT – SP Shelf	5.55	6
Wilmington – LAXT – PV Shelf	5.43	8
Frigate – LAXT – PV Shelf	5.36	10
Figueroa – Angels Gate – PV Shelf	5.48	7
N Gaffey – Angels Gate – PV Shelf	5.42	9
Figueroa – Harbor Regional Park – N Gaffey – Capitol – Western	7.56	1
Figueroa – John S Gibson – Capitol – Western	7.49	2
Figueroa – Harbor Regional Park – Navy Fuel Depot – Western	7.47	3
Lomita – Western	7.39	4

Selecting Feasible Alternatives

There are a number of potential approaches to using the scoring as a way to rank the viable alternatives and select those to carry forward as feasible alternatives. The simplest approach would be to rank alternatives based strictly on the scoring, with the highest score ranked as number one and the lowest ranked as number ten, as presented in Table 6-28.

With this approach, the top three or four alternative scores could be used to determine the feasible alternatives. However, there was no clear delineation between the higher and lower ranked alternatives for a new ocean discharge system, and selecting only the alternatives for a modified ocean discharge system would not constitute a reasonable range of alternatives, as required for environmental review under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA).

A sensitivity analysis was performed in which the screening parameter weights were varied. This analysis indicated that the ten viable alternatives could be logically divided into four distinct groups based on the intermediate shaft site and the diffuser location. The three groups within the new ocean discharge system are LAXT to SP Shelf, LAXT to PV Shelf, and Angels Gate to PV Shelf. The fourth group would consist of the modified ocean discharge alternatives, which would have a shaft site at Royal Palms Beach and would utilize the existing ocean outfalls. The grouping of the viable alternatives is shown in Table 6-29.

Table 6-29. Grouping of Viable Alternative by Intermediate Shaft Site and Diffuser Location

Program Alternative	Intermediate Shaft Site and Diffuser Area	Project Alternative	Aggregate Score	Relative Ranking Within Grouping
New Ocean Discharge System	LAXT to SP Shelf	Wilmington – LAXT – SP Shelf	5.63	1
		Frigate – LAXT – SP Shelf	5.55	2
	LAXT to PV Shelf	Wilmington – LAXT – PV Shelf	5.43	1
		Frigate – LAXT – PV Shelf	5.36	2
	Angels Gate to PV Shelf	Figueroa – AG – PV Shelf	5.48	1
		N Gaffey – AG – PV Shelf	5.42	2
Modified Ocean Discharge System	Royal Palms to Existing Ocean Outfalls	Figueroa – Harbor Regional Park – N Gaffey – Capitol – Western	7.56	1
		Figueroa – John S Gibson – Capitol – Western	7.49	2
		Figueroa – Harbor Regional Park – Navy Fuel Depot – Western	7.47	3
		Lomita – Western	7.39	4

In all four of these groups, one alternative always ranked highest in the sensitivity analysis, regardless of the screening criteria weights. These top-ranked alternatives are the feasible project alternatives (shown on Figure 6-14).

6.3.4.3 Ranked Feasible Alternatives

On the basis of the analysis performed, the ranked feasible project alternatives, listed from highest to lowest ranking, are:

- **JE 3 (Figueroa – Harbor Regional Park – North Gaffey – Capitol – Western – Royal Palms – Existing Ocean Outfalls):** JWPCP West (working shaft); beneath Figueroa Street, Harbor Regional Park, North Gaffey Street, Capitol Drive, and Western Avenue (through Dodson Avenue); to Royal Palms Beach (exit shaft); and rehabilitation of the existing ocean outfalls
- **JE 2A (Wilmington – LAXT – SP Shelf):** JWPCP East (working shaft); beneath Wilmington Boulevard to the Port of Los Angeles (access shaft at TraPac; construction shaft at LAXT); out through Southwest Marine (access shaft); to diffuser area on SP Shelf; and rehabilitation of the existing ocean outfalls
- **JE 2B (Figueroa – Angels Gate – PV Shelf):** JWPCP West (working shaft); beneath Figueroa Street and South Gaffey Street to Angels Gate Park (access shaft); to diffuser area on PV Shelf; and rehabilitation of the existing ocean outfalls
- **JE 2C (Wilmington – LAXT – PV Shelf):** JWPCP East (working shaft); beneath Wilmington Boulevard to the Port of Los Angeles (access shaft at TraPac; construction shaft at LAXT); out through Southwest Marine (access shaft); to diffuser area on PV Shelf; and rehabilitation of the existing ocean outfalls

A summary of the JOS project-level alternatives analysis is shown on Figure 6-15.

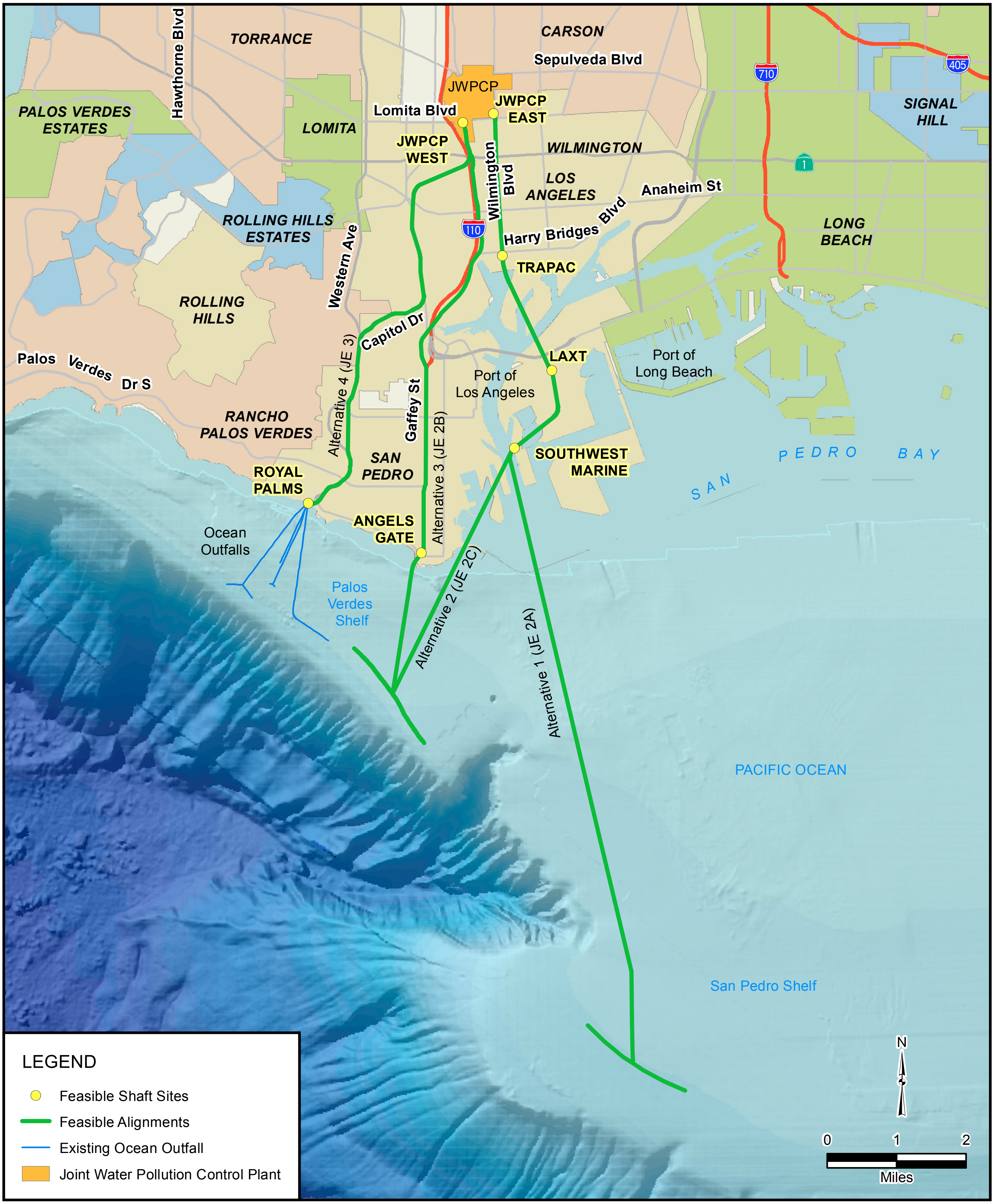


FIGURE 6-14

CLEARWATER Program

Feasible Alternatives for New or Modified Ocean Discharge System

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

STUDY AREA CRITERIA

Use a direct route from JWPCP to diffuser | Remain on continental shelf | Maintain appropriate distance from other outfalls | Avoid Marine Protected Areas

LEVEL 1 SCREENING – PROJECT OBJECTIVES

JWPCP SHAFT SITES	ONSHORE ALIGNMENT	INTERMEDIATE SHAFT SITES	OFFSHORE ALIGNMENT	RISER & DIFFUSER AREA
Minimum area – 8 acres Mostly within JWPCP boundaries Sufficient access Appropriate shape/geometry Avoid existing facilities	Use public ROW and easements Sufficient turning radius for tunnel boring machine Minimize overall length	Sufficient area Appropriate shape/geometry Relatively flat Use public lands Proximity to onshore alignment	Input from viable land and diffuser options All tunnel (T) Combined tunnel & ocean floor pipeline (C)	Perform as well as existing outfalls Slope (straight contour) Geotechnically stable area Avoid other agency outfalls

PRELIMINARY OPTIONS – BY PROJECT ELEMENT

JWPCP SHAFT SITES	ONSHORE ALIGNMENT	INTERMEDIATE SHAFT SITES	OFFSHORE ALIGNMENT	RISER & DIFFUSER AREA
JWPCP West JWPCP East	Fig-NGaf-SGaf Fig-NGaf-Pac Fig-NGaf-Pac-CBch Fig-NGaf-Harb Fig-Nav-West Fig-NGaf-Cap-West Fig-JSG-SGaf Fig-JSG-Pac Fig-JSG-Pac-CBch Fig-JSG-Harb Fig-JSG-Cap-West Fig-CS-Harb Frig-JSG-SGaf Frig-JSG-Pac Frig-JSG-Pac-CBch Frig-JSG-Cap-West Frig-JSG-Harb Frig-CS-Harb Fig-POLA Frig-POLA Wilm-POLA Lom-West	Navy Fuel Depot Fort MacArthur Averill Park Cabrillo Beach Field of Dreams Peck Park Point Fermin Park White Pt Nature Reserve Royal Palms Beach Angels Gate Park Port of Los Angeles	AG-PV(T) AG-SP(T) AG-PV(C) AG-SP(C) LAXT-SWM-PV(T) LAXT-SWM-SP(T) LAXT-SWM-PV(C) LAXT-SWM-SP(C) LAXT-P400-PV(T) LAXT-P400-SP(T) LAXT-P400-PV(C) LAXT-P400-SP(C)	Palos Verdes Shelf San Pedro Shelf at Sea Valley San Pedro Shelf Existing ocean outfalls

LEVEL 2 SCREENING – PROJECT ELEMENT SCREENING CRITERIA

JWPCP SHAFT SITES	ONSHORE ALIGNMENT	INTERMEDIATE SHAFT SITES	OFFSHORE ALIGNMENT	RISER & DIFFUSER AREA
Compatible land use Minimize environmental concerns Minimize impact to public facilities Institutional constraints relative to use	Minimize exposure to faults Compatible with intermediate shaft sites Minimize easement required Minimize length	Compatible land use Minimize environmental concerns Minimize impact to recreational areas Avoid contaminated sites Input from local jurisdictions and public	Stay within state of art tunnel/riser limits Minimize cost Minimize marine impacts Avoid offshore crossing of PV Fault	Favorable currents Ability to accommodate future flows

VIABLE OPTIONS – BY PROJECT ELEMENT

JWPCP SHAFT SITES	ONSHORE ALIGNMENT	INTERMEDIATE SHAFT SITES	OFFSHORE ALIGNMENT	RISER & DIFFUSER AREA
JWPCP West JWPCP East	Fig-NGaf-SGaf Fig-Nav-West Fig-NGaf-Cap-West Fig-JSG-Cap-West Fig-JSG-SGaf Wilm-POLA Lom-West Frig-POLA	Angels Gate Park Port of Los Angeles Royal Palms Beach	AG-PV(T) LAXT-SWM-PV(T) LAXT-SWM-SP(T)	Palos Verdes Shelf San Pedro Shelf Existing ocean outfalls

AG: Angels Gate
Cap: Capitol Dr
CBch: Cabrillo Beach
CS: China Shipping
Fig: Figueroa St
Frig: Frigate Ave
Harb: Harbor Blvd
JSG: John S Gibson Blvd
LAXT: Los Angeles Export Terminal
Lom: Lomita Blvd
NAV: Naval Fuel Depot
NGaf: North Gaffey St
Pac: Pacific Ave
P400: Pier 400
POLA: Port of Los Angeles
PV: Palos Verdes Shelf
RP: Royal Palms
SGaf: South Gaffey St
SP: San Pedro Shelf
SWM: Southwest Marine
West: Western Ave
Wilm: Wilmington Blvd

VIABLE ALTERNATIVES (PROJECT)

JWPCP West : Fig-JSG-SGaf : AG : AG-PV(T) : PV
JWPCP West : Fig-NGaf-SGaf : AG : AG-PV(T) : PV
JWPCP East : Wilm-POLA : POLA : LAXT-SWM-PV(T) : PV
JWPCP East : Wilm-POLA : POLA : LAXT-SWM-SP(T) : SP
JWPCP East : Frig-POLA : POLA : LAXT-SWM-SP(T) : SP
JWPCP East : Frig-POLA : POLA : LAXT-SWM-PV(T) : PV
JWPCP West : Fig-Nav-West : RP : Existing ocean outfalls
JWPCP West : Fig-NGaf-Cap-West : RP : Existing ocean outfalls
JWPCP West : Fig-JSG-Cap-West : RP : Existing ocean outfalls
JWPCP West : Lom-West : RP : Existing ocean outfalls

LEVEL 3 SCREENING – ALTERNATIVES EVALUATION CRITERIA (PROJECT)

Public input | Cost effectiveness | Long-term uncertainty | Operational considerations | Constructability | Environmental impacts

RANKED FEASIBLE ALTERNATIVES (PROJECT)

HIGHEST RANKED	Alternative 4 (JE 3):	JWPCP West : Fig-NGaf-Cap-West : RP : Existing ocean outfalls
	Alternative 1 (JE 2A):	JWPCP East : Wilm-POLA : POLA : LAXT-SWM-SP(T) : SP
	Alternative 3 (JE 2B):	JWPCP West : Fig-JSG-SGaf : AG : AG-PV(T) : PV
LOWEST RANKED	Alternative 2 (JE 2C):	JWPCP East : Wilm-POLA : POLA : LAXT-SWM-PV(T) : PV

ENVIRONMENTAL ANALYSIS (EIR/EIS)

RECOMMENDED PROJECT

FIGURE 6-15

CLEARWATER Program

Master Facilities Plan Project-Level Alternatives Screening Process

Source: Sanitation Districts of Los Angeles County 2011

6.4 Final Plan Alternatives

6.4.1 Viable Alternatives

In Section 6.2, the program component areas were analyzed, and four of the program component areas resulted in one feasible option. They are:

- **Wastewater Conveyance and Treatment – CT 2A:** Expansion at the SJCWRP; Process Optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and Additional Conveyance Capacity
- **Solids Processing – SP 1A:** Centralized Processing at the JWPCP/Use of Existing Systems
- **Biosolids Management – BM 1:** Current Practices: Beneficial Use/Landfill
- **WRP Effluent Management – WE 1:** Use of Current Effluent Management Systems

Analysis of the fifth program component area, JWPCP effluent management, resulted in two feasible options that were analyzed at a project level in Section 6.3:

- **JWPCP Effluent Management – JE 2:** New Ocean Discharge System
- **JWPCP Effluent Management – JE 3:** Modified Ocean Discharge System

The results of this analysis provided a set of four ranked feasible project alternatives (listed from highest to lowest ranking):

- **Modified Ocean Discharge System – JE 3:** Figueroa – Harbor Regional Park – North Gaffey – Capitol – Western – Royal Palms – Existing Ocean Outfalls
- **New Ocean Discharge System – JE 2A:** Wilmington – LAXT – SP Shelf
- **New Ocean Discharge System – JE 2B:** Figueroa – Angels Gate – PV Shelf
- **New Ocean Discharge System – JE 2C:** Wilmington – LAXT – PV Shelf

Combining the program and project elements into a set of system wide alternatives results in four feasible plan alternatives, which are listed in Table 6-30 and shown on Figure 6-2.

Table 6-30. Feasible Plan Alternatives

Alternative	Component Areas	Relative Ranking
1	CT 2A – SP 1A – BM 1 – WE 1 – JE 2A	2
2	CT 2A – SP 1A – BM 1 – WE 1 – JE 2C	4
3	CT 2A – SP 1A – BM 1 – WE 1 – JE 2B	3
4	CT 2A – SP 1A – BM 1 – WE 1 – JE 3	1

6.4.1.1 Cost of Feasible Alternatives

The capital cost to implement each of the four feasible plan alternatives is shown in Table 6-31.

Table 6-31. Capital Costs for Feasible Plan Alternatives

Component Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wastewater Conveyance and Treatment	$658M	$658M	$658M	$658M
Solids Processing	$66M	$66M	$66M	$66M
Biosolids Management	$0M	$0M	$0M	$0M
WRP Effluent Management	$0M	$0M	$0M	$0M
JWPCP Effluent Management[a]	$1,362M	$984M	$909M	$550M
Total:	$2,086M	$1,708M	$1,633M	$1,274M

[a] Includes $15 million to rehabilitate the existing ocean outfalls.
M = million

6.4.2 No-Project and No-Federal-Action Alternatives

Environmental reviews (CEQA and NEPA) associated with new facilities require the inclusion of no-project and no-federal-action alternatives as a basis for comparison in the evaluation of the environmental impacts for the recommended facilities.

Under the No-Project Alternative for the Clearwater Program, it is assumed that the recommendations for WRP expansion, conveyance system improvements, WRP effluent management, solids processing, and biosolids management from the previous comprehensive JOS facilities planning effort (JOS 2010 Master Facilities Plan) would be implemented when needed. There would be no process optimization at the WRPs and a new or modified ocean discharge system would not be constructed. Under this approach, project objectives previously outlined would not be achieved, so it is not considered feasible.

Under the No-Federal-Action Alternative, it is assumed that no federal permits would be issued for any of the recommendations of the Clearwater Program. The only aspect of the Clearwater Program that requires federal permits is the construction of a new or modified ocean discharge system. Therefore, under this alternative, all of the conveyance/treatment, solids processing, biosolids management, and WRP effluent management recommendations of the Clearwater Program would be implemented, but there would be no new or modified ocean discharge system. Under this approach, project objectives previously outlined would not be achieved, so it is not considered feasible.

6.4.3 Identification of Recommended Plan

The four plan alternatives consist of program and project aspects. Because the alternatives are identical in all aspects except for the selected approach to JWPCP effluent management, the ranking of the feasible project alternatives, shown in Section 6.3.4.3, represents the ranking of the plan alternatives. Therefore, Alternative 4 from Table 6-30 is the recommended plan alternative. The program and project elements of the recommended plan are:

- **Wastewater Conveyance and Treatment – CT 2A:** Expansion at the SJCWRP; Process Optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and Additional Conveyance Capacity
- **Solids Processing – SP 1A:** Centralized Processing at the JWPCP
- **Biosolids Management – BM 1:** Current Practices: Beneficial Use/Landfill
- **WRP Effluent Management – WE 1:** Use of Current Effluent Management Systems
- **JWPCP Effluent Management – JE 3:** Figueroa – Harbor Regional Park – North Gaffey – Capitol – Western – Royal Palms (JWPCP West [working shaft]; Beneath Figueroa Street,

Harbor Regional Park, North Gaffey Street, Capitol Drive, and Western Avenue [through Dodson Avenue]; to Royal Palms Beach [exit shaft]); and Rehabilitation of the Existing Ocean Outfalls

The specifics of the recommended plan are described in more detail within Chapter 7.

Chapter 7
RECOMMENDED PLAN SUMMARY

7.1 Introduction

Based on the alternatives analysis presented in Chapter 6, the recommended plan for the Clearwater Program is a combination the highest-ranked feasible program alternatives for each of the Joint Outfall System (JOS) component areas and the highest-ranked feasible project alternative (Alternative 4) for effluent management at the Joint Water Pollution Control Plant (JWPCP). Chapter 7 presents a detailed description of the facilities needed to implement the recommended plan. Given the speculative nature of the program, which would be implemented over the long term, the emphasis of this chapter is on the recommended project – a modified ocean discharge system.

This chapter is organized into the following major sections:

- Summary of the Recommended Plan
- Plan Implementation and Schedule
- Project Cost
- Revenue Program
- Project Financing

7.2 Summary of the Recommended Plan

Program recommendations, which are broad and long term, would be implemented as needed. Project recommendations, which require a greater level of detail, would be implemented in the short term.

The five major program component areas are:

- Wastewater conveyance and treatment
- Solids processing
- Biosolids management
- Water reclamation plant (WRP) effluent management
- JWPCP effluent management

The four component areas with recommended program-level improvements are wastewater conveyance and treatment, solids processing, biosolids management, and WRP effluent management. The one component area with recommended project-specific improvements is JWPCP effluent management.

7.2.1 Wastewater Conveyance and Treatment

Recommendations for the conveyance and treatment program component area of the recommended plan include a 25 million gallons per day (MGD) expansion at the San Jose Creek Water Reclamation Plant (SJCWRP); process optimization at the Pomona Water Reclamation Plant (POWRP), SJCWRP, Los Coyotes Water Reclamation Plant (LCWRP), and Long Beach Water Reclamation Plant (LBWRP); and approximately 32.5 miles of relief sewers within the JOS. Process optimization consists of modifications within the existing plants to ensure that the Sanitation Districts of Los Angeles County (Sanitation Districts) continue to consistently meet permit conditions in anticipation of increasing regulatory requirements. Process optimization construction activities include flow equalization through the addition of storage capacity; treatment system modifications, as well as ancillary support facilities; and other in-plant upgrades.

7.2.1.1 Pomona Water Reclamation Plant

The POWRP would be upgraded to include flow equalization of the primary effluent, as shown on Figure 7-1. The flow equalization volume required for the POWRP is approximately 20 percent of the plant's daily permitted flow of 15 MGD. Therefore, the recommended equalization volume is 3 million gallons (MG). Based on a unit cost of $4 per gallon of storage, the total capital cost associated with the flow equalization facilities at the POWRP is approximately $12 million.

The current POWRP property boundary is large enough to accommodate the process optimization facilities, so additional land would not be required. Process optimization would likely be implemented between 2018 and 2028 depending on future flows, recycled water demands, regulatory requirements, and funding considerations.

7.2.1.2 San Jose Creek Water Reclamation Plant

Based on the wastewater flow projections presented in Chapter 4 and the assessment of current capabilities relative to future needs presented in Chapter 5, approximately 20 MGD of additional treatment plant capacity is required for the JOS by the 2050 planning horizon. As concluded by the alternatives analysis presented in Chapter 6, the SJCWRP is the most suitable location for a treatment plant expansion of at least 20 MGD. Therefore, the recommended plan calls for the SJCWRP to be expanded from its current permitted capacity of 100 MGD to 125 MGD. This 25-MGD expansion consists of the addition of two 12.5-MGD treatment modules that are consistent with the existing modules at the SJCWRP. The design criteria for the SJCWRP expansion is provided in Appendix C. Based on a unit cost of $8 per gallon of wastewater treated, the total capital cost associated with the 25-MGD wastewater treatment facilities expansion is approximately $200 million.

The current SJCWRP property boundary is large enough to accommodate the recommended wastewater treatment facilities expansion. Consequently, construction of the facilities would not require acquisition of additional land. Based on wastewater flow projections, SJCWRP expansion would likely be implemented between 2040 and 2050. The locations of the recommended treatment facilities are shown on Figure 7-2.

In addition to a 25-MGD expansion, the SJCWRP would be upgraded to include flow equalization of the primary effluent. The flow equalization volume required for the SJCWRP is approximately 25 percent of the plants' expanded daily permitted flow of 125 MGD. Therefore, the recommended equalization volume is 31 MG. Based on a unit cost of $4 per gallon of storage, the total capital cost associated with 31 MG of flow equalization facilities at the SJCWRP is approximately $125 million.

FIGURE 7-1

CLEARWATER Program

Pomona Water Reclamation Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

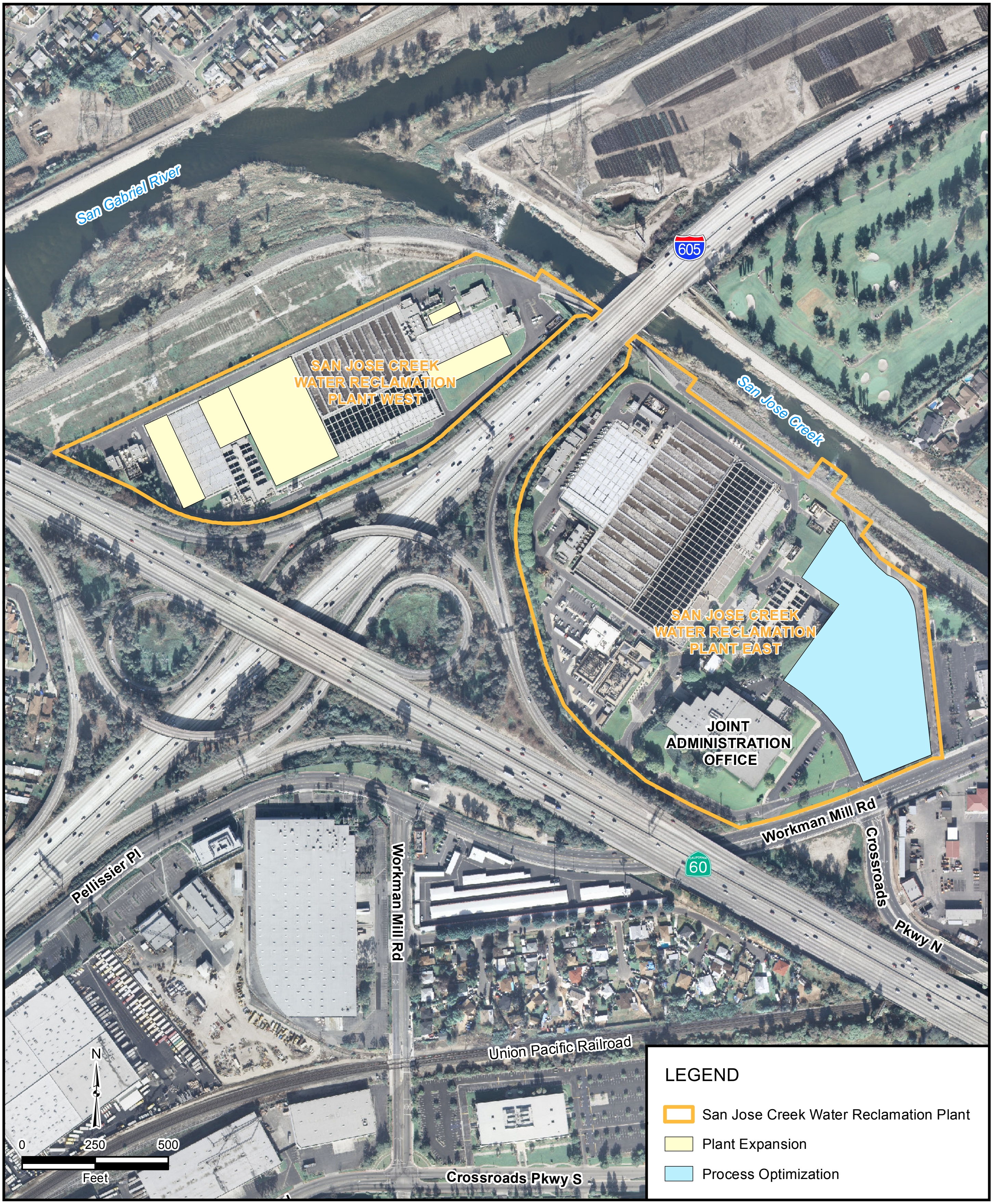


FIGURE 7-2

CLEARWATER Program

San Jose Creek Water Reclamation Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

The current SJCWRP property boundary is large enough to accommodate the process optimization facilities, so additional land would not be required. Process optimization would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations. The location of the recommended process optimization facilities is shown on Figure 7-2.

7.2.1.3 Los Coyotes Water Reclamation Plant

The LCWRP would be upgraded to include flow equalization of the primary effluent, as shown on Figure 7-3. The flow equalization volume required for the LCWRP is approximately 20 percent of the plant's daily permitted flow of 37.5 MGD. Therefore, the recommended equalization volume is 7.5 MG. Based on a unit cost of $4 per gallon of storage, the total capital cost associated with the flow equalization facilities at the LCWRP is approximately $30 million.

The current LCWRP property boundary is large enough to accommodate the process optimization facilities, so additional land would not be required. Flow equalization facilities can be built under the existing driving range for the Iron-Wood Nine Golf Course, thus not impacting its long-term use. Process optimization would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations.

7.2.1.4 Long Beach Water Reclamation Plant

The LBWRP would be upgraded to include flow equalization of the primary effluent, as shown on Figure 7-4. The flow equalization volume required for the LBWRP is approximately 20 percent of the plant's daily permitted flow of 25 MGD. Therefore, the recommended equalization volume is 5 MG. Based on a unit cost of $4 per gallon of storage, the total capital cost associated with the flow equalization facilities at the LBWRP is approximately $20 million.

The current LBWRP property boundary is large enough to accommodate the process optimization facilities, so additional land would not be required. Process optimization would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations.

7.2.1.5 Conveyance System

Based on the projected wastewater flows for the year 2050 and a 25-MGD expansion at the SJCWRP, approximately 32.5 miles of Joint Outfall (JO) relief trunk sewers would be required during the planning period. The Sanitation Districts would continue to closely monitor the JOS conveyance system throughout the planning period to determine actual relief needs. The future conveyance system improvement projects, which would be implemented on an as-needed basis, are graphically depicted on Figure 7-5. Based on a unit cost of $30 per inch-diameter per linear foot, the total capital cost associated with the conveyance system improvements is approximately $271 million.

7.2.2 Solids Processing

The recommended plan is to continue centralized solids processing at the JWPCP using existing systems. Sludges generated at the upstream WRPs would continue to be returned to the conveyance system and removed and treated at the JWPCP.

FIGURE 7-3

Los Coyotes Water Reclamation Plant Proposed Facilities

CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

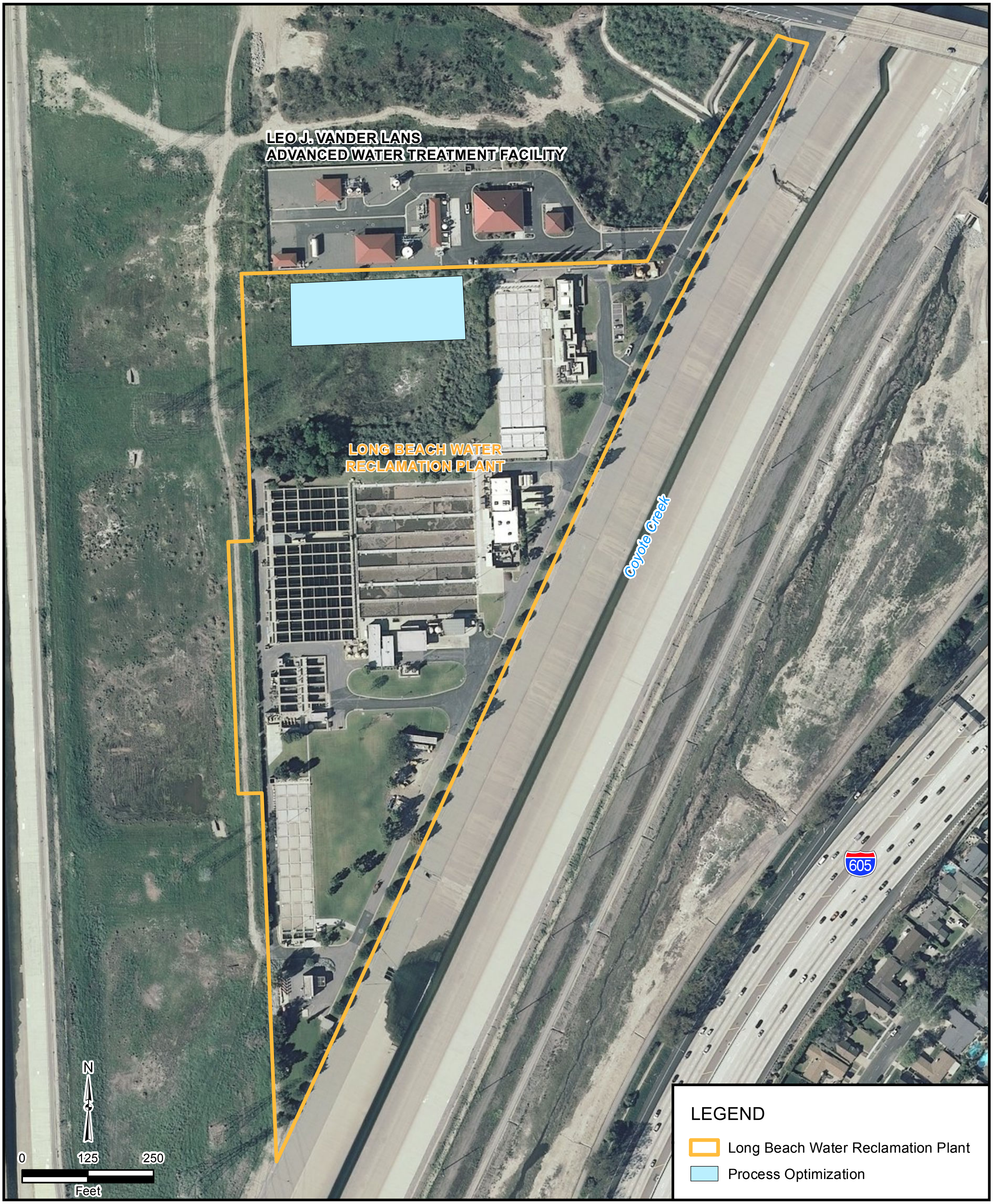


FIGURE 7-4

CLEARWATER Program

Long Beach Water Reclamation Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

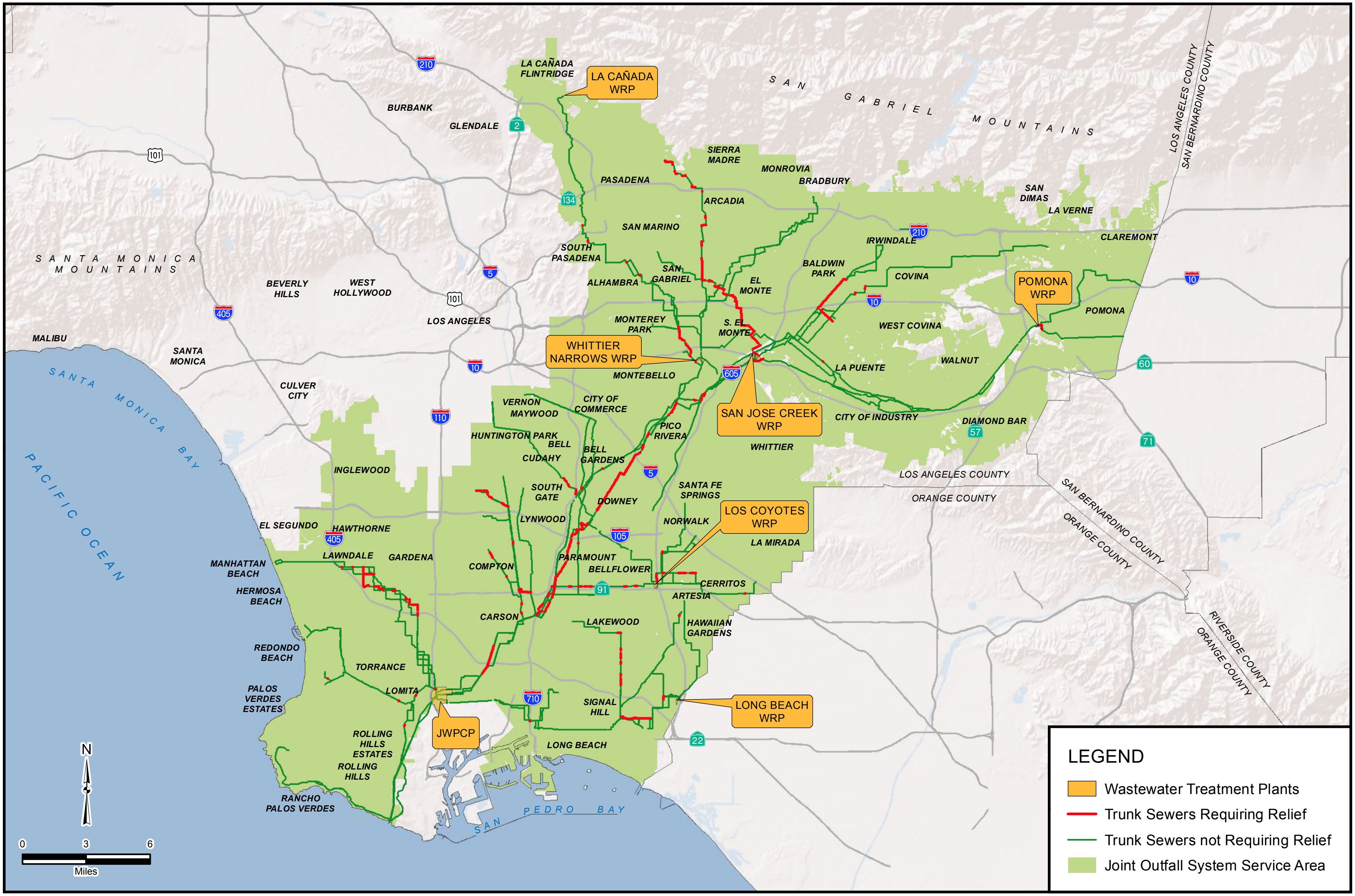


FIGURE 7-5

CLEARWATER Program

Conveyance System Improvements

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

7.2.2.1 Sludge Thickening

The capacity of the existing dissolved air flotation thickener system at the JWPCP is anticipated to be sufficient to meet the projected needs for 2050. Therefore, no additional thickening systems would be required over the duration of the planning period.

7.2.2.2 Sludge Stabilization

Based on the solids projections presented in Chapter 4 and the needs assessment presented in Chapter 5, additional sludge stabilization capacity would be required at the JWPCP. It is anticipated that the additional capacity would be in the form of units of similar design to those currently existing. Based on this assumption, six additional anaerobic digesters would be required by 2050. The total capital cost associated with the sludge stabilization facilities expansion is approximately $66 million.

The current JWPCP property boundary is large enough to accommodate the six additional digesters, so additional land would not be required. The location for the new digesters is shown on Figure 7-6. The timing for digester construction is dependent on future trending of sludge production at the JWPCP.

7.2.2.3 Sludge Dewatering

The capacity of the existing sludge dewatering system is anticipated to be sufficient to meet the projected future digested sludge flow for 2050. Therefore, no additional sludge dewatering facilities would be required over the duration of the planning period. The Sanitation Districts would continue the existing program of replacing aging centrifuges as needed throughout the duration of the planning period.

7.2.2.4 Digester Gas Handling and Power Generation

The power plant at the JWPCP currently utilizes two turbines that run on digester gas, a third turbine that is used for standby, four boilers that create steam from digester gas for process heating, and twelve flares that burn excess digester gas. Additional gas resulting from an increased number of digesters would be managed by these facilities. The turbines are currently supplemented with natural gas. As digester gas increases, it would be used in lieu of natural gas.

7.2.3 Biosolids Management

The recommended plan for biosolids management is the continuation of current practices. During the planning period, it is projected that the JOS biosolids generation rate would increase nearly 30 percent. The Sanitation Districts currently have a robust and diverse system in place to address the projected increase. The Sanitation Districts also have the ability to co-dispose biosolids in landfills, but this option would become more restrictive with the scheduled closure of the Puente Hills Landfill in 2013. However, the Westlake Farms Composting Facility should begin operations by the same year, and can be expanded in phases if and when future needs arise. Therefore, it is anticipated that there is no additional physical infrastructure required to accommodate future biosolids management. The Sanitation Districts would continue to explore options that provide for additional biosolids management diversity and further optimize the beneficial use of these materials.

7.2.4 WRP Effluent Management

The recommended plan for WRP effluent management is the continuation of existing practices. The existing system of WRP effluent management is effective and provides the Sanitation Districts flexibility

FIGURE 7-6

CLEARWATER Program

Joint Water Pollution Control Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

with respect to providing recycled water for reuse and discharging any excess flows to surface waterways. While the amount of reuse is likely to increase in the future, surface water discharge capabilities would be retained.

7.2.5 JWPCP Effluent Management (Project)

The recommend plan for JWPCP effluent management includes a project to modify the existing ocean discharge system (Alternative 4 from Chapter 6). Project elements comprise a working shaft site at the JWPCP, an onshore tunnel between the JWPCP and the existing ocean outfall manifold structure at Royal Palms Beach near White Point, an exit shaft site at Royal Palms Beach, and the rehabilitation of the existing ocean outfalls. Overall, it is anticipated that the project would take approximately 6.5 years to construct. The new tunnel, when connected to the existing ocean outfalls, would have a maximum hydraulic capacity of approximately 1,080 MGD, which can accommodate the peak storm flows of 927 MGD projected for the year 2050. Therefore, upon completion of the recommended project, the two existing effluent tunnels could be dewatered, inspected, and repaired or rehabilitated as necessary.

7.2.5.1 JWPCP West Shaft Site

The JWPCP West shaft site would be located mostly within the JWPCP property boundary on approximately 18 acres to the south and 1 acre to the north of Lomita Boulevard near Figueroa Street in the cities of Los Angeles and Carson as shown on Figure 7-7. The JWPCP West shaft site would function as a working shaft site and would be used throughout the duration of the project for site preparation, mobilization, shaft construction, staging and support for tunnel construction, and connection to the existing JWPCP effluent force main. The shaft would serve as the entry/exit point for construction workers, tunnel materials (e.g., liner segments), and equipment and the exit point for all of the excavated material. If needed, a noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors. It is anticipated that the shaft itself would be constructed in the northern half of the 18-acre portion of the site. Access to the shaft site would likely occur from Figueroa Street via Lomita Boulevard, Pacific Coast Highway, or Sepulveda Boulevard.

The shaft depth would be approximately 140 feet below ground surface, and the shaft diameter would be about 40 to 60 feet. The shaft profile is shown in Figure 7-8. Shaft construction would take about 10 to 12 months. Upon completion of the tunneling activities, the shaft would be converted into a drop structure and connected to the existing JWPCP effluent force main, located within the 1-acre portion of the site. This connection would likely either be tunneled or jacked under Lomita Boulevard. Approximately 0.5 acre would be required at the shaft site for permanent aboveground facilities, which would include a ground-level concrete lid over the shaft, a surge tower, vent pipes, access lids, and possibly a pumping plant.

7.2.5.2 Figueroa – Harbor Regional Park – North Gaffey – Capitol – Western Tunnel Alignment

The recommended tunnel alignment, as shown on Figure 7-9, would begin at the JWPCP West shaft site, continue approximately 2,600 feet south under Figueroa Street, approximately 6,000 feet southwest under Harbor Regional Park, approximately 8,000 feet south under North Gaffey Street, approximately 5,300 feet southwest under Capitol Drive, approximately 5,200 feet south under Western Avenue, approximately 4,000 feet south under South Dodson Avenue, and approximately 5,500 feet southwest under Western Avenue to the Royal Palms shaft site for a total distance of approximately 36,600 feet, or 6.9 miles. The tunnel would terminate adjacent to the existing ocean outfall manifold structure at Royal Palms Beach.

FIGURE 7-7

CLEARWATER Program

JWPCP West Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

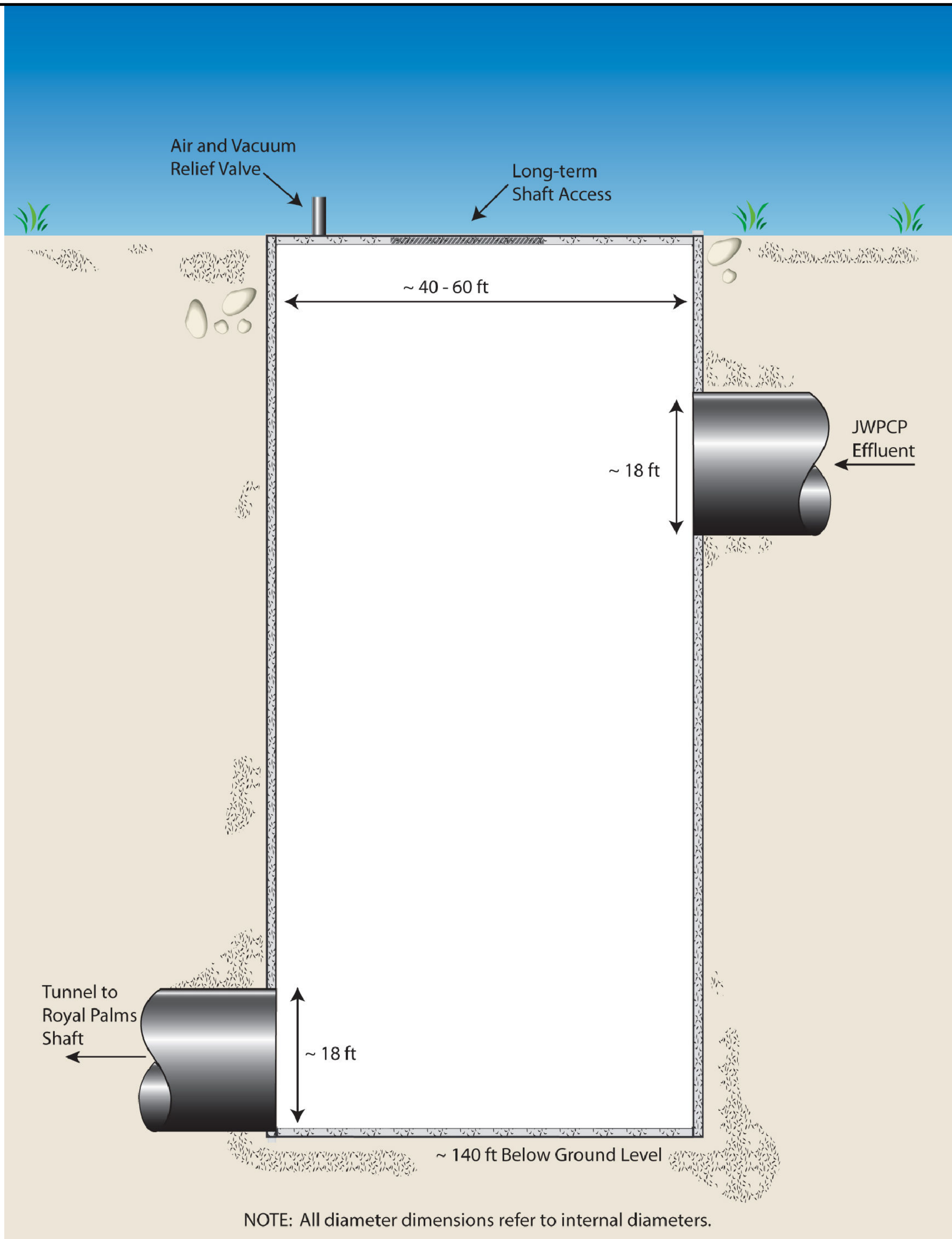


FIGURE 7-8

CLEARWATER Program

JWPCP West Shaft Profile

Source: Sanitation Districts of Los Angeles County 2011

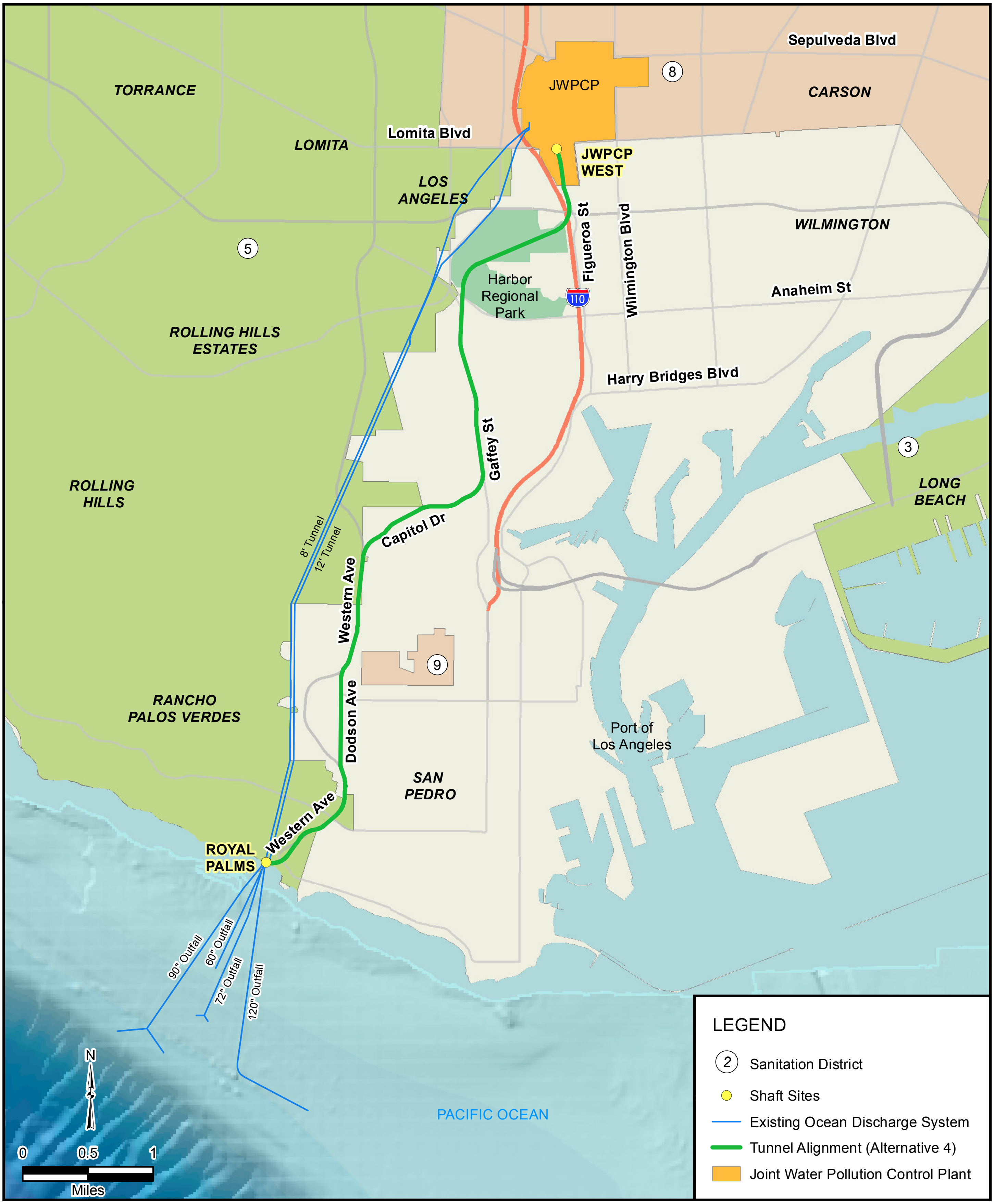


FIGURE 7-9

CLEARWATER Program

Recommended Tunnel Alignment

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros 2011, ESRI 2011

The tunnel would be constructed with a tunnel boring machine (TBM). The TBM, which would be placed underground at the JWPCP West shaft site, would be capable of excavating soil/rock and installing a tunnel liner as it advances. The excavated material would be removed for disposal or, possibly, beneficial use. Tunneling is expected to advance at an average rate of 35 feet per day through soil and an average rate of 40 feet per day through rock. Tunnel construction for this alignment would take approximately 4 years.

The tunnel depth at tunnel crown would range from approximately 70 to 450 feet below ground surface, except for where the tunnel alignment would connect to the Royal Palms shaft (approximately 30 feet below ground surface). The tunnel would have an excavated diameter of approximately 20 to 22 feet and an internal finished diameter of approximately 18 feet. The tunnel would be constructed of pre-fabricated, steel-reinforced concrete liner segments with watertight gaskets.

Tunnel construction would require mobilization of various support equipment for activities such as assembly of the TBM and trailing gear; operation of the tunnel ventilation system; and movement of workers, materials, and equipment between the ground surface and the bottom of the shaft.

Either an earth-pressure balance (EPB) TBM or a slurry TBM would be utilized on this project. The primary difference between the two TBM types is how the excavated material generated from the tunneling operation is removed. With an EPB TBM, specialized locomotives would convey the excavated material in rail cars back through the constructed portion of the tunnel to the JWPCP West shaft for removal by crane. The excavated material would be retained at the surface to allow any water to separate before removal. With a slurry TBM, the excavated material would be blended with a slurry mixture (such as bentonite clay and water) and pumped back through the constructed portion of the tunnel to the ground surface at the JWPCP West shaft. The excavated material and slurry mixture would be processed at a temporary slurry separation plant, located at the shaft site, which extracts the slurry for reuse. The type of TBM would not be specified until completion of final design.

7.2.5.3 Royal Palms Shaft Site

The Royal Palms shaft site would be located mostly within Sanitation Districts-owned property surrounding the existing ocean outfall manifold structure on approximately 1 acre at Royal Palms Beach near the access road off of West Paseo Del Mar as shown on Figure 7-10. The Royal Palms shaft site would function as an exit shaft site for removal of the TBM upon tunnel completion. The shaft site would also be used to connect the new tunnel to the existing ocean outfalls at the manifold structure.

The shaft depth would be approximately 50 feet below ground surface, and the shaft diameter would be about 25 to 35 feet. The shaft profile is shown in Figure 7-11. Shaft construction would take approximately 6 to 9 months. A noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors.

A new underground manifold structure would be constructed next to the shaft to facilitate the connections between the tunnel and the existing ocean outfalls. Valves would be installed to control the amount of effluent flow to each of the outfalls and to allow for isolation of the new tunnel between the Royal Palms and JWPCP West shaft sites. The interconnection work would take approximately 1.5 years.

After construction, the beach parking area would be restored to its original configuration. There would be no permanent aboveground facilities at the shaft site, except a ground-level concrete lid over the shaft and new manifold structure, vent pipes, and access lids. A permanent access easement of approximately 0.1 acre would be needed for future operation and maintenance activities.

FIGURE 7-10

CLEARWATER Program

Royal Palms Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

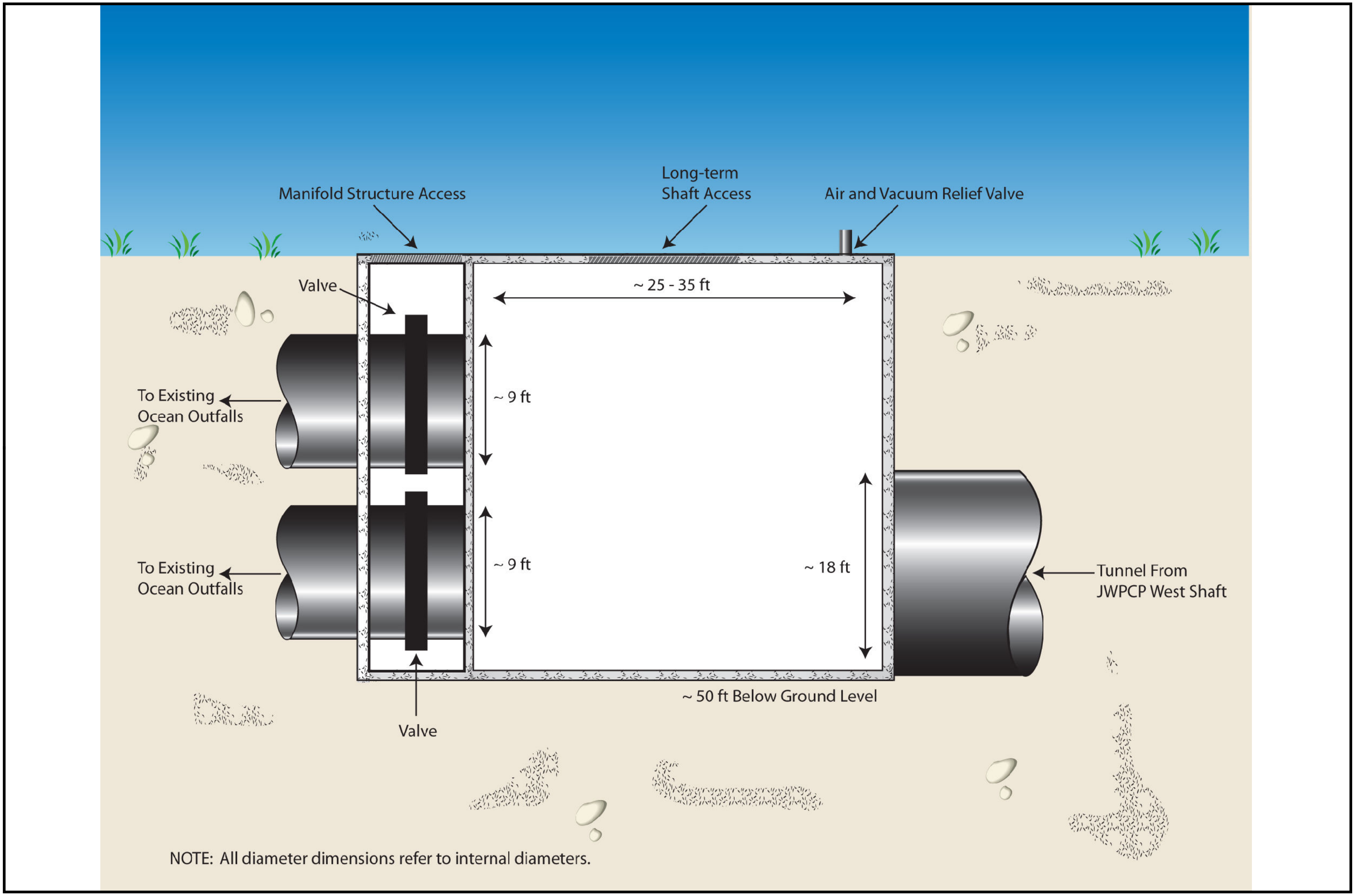


FIGURE 7-11

CLEARWATER Program

Royal Palms Shaft Profile

Source: Sanitation Districts of Los Angeles County 2011

7.2.5.4 Existing Ocean Outfall Rehabilitation

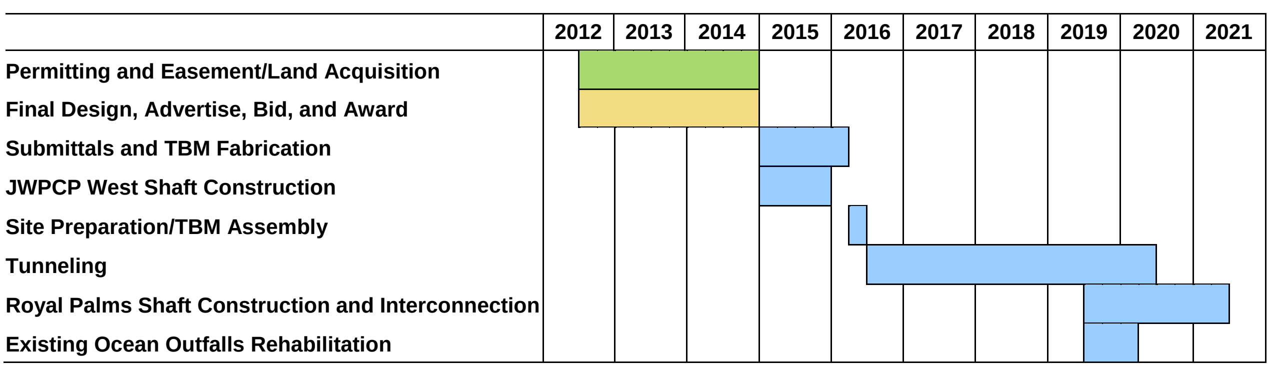
Under the recommended plan, JWPCP effluent would continue to be discharged through the existing ocean outfalls. The recommended plan would include rehabilitation of the three largest existing ocean outfalls and abandonment of the 60-inch outfall. Re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in ocean depths ranging from approximately 20 to 50 feet. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfalls to fully expose the joint being repaired. A coupling would be installed around the joint and the annular space filled with concrete, and the ballast rock would be replaced around the pipe. Cathodic protection would be restored or added as necessary. Overall, the rehabilitation work, including mobilization, construction, and demobilization, would take approximately 9 months. Once rehabilitated, it is anticipated that the three existing ocean outfalls would have a remaining service life that extends well beyond the 2050 planning horizon. (Parsons 2011)

7.3 Plan Implementation and Schedule

The program-level components of the recommended plan would be implemented as necessary during the planning period. Process optimization improvements at the POWRP, SJCWRP, LCWRP, and LBWRP would likely occur between 2018 and 2028 but are contingent on actual future flows, recycled water demands, regulatory requirements, and funding considerations. Similarly, the conveyance system relief projects and the six digesters at the JWPCP would be constructed on an as-needed basis. Based on wastewater flow projections, the 25-MGD expansion at the SJCWRP would be implemented between 2040 and 2050. If the actual flows materialize later than anticipated, the construction of the recommended facilities would be delayed accordingly. Likewise, if the actual flows materialize sooner than anticipated, the construction of the recommended facilities would be accelerated accordingly.

The estimated implementation schedule for the modified ocean discharge system is summarized in Table 7-1. The actual schedule could vary depending on permitting, right-of-way and land acquisition, final design, funding, and construction considerations. Project construction is scheduled from early 2015 to mid-2021, a total duration of approximately 6.5 years.

Table 7-1. Implementation Schedule for Modified Ocean Discharge System



7.4 Project Cost

The total capital cost and equivalent annual capital cost for the modified ocean discharge system are presented in Table 7-2. Although the project cost would be incurred over multiple years in the future, all amounts shown in Table 7-2 are in 2011 dollars and include design, construction, and project management. The anticipated total project cost, in 2021 dollars (at the end of construction, when repayment of long-term financing would commence) is approximately $739,000,000.

Table 7-2. Capital and Annualized Capital Cost Breakdown of the Recommended Project[a,b]

Project Element	Total
JWPCP West Shaft Site	$33,000,000
Tunnel (Figueroa – Harbor Regional Park – North Gaffey – Capitol – Western)	$478,000,000
Royal Palms Shaft Site	$24,000,000
Existing Ocean Outfalls Rehabilitation	$15,000,000
Total Capital Costs	$550,000,000
Equivalent Annual Capital Cost[c]	$37,000,000

[a] 2011 dollars.
[b] All costs include design support, construction, and project management.
[c] Amortized at a 3-percent annual interest rate for 20 years.

7.4.1 Upgrade and Expansion Costs

For funding purposes, the capital cost of the recommended project has been split into two subcategories: upgrade and expansion. Upgrade portions of the project benefit existing users by addressing needed improvements or existing deficiencies without providing additional capacity. Expansion portions of the project benefit new users by providing increased capacity to accommodate their discharge. For the purposes of this financial analysis, the upgrade portion is based on the peak wet weather plant flow associated with current average daily flow. The expansion portion is based on the additional capacity above and beyond current peak wet weather flows.

As discussed in the previous chapters, the two existing JWPCP effluent tunnels are critical components of the existing JOS ocean discharge system. Neither of the tunnels has been inspected in over 50 years, and one of the tunnels has been in service for over 70 years. Inspection of the tunnels is not possible due to their overall length, limited access, lack of hydraulic separation between the tunnels, and the large quantity of daily effluent flow through the tunnels. For the same reasons, repair and rehabilitation of these tunnels, should it be warranted, is not possible. Furthermore, both tunnels cross an active seismic fault (the Palos Verdes Fault), but neither was constructed to modern day seismic standards and neither has been retrofitted since being built. The recommended project would provide a redundant effluent tunnel with the capacity to accommodate all current flows to the JWPCP, thus allowing the existing tunnels to be taken out of service and dewatered as needed for inspection and rehabilitation/repair. The recommended project would also increase the hydraulic capacity of the ocean discharge system by approximately 25 percent, which would accommodate the projected peak storm flows through the year 2050.

Therefore, with the exception of the existing ocean outfall rehabilitation, all elements of the recommended project should be allocated at a 3:1 ratio between upgrade and expansion, respectively. Because the rehabilitation of the existing ocean outfall would not provide any additional capacity, 100 percent of the cost associated with this project element should be attributed to upgrade. As shown in Table 7-3, of the recommended project's $550,000,000 total estimated capital cost, $416,250,000 is attributable to upgrade and $133,750,000 is attributable to expansion.

Table 7-3. Capital Cost of Upgrade and Expansion Portions of the Recommended Project[a,b]

Project Element	Upgrade	Expansion	Total
JWPCP West Shaft Site	$24,750,000	$8,250,000	$33,000,000
Onshore Tunnel	$358,500,000	$119,500,000	$478,000,000
Royal Palms Shaft Site	$18,000,000	$6,000,000	$24,000,000
Existing Ocean Outfalls Rehabilitation	$15,000,000	-	$15,000,000
Total Capital Costs	$416,250,000	$133,750,000	$550,000,000

[a] 2011 dollars.
[b] All costs include design support, construction, and management.

The upgrade portion of the recommended project does not provide additional capacity to the ocean discharge but, instead, addresses the aging infrastructure concerns regarding key system elements. Consequently, the existing users are responsible for paying for the capital costs associated with the upgrades. A portion of the service charge collected from the existing users would ultimately pay for this portion of the recommended project as discussed in the following sections.

The expansion portion of the recommended project would provide additional hydraulic capacity to the ocean discharge system. Consequently, the new users of the system, as well as existing users who significantly increase their discharge flow and/or strength, are responsible for paying the capital costs associated with expansion. The new users would ultimately pay for this portion of the recommended project through connection fees as discussed in the following sections.

7.5 Revenue Program

A major consideration in proposing any capital construction program is the cost and impact it would have on both existing and future users. The Sanitation Districts have developed a comprehensive revenue program to address these issues. In general, this means a program, including appropriate ordinances, to allocate costs and collect revenues as needed from the users of the wastewater management system to ensure sufficient revenues for the construction and subsequent operation of facilities. Specifically, a revenue program must demonstrate that the proposed system of user charges is fair, equitable, and based on both the flow and the strength of the users' discharges. Furthermore, a revenue program must provide that, following completion of construction, there would be a sufficient revenue stream to continue to operate and maintain each facility throughout its useful life. Lastly, a revenue program must provide for the repayment of any long-term financing used to fund the construction of facilities.

The Sanitation Districts first addressed the issue of a revenue program in the May 1979 Report on the Future Revenue Program of the Sanitation Districts of Los Angeles County. This report has been updated numerous times as subsequent facilities plans were submitted to the State Water Resources Control Board (SWRCB) in conjunction with State Revolving Fund (SRF) loan applications. In summary, these reports recommended a revenue program based on maximum utilization of existing sources of revenue, supplemented by revenues from two additional programs: the Service Charge Program and the Connection Fee Program.

7.5.1 Service Charge Program

In fiscal year 1978–79, with the passage of Proposition 13 and the subsequent reduction in ad valorem taxes, the Sanitation Districts' expenses began to exceed available revenues. In order to remain solvent, the Sanitation Districts utilized available cash reserves. These reserves had been accumulated in anticipation of having to construct secondary treatment facilities at the JWPCP. As the Sanitation

Districts were successful in obtaining grant funding for a number of projects, the previously accumulated funds were not needed for the capital construction program and were available for on-going expenses. Although these reserves served to keep the Sanitation Districts solvent in the near term, the Service Charge Program was developed as a long-term solution.

The development of the Service Charge Program was approached from two basic perspectives: charge structure and method of collection. As part of the development process, an extensive public information program was conducted. The key factors stressed by the public were a low administrative cost, a low delinquency factor, and equity for all users. With respect to equity, a point repeatedly voiced by the public was that existing users of the sewerage system should not be required to subsidize new growth. From this latter point came the development of the Connection Fee Program (see Section 7.5.2).

The Service Charge Program, as developed, includes the following provisions:

- Existing users are charged for operations, maintenance, and upgrade capital costs
- Charges are based on the estimated usage of the system (i.e., based on user category with estimated loadings per unit of usage and facility size)
- Charges are based on a combination of flow rate and strength (i.e., chemical oxygen demand [COD] and suspended solids [SS])
- Dischargers may receive a rebate based on demonstrated water usage below the estimated loading of their particular user category
- Charges are collected as specific liens on the property tax bills

The historic, current, and adopted annual service charge rates per sewage unit (equivalent single-family home) are provided in Table 7-4.

Table 7-4. Joint Outfall System Annual Service Charge Rates per Sewage Unit

District[a]	Fiscal Year 2006–07	Fiscal Year 2007–08	Fiscal Year 2008–09	Fiscal Year 2009–10	Fiscal Year 2010–11	Fiscal Year 2011–12	Fiscal Year 2012–13	Fiscal Year 2013–14
1	$108.75	$116.00	$126.00	$138.00	$152.00	$154.00	$156.00	$158.00
2	104.50	111.00	121.00	133.00	147.00	148.00	149.00	150.00
3	105.00	112.00	122.00	134.00	148.00	150.00	152.00	154.00
5	95.75	100.00	108.00	118.00	130.00	132.00	134.00	136.00
8	94.00	99.00	109.00	121.00	135.00	139.00	143.00	147.00
15	98.00	103.00	110.00	119.00	130.00	132.00	134.00	136.00
16	101.00	106.00	113.00	122.00	133.00	135.00	137.00	139.00
17	102.00	107.00	114.00	123.00	134.00	136.00	138.00	140.00
18	104.50	112.00	122.00	134.00	148.00	149.00	150.00	151.00
19	103.75	110.00	120.00	132.00	146.00	148.00	150.00	152.00
21	102.50	109.00	119.00	131.00	145.00	146.00	147.00	148.00
22	106.25	113.00	121.00	131.00	143.00	145.00	147.00	149.00
23	79.00	85.00	92.00	101.00	112.00	114.00	116.00	118.00
28[b]	308.00	308.00	315.00	324.00	335.00	336.00	337.00	338.00

Table 7-4 (Continued)

District[a]	Fiscal Year 2006–07	Fiscal Year 2007–08	Fiscal Year 2008–09	Fiscal Year 2009–10	Fiscal Year 2010–11	Fiscal Year 2011–12	Fiscal Year 2012–13	Fiscal Year 2013–14
28[c]	100.00	100.00	107.00	116.00	127.00	128.00	129.00	130.00
29	141.75	201.75	261.75	321.75	327.75	333.75	339.75	-
SBC	90.00	92.00	99.00	108.00	119.00	120.00	121.00	122.00

[a] Although District No. 34 is a Joint Outfall District, it is currently inactive and, therefore, is not listed.
[b] Rate applies to those users who directly connect to the La Cañada Outfall Trunk Sewer or the Foothill Main Trunk Sewer or are in an area tributary to the La Cañada WRP.
[c] Rate applies to those users who are within a city of La Cañada Flintridge assessment district.

7.5.2 Connection Fee Program

The Connection Fee Program only applies to new users and existing users who significantly increase their discharge flow and/or strength. This program includes the following provisions:

- New users, or existing users who significantly increase their discharge flow and/or strength, are charged a one-time fee for the incremental cost of expanding capital facilities to accommodate the new or significantly increased discharge
- Charges are based on the anticipated usage of the system (i.e., based on user category and facility size)
- Charges are based on a combination of flow rate and strength (i.e., COD and SS)

The connection fees from new users, or existing users who significantly increase their discharge flow and/or strength, are collected and deposited into a restricted fund designated as the Capital Improvement Fund. As expansion-related projects are constructed, the necessary funds are withdrawn from this account and used to cover the cost of expansion.

The historic, current, and adopted connection fee rates per capacity unit (equivalent single-family home) are provided in Table 7-5.

Table 7-5. Joint Outfall System Connection Fee Rates per Capacity Unit

District[a]	Fiscal Year 2006–07	Fiscal Year 2007–08	Fiscal Year 2008–09	Fiscal Year 2009–10	Fiscal Year 2010–11	Fiscal Year 2011–12	Fiscal Year 2012–13	Fiscal Year 2013–14
1	$1,735	$1,860	$2,520	$3,280	$4,140	$4,260	$4,390	$4,520
2	1,765	1,890	2,550	3,310	4,170	4,300	4,430	4,560
3	1,665	1,790	2,410	3,130	3,950	4,070	4,190	4,320
5	1,785	1,910	2,580	3,350	4,220	4,350	4,480	4,610
8	1,745	1,870	2,530	3,290	4,150	4,270	4,400	4,530
15	1,625	1,750	2,350	3,050	3,850	3,970	4,090	4,210
16	1,635	1,760	2,360	3,060	3,860	3,980	4,100	4,220
17	1,675	1,800	2,420	3,140	3,860	3,980	4,100	4,220
18	1,765	1,890	2,560	3,330	4,200	4,330	4,460	4,590
19	1,715	1,840	2,480	3,220	4,060	4,180	4,310	4,440
21	1,665	1,790	2,410	3,130	3,950	4,070	4,190	4,320
22	1,725	1,850	2,490	3,230	4,070	4,190	4,320	4,450

Table 7-5 (Continued)

District[a]	Fiscal Year 2006–07	Fiscal Year 2007–08	Fiscal Year 2008–09	Fiscal Year 2009–10	Fiscal Year 2010–11	Fiscal Year 2011–12	Fiscal Year 2012–13	Fiscal Year 2013–14
23	1,495	1,620	2,140	2,760	3,480	3,580	3,690	3,800
28[b]	4,863	5,274	6,087	7,000	8,013	8,114	8,218	8,325
28[c]	1,489	1,614	2,141	2,768	3,495	3,596	3,700	3,807
28[d]	5,855	6,266	7,079	7,992	9,005	9,106	9,210	9,317
28[e]	5,569	5,980	6,793	7,706	8,719	8,820	8,924	9,031
29	2,105	2,230	2,770	3,410	4,150	4,270	4,400	4,530
SBC	1,785	1,910	2,580	3,350	4,220	4,350	4,480	4,610

[a] Although District No. 34 is a Joint Outfall District, it is currently inactive and, therefore, is not listed.
[b] Rate applies to those users who connect in an area tributary to the La Cañada WRP.
[c] Rate applies to those users who connect within a city of La Cañada Flintridge assessment district.
[d] Rate applies to those users who directly connect to the La Cañada Outfall Trunk Sewer.
[e] Rate applies to those users who directly connect to the Foothill Main Trunk Sewer.

7.5.3 Additional Sources of Revenue

In addition to the Service Charge and Connection Fee Programs, the Sanitation Districts rely on five revenue sources to support wastewater management services.

7.5.3.1 Ad Valorem Taxes

The Sanitation Districts receive a pro rata share of the 1-percent ad valorem property tax levy pursuant to Proposition 13. The pro rata share is based on the percentage of the total tax levy each district received prior to the implementation of Proposition 13 in fiscal year 1978–79. Accordingly, the pro rata share varies slightly from district to district. All ad valorem taxes are deposited into the respective district's operating fund and are used to help offset bonded indebtedness, operation expenses, and capital expenses. The average annual ad valorem taxes collected across the Joint Outfall Districts equates to approximately $25 per single-family home.

7.5.3.2 Contracts

The Sanitation Districts generate revenue through disposal contracts to certain facilities located outside of the JOS boundaries. The contracts are structured to recover the total cost of services rendered to these facilities. In addition, revenue is generated through sales contracts for recycled water and power generated from the wastewater treatment process.

7.5.3.3 Industrial Waste Surcharge

In 1972, the Sanitation Districts instituted a surcharge program for industrial dischargers. It requires industrial dischargers to pay a fair share of operations and maintenance (O&M) and upgrade capital costs according to their usage of the sewerage system. Usage is measured in terms of three parameters: flow, COD, and SS. In addition, dischargers with excessive peak flows must pay a supplemental peak flow charge. The method for determining the surcharge rates is similar to that for determining the service charge rate.

7.5.3.4 Investment Income

Investment income refers to interest received during the fiscal year. This source of revenue is variable and depends on the cash balance maintained by each district as well as the prevailing interest rates. Sanitation Districts' funds are invested in various instruments in conformance with the Investment Policy that is adopted on an annual basis.

7.5.3.5 Annexation Fees

Annexation fees are paid by each property owner annexing territory into a district. The annexation fee program is in conformance with Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000. The revenue received from annexation fees varies considerably and unpredictably. Since each annexation fee solely covers the cost of processing that annexation request, this revenue source is not relied on during budget preparation.

7.6 Project Financing

As discussed in Section 7.4.1, the portion of the estimated cost of the recommended projected attributable to upgrade is $416,250,000 (2011 dollars). On a per sewage unit basis, this equates to $214 per equivalent single-family home. If all of this had to be collected in a single year or even a few years, the impact would be unacceptable to the public. Therefore, it is imperative that a long-term financing solution be developed.

7.6.1 Available Financing Sources

There are generally two sources of long-term financing available for wastewater agencies: (1) SRF loans and (2) revenue bonds. In some respects, these two sources are very similar in that they both provide project funding with an extended repayment period at a fixed interest rate.

In the case of SRF loans, the repayment period is 20 years, beginning one year after the completion of construction at an interest rate equal to one-half of the most current state of California general obligation bond rate. Interest is capitalized during the construction period and calculated into the principal amount of the loan that must be repaid. Currently, there is an annual cap of $50 million per agency on SRF loans.

In the case of revenue bonds, the repayment period is typically 30 years with repayment beginning as soon as the bonds are issued. Interest rates are dependent on market conditions on the date the bonds are issued and the financial strength of the Joint Outfall Districts. There are ways to structure revenue bonds so that the beginning of the repayment period can effectively be pushed back until construction is complete.

7.6.2 Financing Analysis

Because of the current cap on SRF loans, the funding for the recommended project is expected to be a combination of SRF loans and revenue bonds. However, by structuring the bonds to have repayment begin toward the end of construction, they would take on the appearance of SRF loans. Additionally, although bonds generally have higher interest rates than SRF loans, the longer repayment period makes it such that the annual payments are roughly equivalent under both funding options. Therefore, for the financing analysis, it is assumed that 20-year SRF loans at 3-percent interest would be used for funding the project attributable to the upgrade portions of the recommended project. Furthermore, it is assumed that the expansion-related portions of the recommended project would be funded utilizing previously accumulated connection fees currently held in the Joint Outfall Districts' Capital Improvement Fund.

Because interest would be capitalized during construction, the total principal amount of the SRF loan must be projected into 2021 dollars. As discussed in Section 7.4, this equates to an estimated $739 million. Using the upgrade/expansion allocations developed in Section 7.4.1, the total upgrade cost of the project in 2021 dollars would be $559 million. At 3-percent interest for 20 years, this results in an annual repayment of $37.6 million per year.

Based on the best available financing assumptions and escalation of construction costs, the recommended project would result in a service charge rate increase of approximately $20 per year per sewage unit (or equivalent single-family home) in 2021 dollars (when construction would be completed). For comparison, the current JOS average annual service charge rate is $146 per sewage unit.

7.6.3 Opportunities for Public Input

Even after a funding source has been identified, long-term financing cannot be undertaken until the Sanitation Districts actually adopt appropriate service charge rates to ensure that repayment can be made. Given the current economic climate and the public's concern over any rate increases, this is a process that would involve multiple opportunities for public input. At a minimum, the Sanitation Districts must comply with Proposition 218. For the Clearwater Program, this would entail mailing public notices to approximately 1.2 million property owners at least 45 days before the Joint Outfall Districts' Boards of Directors hold a public hearing. Each public notice, in addition to providing information about the public hearing, must include the actual charges to be imposed on a given parcel and the basis for those charges.

In practice, the Sanitation Districts typically go much further than what is required by law. The public notices explain what projects are being undertaken, what the cost is, and what the future rates would be. The notices also include a series of commonly asked questions and provide answers to those questions. Lastly, the notices reference the Sanitation Districts' internet site where, in addition to supplementary information, Spanish language translations are provided. Furthermore, the Sanitation Districts have a dedicated toll free telephone line for people to ask questions and obtain more information. Prior to the public hearing, the Sanitation Districts also conduct a series of information meetings, usually consisting of a brief presentation followed by a question and answer period. A video version of the information meetings is made available on the Sanitation Districts' internet site.

LIST OF APPENDICES

Appendix A
STATE WATER RESOURCES CONTROL BOARD REQUIREMENTS FOR PROJECT REPORTS

State Revolving Fund Loan Program Compliance

The State Revolving Fund (SRF) loan program was created by the 1987 Amendments to the Federal Clean Water Act and replaces the previous federal grant program. The SRF loan program provides low interest loans for many public works projects, including construction of publicly owned treatment works.

The Sanitation Districts of Los Angeles County (Sanitation Districts) have prepared the Clearwater Program Master Facilities Plan (MFP) to identify a recommended plan that will meet the wastewater management needs of the Joint Outfall System (JOS) through the year 2050. The MFP identifies both program-level and project-level portions of the recommended plan. The program-level portion of the recommended plan includes: expansion of the conveyance system with approximately 32.5 miles of relief trunk sewers; expansion of the San Jose Creek WRP (SJCWRP) by 25 million gallons per day (MGD); process optimization at the Pomona WRP (POWRP), the SJCWRP, the Los Coyotes WRP (LCWRP), and the Long Beach WRP (LBWRP); a continuation of current practices for water reclamation plant (WRP) effluent management and biosolids management practices; and additional sludge stabilization facilities at the Joint Water Pollution Control Plant (JWPCP). The project-level portion of the recommended plan includes installation of a new effluent tunnel originating at the JWPCP and extending to the existing ocean outfall manifold structure at Royal Palms Beach near White Point. Rehabilitation of the existing ocean outfalls will be included in the project scope of work.

The SRF loan program is administered by the State Water Resources Control Board (SWRCB). The purpose of this appendix is to facilitate review of the project report requirements by the SWRCB. Applicable sections of the MFP are referenced, and in some cases, supplemental information is provided as necessary to address SRF requirements. The project, referred to as the recommended plan, is evaluated and defined in the MFP and analyzed the associated environmental impact report/environmental impact study (EIR/EIS), which was prepared by the environmental consulting firm ICF International in conformance with the California Environmental Quality Act and the National Environmental Policy Act, respectively. The Clearwater Program EIR/EIS is available under separate cover.

Project Report Requirements

The SRF Policy published by the SWRCB (as amended March 17, 2009) contains a list of items that a project report must contain, as appropriate. Applicable items addressed in the MFP are as follows:

1. *A statement of Project needs and benefits, including a discussion of the water quality benefits of the Project and the public health or water quality problems to be corrected.*

The statement of the Clearwater Program purpose and needs, as well as the goal and objectives, are found in Section 1.4. Water quality and health benefits are also discussed in this section. A project needs assessment is included in Section 5.9.

2. *Proposed Project service area and composition information*:

   a. *Median household income (MHI) and population for the proposed Project service area using census data or the most recent income survey if the census data do not accurately reflect the community's MHI.*

      The MHI and population, derived from the Department of Finance, are contained in Sections 2.2.3 and 2.2.1, respectively. In 2000, the MHI was $47,834 and the population was 4,720,505 within the JOS service area.

   b. *Total number of active wastewater service connections that are currently and directly served by the wastewater collection system. This includes a breakdown by each category for all domestic or residential, industrial, commercial, or other connections. A map for the existing wastewater service area for the proposed Project must be provided.*

      As of fiscal year 2010-2011, a total of 1,068,384 parcels are served by the JOS. Of this number: 1,005,667 are domestic or residential; 19,894 are industrial; 40,609 are commercial; and 2,214 are other (such as schools, government buildings, etc.). A map of the existing wastewater service area for the recommended plan is shown in Chapter 1 (Figure 1-2).

   c. *The average current monthly wastewater charges by category. If the wastewater system uses a "tiered" rate, the charge should reflect what a typical user pays in each category and the basis of the charges. The rate should reflect direct wastewater charges plus any other fees or charges that support the wastewater service such as parcel fees, standby charges, wastewater taxes, and surcharges.*

      The historic, current, and adopted wastewater service charge rates within the JOS are contained in Section 7.5.1 and shown in Table 7-4. Rates within the JOS are not tiered. Approximately $25 per year of local property taxes per parcel supports wastewater service. An average of $41 per year is charged for local sewer maintenance by the district or city responsible for such maintenance.

3. *A cost effectiveness and climate change evaluation of alternatives over the useful life of the Project. The evaluations presented must include an evaluation of the alternative of upgrading operation and maintenance of the existing facility to improve effluent quality, and a regional treatment solution.*

   Alternatives are evaluated for cost effectiveness in Chapter 6 in both the Level 2 and Level 3 screening (Sections 6.2.6.4 and 6.3.4.2, respectively). The alternatives are evaluated for climate change (greenhouse gasses) in Section 6.2.1.4, where they are considered as part of regulatory compliance in Level 2 screening, and in Chapter 9 of the associated Clearwater Program EIR/EIS. Upgrading operation and maintenance of existing facilities has been evaluated on a regional basis spanning the JOS.

4. *An evaluation of alternative methods for reuse or ultimate disposal of treated wastewater and sludge material resulting from the treatment process.*

Section 5.4 discusses WRP effluent management while Section 5.6 discusses effluent management at the JWPCP. Section 5.8 discusses the biosolids history, biosolids strategy, recent management practices, landfill co-disposal, and future solids management. Alternative methods are evaluated in Section 6.2 for program components and Section 6.3 for project elements.

For wastewater treatment Projects producing sludge material, the following information needs to be identified and compared:

a. *All landfills within a 100-mile radius that accept sewage sludge;*

   All landfills within at least a 100-mile radius that accept sewage sludge are identified in Chapter 5 and shown in Table 5-9.

b. *Any composing facilities within a 100-mile radius accepting sewage sludge;*

   All composting facilities within at least a 100-mile radius that accept sewage sludge are identified in Chapter 5 and shown in Table 5-9.

c. *The potential for dedicated land disposal;*

   Future solids management is discussed in Section 5.8.5. All of the solids generated in the JOS are conveyed to and treated at the JWPCP. Biosolids management follows a diversified management program that actively seeks out alternative biosolids disposal methods as discussed in Section 5.8.2.

d. *Conversion of sludge to biosolids for distribution as soil amendment or as another agricultural product; and*

   The sludge material is anaerobically digested at the JWPCP, becoming biosolids, and is concentrated in centrifuges. Recent solids handling practices in the JOS are discussed in Section 5.8.3.

e. *Ultimate disposal methods approved by the Regional Water Boards.*

   Disposal methods for solids generated in the JOS are discussed in Sections 5.8.3 through 5.8.5. All in-state facilities have been approved by the Regional Water Board with local oversight responsibility. All out of state facilities have been approved by the appropriate regulatory agencies with oversight responsibility.

5. *An evaluation of the non-existence or possible existence of excessive infiltration/inflow (I/I) in the existing sewer system. If the average daily flow during periods of sustained high groundwater is less than 120 gallons per capita per day (gpcd), a Sewer System Evaluation Survey (SSES) is not required. If it is above 120 gpcd, the applicant must perform a SSES to determine whether it is cost-effective to treat or correct the I/I. If a SSES is not submitted, funding will be based on a maximum flow rate of 120 gpcd. If the peak flow during a storm event (highest three-hour average) exceeds 275 gpcd, a SSES must be completed or funding will be based on a maximum peak flow rate of 275 gpcd. Cost-effective corrections under these criteria are eligible for funding.*

   An evaluation of I/I is provided in Section 4.8.3.3.

6. *Information on total capital costs, annual operation and maintenance costs.*

   Total capital cost, total annual cost, and the estimated cost to users for implementing the recommended plan are provided in Sections 7.2, 7.4, and 7.6.

7. *A discussion of the existing population, flows, loadings, and projections of the same, used to estimate the capacity needs for the funded facilities.*

   Section 4.8 discusses wastewater flow projections. Existing and projected population, flows, and loadings are discussed in Sections 4.8.1.2, 4.8.2, and 4.8.1.1, respectively.

8. *A discussion of the anticipated eligible capacity for the Project, and how that capacity was derived.*

   The anticipated eligible capacity and its derivation are identified in Section 4.8.

9. *A summary of public participation.*

   Sections 1.4.5 and 6.1.4, respectively, summarize the public participation efforts for the Clearwater Program. A greater level of detail is provided in the associated Clearwater Program Agency and Public Scoping Report, which is available under separate cover in Appendix 1-B of the EIR/EIS.

10. *The following must be submitted for the selected alternative:*

    a. *A detailed description of the selected alternative and the complete waste treatment system of which it is a part;*

       Section 7.2 contains a summary of the selected alternative. Chapter 5 provides an overview of the complete JOS waste treatment system.

    b. *A summary of relevant design criteria (i.e., design flow, peak flows, daily Biochemical Oxygen Demand (BOD) or Chemical Oxygen Demand (COD) loadings, daily suspended solids loadings, overflow rates, detention times, sludge production, etc.);*

       The recommended plan includes the expansion of the SJCWRP. A summary of the design criteria for this plant is contained in Appendix C and shown in Table C-1.

    c. *The estimated construction and annual operation and maintenance costs and a description of the anticipated manner in which all the costs will be financed;*

       Costs associated with the recommended plan are provided in Sections 7.2 and 7.4, the Sanitation Districts' revenue program is described in Section 7.5, and financing is presented in Section 7.6. Operation and maintenance costs are anticipated to remain the same for the proposed modified ocean discharge system.

    d. *A summary of the cost impacts on wastewater system users. Provide the average projected monthly wastewater charges that will be passed on to wastewater users by category and the basis of the charges during the useful life of the proposed Project. Include any ineligible project costs as well as non-Project-related wastewater system costs that will be imposed on* *the residential users during the next five years. Also include any income generated by the project, such as income generated by the sale of recycled water;*

Total capital cost, total annual cost, and the estimated cost to users for implementing the recommended plan are provided in Sections 7.2, 7.4, and 7.6. Past, current, and future adopted Service Charge and Connection Fee rates are provided in Section 7.5. No additional operation and maintenance costs would be incurred. The proposed modified ocean discharge system would not result in the generation of income.

e. A summary of the significant environmental impacts of the selected Project and any proposed mitigation measures;

The Clearwater Program Executive Summary, which is available under separate cover, provides a summary of all significant environmental impacts of the recommended plan and the proposed mitigation measures.

f. A statement that identifies and discusses the source(s) and the amount of unallocated potable water currently available in the Project service area. If the amount of potable water is less than what is needed to serve the projected population for the proposed Project, a plan identifying how that deficiency will be mitigated shall be presented;

A comprehensive discussion of existing and future water supply and demand is provided in Sections 4.1, 4.2, 4.3, 4.4, 4.5, and 4.6. As described in Section 4.8, population projections provided by the Southern California Association of Governments were used as the basis for projecting future flows within the JOS service area and determine the wastewater management facilities necessary to accommodate the projected flows. Therefore, the Clearwater Program is growth accommodating, not growth inducing.

g. A discussion of facilities that were previously funded by federal/state grants, loans, or other financing, if such facilities are to be repaired or replaced;

The Clearwater Program would not involve the replacement of existing facilities. The ocean outfalls being proposed for rehabilitation were not funded by federal/state grants, loans, or other financing.

h. A discussion, if applicable, where minority populations are included in the facilities planning area, showing that such areas will be served or excluded from service only for reasons of cost-effectiveness. Applicants much comply with the Civil Rights Act of 1964.

The Clearwater Program is in compliance with the Civil Rights Act of 1964 in that wastewater management services are provided in a cost-effective manner to all residents within its service area, without regard to race, color, religion, sex, national origin, age, disability, ancestry, marital status, cancer-related medical condition, or status as a disabled veteran. Refer to of the MFP, Section 2.2, for a description of the social-economic characteristics of the region.

i. A description of operation and maintenance requirements;

The operation and maintenance requirements for the proposed modified ocean discharge system would be the same as those for the existing tunnel and ocean outfalls. Tunnel/outfall operation consists of opening and closing the valves that control the routing of the effluent through the specific outfalls. Maintenance requirements include general valve maintenance for the above noted valves and annual underwater inspection of the outfall, followed by maintenance (typically re-ballasting) as required.

j. *A demonstration that the selected alternative is consistent with any applicable approved water quality management plan;*

The recommended plan would provide for continued compliance with all applicable effluent and receiving water standards in the 1994 Water Quality Control Plan for the Los Angeles Region. Refer to Section 3.2.2 for more details on state water quality management regulations.

k. *A summary of public participation; and*

Sections 1.4.5 and 6.1.4, respectively, summarize the public participation program for the Clearwater project. A greater level of detail is provided in the Clearwater Program Agency and Public Scoping Report, which is available under separate cover in Appendix 1-B of the EIR/EIS.

l. *For existing facilities, the applicant must submit a copy of the current adopted WDRs issued by the Regional Water Board. If there are no existing facilities, the applicant must submit a copy of the tentative WDRs, which must become final before disbursement of costs for construction. Division staff will track the status of the WDRs and may require additional relevant information and updates from the applicant.*

There are current adopted WDRs for the JWPCP and WRPs. The WDRs issued by the Los Angeles Regional Water Board for the can be found at the following links:

- JWPCP: http://63.199.216.6/larwqcb_new/permits/docs/1758_R4-2011-0151_WDR_PKG.pdf
- Pomona WRP: http://63.199.216.6/larwqcb_new/permits/docs/0755_R4-2009-0076_WDR.pdf
- Whittier Narrows WRP: http://63.199.216.6/larwqcb_new/permits/docs/2848_R4-2009-0077_WDR_PKG.pdf
- San Jose Creek WRP: http://63.199.216.6/larwqcb_new/permits/docs/5542_R4-2009-0078_WDR.pdf
- Long Beach WRP: http://63.199.216.6/larwqcb_new/permits/docs/5662_R4-2007-0047_WDR_PKG.pdf
- Los Coyotes WRP: http://63.199.216.6/larwqcb_new/permits/docs/5059_R4-2007-0048_WDR_PKG.pdf
- La Cañada WRP: There are no on-line documents for the La Cañada WRP.

m. *Applicants requesting Extended Term Financing must include the following in the Project Report: 1) an assessment of the useful life of the selected alternative; and 2) an affordability analysis, which demonstrates the financing term necessary to make the selected alternative affordable for the community.*

Extended Term Financing is not being requested for this project.

11. *A description of how the applicant's Project addresses each of the state planning priorities defined in Section 65041.1 of the Government Code and sustainable water resource management priorities. These are intended to promote equity, strengthen the economy, protect the environment, and promote public health and safety in the state, including in urban, suburban, and rural communities. The state planning priorities and sustainable water resources management priorities as of the date of adoption of this Policy are as follows:*

    a. *To promote infill development and equity by rehabilitating, maintaining, and improving existing infrastructure that supports infill development and appropriate reuse and redevelopment of previously developed, underutilized land that is presently served by transit, streets, water, sewer, and other essential services, particularly in underserved areas, and to preserving cultural and historic resources;*

       Sections 7.2 and 7.3 describe the recommended plan, which improves existing infrastructure, therefore supporting infill development and appropriate reuse and redevelopment of underutilized land.

    b. *To protect environmental and agricultural resources by protecting, preserving, and enhancing the state's most valuable natural resources, including working landscapes such as farm, range, and forest lands, natural lands such as wetlands, watersheds, wildlife habitats, and other wildlands, recreation lands such as parks, trails, greenbelts, and other open space, and landscapes with locally unique features and areas identified by the state as deserving special protection;*

       Section 4.10 discusses the use of recycled water to benefit the local environment. As described in Chapters 4, 6, 11, 12, 13, and 17 of the Clearwater Program EIR/EIS, which is available under separate cover, the recommend plan would result in less than significant impacts to natural resources such as working landscapes, recreation lands, and landscapes afforded special state protection.

    c. *To encourage efficient development patterns by ensuring that any infrastructure associated with development that is not infill supports new development that uses land efficiently, is built adjacent to existing developed areas to the extent consistent with the priorities specified pursuant to subdivision (b), in an area appropriately planned for growth, services, and minimizes ongoing costs to taxpayers.*

       New facilities associated with the recommended plan would be located primarily at existing treatment plant sites or within existing developed areas; therefore, infill development patterns would be more likely to follow this project.

    d. *To encourage sustainable water resources management by ensuring that sustainable water resources measures, such as recycling wastewater, conserving water, conserving energy, and applying Low Impact Development Best Management Practices to the maximum extent practicable. Agencies that are legislatively prohibited from engaging in these activities are exempt from this requirement. Exempt agencies shall provide a statement in their Project Report citing the legislation and what activities are prohibited.*

       Section 3.5 discusses regulations associated with recycled water reuse. All wastewater entering the JOS WRPs is treated to a level suitable for reuse. This recycled water is made available to local water wholesale or retail agencies, which in turn supply recycled water to their clients. Per the California Public Utilities Code Chapter 8.5, Service Duplication, the Sanitation Districts are prohibited from selling recycled water directly to a user served by a private water company.

State Revolving Fund Water Conservation Requirement

The Sanitation Districts are not water purveyors. Therefore, to comply with SRF requirements, the Sanitation Districts must (1) certify that 75 percent of the water connections in the service area are covered by adopted water conservation programs approved by the Division or (2) demonstrate that the water purveyors have signed the Memorandum of Understanding covering at least 75 percent of the water connections with the sewer service area.

Table A-1 lists the member agencies of the Metropolitan Water District of Southern California (MWD) that serve the JOS service area and their total water supply for fiscal year 2009-10 in acre-feet (AF). Of an estimated 954,644 AF of total water supply utilized in the JOS service area in fiscal year 2009-10, at least 950,032 AF came from member agencies that are signatory to a memorandum of understanding with MWD. Therefore, 99.5 percent of the water supplied by MWD was through signatory agencies. Since these agencies provide more than 75 percent of the total water supply within the JOS, the Sanitation Districts are in compliance with the SRF water conservation requirement.

Table A-1. Total Water Supply for Signatory Agencies (Fiscal Year 2009-2010)

Member Agency	Total Water Supply (AF)	Water Supply of Signatory Agencies (AF)
Central Basin MWD	301,381	301,381
City of Compton	8,270	8,270
Foothill MWD	20,125	20,125
City of Long Beach	63,742	63,742
City of Pasadena	33,755	33,755
City of San Marino	4,612	NS
Three Valleys MWD	117,028	117,028
City of Torrance	23,613	23,613
Upper San Gabriel MWD	205,387	205,387
West Basin MWD	176,731	176,731
Total:	954,644	950,032

AF = acre feet
NS = not a signatory agency to the MOU
Source: MWD Annual Report for Fiscal Year 2009-10 (http://www.mwdh2o.com/mwdh2o/pages/about/AR/AR10.html)

Appendix B
SANITATION DISTRICTS THAT PROVIDE SERVICE TO LOCAL JURISDICTIONS

Table B-1. Sanitation Districts That Provide Service to Local Jurisdictions

Jurisdiction	District
Alhambra	2-16
Arcadia	15-22
Artesia	2-18-19
Azusa	22
Baldwin Park	15-22
Bell	1-2
Bellflower	2-3-18
Bell Gardens	2
Beverly Hills	4
Bradbury	15-22
Carson	8
Cerritos	2-3-18-19
Claremont	21
Commerce	2
Compton	1-2-8
Covina	22
Cudahy	1
Culver City	5
Diamond Bar	21
Downey	2-18
Duarte	15-22
El Monte	15
El Segundo	SBC-5
Gardena	5
Glendora	22
Hawaiian Gardens	19
Hawthorne	5
Hermosa Beach	SBC
Huntington Park	1
Industry	15-18-21
Inglewood	5
Irwindale	15-22
La Cañada Flintridge	28-34
La Habra Heights	18
Lakewood	3-19
La Mirada	18

Table B-1 (Continued)

Jurisdiction	District
Lancaster	14
La Puente	15-21
La Verne	21-22
Lawndale	5
Lomita	5
Long Beach	1-2-3-8-19
Los Angeles	1-2-3-4-5-8-9-16
Lynwood	1
Manhattan Beach	SBC-5
Maywood	1
Monrovia	15-22
Montebello	2-15
Monterey Park	2-15
Norwalk	2-18
Palmdale	14-20
Palos Verdes Estates	SBC-5
Paramount	1-2
Pasadena	15-16-17
Pico Rivera	2-18
Pomona	21
Rancho Palos Verdes	SBC-5
Redondo Beach	SBC-5
Rolling Hills	5
Rolling Hills Estates	SBC-5
Rosemead	15
San Dimas	21-22
San Gabriel	2-15
San Marino	15-16
Santa Clarita	SCV (32)
Santa Fe Springs	18
Sierra Madre	15
Signal Hill	3-29
South El Monte	15
South Gate	1-2
South Pasadena	16
Temple City	15
Torrance	SBC-5
Vernon	1-2-23
Walnut	21-22
West Covina	15-21-22
West Hollywood	4
Whittier	2-15-18
Los Angeles County	1-2-3-5-8-9-14-15-16-17-18-19-20-21-22-SCV
Unincorporated Area Only	27

Source: Sanitation Districts of Los Angeles County 2011

Appendix C
DESIGN CRITERIA FOR THE SAN JOSE CREEK WATER RECLAMATION PLANT

Table C-1. Design Criteria for the San Jose Creek WRP

Design Element	Units	SJCWRP-East (Existing)	SJCWRP-West (Existing)	SJCWRP-West (Ultimate)
Plant Flows				
Average	MGD	62.5	37.5	62.5
Peak Sanitary	MGD	90	60	100
Peak Storm	MGD	125	75	125
Equalized Waste Filter Backwash	MGD	1.6	-	-
Primary Sedimentation Tanks				
Number	-	8	5	8
Dimensions (LxWxD)	feet	300x20x12	300x20x12	300x20x12
Avg. Overflow Rate	gpd/ft^2	1,300	1,300	1,300
Avg. Detention Time	hours	1.65	1.65	1.65
SS Removal (Avg)	%	65	62	62
BOD_5 Removal (Avg)	%	35	36	36
Aeration Tanks				
Process Configuration	-	SFA	SFA	SFA
Number	-	20	12	20
Dimensions (LxWxD)	feet	225x30x15	225x30x15	225x30x15
Fraction Anoxic	%	25	25	25
Fraction Aerobic	%	75	75	75
Equipment Type	-	Fine Bubble	Fine Bubble	Fine Bubble
Make	-	Sanitaire	Sanitaire	Sanitaire
HRT Total	hours	1.86	1.86	1.86
Process Air Compressors				
Number	-	5	3	3
Type	-	Centrifugal	Centrifugal	Centrifugal
Capacity (Per Unit)	cfm	3@44,000 2@20,000	44,000	44,000
Final Sedimentation Tanks				
Number, Total	-	30	18	30
Number Assigned to BWR	-	-	-	-
Dimensions (LxWxD)	feet	150x20x10	150x20x10	150x20x10
Avg Overflow Rate	gpd/ft^2	694	694	694
Avg Detention Time	hours	1.94	1.94	1.94

Table C-1 (continued)

Design Element	Units	SJCWRP-East (Existing)	SJCWRP-West (Existing)	SJCWRP-West (Ultimate)
Filters				
Number	-	20	14	24
Type	-	Gravity - Dual	Gravity - Mono	Gravity - Mono
Dimensions (LxWxD media)	feet	37x16x7.6	37x16x7.2	37x16x7.2
Avg SLR (All in Service)	gpd/ft^2	3.63	3.11	3.03
Filter Effluent Pumps				
Number	-	5	3	3
Type	-	Vertical Mixed Flow	Vertical Mixed Flow	Vertical Mixed Flow
Capacity Per Pump	gpm	2@22,800 1@22,000 1@12,200 1@13,800	23,000	23,000
Filter Backwash Pumps				
Number	-	2	2	2
Type	-	Vertical Mixed Flow	Vertical Mixed Flow	Vertical Mixed flow
Capacity Per Pump	gpm	6,500	13,500	13,500
Filter Waste Backwash Recovery Tank				
Number	-	1	1	1
Volume (Effective)	gallons	136,925	135,000	135,000
Chlorine Contact Tanks				
Number	-	4 (Series)	4	6
Dimensions (LxWxD)	feet	386x13x16	300x27x15	300x27x15

Notes:
Avg = average
MGD = million gallons per day
gpd = gallons per day
gpm = gallons per minute
ft^2 = square feet
cfm = cubic feet per minute
SFA = step-feed anoxic
SS = suspended solids
COD = chemical oxygen demand
BOD_5 = biochemical (or biological) oxygen demand
HRT = hydraulic retention time
BWR = backwash recovery
SLR = surface loading rate

Appendix D
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Appendix E
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Appendix F
LIST OF ABBREVIATIONS

°F	degrees Fahrenheit
µg/L	micrograms per liter
1977 Plan	1977 JOS Facilities Plan
2010 Plan	Joint Outfall System 2010 Master Facilities Plan
ACS	American Community Survey
ADWF	average dry weather flow
AF	acre-feet
AFY	acre-feet per year
AQMP	air quality management plan
ATCM	Airborne Toxic Control Measure
AWTF	Advanced Water Treatment Facility
AWWA	American Water Works Association
BACT	best available control technology
Basin Plan	Water Quality Control Plan, Los Angeles Region
BM	Biosolids Management
BMP	best management practice
BOD	biochemical (or biological) oxygen demand
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Occupational Safety and Health Administration
CARB	California Air Resources Board
CBMWD	Central Basin Municipal Water District
CCC	California Coastal Commission
CCR	California Code of Regulations
CCT	chlorine contact tank
CDFG	California Department of Fish and Game
CDPH	California Department of Public Health
CDWS	California drinking water standards

CEC	Constituents of Emerging Concern
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
cfs	cubic feet per second
CFU	Coliform Forming Units
CI	cast iron
CII	commercial, industrial, and institutional
CIP	capital improvement plan
CMOM	capacity, management, operations, and maintenance
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
COD	chemical oxygen demand
Corps	U.S. Army Corps of Engineers
County DPH	Los Angeles County Department of Public Health
CPRC	California Public Resources Code
CRS	combined raw sludge
CSDLAC	County Sanitation Districts of Los Angeles County
CSLC	California State Lands Commission
CT	(wastewater) conveyance and treatment
CT	contact time
CTR	California Toxics Rule
CUP	conditional use permit
CWA	Clean Water Act
CWC	California Water Code
CZMA	Coastal Zone Management Act
DAF	dissolved air flotation
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene

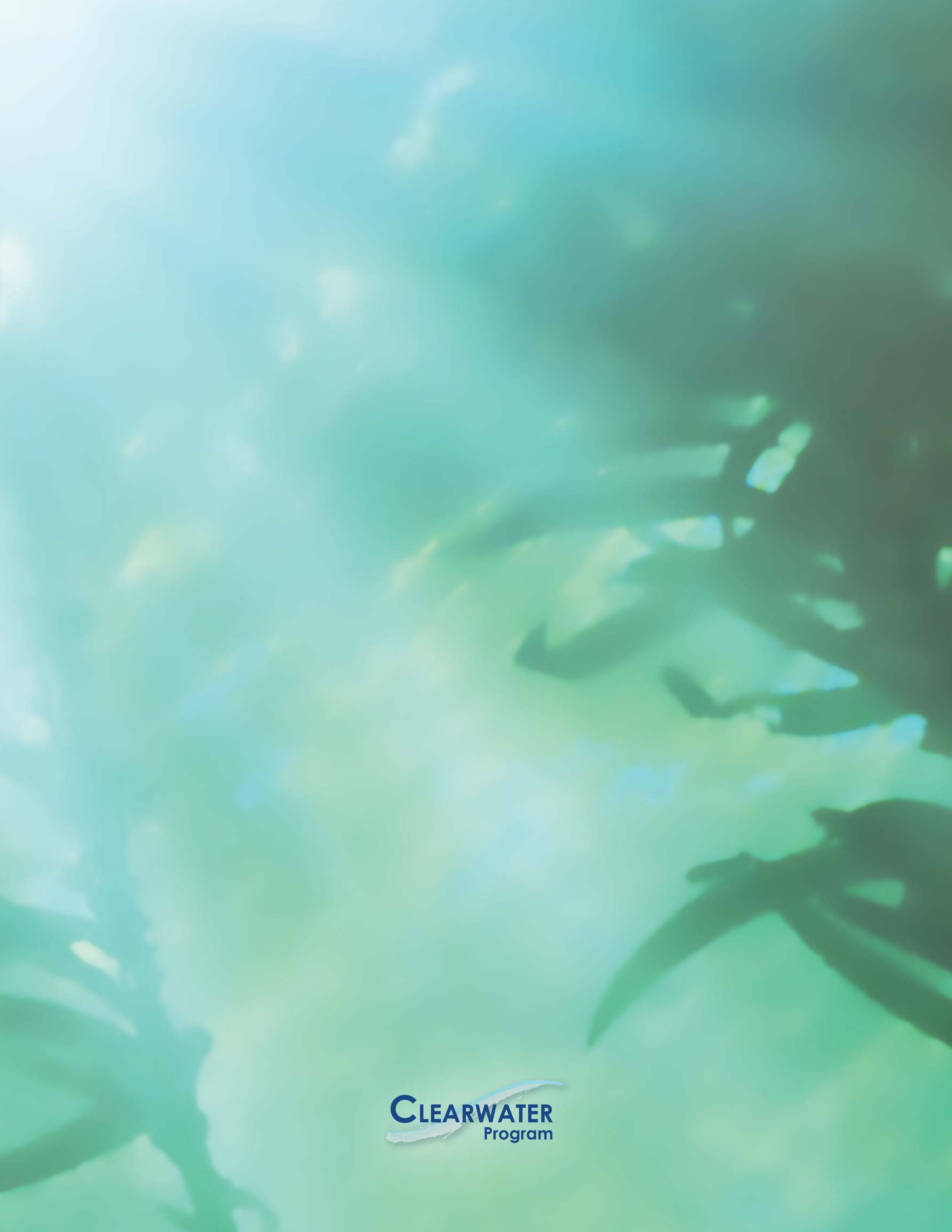
DDT	dichlorodiphenyltrichloroethane
Delta	Sacramento-San Joaquin Delta
DHS	Department of Health Services
DOF	Department of Finance
DPM	diesel particulate matter
DRP	Department of Regional Planning
dtpd	dry tons per day
DWR	Department of Water Resources
DWUR	Dry weather urban runoff
EIR	environmental impact report
EIR/EIS	environmental impact report/environmental impact statement
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
EPB	earth-pressure balance
FESA	federal Endangered Species Act
GBT	gravity belt thickener
General Permit	General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water
GHG	greenhouse gas
GIS	geographic information system
gpcd	gallons per capita per day
gpm	gallons per minute
GRIP	Groundwater Reliability Improvement Program
GRP	Gross Regional Product
GRRP	groundwater reuse recharge project
GVWR	gross weight rating greater
HSWA	Hazardous and Solid Waste Amendments of 1984
HWCA	Hazardous Waste Control Act
I-	Interstate
I/I	infiltration and inflow
ICM	Inflow Coefficient Method
in/hr	inches per hour
IRP	Integrated Resource Planning
ISWP	Inland Surface Waters Plan

IW	industrial waste
JAA	Joint Administration Agreement
JE	JWPCP Effluent Management
JO	Joint Outfall
JOA	Joint Outfall Agreement
JOS	Joint Outfall System
JWPCP	Joint Water Pollution Control Plant
Kellogg	H.C. Kellogg
LA/OMA	Los Angeles/Orange County Metropolitan Area
LACAWRP	La Cañada Water Reclamation Plant
LACDPW	Los Angeles County Department of Public Works
LARWQCB	Los Angeles Regional Water Quality Control Board
LAXT	Los Angeles Export Terminal
lbs/d	pounds per day
LBWD	Long Beach Water Department
LBWRP	Long Beach Water Reclamation Plant
LCFS	low carbon fuel standard
LCWRP	Los Coyotes Water Reclamation Plant
LFG	landfill gas
M&I	municipal and industrial
MBR/RO	membrane bioreactor/reverse osmosis
MBRs	membrane bioreactors
MCL	maximum contaminant level
MF/RO	microfiltration and reverse osmosis
MFP	(Clearwater Program) Master Facilities Plan
MG	million gallons
mg/L	milligrams per liter
MGD	million gallons per day
MGY	million gallons per year
mL	milliliters
MLE	Modified Ludzack-Ettinger
MLSS	mixed liquor suspended solids
MPAs	Marine Protected Areas
MPN	most probable number

MW	megawatts
MWD	Metropolitan Water District of Southern California
MWh	megawatt hour
NAAQS	National Ambient Air Quality Standards
NACWA	National Association of Clean Water Agencies
NAHC	Native American Heritage Commission
NDMA	N-nitrosodimethylamine
NDN	nitrification-denitrification
NDN Plan	Nitrification/Denitrification Facilities Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NTR	National Toxics Rule
NTUs	nephelometric turbidity units
O&M	operations and maintenance
OES	Office of Emergency Services
OLAC	Orange and Los Angeles County
OPR	Office of Planning and Research
PCA	Porter-Cologne Water Quality Control Act of 1969
PERP	Statewide Portable Equipment Registration Program
PM	particulate matter
PM_{10}	respirable particulate matter
$PM_{2.5}$	fine particulate matter
POTWs	publicly owned treatment works
POWRP	Pomona Water Reclamation Plant
ppcd	pounds per capita per day
ppd	pounds per day
PV Shelf	Palos Verdes Shelf
RCP	reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act
RDI/I	rainfall dependent infiltration and inflow
RO	reverse osmosis

RPS	raw primary sludge
RTP	Regional Transportation Plan
RWC	recycled water contribution
RWQCBs	Regional Water Quality Control Boards
SAA	Streambed Alteration Agreement
Sanitation Districts	Sanitation Districts of Los Angeles County
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Air District
SDWA	Safe Drinking Water Act
SDWSRF	Safe Drinking Water State Revolving Fund
SEA	significant ecological area
SEATAC	Significant Ecological Areas Technical Advisory Committee
sf	square feet
SFA	Step-Feed Anoxic
SFR	single-family residence
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SJCWRP	San Jose Creek Water Reclamation Plant
SOI	sphere of influence
SP	Solids Processing
SP Shelf	San Pedro Shelf
SR-	State Route
SRF	State Revolving Fund
SS	suspended solids
SSECAP	Sewer System Evaluation and Capacity Assurance Plan
SSES	Sewer System Evaluation Survey
SSMP	sewer system management plan
SSO	Sanitary Sewer Overflow
SWP	State Water Project
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TBM	tunnel boring machine

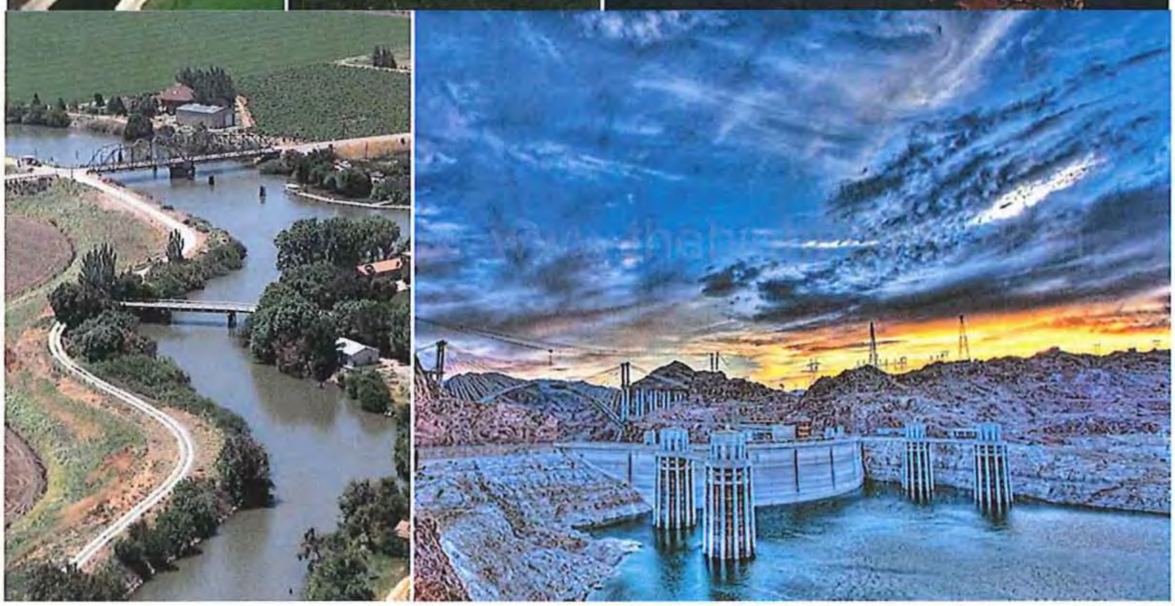
TDS	total dissolved solids
THM	trihalomethane
TICH	Total Identifiable Chlorinated Hydrocarbons
TMDL	Total Maximum Daily Load
TOC	total organic carbon
TraPac	Trans Pacific Container Service Corporation
TSDF	treatment, storage, and disposal facility
TU_c	chronic toxicity unit
TWAS	thickened waste activated sludge
U.S.	United States
UF/RO	ultrafiltration/reverse osmosis
USBR	United States Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
USGVMWD	Upper San Gabriel Valley Municipal Water District
UV	ultraviolet
UWMP	Urban Water Management Plan
VOCs	volatile organic compounds
WAS	waste activated sludge
waters of the U.S.	waters of the United States
WDR	waste discharge requirement
WE	WRP Effluent Management
WNWRP	Whittier Narrows Water Reclamation Plant
WQOs	water quality objectives
WRD	Water Replenishment District of Southern California
WRP	water reclamation plant
WRR	water reclamation requirements
WSDM Plan	Water Surplus and Drought Management Plan
wtpd	wet tons per day
wtpy	wet tons per year
WVWD	Walnut Valley Water District
WWUR	Wet weather urban runoff



CLEARWATER
Program

Central Basin

Municipal Water District



DRAFT

2010 Urban Water Management Plan

March 2011

MESSAGE FROM THE BOARD OF DIRECTORS

Since the District's formation in 1952, Central Basin Municipal Water District has remained steadfast in its commitment to ensure a safe and reliable water supply for the region. Through the years, the District has grown and transformed, seeking innovative and viable solutions to meet the changing needs of its communities. All of us at Central Basin continue to expand our efforts to meet the growing water demand while preserving our limited and precious water resource. Through our water recycling, conservation, education and groundwater quality protection programs, Central Basin has evolved from a potable water wholesaler to a leader safeguarding the region's water supply.

We are proud to submit this 2010 Urban Water Management Plan to the California Department of Water Resources. The Plan reports all current and projected water supplies and demands within Central Basin's service area, demonstrates water reliability for the next 25 years, and provides a comprehensive overview of Central Basin's various programs as well as our assistance to cities and agencies to meet their 20 percent by 2020 targets.

DIRECTORS

Division I – Edward C. Vasquez
Bell Gardens, Downey, Montebello, Norwalk and Vernon

Division II – Robert Apodaca
La Habra Heights, La Mirada, Pico Rivera, Santa Fe Springs and Whittier

Division III – Art Chacon
Bell, Commerce, Huntington Park, Maywood, portions of Cudahy, Monterey Park and unincorporated areas of East Los Angeles

Division IV – Rudy C. Montalvo
Lynwood, South Gate, portions of Cudahy, Carson, Florence-Graham and Willowbrook

Division V – Phillip D. Hawkins
Artesia, Bellflower, Cerritos, Hawaiian Gardens, Lakewood, Paramount and Signal Hill

MISSION STATEMENT

"To exercise the powers given to the District under its establishing act, utilizing them to the benefit of parties within the District and beyond. To acquire, sell and conserve imported and other water that meets all required standards and to furnish it to our customers in a planned, timely and cost effective manner that anticipates future needs. The District serves as the official representative for its public at the Metropolitan Water District of Southern California. It also provides leadership, support, advice and communication on water issues to the people and agencies within and outside its boundaries, as appropriate."

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1

Introduction

This section is an introduction to Central Basin and its relationship to MWD

1.1 PURPOSE AND UWMP SUMMARY

An Urban Water Management Plan (UWMP or Plan) prepared by a water purveyor is to ensure the appropriate level of reliability of water service sufficient to meet the needs of its various categories of customers during normal, single dry or multiple dry years. The California Urban Water Management Planning Act of 1983 (Act), as amended, requires urban water suppliers to develop an UWMP every five years in the years ending in zero and five.

The legislature declared that waters of the state are a limited and renewable resource subject to ever increasing demands, that the conservation and efficient use of urban water supplies are of statewide concern, that successful implementation of plans is best accomplished at the local level, that conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources, that conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions and that urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

Central Basin Municipal Water District's (Central Basin) 2010 UWMP has been prepared in compliance with the requirements of the Act, and includes data and/or discussion of the following topics:

- Water Wholesale Service Area
- Water Demands
- Water Sources and Supplies
- Water Reliability Planning
- Water Quality Information
- Water Demand Management Measures
- Water Shortage Contingency Plan
- Water Recycling
- 20percent x 2020 Compliance Assistance

1.2 URBAN WATER MANAGEMENT PLAN UPDATE PREPARATION

Central Basin's 2010 UWMP revises the 2005 UWMP prepared by Central Basin and incorporates changes enacted by legislation over the last five years, including SB 1087 (2005), AB 1376 (2007), AB 1420 (2007), SBX3 27 (2009), and AB 1465 (2010), The UWMP also incorporates water use efficiency efforts Central Basin has implemented pursuant to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). Central Basin was one of the first agencies to become signatory to the MOU in September 1991.

The sections in this UWMP correspond to the outline of the Act, specifically Article 2, Contents of Plans, Sections 10621, 10631, 10632 and 10633 and 10644. The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of Central Basin. The Department of Water Resources' Review for Completeness form has been completed, which identifies the location of Act requirements in this Plan and is included as Appendix A.

1.2.1 PLAN ADOPTION

The 2010 UWMP was adopted by a resolution of Central Basin's Board of Directors in May 2011(estimate) following a public hearing. The Plan was submitted to the California Department of Water Resources within 30 days of Board approval. Copies of the Notice of Public Hearing and the Resolution of Plan Adoption are included in Appendix B. Copies of the Plan were made available to the public within 30 days following Board approval.

FOOTNOTES:

1 California Water Code, Division 6, Part 2.6; §10610, et. seq. Established by Assembly Bill 797 (1983).

2 The Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) was adopted in September 1991 by a large number of water suppliers, public advocacy organizations and other interested groups. It created the California Urban Water Conservation Council and established 16 Best Management Practices (BMPs) for urban water conservation, recently refined to 14 BMPs. The District became signatory to the MOU in September 1991.

1.2.2 AGENCY COORDINATION

In November 2009, the Governor signed off on a legislative package of bills that altered how water is managed in the state. The landmark legislative package required all retail water agencies in the state to reduce their water demand by 20 percent by the year 2020. Retail water agencies were mandated to develop plans for meeting that conservation goal and include those plans as part of their 2010 UWMP's. To allow time to complete those plans, retail water agencies were provided six additional months beyond December 31, 2010 when those UWMP would be due. Although wholesale water agencies were not included in the statewide mandate, in September 2010 the state did allow wholesale water agencies the additional six months to complete their UWMP's under SB 1478. Subsequently, Central Basin modified and extended its schedule for completing the UWMP by June 30, 2011.

A notice of adoption of Central Basin's 2010 UWMP was prepared and sent to the Metropolitan Water District of Southern California (MWD), the County of Los Angeles and all of the District's various cities and customer agencies at least 60 days before the formal adoption date. The notice of adoption is included in Appendix C.

Central Basin's 2010 UWMP was completed by District staff in coordination with its customer water agencies and MWD. Table 1-1 provides an overview of the coordination and the participation of local and regional cities and agencies. Central Basin staff submitted this in draft form to the cities and retail agencies during the winter of 2011 for review and comment. Since most of the cities and agencies need to prepare their own UWMP's, Central Basin staff provided historical water use and conservation data that they were able to use in their own plans.

Central Basin is a wholesaler water agency and purchases its potable supplies from MWD and its recycled water from the County Sanitation Districts of Los Angeles to sell within its service area and beyond. This UWMP details the specifics as they relate to the Central Basin service area and will refer to MWD throughout the document. MWD held several UWMP information meetings for stakeholders and the public throughout its service area during 2009 and 2010.

The 2010 UWMP is intended to serve as a general, flexible and open-ended document that periodically can be updated to reflect changes in the region's water supply trends as well as conservation and water use efficiency policies. This UWMP, along with Central Basin's other planning documents, will be used by Central Basin staff to guide the service area's water use and management efforts through the year 2015, when the UWMP is required to be updated again.

1.3 CENTRAL BASIN MUNICIPAL WATER DISTRICT

1.3.1 BACKGROUND

Central Basin Municipal Water District was established by a vote of the people in 1952 to protect the Central Groundwater Basin from over pumping. Central Basin's founders realized they would have to curtail the use of pumping by providing the region with imported water. Therefore, Central Basin joined MWD in 1954 to purchase, on a wholesale level, potable water imported from the Colorado River and then sell it to the local municipalities, investor-owned and mutual water companies and water districts. As a water supplier, MWD provides the Southern California region with a reliable supply of imported water. Central Basin remains one of the largest member agencies of MWD's wholesalers with a population of about 1.6 million to 2 million.

Today, Central Basin wholesales potable water to 26 cities, mutual water companies, investor-owned utilities, water districts and private companies in the region. In addition, Central Basin supplies recycled water to the region for municipal, commercial and industrial use. Central Basin supplies imported and recycled water to its customer agencies to help protect the Central Groundwater Basin and reduce their reliance on groundwater supplies.

Central Basin is governed by a five member Board of Directors elected from within the service area. Each Director serves a four-year term once elected. The Board of Directors guides the mission and policy of Central Basin. In addition, Central Basin's Board of Directors appoints two representatives to serve on the 37-member MWD Board of Directors. Central Basin's representation on the MWD Board is critical to shaping a regional voice on water issues.

1.3.2 CENTRAL BASIN'S SERVICE AREA

Central Basin's service area covers approximately 227 square miles and includes 24 cities and several unincorporated areas in southeast Los Angeles County. Central Basin maintains an official population of approximately 1.65 million people according to the Southern California Area Governments (SCAG), but due to the undercounting of the area's immigrant population, the number is closer to 2 million. Central Basin is broken up into 5 distinct political divisions with the residents of each division voting for a representative to the Board of Directors. The cities and their associated divisions include:

Division 1:
Bell Gardens, Downey, Montebello, Norwalk and Vernon.

Division 2:
La Habra Heights, La Mirada, Pico Rivera, Santa Fe Springs and Whittier.

Division 3:
Bell, Commerce, Huntington Park, Maywood, portions of Monterey Park and areas of unincorporated East Los Angeles and Walnut Park.

Division 4:
Portions of Carson, Compton and Cudahy, Lynwood, South Gate, Florence-Graham and Willowbrook.

Division 5:
Artesia, Bellflower, Cerritos, Hawaiian Gardens, Lakewood, Paramount and Signal Hill.

1.3.3 RELATIONSHIP TO METROPOLITAN WATER DISTRICT

Central Basin is one of 26 member agencies of MWD. MWD was formed in 1928 with just 13 member agencies to build and operate the Colorado River Aqueduct (CRA). The first deliveries of CRA water began in 1941. Central Basin joined MWD in 1954 as a wholesale water district to sell imported water to the local retail water agencies. The first CRA water deliveries to the Central Basin area began a few months later.

Representation on the MWD Board of Directors

The MWD maintains a Board of Directors of 38 representatives, each of which are appointed by the governing bodies of the 26 member agencies.

Over the last 56 years that Central Basin has been a member agency, MWD's administrative code concerning representation on the Board of Directors has only changed slightly. Essentially, the same rules apply today as they did in 1929 when MWD was formed. All member agencies receive one directorship at least. Member agencies receive an additional directorship for each 5 percent of that member agency's assessed valuation of the total MWD service area. Since Central Basin currently is valued at about 5.3 percent of the total MWD service area, Central Basin receives two directorships on the MWD Board. This system disproportionately impacts member agencies such as Central Basin, which represents an economically diverse service area, with 47percent of the communities served qualifying as disadvantaged. Although this approach may have made sense in 1929, today it is an antiquated formula for determining representation because it does not adequately take into account population increases, but relies exclusively on property values. Therefore, representation on the MWD Board of Directors is an area of concern for Central Basin and will remain so until a more equitable process is in place.

Supply Chain

Central Basin plays an important role in managing the imported supplies for the region. Through various programs and projects, Central Basin strives to ensure that its residents have a safe and reliable supply of water. Figure 1-1 shows the water supply chain which illustrates the relationship between Central Basin and its customer cities and agencies.

Table 1-1
Central Basin Public and Agency Coordination

Coordinating Agencies	Sent a 60-Day Notice of Plan Preparation	Participated in Plan Development	Commented on Draft Plan	Attended Public Meetings	Sent a Copy of Draft Plan	Sent a Notice of Intention to Adopt
Cities						
Artesia						
Bell						
Bellflower						
Carson						
Cudahy						
Hawaiian Gardens						
La Habra Heights						
La Mirada						
Maywood						
Retail Water Agencies						
Bellflower-Somerset Mutual Water Co.						
California Water Service Co.						
City of Bell Gardens						
City of Cerritos						
City of Commerce						
City of Downey						
City of Huntington Park						
City of Lakewood						
City of Lynwood						
City of Montebello						
City of Norwalk						
City of Paramount						
City of Pico Rivera						
City of Santa Fe Springs						
City of Signal Hill						
City of South Gate						
City of Vernon						
City of Whittier						
Golden State Water Co.						
City of La Habra Heights CWD						
Maywood Mutual Water Co. #1						
Maywood Mutual Water Co. #2						
Maywood Mutual Water Co. #3						
Montebello Land & Water Co.						
Orchard Dale Water District						
Park Water Co.						
Pico Water District						
Rancho Los Amigos - LAC						
San Gabriel Valley Water Co.						
South Montebello Irrigation District						
Suburban Water Systems						
Walnut Park Mutual Water Co.						
Regional Agencies						
County Sanitation Districts of LAC						
Water Replenishment District						
LAC Department of Regional Planning						
Metropolitan Water District						

Figure 1-1
Imported Water Supply Chain

To Be Developed

2

Water Demand

This section describes current and future water demand trends within Central Basin's service area

2.1 OVERVIEW

In FY 2009-10, the total water demand for the 1.65 million people living within Central Basin's service area is approximately 257,492 acre-feet (AF) with an annual imported water replenishment demand of about 21,000 AF. One acre-foot equals 326,000 gallons and serves the annual water needs of two families. In 1990, Central Basin's population was 1.4 million and the service area's water demand was 248,570 AF (not including replenishment). In the last 20 years, Central Basin's retail water demand has grown 3. 4percent while service area population has grown 20 percent. The reason for this low growth in demand has been largely due to conservation and public education programs, and to the development of recycled water programs.

Projections show that Central Basin's water usage is expected to increase roughly 3.5 percent over the next five years, but over the next 25 years, Central Basin expects service area demands for imported water to flatten out with the result that per capita water use decrease as shown in Table 2-5. This is due to the expanded role of recycled water as a management tool.

This section will explore in greater detail Central Basin's population trends and historical and current water demands as well as offer some insight into expected future water demands for the next 25 years.

2.2 CLIMATE CHARACTERISTICS

Central Basin's service area lies in the heart of Southern California's coastal plain. The climate is Mediterranean, characterized by typically warm, dry summers and wet, cool winters with an average precipitation level of approximately 15.4 inches per year[1]. The combination of mild climate and low rainfall makes the area a popular residential destination, creating a challenge for water agencies in meeting increasing water demands with a limited water supply.

Areas with low precipitation, such as Southern California, are typically vulnerable to droughts. Historically, Southern California has experienced a pattern of severe dry periods (Droughts of 1977-78 and 1987-92), with one of worst occurring from 2005 through 2009. During those four years, the 2006-07 year was considered the driest year with only 3.21 inches of rain recorded in downtown Los Angeles. Any time low rainfall occurs, the region becomes even more reliant upon other sources of water such as groundwater and imported water. Reducing our reliance on imported water is something Central Basin has actively pursued for the last 20 years to ensure future water reliability.

Table 2-1 illustrates the climate characteristics for the Los Angeles region, taken at both the Long Beach Station and the Montebello Station, using data accumulated between 1979 and 2005 (26 years) including standard monthly average ETo[2] (Long Beach Station), the average rainfall (Montebello Station) and the average temperature (Montebello Station). In comparison to other regions in California with an abundant supply of precipitation each year, the low rainfall in this region invariably challenges Central Basin to provide sufficient, reliable, quality water to meet the area's water needs.

FOOTNOTES:

1 According to the Western Region Climate Center

2 Evapotranspiration is the water lost to the atmosphere by two processes-evaporation and transpiration. Evaporation is the loss from open bodies of water, such as lakes and reservoirs, wetlands, bare soil and snow cover; transpiration is the loss from living-plant surfaces

Table 2-1
Climate Characteristics - Los Angeles Region
Zone 4 - South Coast Inland Plain

	Jan	Feb	Mar	Apr	May	June
Standard Monthly Average Eto[1]	1.86	2.24	3.41	4.50	5.27	5.70
Average Rainfall (inches)[2]	3.56	3.91	3.06	0.90	0.23	0.07
Average Temperature (Fahrenheit)[2]	69.4	71.1	72.8	77.8	79.4	83.7

	July	Aug	Sept	Oct	Nov	Dec	Annual
Standard Monthly Average Eto	5.89	5.58	4.50	3.41	2.40	1.86	46.62
Average Rainfall (inches)	0.02	0.02	0.20	0.30	1.23	1.88	15.38
Average Temperature (Fahrenheit)	88.6	89.7	87.9	82.6	75.4	70.9	79.1

[1] Data taken from the California Irrigation Management Information System (CIMIS) at the Long Beach

Station for the Southeast Los Angeles Region for Calendar Year 2009: http://www.cimis.water.ca.gov/cimis/welcome.jsp

[2] Data taken from the Western Regional Climate Center's web site at the Montebello Station for the period Jan 1979 through Dec 2005:
http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?camont

2.3 DEMOGRAPHICS

Central Basin's service area encompasses 227 squares miles in southeast Los Angeles County and includes 24 cities. There are 26 retail water agencies that include cities, water agencies, publicly-owned mutual water companies and other publicly regulated utilities. This service area includes some of the most densely populated areas in Los Angeles County. According to the Southern California Area Governments (SCAG) 2008 Regional Transportation Plan and the Metropolitan Water District (MWD) demographics data, Central Basin has grown from 1.4 million people in 1990 to 1.65 million people today.

Based on SCAG and MWD demographic projections, population is expected to increase an average of 2 percent every five years for the next 25 years, or one-half of one percent annually. This is much slower growth than was anticipated in Central Basin's 2005 Urban Water Management Plan. By 2035, Central Basin's population is expected to grow by about 155,000 people. Table 2-2 displays the demographic projections for the next 25 years.

Table 2-2 also displays Central Basin's total households, which are expected to increase by 10percent (or 43,900) by 2035. As it relates to water demand, more households will increase the demand on water supplies. As for employment, Central Basin is expected to see a 6.9percent increase by 2035. As urban employment grows, so does the demand on water supplies.

2.4 HISTORICAL AND CURRENT WATER DEMANDS

The key factors that affect water demand are growth in population, increases in land use development, industrial growth and hydrology. However, since the end of the 1989-92 drought, retail water demand in Central Basin's service area has remained fairly consistent. As illustrated in Figure 2-1, the Central Basin region has not seen significant increases in water demand during the past 15 years despite population growth at an average rate of 10,350 persons per year and continued in-fill development in the service area. Central Basin's service area total water use in FY 2009-10 was 288,450 AF (including recycled water deliveries). Total retail demand was 228,155 AF.

Total water use within Central Basin's service area includes retail demand and groundwater replenishment deliveries. Total retail demand is defined as all municipal (i.e. residential, firefighting, parks, etc.) and industrial uses, and represents the population's total direct water consumption including recycled water, but not replenishment. Groundwater replenishment activities include deliveries to the San Gabriel River Spreading Grounds and Rio Hondo Spreading Grounds (in Pico Rivera) which are not

Table 2-2
Demographic Projections for Central Basin's Service Area[1]

Year	2010	2015	2020	2025	2030	2035
Population	**1,654,866**	**1,689,064**	**1,720,700**	**1,751,519**	**1,781,368**	**1,809,737**
Single-family	301,186	307,330	312,886	316,725	320,367	322,932
Multi-family	126,269	131,390	136,352	140,535	144,721	148,425
Total Household	**427,455**	**438,720**	**449,238**	**457,260**	**465,088**	**471,357**
Persons per Household	3.87	3.84	3.83	3.83	3.83	3.84
Employment	553,727	563,417	569,641	591,700	584,740	592,147

[1] Information provided by MWD Demographic Data, October 2009 which is based on SCAG 2008 Transportation Plan.

Note: All units are rounded to the nearest hundred; totals may not sum exactly due to rounding.

directly delivered to the public but enable continued groundwater production to help satisfy retail demand. In May 2007, MWD curtailed deliveries of imported replenishment water due to drought conditions. In FY 2009-10, due to falling groundwater levels Central Basin began delivering higher cost imported water for replenishment purposes.

Figure 2-1 displays Central Basin's total retail water demand from FY 1995 to 2010. As previously discussed, retail demand has remained fairly consistent since 1995 following several years of increasing demands after the drought. However, in 2007 when MWD curtailed replenishment deliveries, total demand fell sharply. Economic conditions pushed water demand down even further in 2009 and 2010. The average total retail demand for the past 15 years is about 255,600 AFY.

Over the last two years, Central Basin's total water use has averaged significantly lower at about 241,600 AFY, which is about 5.5 percent lower than the 15 year average. Table 2-3 provides projected imported water sales (including replenishment activities) to the cities and agencies within the Central Basin service area in comparison to FY 2005-06, which can be considered an average demand year.

Central Basin's service area is using the same amount of water as it did 10 years ago, despite the addition of 148,560 people. This indicates that water conservation and education has significantly affected the manner in which Central Basin's residents are using water today. We can further verify this by reviewing Central Basin's water usage per person in "Per Capita Water Usage" in Figure 2-2.

2.4.1 PER CAPITA WATER USAGE

In February 2008, the California legislature introduced a seven part comprehensive plan for improving the Sacramento-San Joaquin Delta. As part of that effort, several state agencies were directed to develop a plan to reduce per capita water use statewide by 20 percent by the year 2020. Legislation titled the "Water Conservation Act of 2009" (SB X7-7) enacted the 20 x 2020 concept. As part of the 20 x 2020 plan, all retail water agencies in the state are required to detail how they plan to achieve the mandatory reductions though their Urban Water Management Plans (UWMP). The provision allowed retail water agencies an extended deadline of June 30, 2011 to submit their UWMP.

Statewide Target

According to the State of California[3], the state's total urban water usage in 2005 is equivalent to 192 gallons per capita per day (gpcd). However, this number can be misleading because it represents different hydrological regions across the state that have urbanized populations and highly variable climatic conditions that influence water use.

FOOTNOTES:
3 20x2020 Water Conservation Plan – February 2010, pg. 2-27

Table 2-3

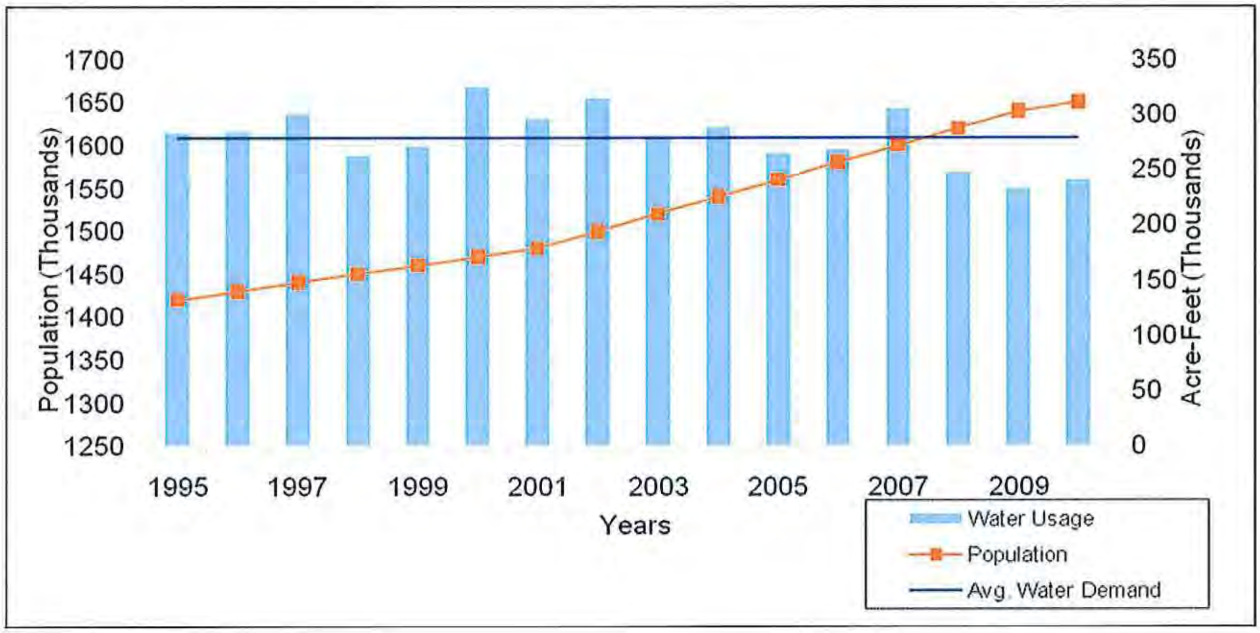
Historical & Projected Imported Water Sales to Central Basin Service Area Retail Agencies[1]

Agencies Purchasing Imported Water	FY 2005-06	FY 2009-10	2015	2020	2025	2030	2035
Bellflower-Somerset Mutual Water Company	2,105	1,800	2,100	2,150	2,200	2,300	2,350
California Water Service - East Los Angeles/Commerce	14,428	12,171	14,700	15,150	15,600	16,000	16,500
City of Bell Gardens	1,111	493	1000	1,100	1,100	1,150	1,200
City of Cerritos	625	290	1,000	1,000	1,050	1,100	1,150
City of Downey	0	0	0	0	0	0	0
City of Huntington Park	1,793	1,346	1,600	1,700	1,700	1,750	1,800
City of Lakewood	0	0	0	0	0	0	0
City of Lynwood	1,653	267	850	900	925	950	975
City of Montebello	1,137	1,112	1,300	1,300	1,350	1,400	1,450
City of Norwalk	920	841	100	100	100	100	100
City of Paramount	2,428	2,518	3,100	3,200	3,300	3,400	3,500
City of Santa Fe Springs	2,602	3,683	3,900	4,000	4,100	4,200	4,300
City of Signal Hill	426	135	100	100	100	100	100
City of South Gate	0	0	0	0	0	0	0
City of Vernon	2,785	1,099	1,900	1,950	2,000	2,100	2,150
County of Los Angeles - Rancho Los Amigos	358	308	25	25	25	25	25
Golden State Water Company	10,787	6,944	10,800	11,100	11,400	11,800	12,100
La Habra Heights Water District	114	79	250	260	270	280	290
Maywood Mutual Water Co. No. 1	140	40	100	100	100	100	100
Maywood Mutual Water Co. No. 2	285	26	100	100	100	100	100
Maywood Mutual Water Co. No. 3	0	0	0	0	0	0	0
Orchard Dale Water District	1,216	754	1,100	1,100	1,150	1,200	1,200
Park Water Company	12,098	8,905	11,500	11,800	12,200	12,600	12,900
San Gabriel Valley Water Co	881	0	0	0	0	0	0
Suburban Water Systems	1,992	335	1,000	1,050	1,100	1,100	1,150
Walnut Park Mutual Water Co.	507	0	0	0	0	0	0
Total Imported Water Demand	**60,391**	**43,142**	**56,525**	**58,185**	**59,870**	**61,755**	**63,440**
Water Replenishment District (Replenishment)[2]	**25,418**	**20,295**	**21,000**	**21,000**	**21,000**	**21,000**	**21,000**
Total including Replenishment	**85,809**	**63,437**	**77,525**	**79,185**	**80,870**	**82,755**	**84,440**

[1]Projected imported water sales are not necessarily reflective of the local agency's UWMP. The above projections are based on estimated increases of about 3percent over each five-year period.

[2]Imported replenishment water sales in FY 2009-10 were actually Tier I untreated. Projected demand for replenishment purposes are based upon WRD's projected annual estimate. The demand can be met through Tier I sales or through Long Term Seasonal Storage sales, when available.

Figure 2-1
Central Basin's Historical Total Retail Water Demand vs. Population



Using that number as the baseline, the state must reduce per capita water demand to 173 gpcd by 2015 as the interim target and 154 gpcd by 2020 to meet the final statewide target.

Regional Target
In the South Coast hydrological region (which incorporates the Central Basin service area as well as all of the MWD service area), the total urban water usage in 2005 was 180 gpcd. Based on the criteria for establishing a target number, the baseline for the South Coast Region is 171 gpcd (which is 95 percent of established target reductions). With this baseline in mind, the South Coast region's interim target for 2015 is 154 gpcd and the final target for 2020 is 137 gpcd.

Central Basin Service Area
Within the Central Basin service area, the gpcd changes annually due to influences of drought or precipitation and water supply. For example, in May 2007, MWD eliminated imported water replenishment deliveries (also known as Seasonal Storage) due to drought conditions. Compared to previous years, that action had the impact of lowering Central Basin's gpcd significantly in the years that followed. In 2010, due to falling groundwater levels, Central Basin, worked with the Water Replenishment District of Southern California (WRD) to purchase 20,295 AF of higher-cost imported water from MWD for replenishment purposes. This slightly increased the gpcd trend as shown in Figure 2-2.

Spreading Demands
Overall, during the last five years, water usage has generally become more efficient, decreasing in 2010 to about 131 gpcd. Figure 2-2 illustrates the retail water usage per capita for the last six fiscal years comparative to population in Central Basin's service area.

Gateway IRWMP
In February 2011, the Gateway Integrated Regional Water Management (Gateway IRWM) group executed an agreement with a consultant to provide services to Gateway IRWMP members to meet the interim and 2020 targets as indicated in SB X7-7 for all agencies in the Gateway IRWM (which includes all of the Central Basin service area). Although Central Basin itself is under no requirements to meet specific gpcd targets, Central Basin has agreed to include the 20x2020 plan in its 2010 UWMP. Since many local agencies will be appending Central Basin's 2010 UWMP to their own UWMP, this approach will achieve adoption compliance.

2.4.2 REPLENISHMENT DEMANDS

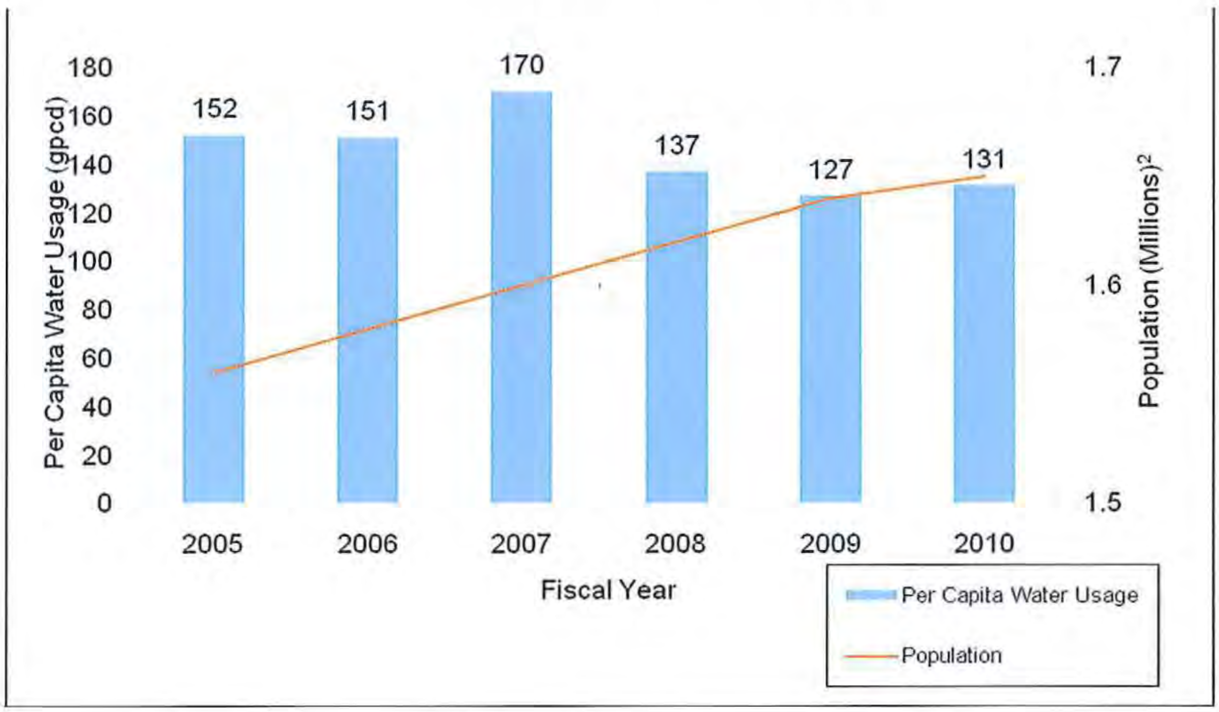
Replenishment water is defined as water that is used to refill or protect the groundwater basin. The Water Replenishment District of Southern California (WRD) is the entity responsible for purchasing imported and recycled water for replenishing the Central Groundwater Basin.

As groundwater is extracted annually beyond the natural level of replenishment, WRD purchases supplemental water to refill the basin and replenish the amount that is extracted above the basin yield. This replenishment water is a combination of allowable deliveries of recycled water and the purchases of untreated imported water from Central Basin. Storm water is also used for replenishment, but the diversion of storm water into the Rio Hondo and San Gabriel River Spreading Grounds (Spreading Grounds) is managed by the Los Angeles County Department of Public Works (LACDPW).

As the imported water wholesaler, Central Basin provides untreated water to WRD to be conserved at the Spreading Grounds in the Montebello Forebay, located in Pico Rivera and Montebello. Demands at the Spreading Grounds have varied year to year. As shown in Figure 2-3, imported spreading purchases can range from about 46,000 AF to 0 AF in any given year, while there is always some annual variability in demand due to storm activity and drought conditions, typically WRD needs about 21,000 AF of imported water annually to help replenish the Central Groundwater Basin.

Figure 2-2

Historical Per Capita Retail Water Usage1



[1] Retail water usage includes groundwater, imported water, seasonal spreading, WQPP, and Main Basin deliveries.

[2] Information based on MWD Demographic Data, 2009.

In May of 2007, the MWD Board of Directors made the decision to discontinue replenishment deliveries to all member agencies, including Central Basin, due to drought conditions. Almost immediately, groundwater levels began to fall. In December 2009, monitoring wells in the Montebello Forebay were shown to be at the lowest recorded level in 30 years. Central Basin, working in cooperation with WRD and the City of Long Beach, arranged to purchase more than 25,000 AF of higher cost imported water for replenishment of the Central Groundwater Basin. While monitoring well levels have improved significantly since then, the dangers of not purchasing adequate replenishment supplies to groundwater basins, even at higher costs, remain apparent.

Future replenishment demands are always difficult to project because of the variation in operational changes and replenishment needs. However, based on typical hydrological conditions, WRD will need about 21,000 AF of imported water annually to blend with recycled water and storm water just to maintain current groundwater levels. To actually fill the Central Groundwater Basin will require much higher levels of replenishment from all three sources.

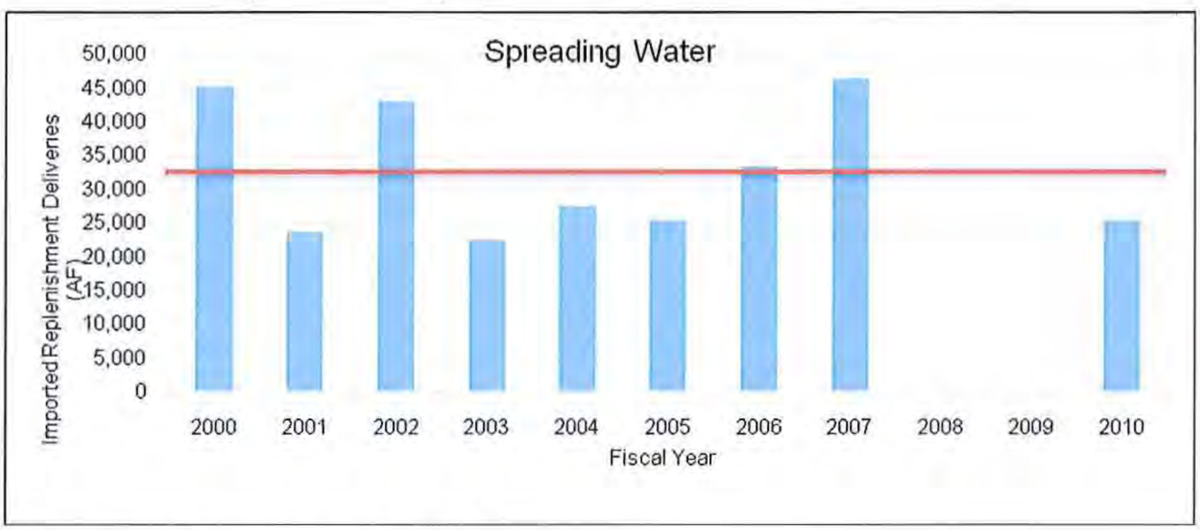
In coming years, two new projects are projected to increase the amount of storm water at the San Gabriel River and Rio Hondo Spreading Grounds within the Central Basin. The first project is currently under construction along Mines Avenue in Pico Rivera. The LACDPW is constructing a 78" conduit with a pump station along Mines Avenue that will allow for the movement of water between the two spreading grounds. When one spreading ground fills with storm water, the water can be moved to the other spreading ground allowing it to percolate into the groundwater basin instead of being lost to the Pacific Ocean, thus conserving the water supply. This project is expected to be completed in September 2010. A second project is the Whittier Narrows Conservation Pool project which proposes to raise the level of the Whittier Narrows Dam to increase storm water capture. If completed, the project will save about 10,000 AF for recharge in the spreading grounds and will help lessen the need for imported water for replenishment.

2.4.3 RETAIL IMPORTED WATER DEMAND BY CUSTOMER AGENCY

As mentioned above, Central Basin, as a wholesaler, has not seen significant increases in water demand for the past 10 years. However, local retail agencies have experienced significant changes in their overall water demand since 2005.

For comparative purposes, Table 2-3 illustrates the changes in each retail agencies' imported water demands during FY 2005-06 and FY 2009-10. Although some agencies have seen some dramatic shifts in imported water demand during the past five years, the overall demand saw a 28 percent decrease in demand. The significant changes among cities and agencies can be attributed to the national and local economy. When the economy recovers, Central Basin expects imported water demand to begin to increase back to a more normalized level.

Figure 2-3
Imported Water Replenishment Sales in Central Basin's Service Area



Source: Central Basin Water use Database, 2010

Table 2-4
Central Basin Service Area Current & Future Water Demands

	2010	2015	2020	2025	2030	2035
Retail Municipal and Industrial Demand						
Groundwater[1]	174,318	182,600	184,100	184,600	184,600	184,600
Imported Water[2]	63,443	77,525	78,185	80,870	82,755	84,440
Recycled Water[3]	6,632	6,700	11,000	16,000	16,000	16,000
Total	**244,393**	**266,825**	**273,285**	**281,470**	**283,355**	**285,040**

1 Includes both Central Groundwater Basin, San Gabriel Valley "Main" Basin, and WQPP deliveries
2 Includes direct deliveries and replenishment deliveries.
3 Direct deliveries from Central Basin's system.

2.5 PROJECTED WATER DEMANDS

One of the objectives of this UWMP is to provide insight into Central Basin's expected water demand for the next 25 years. The predictability of water usage is an important element in planning future water supplies. The methodology used in demand forecasting is a combination of historical water use analysis, population growth and commercial and residential development. Central Basin, with the assistance of MWD's forecasting model known as MWD-MAIN (Municipal and Industrial Needs) Water Use Forecasting System, is able to develop well formulated water demand projections.

The MWD-MAIN forecasting model determines expected urban water usage for the next 25 years. To project water demands, this model incorporates census data, industrial growth, employment and regional development from regional planning agencies, such as SCAG (Southern California Association of Governments). It also features demands in sectors such as single family, multifamily, industrial, commercial and institutional usage for the region. MWD also takes into account current and future water management efforts, such as water conservation Best Management Practices (BMPs) and education programs.

Table 2-4 illustrates the current and projected retail water demands until the year 2035 for Central Basin under normal demand conditions.

Retail imported water demand in Central Basin is expected to grow approximately 0.3 percent over each five year period through 2035. Groundwater will remain consistent, due to the limited amount of extractable pumping rights within the basin, while recycled water and conserved water will meet the rise in demand during the next 25 years.

2.5.1 PROJECTED PER CAPITA

As discussed previously, water demand is determined by the water usage divided by the population. The future "per capita" use shows that water demand will remain relatively flat as compared to the population increases that are expected over the next 25 years.

Table 2-5 shows a gradual decrease in per capita usage at a time when water has become a scarce commodity and population is projected to increase. Essentially, water use within the Central Basin service area will become more efficient.

Table 2-5
Water Supply Efficiency in the Central Basin Service Area

Year	Estimated Population[1] (Millions)	Retail Water Usage[2] (AF)	Per Capita (GPCD)
2015	1.689	259,125	137
2020	1.720	262,000	136
2025	1.751	265,000	135
2030	1.781	267,000	134
2035	1.809	269,000	133
		Average	**135**

[1] Information provided by MWD Demographic Data, October 2009 which is based on SCAG 2008 Transportation Plan.

[2] Retail Water Usage includes recycled water but does not include replenishment sales.

3
Water Supply

This section discusses the current and future water supply within Central Basin's service area

3.1 OVERVIEW

It is Central Basin's mission to ensure a safe, adequate and reliable supply of water for the region it serves. However, with increasingly limited and costly water supplies, the task of meeting this mission has become a challenge for Central Basin.

Sixty years ago, retail water agencies in the Central Basin relied completely on groundwater. Today, they rely on a more diverse mix of water resources along with 61percent groundwater, 21percent imported, 16percent recycled water (only M&I) and 11percent conservation efforts. (Note that conservation is an estimate of the amount of water that would have been needed had conservation programs not been implemented). It has been projected that by 2035, the resource mix will depend less upon imported water, with greater reliance upon recycled water development and conservation programs. Central Basin has already begun diversifying water resources to ensure a reliable supply of water for its service area.

This section provides an overview of the current and future water supplies needed to meet the expected demands of Central Basin including: a review of the current and projected water supply mix, a description of each water source Central Basin's service agencies currently rely on and expected future supplies that Central Basin is planning and/or developing to meet its service area future demands.

3.2 CENTRAL BASIN'S WATER SUPPLY PORTFOLIO

Since its formation in 1952, Central Basin has fulfilled its responsibility of providing its customer agencies with supplemental supplies to ensure reliability. Today, diversification is the key to an ample future supply of water throughout its service area. As illustrated in Figure 3-1, Central Basin's supply portfolio has changed through the years.

Similar to creating a balanced investment portfolio in order to reduce risk, Central Basin plans to further diversify its water resource mix during the next 25 years with the expansion of the recycled water system, increased conservation efforts along with groundwater storage opportunities. Central Basin's dependence on imported sources will continue to decrease with the expansion of these alternative resources. Figure 3-1 and Table 3-1 show the current and projected water supply portfolio which Central Basin uses to meet regional demand.

Figure 3-1
Historical, Current & Projected Water Supplies

Pie Charts
To Be Developed

Table 3-1
Current & Projected Water Supplies in Central Basin
(In Acre-Feet)

Supply Source	2010	2015	2020	2025	2030	2035
Groundwater[1]	205,960	205,960	205,960	205,960	205,960	205,960
Imported Water[2]	72,360	72,360	72,360	72,360	72,360	72,360
Recycled Water[3]	23,000	23,000	23,000	23,000	23,000	23,000
Total Supply	**301,320**	**301,320**	**301,320**	**301,320**	**301,320**	**301,320**

Note: Imported supply covers only retail water demand; does not include replenishment deliveries such as spreading

[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin, according to the 2009 DWR Central Basin Watermaster Report.

[2] Central Basin's annual Tier I supply from MWD based on ten-year purchase order annual allocation.

[3] Available supply from CSDLAC per contract.

3.3 CENTRAL BASIN'S WATER SOURCE

3.3.1 IMPORTED WATER SUPPLY

Central Basin currently relies on approximately 63,000 acre-feet per year (AFY) of imported water from the Colorado River and the California State Water Project (SWP) to meet its retail and replenishment demands. The Metropolitan Water District of Southern California imports water from the Colorado River and the State Water Project. That water is then made available to Central Basin and other water agencies throughout Southern California.

Colorado River

MWD was established to develop or import a water supply from the Colorado River by constructing .and operating the Colorado River Aqueduct (CRA), which can deliver roughly 1.2 million acre-feet (MAF) per year. Under its contract with the federal government, MWD has a basic entitlement of 550,000 AF per year of Colorado River water, plus a priority for an additional 662,000 AF per year. MWD can obtain additional water under this priority when the U.S. Secretary of the Interior determines that one or both of the following conditions exists:

- Surplus water is available; and/or
- Colorado River Water is apportioned to but unused by Arizona and/or Nevada.

MWD and the State of California have acknowledged that they could obtain less water from the Colorado River in the future than they have in the past, but the lack of clearly quantified water rights has hindered efforts to promote water management projects. The U.S. Secretary of Interior asserted that California's users of Colorado River water have to limit their use to a total of 4.4 MAF per year, plus any available surplus water.

The resulting plan, known as "California's Colorado River Water Use Plan" or the "California 4.4 Plan," characterizes how California could develop a combination of programs to limit its annual use of Colorado River water to 4.4 MAF per year plus any available surplus water. The Quantification Settlement Agreement (QSA) among the California agencies was a critical component of the California 4.4 Plan until February 2010, which was when the Sacramento County Superior Court nullified major portions of the agreement. The court ruled that the state's commitment to be responsible for all mitigation and restoration costs beyond $163 million from local agencies, was unconditional and a violation of the state's debt limitation, as specified in the California Constitution. MWD and other agencies have filed an appeal that will stay the ruling for a short time. If the ruling is upheld, MWD and its member agencies will likely see higher costs. In addition, the impact of the ruling on CRA supplies cannot be quantified.

The amount of runoff in the Colorado River Basin has been impacted over the last 10 years by an 8-year drought that caused storage levels at Lake Powell and Lake Mead, the two major reservoirs on the Colorado River, to use about 50 percent of capacity, where they remain today. In FY 2009-10, the Colorado River Basin saw slightly above average precipitation for the first time in 10 years.

To reduce the uncertainty of Colorado River supplies, MWD has been activity pursuing water conservation and storage agreements with irrigation districts and other agencies along the Colorado River to secure water sources beyond their basic apportionment. In FY 2009-10, MWD received a nearly full CRA of 1.1 MAF despite having an annual allocation of only 550,000 AF.

State Water Project

California's State Water Project (SWP), MWD's second main source of imported water, is the nation's largest state-built water and power development and conveyance system. It includes facilities-pumping and power plants, reservoirs, lakes, storage tanks, canals, tunnels and pipelines that capture, store and convey water from the Lake Oroville watershed on the Feather River in Northern California to 29 water agencies or contractors throughout the state. Facilities located within Central and Southern California are planned, designed, constructed and now operated and maintained by the California Department of Water Resources (DWR). These facilities provide supplemental water supplies for about 23 million Californians and about 800,000 acres of irrigated farmland, mostly in the state's Central Valley region.

The original State Water Contract called for an ultimate delivery capacity of 4.2 MAF, with MWD holding a contract for about 1.9 MAF. More than two-thirds of California's imported drinking water, including all of the water supplied by the SWP, passes through the San Francisco-San Joaquin Bay-Delta (Bay-Delta). For decades, the Bay-Delta system has experienced water quality and supply reliability challenges along with conflicts due to variable hydrology and environmental standards that limit pumping operations.

Until very recently, as a contractor to the SWP, MWD enjoyed annual deliveries of about 1.4 MAF. Even with annual fluctuations in hydrology, the SWP was considered to be a highly reliable source of water for the Bay Area, the Central Valley, and Southern California.

In 2004, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service issued Biological Opinions that govern the operation of the SWP as well as the Federal Central Valley Project (CVP) which also takes water from the Bay-Delta. Litigation was filed by environmental groups under the Endangered Species Act claiming that the Biological Opinions did not adequately protect Delta Smelt and the spring-run Chinook salmon. In May 2007, Federal District Judge Oliver Wanger agreed with the litigants and invalidated the Biological Opinions. Judge Wanger also issued an Interim Remedial Order which required the SWP and the CVP to be operated under specified criteria that severely constrained deliveries of water from the Bay-Delta.

In 2008, MWD estimated that it lost 250,000 AF water with the combined loss for all SWP contractors being about 1 MAF.

Operational constraints will likely continue well into the future until a long-term solution for the Bay-Delta is implemented. MWD, along with state and federal resource agencies, and various environmental and water use agencies are currently engaged in formulating the Bay-Delta Conservation Plan (BDCP). The purpose of BDCP is to help reduce conflicts by developing a set of water flow and habitat restoration projects that contribute to the recovery of endangered species in the Bay-Delta and securing long-term operating permits for the SWP.

Types of Imported Supplies

Depending on the ultimate use, Central Basin has delivered Non-Interruptible Water (treated full-service), Seasonal Treated Replenishment Water and Seasonal Untreated Replenishment Water. MWD offers a variety of imported water supplies to its member agencies.

Non-Interruptible Water is the treated firm supply that is available all year round. Central Basin delivers a five-year average of 60,800 AFY of non-interruptible water annually. It is used as the main supplemental supply for cities and water agencies.

Seasonal Storage Long Term, also known as "In-Lieu" water, is delivered to customer agencies that are eligible to offset groundwater production with imported water. This program incentivizes customer agencies to take surplus imported water which indirectly replenishes the local groundwater basin. This surplus water is purchased at a discount rate in exchange for leaving groundwater in the basin for no less than a year so that it can be used subsequently during dry years.

Seasonal Spreading, better known as replenishment water, is delivered to the San Gabriel River and Rio Hondo Spreading Grounds in the Montebello Forebay. Replenishment water does not require treatment and is generally provided during the seasonal months (October through April), which allows for it to be purchased at a discounted rate. The Water Replenishment District (WRD) purchases imported replenishment water from Central Basin for the purpose of replenishing the Central Groundwater Basin. The amount varies from year to year depending on the replenishment needs of the Groundwater Basin, but typically, the long term average is approximately 21,000 AFY.

In May 2007, due to drought and falling storage levels, MWD curtailed deliveries of both replenishment water and in-lieu water. This curtailment has caused severe impacts to groundwater basins throughout Southern California. In late 2009, after three years of below average rainfall and two years of curtailment of imported water, Central Groundwater Basin levels fell to their lowest level in 30 years. The winter of 2009-10 provided significant storm water flows to the Central Groundwater Basin. At the same time, Central Basin and the City of Long Beach agreed to sell about 25,000 AF of Tier I imported water to WRD for replenishment. The winter storms of late 2010 as well as sales of about 10,000 AF of higher cost Tier I water have significantly improved the groundwater levels in the Central Groundwater Basin. However, as long as inexpensive imported replenishment water is not available, the groundwater basins will continue to depend on more expensive sources of water for replenishment.

3.3.2 GROUNDWATER SUPPLY

Groundwater has for many years been the primary supply of water within Central Basin's service area. In fact, it was the sole source of water supply until the Central Groundwater Basin was over drafted beginning in the late 1940s and throughout the 1950s. Today, the average retail customer agency in Central Basin relies on groundwater production for about 61percent of its water supply. Although, there still remain many agencies in Central Basin's service area that rely exclusively on groundwater to meet all current water needs.

Ultimately, the continuous and extensive overpumping of the Basin caused critically low groundwater levels. This overpumping of the Basin resulted in a legal judgment, or adjudication, that limited the allowable extraction that could occur in any given year and assigned water rights to basin pumpers. The adjudicated water rights were greater than the Basin's yield. In essence, the Basin was operating with an annual overdraft. In order to address the overdraft, a strategy was required to purchase imported and recycled water sources. The Central Groundwater Basin Judgment is included as Appendix D.

Water Replenishment District

The groundwater producers (pumpers) in the area, which are members of the Central Basin Water Association, shepherded the creation of the Water Replenishment District of Southern California (WRD). The purpose of the WRD is to act as a financial mechanism that purchases imported and recycled water to replenish the Central Groundwater Basin. In 1959, the State Legislature enacted the Water Replenishment Act, enabling the water associations to secure voter approval for the formation of the "Central and West Basin Water Replenishment District" (now called the Water Replenishment District of Southern California or "WRD"). The WRD has the statutory responsibility to acquire sufficient revenues through an assessment on each acre-foot of water pumped from the groundwater basin to purchase water from other sources to replenish the groundwater supplies within its boundaries for the beneficial use of the approximately 3.5 million residents and water users who rely upon those groundwater resources to satisfy all or a portion of their water needs.

Groundwater Rights

Although the water rights have been bought, sold, exchanged or transferred through the years, the total amount of allowable extraction rights within the entire groundwater basin has remained virtually the same. The adjudicated pumping rights from the Central Groundwater Basin are 217,367 AFY. However, not all holders of these rights are within the Central Basin service area. Those rights holders within Central Basin's service area total 161,836 AF. Some of the groundwater rights holders are nurseries, businesses, schools, cemeteries and private entities that make up about 7 percent (16,679 AF) of the total water rights. Of the remainder, 127,237 AF is the water pumped by Central Basins service area cities and water agencies and 55,531 AF is pumped by cities and agencies not affiliated with Central Basin Municipal Water District. Table 3-2 shows the adjudicated pumping rights in the Central Groundwater Basin.

Main Basin

Although most of the groundwater supply is extracted from the Central Basin, there are a number of water retailers that retain groundwater rights within the Main San Gabriel Basin (Main Basin) that are extracted and utilized within their Central Basin service area. Main Basin underlies most of the San Gabriel Valley, north of the Central Groundwater Basin. It is bounded by the San Gabriel Mountains to the north, the San Jose Hills to the east, the Puente Hills to the south and by the Raymond Fault and a series of other hills to the west.

Table 3-2
Adjudicated Pumping Rights in Central Groundwater Basin
(In Acre-Feet)

Central Basin Retailer Cities & Agencies	Adjudicated Rights (AF)
Bellflower - Somerset Mutual Water Company	4,313
California Water Service Company - East Los Angeles	11,774
California Water Service Company - Commerce	5,081
City of Bell Gardens	1,914
City of Cerritos	4,680
City of Downey	16,554
City of Huntington Park	3,853
City of Lakewood	9,432
City of Lynwood	5,337
City of Montebello	387
City of Norwalk	1,773
City of Paramount	5,883
City of Santa Fe Springs	4,036
City of Signal Hill	2,022
City of South Gate	11,183
City of Vernon	8,039
County of Los Angeles - Rancho Los Amigos	490
Golden State Water Company	16,439
La Habra Heights County Water District	2,596
Maywood Mutual Water Company No. 1	741
Maywood Mutual Water Company No. 2	912
Maywood Mutual Water Company No. 3	1,407
Orchard Dale Water District	1,107
Park Water Company	2
San Gabriel Valley Water Company	2,565
Suburban Water Systems	3,721
Walnut Park Mutual Water Company	996
Sub-Total	**127,237**
Groundwater Only Retail Water Agencies	17,920
Agencies Outside of Central Basin Service Area	55,531
Non-Retail Water Agencies	16,679
Total	**217,367**

Source: Central Basin Watermaster Report, FY 2008-09

The total amount of water extracted from the Main Basin and utilized within the Central Basin service area over the last five years averages to approximately 31,500 AFY. Table 3-3 displays the water retailers and the amount produced from the Main Basin and from the Central Groundwater Basin for the last five fiscal years. The total amount of groundwater produced in the Central Basin and the Main Basin has remained fairly consistent over the last five years. This is due mainly to the fact that both basins are adjudicated, so groundwater extractions in any given year are limited.

The total amount of groundwater projected to be extracted during the next 25 years will also be fairly consistent as shown in Table 3-4. The economic costs to pump groundwater versus the purchases of imported water will continue to pressure water retailers to maximize their groundwater rights.

Groundwater Recharge

For the past 42 years, the Central Groundwater Basin has been replenished through the San Gabriel River and Rio Hondo Spreading Grounds (spreading grounds), which were constructed by the Los Angeles County Flood Control District (LACFCD) and are owned and operated by the Los Angeles County Department of Public Works (LACDPW). The WRD purchases imported water (replenishment or Tier I untreated) from Central Basin Municipal Water District and recycled water from the County Sanitation Districts of Los Angeles County (CSDLAC) and asks LACDPW to spread that water in the spreading grounds where it percolates into the Montebello Forebay of the Central Groundwater Basin. Table 3-5 shows the demand projections for imported and recycled water in the Central Basin area.

Table 3-3
Historical Amount of Groundwater Pumped from the Central Groundwater Basin & Main San Gabriel Basin
(In Acre-Feet)

	2005	2006	2007	2008	2009
Main Basin Retail Agencies					
California Domestic Water Co.	8,327	8,928	8,513	8,466	8,235
San Gabriel Valley Water Co.	3,387	2,310	3,537	4,221	2,240
Suburban Water Systems	11,857	13,708	12,502	12,395	11,527
City of Whittier	7,773	7,953	7,144	8,034	6,527
Sub-Total	**31,344**	**32,899**	**31,696**	**33,116**	**28,530**
Central Groundwater Basin	149,443	153,297	156,985	146,336	145,788
Total	**180,787**	**186,196**	**187,985**	**181,336**	**174,318**

Source: Central Basin Watermaster Annual Reports & Main Basin Watermaster Reports and agency reports

Table 3-4
Projected Amount of Groundwater Pumped from the Central Groundwater Basin & Main San Gabriel Basin
(In Acre-Feet)

Basin Name	2015	2020	2025	2030	2035
Central Groundwater Basin[1]	146,500	148,000	148,500	148,500	148,500
Main San Gabriel Basin[2]	32,600	32,600	32,600	32,600	32,600
Total	**179,100**	**180,600**	**180,600**	**180,600**	**180,600**

[1] Central Basin service area groundwater production including WQPP.

[2] Amount of water production from Main Basin which is utilized in Central Basin's service area.

Table 3-5
Demand Projections for Imported & Recycled Water in the Central Basin Service Area

Central Basin MWD	2015	2020	2025	2030	2035
Imported Water[1]	56,525	58,185	59,870	61,755	63,440
Recycled Water[2]	58,600	62,900	67,900	67,900	67,900
Replenishment Water[3]	21,000	21,000	21,000	21,000	21,000
Total	**136,125**	**142,085**	**148,770**	**150,655**	**152,340**

1. Municipal & Industrial Demands
2. Central Basin deliveries, Cerritos/Lakewood deliveries & groundwater replenishment estimates
3. Projected annual demand for imported replenishment water.

By statute, WRD assesses a groundwater production fee, a "Replenishment Assessment," to pumpers in the Central Groundwater Basin. The assessment provides funds for WRD to purchase imported water and recycled water, which is for spread to replace pumped groundwater. The available supply of replenishment water to physically recharge the basins can be classified as follows:

• **Local water**
Consists of storm flows from the San Gabriel River, Rio Hondo River and other waterways within the San Gabriel Valley and flow obligations under the San Gabriel River Judgment with the Upper Area of the Central Basin, defined as "Make-up Water."

• **Recycled water**
Consists of recycled water purchased from CSDLAC for delivery at the spreading grounds.

• **Imported water**
Consists of untreated imported water purchased from Central Basin for delivery at the spreading grounds.

Groundwater Replenishment Graphic

To Be Developed

WRD also encourages in-lieu replenishment of the Central Groundwater Basin. Under the In-Lieu program, pumpers are encouraged through a financial incentive to purchase surplus imported water from Central Basin "in-lieu" of pumping groundwater. However, the incentive program is dependent on the availability of water from MWD.

Table 3-6 summarizes the historical amounts of imported water purchased by WRD to replenish the Central Groundwater Basin at the spreading grounds and to provide for injection into the Alamitos Gap Seawater Barrier.

3.3.3 RECYCLED WATER SUPPLY

Recycled water is one of the cornerstones of Central Basin's efforts to augment local supplies and reduce dependence on imported water. Since the planning and construction of Central Basin's recycling water system in the early 1990s, Central Basin has become a leader in producing and marketing recycled water. Recycled water assists in meeting the demand for non-potable applications such as landscape irrigation, commercial and industrial processes, and seawater barriers. Recycled water is a resource that is reliable and environmentally beneficial to the region. It is only limited by the infrastructure needed for delivery. Through its over 215 site connections, Central Basin has delivered an average of 4,800 AFY over the last five years.

Table 3-6
Historical Imported Water Replenishment Deliveries
(In Acre-Feet)

Fiscal Year	Spreading Water	Barrier Water[1]	Total
1995	21,837	5,269	**27,106**
1996	18,012	5,739	**23,751**
1997	22,738	5,336	**28,074**
1998	952	5,330	**6,282**
1999	0	6,169	**6,169**
2000	45,037	5,398	**50,435**
2001	23,451	6,062	**29,513**
2002	42,875	3,479	**46,354**
2003	22,366	0	**22,366**
2004	27,520	0	**27,520**
2005	25,296	0	**25,296**
2006	33,229	0	**33,229**
2007	46,310	0	**46,310**
2008	0	0	**0**
2009	0	0	**0**
2010	25,295	0	**20,295**

Source: Central Basin water use database, 2010

[1] Alamitos Barrier supplies transferred to the City of Long Beach in 2003.

In addition, the City of Cerritos has its own recycled water system that currently treats and supplies nearly 2,000 AF per year of recycled water within the City's boundaries and to its neighbor, the City of Lakewood.

Recycled water deliveries within Central Basin are projected to reach 11,000 AF by year 2020. For a detailed description of Central Basin's water recycling program please refer to Section 8.

Recycled water effluent from San Jose Creek Water Recycling Plant.

3.4 ALTERNATIVE WATER SUPPLY PROJECTS

3.4.1 CONJUNCTIVE USE GROUNDWATER STORAGE

Since the early days of groundwater basin adjudication, it has been recognized that a groundwater storage program, utilizing available surface water supplies, would offer tremendous advantages for all pumpers in the Central Basin region. Storing water for later use is the key to ensure reliability for any city or agency.

Conjunctive Use Storage can be defined as the coordinated management of surface and groundwater supplies to increase the yield of both supplies and enhance water supply reliability in an economic and environmentally responsible manner.

The benefits of a Conjunctive Use Storage program include:

- Operational flexibility for groundwater production;
- Increased yield of the basin;
- More efficient use of surplus surface water during wet years;
- Financial benefits to groundwater users;
- Better distribution of water resources; and
- Increased measure of reliability.

Several years ago, WRD, with financial support from the California Department of Water Resources, began a process to define their agency as the public entity responsible for management of a conjunctive use program for the Central Groundwater Basin. Even though that responsibility was not part of their statutory authority, WRD proceeded to define a groundwater storage program in which their Board of Directors will be the ultimate management authority. Although there was agreement with this approach by several cities and agencies, others disagreed. After the court was petitioned by WRD with a change to the Central Basin Judgment to accommodate their storage program, Central Basin filed a petition citing that WRD's management authority for storage did not exist. In the summer of 2010, the court agreed with Central Basin. As a result, in November 2010, the WRD Board of Directors adopted a "Declaration of a Water Emergency." The intent of the declaration was to subvert the Superior Court's decision to establish a storage program. In the meantime, the groundwater table continued to fall. Since its inception in 1959, WRD has not substantially improved the condition of the Central Groundwater Basin through its replenishment plan. What they have done is to simply manage an overdraft situation.

Central Basin envisions the development of a Conjunctive Use Storage Program as part of a larger Water Management Program that will bring groundwater levels up to appropriate levels, which will improve the condition of the basin. This is part of Central Basin's core responsibilities to ensure a reliable supply of water for its service area and to protect the Central Groundwater Basin. When done in a publicly responsible manner, groundwater storage can be viewed as an additional source in diversifying our water resource supply portfolio. In 2011, Central Basin began its environmental review process (California Environmental Quality Act or CEQA) to develop a groundwater storage program with the general public invited to provide input. Over the next year, that program will be defined through a series of transparent public meetings. Central Basin expects to roll out its Groundwater Storage Plan in early 2012.

3.4.2 WATER TRANSFERS & EXCHANGES

Water transfers and exchanges are management tools to address increased water needs in areas of limited supply. Although transfers & exchanges do not generate a new supply of water, they do distribute better water from where it is abundant to where it is limited.

MWD, in recent years, has played an active role statewide in securing water transfers and exchanges as part of their IRP goals in both the Colorado River Basin and along the State Water Project. As a member agency of MWD, Central Basin is the beneficiary of such transfers and exchanges.

3.4.3 DESALINATED WATER

The Central Basin service area is a land locked agency without direct access to the ocean. Therefore, construction of an ocean desalination facility is highly unlikely. Regionally speaking, the area does have active seawater barrier operations to prevent seawater intrusion. However, seawater barriers are not within the Central Basin service area either, so any trapped brackish water is not part of Central Basin's potential resources.

That being said, ocean desalination may provide agencies with ocean access some potential for future resources. However, due to the high energy costs for developing desalination and the lack of accessibility, Central Basin will not be investing in ocean desalination in the near future.

4
Water Reliability

This section discusses Central Basin's plan of maintaining a reliable source of water

4.1 OVERVIEW

Among the future challenges of continued urbanization in Southern California is water reliability. In other words, can Southern California water supply agencies meet the necessary water demands of the region during times of drought or during periods when imported water deliveries are not available in historic quantities? Over the last five years, Southern California water agencies have been hit hard with imported water curtailments from the Sacramento-San Joaquin Bay-Delta and by the imposition of an allocation plan to reduce imported water deliveries to member agencies of Metropolitan Water District (MWD).

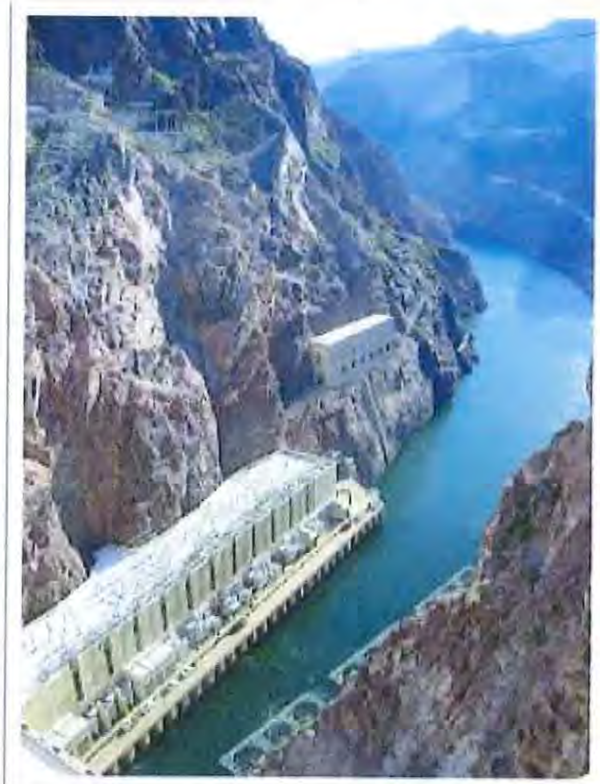
This section will discuss how the regional supplier, MWD, in partnership with its member agencies such as Central Basin, plans on ensuring future reliability through water management measures, long-term planning and investment in local resources, Central Basin's projections for meeting its service area's future demands during single and multiple dry-year conditions and, finally, a review of Central Basin Water Shortage Contingency Plan in the event MWD limits deliveries.

4.2 STATE WATER SUPPLY RELIABILITY

Beginning in 2003, the California Department of Water Resources (DWR) developed a State Water Project (SWP) Reliability Report. The report is meant to provide those SWP contractors with essential information on the reliability to deliver water. The 2009 version of this report was completed in September 2010. The summary report is included in Appendix E. In essence, due the restrictions placed on the SWP by the federal courts, reliability has decreased in the last two years. The 2007 report shows current Table A deliveries averaging 63 percent of the maximum contract amount while the 2009 report shows a reduction to 60 percent. For future conditions of reliability, the 2007 report shows a range of 66 to 69 percent while the 2009 report shows a reduction to 60 percent.

4.3 MWD WATER SUPPLY RELIABILITY

Having experienced the droughts of 1977-78 and 1989-92, MWD has undertaken a number of planning initiatives to ensure water supply reliability. Included among them are the Integrated Resources Plan (IRP), the Water Surplus and Drought Management Plan (WSDM Plan), the Water Supply Allocation Plan (WSAP), and Local Resource Project (LRP) investments. Together, these initiatives have provided the policy framework for MWD and its member agencies to manage their water resources in such a way as to meet the needs of a growing population even under recurrences of the worst historic hydrologic conditions locally and in the key watersheds that supply Southern California. Below is a brief description of each water management initiative MWD has undertaken to ensure continued reliability over the next 20 years.



Colorado River water at Hoover Dam in Nevada.

IRP Pie Charts
To Be Developed

4.3.1 MWD INTEGRATED RESOURCE PLAN

To meet the challenges of an increasing population and supply shortages on the State and Colorado River Aqueducts as well as growing State and Federal regulatory requirements, MWD's Board of Directors called for the development of an IRP in 1996. The IRP's objective was to determine the appropriate combination of water resources to provide 100percent reliability for full service demands over the next 20 years. With the support of its member agencies, MWD developed a preferred supply mix that includes conservation, local supplies (recycled, brackish, desalination), SWP supplies, CRA supplies, groundwater banking and water transfers that could meet projected water demands under severe shortage conditions. The IRP identifies supply targets for each supply option and has become the blueprint for guiding investment and policy decisions for MWD.

By design, the IRP is also subject to revision when conditions and opportunities change through time. In 2004, MWD completed its first update to the IRP, which included revised projected demands and an updated resource supply mix. MWD had three clear objectives for the IRP update: (1) to review the goals and achievements of the 1996 IRP, (2) to identify changed conditions for water resource development and (3) to update the resource targets through 2025.

Among the most significant findings from the updated IRP was the increased participation of local agencies in developing local supplies such as recycled water and brackish groundwater desalination as well as promoting savings from conservation. The result revealed a greater source of local supply reliability than anticipated among MWD's member agencies. However, it also identified the limitations expected on the Colorado River and the need for local infrastructure improvements to provide the flexibility to manage supply risks and increased costs. For example, the continuing drop in water levels in Lake Mead due to drought and over subscription of the Colorado River could have significant impacts on power supply to MWD within the next few years. Currently, Lake Mead is just less than 1,087 feet in elevation, its lowest point in 54 years. If the Lake drops below 1,050 feet, hydroelectric power production would be severely reduced forcing MWD to buy power on the spot market which will cause a drastic rise in water costs to member agencies and ultimately, to consumers. Although it is unlikely that production managers will allow the water level to drop below 1,050, the Colorado River is not producing a sustainable amount of for the needs of California, Arizona, and Nevada, which will have huge impacts to MWD as well as the entire American Southwest.

The California State Water Project (SWP), MWD's other source of water supply, is also in severe hardship with the collapse of various fish species within the Sacramento-San Joaquin River Delta and federal judicial mandates to reduce water deliveries.

Overall, the 2003 IRP Update revealed a need to decrease the region's reliance on Colorado River and State Water Project (SWP) supplies compared to the 1996 IRP, while continuing to provide 100 percent reliability through the year 2025. The IRP did not anticipate the changed conditions and following legal decisions in regard to the Bay-Delta and the impact those conditions would have on the operations of the SWP and the federal Central Valley Project. As a result, MWD is now engaged in a new IRP update for 2010

2010 IRP Update

In their draft 2010 IRP, MWD laid out their strategy for being reliable by 2030. Much of the update centers on navigating through the uncertainty and vulnerability of present day water resource management. Those uncertainties include a wide variety of topics including climate change, energy use, and Sacramento-San Joaquin River Delta (Bay-Delta) issues like endangered species protection and conveyance. The strategy determined through the 2010 IRP process can be summarized in three components:

Component 1
Core Resources Strategy

MWD will meet its future demands through its traditional core resources which include the State Water Project (SWP) and the Colorado River Aqueduct (CRA), and through increased conservation and local supply development. This strategy includes the following steps:

- Assess the current level of supply development and projected retail demands
- Quantify the existing supply gap
- Indentify additional supply development needs within the preferred resource mix to fill the supply gap
- Establish a more diversified role in augmenting local resource development

Component 2
Supply Buffer Implementation

MWD will work with the member agencies to implement a supply buffer through compliance with California mandated requirements in the 20X2020 legislation and through adaptive actions to meet any remaining portion of the 10 percent buffer. This portion of the strategy will be implemented using the following steps:

- Establish a supply buffer at 10 percent of total retail demand of the MWD service area
- Implement a regional consistency approach to meet the 20X2020 targets
- Implement adaptive actions to develop any remaining portion of the supply buffer

Component 3
Foundational Actions

MWD will proactively implement "low-regret" foundational actions that are necessary to bring additional resources online if needed. "Low-regret actions are those actions that are relatively low-cost with high degree of readiness-to-proceed. In response to a trigger event, the approach will determine an appropriate supply/project mix to meet specific needs within the region. This portion of the strategy can be implemented using the following steps:

- Implement low-regret foundational actions
- Monitor key vulnerabilities and bring resource options if conditions dictate
- Use a comprehensive approach

4.3.2 MWD WATER SURPLUS AND DROUGHT MANAGEMENT PLAN

In order for MWD to be 100 percent reliable in meeting all non-discounted non-interruptible demands in the region, MWD adopted the Water Surplus and Demand Management (WSDM) Plan in 1999. The WSDM Plan provides the policy guidance and prioritization to manage the region's water supplies to achieve the reliability goals of the IRP. The goals are achieved by integrating the operating activities of surplus and shortage supplies through a series of stages and principles. Figure 4-1 shows a schematic of the WSDM plan and the management actions that take place at MWD.

Those principles include water management actions that will apply regardless of the current state of regional water supplies. For example, when a surplus water supply situation exists, 5 different stages are utilized. The stages include filling reservoirs and existing storage accounts. When a supply shortage exists, a seven stage plan is activated to describe management activities during shortages, severe shortages, and extreme shortages. The management activities include securing more imported water by promoting efficient water usage, increasing public awareness and seeking additional water transfers and banking opportunities. Should supplies become limited to the point where imported water demands cannot be met, MWD will allocate water through the Water Supply Allocation Plan (WSAP).

4.3.3 MWD WATER SUPPLY ALLOCATION PLAN

The Water Supply Allocation Plan (WSAP) was adopted by the MWD Board of Directors in April 2008 as statewide water supplies continued to decrease. The WSAP plan is a 10 stage approach to mandatory reductions that start from a 5 percent allocation (Stage 1) for each member agency up to a 50 percent allocation (Stage 10).

Strictly speaking, the WSAP is less of a true allocation plan and more of a financial plan. In other words, any member agency could continue to get imported water over and above their allocation, provided they paid the penalty rate. In effect, this approach rewarded those member agencies with better financial resources and penalized those member agencies that did not have the financial resources. On that basis, Central Basin filed a lawsuit against MWD maintaining that the WSAP did not treat all member agencies fairly. Ultimately, as the MWD staff was getting closer to requesting their Board of Directors to activate the WSAP, MWD relented and offered Central Basin a modification to the WSAP to allow more imported water based on the number of lifeline customers in their service area should the member agency exceed their allocation. This compromise was acceptable to Central Basin and the lawsuit was dropped. Shortly afterward, in April 2009, as California entered its third drought year, the MWD Board of Directors activated the WSAP, effective July 1, 2009, at the stage 2 or 10percent mandatory reduction level.

The results of the WSAP implementation showed that none of the 26 member agencies exceeded their allocation in FY 2009-10, including Central Basin. According to DWR, these agencies were assisted by nature, which provided a slightly above normal precipitation level (110 percent) statewide. The snowpack in the northern Sierra Nevada Mountains proved to be excellent in FY 2009-10, reaching 122 percent of normal, which in turn, helped reservoirs to capture more water. For FY 2010-11, the MWD Board of Directors voted to continue the WSAP at the same Stage 2 level.

4.3.4 MWD LOCAL RESOURCE PROJECTS

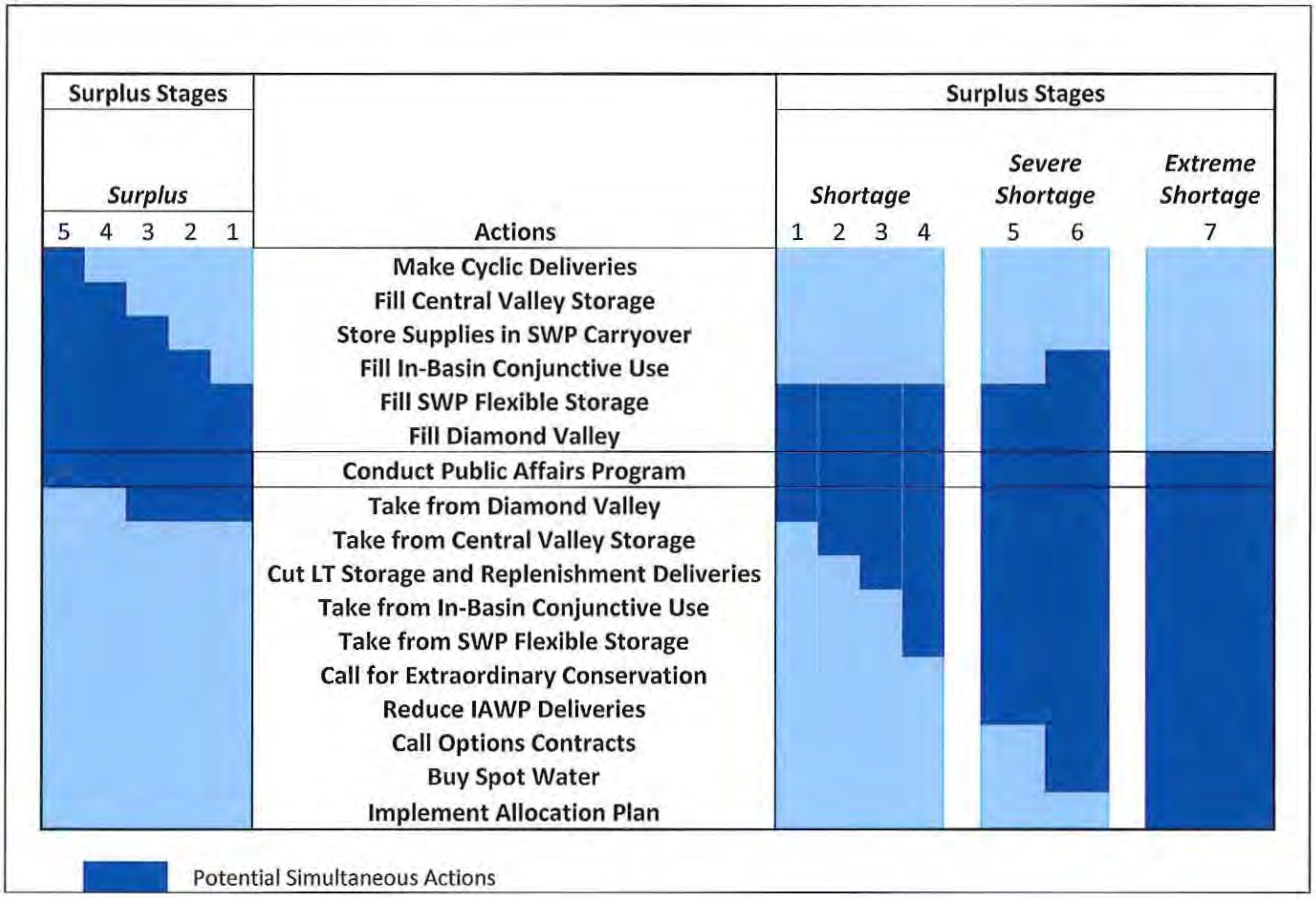
A key element within MWD's IRP objectives to ensure regional reliability is to further enhance local resources. The Local Resource Projects (LRP) program incentivizes member agencies to construct projects that produce water for regional agencies, which in turn help reduce their dependence on MWD. MWD provides a subsidy of up to $250 per AF of water produced or conserved by the local project. This approach helps reduce operational and programmatic costs for the member agencies while creating a more diversified regional resource mix. MWD provides funding for numerous local resource projects including recycled water, conservation, groundwater recovery, surface water storage and even ocean water desalination to help meet future demands. As described in their 2010 Progress Report to the California Legislature, MWD has provided about $220 million in LRP incentives to member agencies for recycled water programs, $89 million for groundwater recovery programs, and $50 million for conservation programs through their Conservation Credits Program.

Central Basin has long been involved with MWD in the LRP program for recycled water development. Since 1991, MWD has provided Central Basin with about $15 million for recycled water development, $3.5 million for conservation programs, and $5.3 million for groundwater recovery projects such as WQPP.

MWD Facility Improvements

One of MWD's most significant investments is Diamond Valley Lake (DVL), which was completed in 1999 and filled by 2002, and its companion project, the Inland Feeder. Built in the saddle of two mountains,

Figure 4-1
MWD's Water Supply & Demand Management Plan



DVL, Southern California's largest reservoir, is an important link in the regional water supply system. The lake, located in southwestern Riverside County, nearly doubled Southern California's surface storage capacity and provides additional water supplies for drought, peak summer and emergency needs. Water began pouring into the reservoir in November 1999 and the lake was filled by early 2002. DVL holds 800,000 AF, or 260 billion gallons, of water. By comparison, Lake Havasu on the Colorado River holds just 648,000 acre-feet, or 201 billion gallons. When at capacity, DVL holds enough water to meet the region's emergency and drought needs for six months and is an important component in MWD's plan to provide a reliable supply of water to the 18 million people of Southern California.

Inland Feeder Project

The Inland Feeder Project was completed in October 2009. It is a 44-mile conveyance system that connects the State Water Project (SWP) to DVL and the Colorado River Aqueduct (CRA). Specifically, the project carries water from Devil Canyon in San Bernardino, under the San Bernardino Mountains, and into Riverside County at DVL. The purpose of the $1.2 billion 12-foot diameter pipeline is to deliver SWP water to DVL for surface storage when that water is available. Before the project was completed, only CRA water was available for storage. This system is designed to increase Southern California's water supply reliability in the face of future weather pattern uncertainties, while minimizing the impact on the Sacramento-San Joaquin Delta (Bay Delta) environment in northern California. The project also will improve the quality of the water coming from DVL because there will be more uniform blending of better quality water from SWP with CRA supplies, which have a higher mineral content. The Inland Feeder Project began deliveries to DVL in late 2009 at about 600 acre-feet per day but has a delivery capacity of almost 2,000 acre-feet per day.

Diamond Valley Lake. Courtesy of MWD.

4.4 CENTRAL BASIN'S WATER SUPPLY RELIABILITY

Along with MWD's reliability initiatives, Central Basin has also taken important steps during the past decade to reduce its service area's vulnerability to extended drought or other potential threats. Central Basin's investments in recycled water to replace imported water for non-potable uses and the implementation of conservation devices and education have resulted in more self-reliance with the region.

Courtesy of MWD. *Colorado River Aqueduct traverses 240 miles of desert to Southern California.*

Based on Central Basin's current water supply portfolio, as illustrated in Table 4-1, Central Basin provides an adequate supply for a single dry-water year and multiple dry-water year scenarios. The "Normal Water Year" used in this plan is based on the average rainfall year - FY 2009-10. According to the National Weather Service, the recorded rainfall in FY 2009-10 was 16.36 inches at the Los Angeles Civic Center - one of the closest years to the historical average of 15.38 inches. The "Single Dry Year" is based on the lowest rainfall year - FY 2006-07. The recorded rainfall in FY 2006-07 was only 3.21 inches - the lowest recorded year in Los Angeles history. The three "Multiple Dry-Water Years" used below were based upon the most recent multiple dry-year period - FY 2006-07 (3.21 inches), FY 2007-08 (13.53 inches), and FY 2008-09 (9.08 inches).

Groundwater is shown as a constant in all scenarios due to the Basin's adjudication, which limits the total amount that each customer within Central Basin's service area is able to extract. Recycled water, which includes both Central Basin and the City of Cerritos systems, is limited only by system constraints and not by availability since recycled water is not subject to hydrologic variation. Actual estimated delivery numbers are used in all the scenarios, but as Central Basin's system are expanded over the next several years, so will the capacity to deliver recycled water. Actual Imported water deliveries are used in all scenarios because this supply is now subject to decreased deliveries through MWD's Water Supply Allocation Plan (WSAP) which can be modified from a 5 percent cut of historical deliveries up to a 50 percent cut which will fluctuate under different hydrological scenarios. Future reliability of imported supplies will be based upon a Bay-Delta fix that will include both ecological and operational changes.

The supply reliability scenarios described in this section focus exclusively on municipal and industrial usage within Central Basin's service area. It does not include replenishment water.

Looking forward, Central Basin will continue to evaluate opportunities to increase its water supply portfolio within its service area. Opportunities include the expanded use of recycled water and additional conservation programs as well as groundwater storage through conjunctive use programs.

Table 4-1
Central Basin Municipal Water District
Retail Supply Reliability
(In Acre-Feet)

Supplies	Normal Water Year	Single Dry-Water Year	Multiple Dry-Water Years		
	FY 2009-10	FY 2006-07	FY 2006-07	FY 2007-08	FY 2008-09
Groundwater[1]	194,400	194,400	194,400	194,400	194,400
Imported Water	67,143	68,000	68,000	59,000	52,750
Recycled Water[2]	6,630	7,960	7,960	7,700	7,000
Total Supply	**268,173**	**270,360**	**270,360**	**261,100**	**254,150**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries.

[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area, plus groundwater only retailers and non-retail water agencies and average annual production from Main San Gabriel Basin according to FY 2008-09 Central Basin Watermaster Report and FY 2008-09 Main Basin Watermaster Report.

[2] Includes actual deliveries of recycled water for both the Central Basin system and the City of Cerritos.

4.4.1 NORMAL-YEAR RELIABILITY COMPARISON

As discussed in Section 2 - Water Demand, Central Basin's normal demands are projected to increase modestly during the next 25 years. Increases in recycled water use during the 25-year planning period will offset the need for additional imported water.

4.4.2 SINGLE DRY-YEAR RELIABILITY COMPARISON

Central Basin's projected single dry-year water supply is expected to require additional imported supplies from MWD. According to historic demands, the total water demands in a single dry-year are projected to be 2.1 percent greater than normal year projections. Much of the increased demand will be covered through the further development of recycled water in the Central Basin system. Table 4-3 compares single dry-year supply and demand projections for the Central Basin service area. For imported supplies, MWD should be able to provide sufficient supplies to all member agencies from their various storage options, so the WSAP would probably not be activated in a single dry-year scenario.

Table 4-2
Projected Normal Water Year Supply And Demand
(In Acre-Feet)

Supplies	**2015**	**2020**	**2025**	**2030**	**2035**
Groundwater[1]	194,400	194,400	194,400	194,400	194,400
Imported Water[2]	72,360	72,360	72,360	72,360	72,360
Recycled Water[3]	12,900	17,900	17,900	17,900	17,900
Total Supply	**279,660**	**284,660**	**284,660**	**284,660**	**284,660**
Total Demand[4]	**245,825**	**253,285**	**260,470**	**262,355**	**264,040**
Surplus/(Shortage)	**33,835**	**31,375**	**24,190**	**22,305**	**20,620**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries.

[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area (refer to Table 3-2) including WQPP and the average annual amount imported from the Main San Gabriel Basin.
[2] Based upon Tier I limitations for deliveries consistent with Central Basin's purchase order.
[3] Includes the available supply of recycled water for both Central Basin and Cerritos systems.
[4] Total Demand includes projected groundwater, imported and recycled M&I demands.

Table 4-3
Projected Single Dry-Year Supply And Demand
(In Acre-Feet)

Supplies	**2015**	**2020**	**2025**	**2030**	**2035**
Groundwater[1]	194,400	194,400	194,400	194,400	194,400
Imported Water[2]	72,360	72,360	72,360	72,360	72,360
Recycled Water[3]	12,900	17,900	17,900	17,900	17,900
Total Supply	**279,660**	**284,660**	**284,660**	**284,660**	**284,660**
Total Demand[4]	**250,987**	**258,604**	**265,940**	**267,864**	**269,585**
Surplus/(Shortage)	**28,673**	**26,056**	**18,720**	**16,796**	**15,075**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries.

4.4.3 MULTIPLE DRY-YEAR RELIABILITY COMPARISON

Under multiple dry-year water scenarios, MWD will have likely activated their WSAP. Since the severity of the allocation will vary according to hydrological conditions, Central Basin will assume a level 2 or 10 percent reduction scenario in the third year of a multiple dry-year period throughout MWD's service area. Therefore, Central Basin is projected to meet demands by continuing to expand recycled water development and further implement conservation programs. Tables 4-4 through 4-8 illustrate the projected water supplies and demands within multiple dry-year reliability comparisons for the next 25 years.

Table 4-4
Projected Water Supply and Demand during Multiple Dry-Year 2013-2015
(In Acre-Feet)

Supplies	2013	2014	2015
Groundwater[1]	194,400	194,400	194,400
Imported Water	72,360	72,360	69,711
Recycled Water[2]	6,600	8,000	12,900
Total Supply	**273,360**	**274,760**	**277,011**
Total Demand[3]	**245,825**	**250,987**	**259,125**
Surplus/(Shortage)	**27,535**	**23,773**	**17,886**

Table 4-5
Projected Water Supply and Demand during Multiple Dry-Year 2018-2020
(In Acre-Feet)

Supplies	2018	2019	2020
Groundwater[1]	194,400	194,400	194,400
Imported Water	72,360	72,360	69,711
Recycled Water[2]	14,000	16,000	17,900
Total Supply	**280,760**	**282,760**	**282,011**
Total Demand[3]	**254,795**	**256,702**	**258,604**
Surplus/(Shortage)	**25,965**	**26,058**	**23,407**

Table 4-6
Projected Water Supply and Demand during Multiple Dry-Year 2023-2025
(In Acre-Feet)

Supplies	2023	2024	2025
Groundwater[1]	194,400	194,400	194,400
Imported Water	72,360	72,360	69,711
Recycled Water[2]	17,900	17,900	17,900
Total Supply	**284,660**	**284,660**	**282,011**
Total Demand[3]	**262,272**	**264,106**	**265,940**
Surplus/(Shortage)	**22,388**	**20,554**	**16,071**

Table 4-7
Projected Water Supply and Demand during Multiple Dry-Year 2028-2030
(In Acre-Feet)

Supplies	2028	2029	2030
Groundwater[1]	194,400	194,400	194,400
Imported Water	72,360	72,360	69,711
Recycled Water[2]	17,900	17,900	17,900
Total Supply	**284,660**	**284,660**	**282,011**
Total Demand[3]	**266,902**	**267,383**	**267,864**
Surplus/(Shortage)	**17,758**	**17,277**	**14,147**

Table 4-8
Projected Water Supply and Demand during Multiple Dry-Year 2033-2035
(In Acre-Feet)

Supplies	2033	2034	2035
Groundwater[1]	194,400	194,400	194,400
Imported Water	72,360	72,360	69,711
Recycled Water[2]	17,900	17,900	17,900
Total Supply	**284,660**	**284,660**	**282,011**
Total Demand[3]	**268,725**	**269,155**	**269,585**
Surplus/(Shortage)	**15,935**	**15,505**	**12,426**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries.

[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin.

[2] Includes the available supply of recycled water based on system limitations for both Central Basin and the City of Cerritos.

[3] Total demand refers to total retail demand from groundwater, imported and recycled M&I.

4.5 WATER SHORTAGE CONTINGENCY PLAN

The State requires that each urban water supplier should provide a water shortage contingency analysis within its urban water management plan. Below is a brief description of Central Basin's plan for a water shortage according to the state's water code requirements.

4.5.1 MINIMUM SUPPLY

Currently, Central Basin's water supplies are groundwater, imported water and recycled water. As it relates to the estimated minimum supply available during a severe drought, Central Basin's groundwater supplies, as stated in Section 3, are not affected by hydrology because the Central Groundwater Basin is adjudicated. The available supply for each groundwater producer (Allowable Production Allocation), set by the Judgment, remains the same regardless of Central Basin's service area's rainfall. The same relates to recycled water, where the supply is not affected by hydrology but rather through system capacity. The benefit of recycled water is that it is drought-proof and the supply of recycled water remains available regardless of the rainfall. Due to ongoing construction projects such as Phase I of Southeast Water Reliability Project (SWRP), expansion of the recycled water supply will continue to increase. Imported water, on the other hand, is the only supply affected by hydrology. MWD's WSAP came in effect on July 1, 2009 and is expected to remain in effect at the mandatory reduction level of Stage 2 (10 percent) through FY 2010-11.

Assuming drought conditions remain unchanged, Central Basin will be limited to a calendar year Tier I imported water supply of 72,360 AF, although a prolonged drought would likely increase the mandatory reduction to a higher level and thus decrease available imported supplies. The estimated minimum supplies during the next three years for Central Basin are shown in Table 4-9.

It is the policy of the Central Basin Board of Directors to pass through all financial actions imposed on Central Basin by MWD, but in this case, a policy to pass through an allocation plan did not exist. Therefore, in June 2009, the Central Basin Board of Directors adopted the "Imported Water Supply Allocation Policy" which included a plan to allocate water to the cities and agencies (Appendix E). That policy remains in effect as Central Basin's Water Shortage Contingency Plan if and when MWD activates their WSAP or if local conditions require its implementation.

Table 4-9
Three-year Estimated Minimum Water Supply
(In Acre-Feet)

Supplies	2011	2012	2013
Groundwater[1]	194,400	194,400	194,400
Imported Water	72,360	72,360	72,360
Recycled Water[2]	5,200	5,500	5,900
Total Supply	271,960	272,260	272,660
Total Demand[3]	245,150	248,500	251,900
Surplus/(Shortage)	26,810	23,760	20,760

Note: Supply reliability covers only retail water demand; does not include replenishment deliveries.
[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin, according to the FY 2008-09 Central Basin Watermaster Report and FY 2008-09 Main Basin Watermaster report.
[2] Includes the available supply of recycled water system for both Central Basin and the City of Cerritos.
[3] Total Demand includes projected groundwater within Central Basin's service area, imported and recycled M&I demands

4.5.2 CATASTROPHIC SUPPLY INTERRUPTION

In the event imported water supplies are interrupted from a catastrophic event, Central Basin, through coordination with MWD, can respond at both a regional and a local level.

In the event that an emergency such as an earthquake, system failure or regional power outage, etc., affected the entire Southern California region, MWD would take the lead and activate its Emergency Operation Center (EOC). The EOC coordinates MWD's and Central Basin's responses to the emergency and concentrates efforts to ensure the system can begin distributing potable water in a timely manner.

If circumstances render the Southern California's aqueducts to be out of service, MWD's Diamond Valley Lake is expected to provide emergency storage supplies for its entire service area's firm demand for up to six months. With few exceptions, MWD can deliver this emergency supply throughout its service area via gravity flow, thereby eliminating dependence on power sources that could also be disrupted. Furthermore, should additional supplies be needed, MWD also has surface reservoirs and groundwater conjunctive use storage accounts that can be draw upon to meet additional demands. The WSDM plan guides MWD's management of available supplies and resources during an emergency to minimize the impacts of a catastrophic event.

4.6 INCONSISTENCY OF SUPPLIES

Overall, Central Basin has very consistent water supplies. Every source, however, has some factor that limits its availability. Table 4-10 provides a thumbnail view of the various factors regarding each of the water supply sources.

Table 4-10
Factors Resulting in Inconsistency of Supply (In Acre-Feet)

Water Supply Sources	Limitation Quantification	Legal	Environmental	Water Quality	Climatic	System Contraints
Imported Water						
State Water Project		✓	✓		✓	✓
Colorado River		✓	✓		✓	✓
Sub-Total[1]	60,750					
Groundwater						
Central GW Basin	150,400	✓				
Main Basin	31,500	✓				
Sub-Total[2]	181,900					
Recycled Water						
Central Basin System	4,670	✓				✓
Cerritos System	2,333	✓				✓
Sub-Total[3]	7,003					
Total						

5
Water Quality

This section discusses the Water Quality within Central Basin's service area

5.1 OVERVIEW

Water quality regulations are an important factor in Central Basin's water management activities. Metropolitan Water District of Southern California (MWD) is responsible for complying with state and federal drinking water regulations for imported water sold in Central Basin. Cities and water agencies to which Central Basin sells imported water are responsible for ensuring compliance in their individual distribution systems up to the customer's water meter.

For groundwater quality, Central Basin assisted purveyors in its service area to meet drinking water standards through its Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program. Title 22 is in reference to the California Code of Regulations section pertaining to both domestic drinking water and recycled water standards. Central Basin offered this program to water agencies for wellhead and reservoir sample collection, water quality testing and reporting services, but transferred the program to the Water Replenishment District (WRD) in 2007. Results of the program are compiled and published in an annual report issued by the WRD.

For imported water quality, Central Basin has developed an imported water quality notification system with those cities and agencies that have access to imported water deliveries. The purpose is to notify cities and agencies through regular emails about the current status of important water quality information as it relates to Total Dissolved Solids (TDS), Total Trihalomethanes (THM's), Coliforms, Bromate, Fluoride, Ammonia/Nitrates, etc. More importantly, it allows cities and agencies to be notified when a significant water quality issue needs to be communicated immediately.

Except for a few instances of groundwater contamination problems, the Central Groundwater Basin has remarkably good water quality. There are still a few contamination problems in isolated areas of the Central Groundwater Basin. These include:

- Perchlorate
- Manganese
- Volatile Organic Compounds (VOC's)

5.2 QUALITY OF EXISTING WATER SUPPLIES

Providing a safe drinking water supply to Central Basin's customers is a task of paramount importance. All prudent actions are taken to ensure that water delivered throughout the service area meets or exceeds drinking water standards set by the state's primary water quality regulatory agency, the California Department of Public Health (CDPH).

As the regional wholesale agency in Southern California, MWD is proactive in its water quality efforts, protecting its water quality interests in the State Water Project and the Colorado River through active participation in processes that would provide for the highest water quality from both sources.

This section will focus on the sources of water in the Central Basin area and the water quality issues and challenges for each.

5.2.1 IMPORTED WATER

Central Basin's imported water comes from the State Water Project and Colorado River via MWD pipelines and aqueducts. MWD tests its water for microbial, organic, inorganic and radioactive contaminants as well as pesticides and herbicides. Protection of MWD's water system is a top priority. To date, MWD has not indentified any water quality risk that cannot be mitigated.

In coordination with its 26 member agencies, MWD added new security measures in 2001 and continues to upgrade and refine procedures. Changes have included an increase in the number of water quality tests conducted each year (more than 300,000) as well as contingency plans that coordinate with the Homeland Security Office's multicolored tiered risk alert system. MWD also has one of the most advanced laboratories in the country where water quality staff performs tests, collects data, reviews results, prepares reports and researches other treatment technologies. Although not required, MWD monitors and samples elements that are not regulated but have captured scientific and/or public interest.

MWD has a strong record of identifying those water quality issues that are most concerning and have identified necessary water management strategies to minimize the impact on water supplies. Part of its strategy is to support and be involved in programs that address water quality concerns related to both the SWP and Colorado River supplies. Some of the programs and activities include:

- **Delta Improvement Package** – MWD in conjunction with California Department of Water Resources (DWR) and U.S. Geologic Survey completed modeling efforts of the Delta to determine if levee modifications at Franks Tract would reduce ocean salinity concentrations in water exported from the Delta. Currently, tidal flows trap high saline water in the tract. By constructing gates across the levee breach, saline and bromide levels can be reduced by 27 percent at the State Water Project intake in the South Delta.

- **Source Water Protection** – In December 2006, MWD completed a "Watershed Sanitary Survey" on its Colorado River operations. In June 2007, MWD conducted the same survey on their State Water Project operations. These surveys are required to be completed every five years. Once completed, they are submitted to CDPH to examine possible sources of drinking water contamination and identify mitigation measures that could be taken to protect the water supply at the source.

  Water from the Colorado River is considered to be most vulnerable to contamination by recreation, urban/storm water runoff, increasing urbanization in the watershed, wastewater and past industrial practices. Water supplies from State Water Project are most vulnerable to urban/storm water runoff, wildlife, agriculture, recreation and wastewater contamination.

  Overall, salinity remains the greatest water quality threat to the CRA and SWP. In 1999, the MWD Board of Directors adopted a Salinity Management Policy which set a goal of achieving salinity concentrations of 500 milligrams per liter or parts per million (ppm). Typically, Colorado River Water supplies have concentrations of about 630 ppm while State Water Project supplies have concentrations of about 250 ppm. To achieve the 500 ppm target, MWD blends the waters together in their surface reservoirs or at their treatment plants to significantly reduce salinity in seven out of ten years. In other years, when State Water Project water is not available in sufficient quantities, higher concentrations of salinity could be a problem for the member agencies and/or the local retail agencies. Further blending with groundwater supplies will probably be necessary.

Disinfection Byproducts

MWD receives imported water from two sources; the Sacramento-San Joaquin River Bay-Delta via the State Water Project (SWP) and the Colorado River via the Colorado River Aqueduct (CRA). These waters are treated with chlorine and/or ozone at one of their 5 treatment plants before being placed into their main distribution system. Unlike CRA water, SWP water is generally heavy with total organic carbon (TOC) and bromide. When these constituents are mixed with chlorine or ozone, disinfection byproducts (DBP) can and do occur. The most prevalent DBP is Total Trihalomethane or TTHM. TTHM's have generally been associated with reproductive and developmental effects in human. Therefore, MWD consistently samples for TTHM's at all treatment plant locations. In 2002, the U.S. Environmental Protection Agency (EPA) introduced a new regulation called "Stage 1 Disinfectants and Disinfection Byproducts Rule." TTHM's are on the list and have a Maximum Contaminant Level of 80 ppb.

Pharmaceuticals and Personal Care Products

Pharmaceuticals and Personal Care Products (PPCP) are considered an emerging contaminate throughout the nation's watersheds. PPCP's have become a growing concern to the water industry specifically because studies show their compounds can be found in wastewater, surface water, and even in finished drinking water throughout the country. To date, there is no evidence that PPCP's are harmful to humans in low concentrations. That being said, there are no regulatory requirements for PPCP's mainly because there is no standardized analytical method to test for these compounds.

MWD has established a monitoring program to look for these compounds in treatment plant effluent and source waters within the Colorado River and State Water Project watersheds. There has been PPCP's detected in these waters at low levels which is consistent with reports from other utilities throughout the country. MWD remains involved in various studies to determine how to further develop analytical methods to test for PPCP's and mitigate their entry into local waters.

5.2.2 GROUNDWATER

Groundwater in the Central Basin is continually monitored because of its susceptibility to seawater intrusion, potential contamination from adjacent basins and migration of shallow contamination into deeper aquifers. The Alamitos Barrier, located in the southwest portion of Central Basin's service area, provides a buffer between the groundwater basin and seawater intrusion. The available supply of replenishment water to physically recharge the Basin includes local and imported water. The local water that recharges the groundwater basin comes from storm flows from the San Gabriel Valley and flow obligations under the San Gabriel River Judgment with the Upper Area of the Central Basin. This water is defined as "Make-Up Water." Imported Water is purchased from MWD to be used for surface spreading at the Montebello Forebay and for seawater barrier injection at the Alamitos Barrier. Recycled water is purchased from the County Sanitation Districts of Los Angeles County (CSDLAC) for spreading and injection.

As mentioned in the overview, the Central Groundwater Basin has very good water quality overall. However, there are several contaminants in isolated areas that are still a concern.

Perchlorate
Perchlorate was used as component of rocket fuel. As such, wherever there was a defense industry complex, perchlorate can usually be found. Perchlorate is a health concern because of its effects on the thyroid. Perchlorate interferes with the thyroid's ability to produce hormones required for normal growth and development. People most affected are infants and small children and pregnant woman. In 1999, the CDPH recommended that drinking water wells be tested for the rocket fuel component, perchlorate. CDPH required all water purveyors in the state to monitor for perchlorate under the Unregulated Contaminant Monitoring Rule. The results showed that perchlorate was a serious problem in drinking water wells throughout the state, but only in certain areas. The CDPH then established a primary drinking water standard for perchlorate with a Maximum Contaminate Level (MCL) of 6 micrograms per liter or parts per billion starting October 18, 2007. (There is no federal drinking water standard).

In the Central Basin, perchlorate has been detected in nine separate wells. Once detected, the wells were shut down and are no longer used. This is because perchlorate is not easily removed with standard wellhead treatment technologies, so much more expensive treatment technologies such as ion exchange must be employed.

The San Gabriel Valley Groundwater Basin was an important home of the defense industry in the 1950's and 1960's. Because of the amount of experimentation with rockets and rocket fuels, perchlorate is one of the most abundant contaminants that seeped into the groundwater. In response, the Central Basin Board of Directors supported a plan to clean up the contaminated groundwater before it migrated into the Central Groundwater Basin. The "San Gabriel Basin Restoration Fund" was established through an act of Congress and the San Gabriel Valley Water Quality Authority was created. Eleven firms agreed to pay $200 million to construct various treatment facilities and other water quality projects throughout the San Gabriel Valley to remove contaminants and restore the groundwater basin. That effort by the Water Quality Authority continues to this day.

Manganese
Manganese is a required nutrient that exists in natural environments. Humans need about 1 to 10 milligrams per day for normal dietary requirements. However, elevated levels can have serious impacts, particularly on children. For example, neurologic damage (mental and emotional disturbances, as well as difficulty in moving) has been reported to be permanent among miners exposed to high levels of airborne manganese for long periods of time. Lower chronic exposures in the workplace resulted in a decrease in various motor skills, balance and coordination, as well as increased memory loss, anxiety, and sleeplessness. In 2003, the CDPH established Manganese as a secondary contaminant with an MCL of .5 micrograms per liter or parts per billion. Included in this secondary standard is an aesthetics MCL of .05 parts per billion. This MCL is related to discoloration, but not health concerns. Still, any public water system affected by manganese must notify their customers that manganese is present at either level. Notification through the annual Consumer Confidence Report (CCR) is acceptable to the CDPH.

Central Basin's service area has traces of manganese throughout the region, but it is generally in low quantities and is managed through blending. However, manganese is most apparent in the area of Maywood where Central Basin is providing technical assistance to the local water agencies to reduce manganese below the MCL. Central Basin will continue to offer assistance as needed until manganese is no longer a contamination problem or an aesthetic problem for the residents of Maywood.

Volatile Organic Compounds
Volatile Organic Compounds (VOC's) such as perchloroethylene (PCE) was used as the primary chemical by dry cleaners for decades and trichloroethylene (TCE) was used as an industrial cleaning and degreasing solvent. Both of these organic compounds were generally used in quantities sufficient to contaminate the groundwater and both of them are considered carcinogenic even at low concentrations. So their cleaning becomes very important to the region. Although the Central Groundwater Basin is not a strong source of VOC's, the San Gabriel Valley "Main" Basin is.

In the Main Basin, VOC's have remained a persistent problem. There are a number of granulated activated carbon (GAC) wellhead treatment programs underway in the San Gabriel Valley. However, about fifteen years ago, the U.S. Environmental Protection Agency (EPA) and Central Basin noted the movement of VOC's from Main Basin into the Central Groundwater Basin through the Whittier Narrows area. Central Basin took action and in 2001, began construction of the Water Quality Protection Program (WQPP) to intercept and treat the VOC plume before it could arrive at local wells. For more information, please see 5.5 Water Quality Protection Project.

Water Replenishment District Water Quality Programs

As the groundwater replenishment agency for the Central Groundwater Basin, the Water Replenishment District (WRD) has programs to monitor groundwater levels and quality.

WRD's Regional Groundwater Monitoring Program consists of a network of about 200 WRD and USGS-installed monitoring wells at 45 locations throughout the Central Basin region. Monitoring well data is supplemented with information from production wells to capture the most accurate information available. WRD staff provides the in-house capability to collect, analyze and report groundwater data. This information is stored in a GIS database and provides the basis to better understand the characteristics of the Central Groundwater Basin. WRD makes this information available through an annual Regional Groundwater Monitoring Report which documents groundwater production, groundwater levels, and groundwater quality conditions throughout the Central Basin.

5.2.3 RECYCLED WATER

Tertiary recycled water that meets Title 22 standards can be used for a wide variety of industrial and irrigation purposes where high-quality, non-potable water is needed. Recycled water is not consumed directly by humans but rather is delivered in an entirely separate distribution system which is not allowed to come in contact with drinking water systems.

In Central Basin's service area, recycled water is developed and produced by the County Sanitation Districts of Los Angeles County (CSDLAC) at their treatment plants. Recycled water meets all applicable state water quality regulations for the recycled water it purchases and distributes through its two systems. Central Basin purchases recycled water from CSDLAC's San Jose Creek Water Reclamation Plant and Los Coyotes Water Recycling Plant (WRP). These two plants together produce approximately 120 MGD of tertiary- treated effluent. Recycled water from CSDLAC's reclamation plants not reused is discharged to the ocean directly through major flood control channels.

5.3 EFFECTS ON WATER MANAGEMENT STRATEGIES

Poor water quality makes a water source unreliable, affects overall supply and increases the cost of serving water to the public. A water source that fails drinking water regulations must be taken out of service. The source can be restored through treatment or other management strategies.

Imported water deliveries are of high importance to the Central Basin service area. While many cities and agencies are heavily reliant upon imported water as part of their resource mix, many depend upon imported water to blend down certain water quality contaminants to meet water quality standards.

Groundwater can become impaired through leaching of contaminants into an aquifer, or by excessive concentrations of naturally-occurring constituents that impact quality, such as arsenic. Surface water sources become contaminated from human activities in the watershed or deliberate contamination.

Replenishment

Replenishment of the Central Groundwater Basin is accomplished through the acquisition of three sources of water by the Water Replenishment District. Replenishment water is delivered to the Rio Hondo & San Gabriel River Spreading Grounds and allowed to percolate into the Central Groundwater Basin. The three sources are:

- Recycled Water – Purchased by WRD from the CSDLAC and spread in the Rio Hondo & San Gabriel River Spreading Grounds by the Los Angeles County Department of Public Works (LACDPW) at a limit of 33percent for all sources.
- Storm Water – Storm flows are captured from the San Gabriel River and directed into the spreading grounds by LACDPW at the capacity of the spreading grounds, and
- Imported Water – Purchased by WRD from Central Basin and delivered to the spreading grounds by LACDPW.

Due to drought and judicial decisions, inexpensive imported water for replenishment has not been available since May 2007. This situation, combined with a lack of storm water due to drought, has had the effect limiting replenishment to recycled water and some storm water. Although WRD has been replenishing the Groundwater Basin with recycled water for about 50 years, in 2008, the Los Angeles Regional Water Quality Control Board (LARWQCB) upgraded WRD's permit to allow unlimited replenishment with recycled water provided WRD adheres to a blend of no more than 30 percent with other sources over a five year period. WRD will continue to monitor conditions in the Central Groundwater Basin and report to the LARWQCB.

5.4 EFFECTS ON RECYCLED SUPPLY RELIABILITY

The quality of recycled water is regularly monitored by the CSDLAC for process control, regulatory compliance and customer development. The results of these tests are reported annually to the LARWQCB which provides the permits to CSDLAC. Through special sampling and testing, customers can have the confidence of knowing that they are receiving the quality of recycled water needed for their particular uses.

5.5 WATER QUALITY PROTECTION PROJECT

In the early 1980s, the San Gabriel Valley aquifer, also referred to as "Main Basin", was discovered to have contaminants including trichloroethylene (TCE) and perchloroethylene (PCE) in the water supply. Based on the contamination level, the U.S. Environmental Protection Agency (EPA) declared the area as a Superfund site. The contamination plume moved south into the Whittier Narrows area toward the Central Groundwater Basin over the next 20 years and threatened local groundwater supplies. The EPA developed a new groundwater treatment facility called the "Whittier Narrows Operable Unit" (WNOU) to deal with the contamination, but it was soon discovered that the plume had already moved passed the new facility. In 2000, Central Basin developed a containment plan known as the Water Quality Protection Project (WQPP). Central Basin received $10 million in Federal funding for the implementation of the WQPP with the dual objective of cleaning up the existing plume and preventing the further migration of contaminants into the Central Groundwater Basin. Congressional funding legislation was enacted in December 2000.

By taking necessary steps to ensure removal of the contaminants, the WQPP prevented the contamination from reaching the San Gabriel River and Rio Hondo Spreading Grounds. The cleanup of the aquifer at no cost to Central Basin produces a safe and reliable supply of potable water supply to participating groundwater producers without effecting water rates and minimizes the impact of rising energy costs.

The $10 million project consists of two extraction wells with a collector pipeline and a treatment facility. The extraction wells pump out the contaminated groundwater with a combined rate of approximately 2,000 gallons per minute and convey it via the collector pipeline to the central treatment facility for purification.

To ensure service while saving costs, Central Basin entered into an agreement with the City of Whittier to locate the treatment facility at the City of Whittier's main water facility yard in Pico Rivera. Whittier then utilizes its own booster pumps to send the water to the City of Pico Rivera and Santa Fe Springs for use in their distribution systems. The WQPP is operated by the City of Whittier for Central Basin.

Operations began in December 2004 with WQPP delivering over 4,600 AF to the Cities of Whittier, Pico Rivera, and Santa Fe Springs. Since then, extraction and deliveries have leveled off to about 3,500 AFY, mainly due to Whittier's decision to stop taking WQPP water in July 2008.

The $10 million funding was used not only for the construction of the above facilities, but also for operating costs. Unfortunately, due to higher construction costs than was anticipated; the funding allocated to the WQPP nearly ran out in 2007. Central Basin considered shutting down the WQPP in 2007, but agencies in the Whittier Narrows area were still concerned about the plume and recommended that Central Basin continue to operate the WQPP. So Central Basin engineered a Memorandum of Understanding with the three principle cities, Pico Rivera, Santa Fe Springs and Whittier to pay a higher price per acre-foot to keep the facility operating until new federal funding could be authorized.

In late 2009, with the support and assistance of Congress member Grace Napolitano, Central Basin secured $11.2 million in funding to operate the WQPP for approximately 10 more years. Central Basin is expecting the first installment of funding in 2011.

6

Water Conservation

This section discusses Central Basin's Water Conservation Programs

6.1 OVERVIEW

In the last two decades, the Central Basin Municipal Water District (Central Basin) has continued to achieve extraordinary success through its water conservation efforts. Beginning 2006, conservation efforts were heightened with the adoption of Central Basin's 5-year Water Conservation Master Plan (CMP). The CMP, evaluated current and future water savings potential in the Central Basin service area and outlined a cost-effective conservation strategy for the Central Basin service area.

Since 2006, Central Basin has also received more than $4 million in grant funding from local, state and federal government agencies to develop and launch innovative water conservation programs. As a result of these efforts, Central Basin now has a diverse program portfolio in place—which includes a bilingual outreach campaign titled "*Shut Your Tap!*"—that will assist the greater Los Angeles County region in meeting the State of California's aggressive 20x2020 water conservation goal.

In 2009, a landmark water emergency was declared in California. As communities across the state recognized the need for greater water conservation, at the local level, funding for conservation programs was drastically reduced by the Metropolitan Water District (MWD). In order to support conservation efforts within the local communities during this critical time, Central Basin embarked on strengthening its existing partnerships and forging new ones with water retailers, purveyors and cities throughout its service area. This effort largely began with the introduction of the *Shut Your Tap!* Campaign.

The *Shut Your Tap!* Campaign (and its Spanish-language counterpart *¡Cierre Su Llave!*) emphasizes community partnerships and grassroots outreach to promote water conservation within Central Basin's 24-city service area. Since its launch in April 2009, it has proven to be a highly successful outreach tool to raise awareness about the need to conserve, while working to encourage simple yet lasting behavioral changes in the way people use water every day. To date, a total of 24 cities in the Central Basin service area have officially joined the campaign. In addition, in 2009 the Los Angeles County Board of Supervisors declared May 19th to be the official "*Shut Your Tap! Day*" in Los Angeles County.

A core under-pinning of the campaign is partnerships, as it is the local partnerships that create synergy and ultimately conservation actions within the community. Through the campaign, local agencies and community members work together to achieve results that are many times greater than what could be achieved separately. Central Basin's service area is fortunate to be home to some of the most diverse demographics in the world, and it is through collaborative efforts such as these that we are able to bring the message of water conservation to the communities we serve.

Through the campaign, and other programs introduced under the CMP, Central Basin has partnered with numerous government and public agencies to bring important services and programs to the local communities. Below is a sample list of regional agencies Central Basin has partnered with:

County & State Agencies------------School Districts

Legislators------------------------------ Utility Companies

Non-Profit Organizations------------Water Agencies and Retailers

Fire Departments

6.2 CENTRAL BASIN'S PAST AND CURRENT WATER CONSERVATION EFFORTS

Today, Central Basin's conservation programs are made up of a wide array of cost-effective programs that are offered free to participants:

Distribution Programs
High-Efficiency Toilets
Water Brooms
Weather Based Irrigation Controllers
Showerheads
Aerators

Direct Installation Programs
WaterFree Urinals
California Friendly Demonstration Gardens
Large Landscape Irrigation Programs
High-Efficiency Clothes Washers
Weather Based Irrigation Controllers
High-Efficiency Toilets

Public Education and Outreach
Shut Your Tap! Conservation Campaign
Bilingual Speakers Bureau
Multicultural Outreach
School Education Programs
California Friendly Garden Workshops

Rebate Programs
Synthetic Turf
Weather Based Irrigation Controllers

6.2.1 METROPOLITAN WATER DISTRICT'S CONSERVATION GOAL

Metropolitan Water District (MWD) is responsible for providing a safe and reliable water supply to its 26 member agencies and the 19 million residents who live and work throughout its 5,200-square-mile service area in Southern California.

In response to the continuing drought conditions here in California, and the state's 20X2020 plan, MWD calculated their projected water savings based on their current conservation plan and determined that, when compared to the state's plan, there was a 575,000 acre feet shortfall.

MWD is taking action to close the gap and has developed the framework for a long term conservation plan. Framework details include, but are not limited to: education, outreach, water use ordinances, market transformation and behavioral change. Central Basin, along with other MWD Member Agencies, will partner with MWD to implement the new plan to reduce water consumption per capita by 20percent by the year 2020.

6.3 CALIFORNIA URBAN WATER CONSERVATION COUNCIL

The California Urban Water Conservation Council (CUWCC) is a membership organization dedicated to maximizing urban water conservation throughout California by supporting and integrating innovative technologies and practices, encouraging effective public policy, advancing research, training and public education, and building on collaborative approaches and partnerships.

The CUWCC utilizes Best Management Practices (BMP) to benchmark an agency's conservation efforts. Central Basin was one of the first agencies to become a signatory to the CUWCC's Memorandum of Understanding, and as water wholesaler, has successfully complied with the BMPs every filing year since becoming a member.

6.3 1 BEST MANAGEMENT PRACTICES (BMP)

The CUWCC's BMPs are a list of recommended conservation measures that have been proven to provide reliable savings to a given urban area. There are currently a total of 14 BMPs, making up a combination of established BMPs, some exclusively for wholesalers, some exclusively for retailers, and some a combination of the two. As a wholesaler, Central Basin is required to report on the following BMPs:

BMP# 3	System Water Audits, Leak Detection and Repair
BMP# 7	Public Information Programs
BMP# 8	School Education Programs
BMP# 1	Wholesale Agency Assistance Programs
BMP#12	Conservation Coordinator

6.4 CENTRAL BASIN BMP COMPLIANCE

6.4. 1 BMP#1 – Water Survey Programs for Single-Family and Multi-Family Residential Customers

Because Central Basin is a water wholesaler and does not have direct access to single or multifamily customer account data, Central Basin can only provide support to the water retailers.

6.4. 2 BMP#2 – Residential Plumbing Retrofit

High-Efficiency Toilet (HET) programs are a key element in the conservation successes Central Basin has experienced over the years. Central Basin's HET programs have been implemented through various partnerships and grant programs, and have been made available throughout the service area. Thousands of free HETs have been distributed to eligible customers over the last few years.

Central Basin anticipates other opportunities for additional water savings through HET programs in the coming years. The Central Basin service area is home to many disabled or disadvantaged residents, and the free distribution of much-needed conservation devices continues to be in demand. Given the current economic down-turn, Central Basin is focusing its attention on securing additional sources of funding to make such programs possible.

6.4. 3 BMP#3 – System Water Audits, Leak Detection and Repair

This BMP is geared to water retailers. However, Central Basin has provided leak detection and repair support in the past.

6.4. 4 BMP#4 – Metering with Commodity Rates for all New Connections and Retrofit of Existing

As a wholesaler, Central Basin does not sell directly to the end-user and does not have metering with which to administer commodity rates.

6.4. 5 BMP#5 – Large Landscape Conservation Programs and Incentives

In addition to the MWD region-wide "SoCal Water$mart" and "Save-A-Buck" rebate programs, which offer rebates for certain qualifying conservation devices to customers throughout the MWD service area, Central Basin also has various large landscape conservation programs including:

- A District-wide large landscape managed irrigation program incorporating maintenance, monitoring and tracking of individual property water savings
- Federal and State grants providing over 2,000 Smart Controllers to residential and commercial customers
- A city partnership program to install Smart Irrigation Controllers in parks and street medians
- A Commercial Landscape research grant to improve water use efficiency at schools, parks and open public spaces

6.4. 6 BMP#6 – High-Efficiency Washing Machine Rebate Programs

Central Basin continues to implement region-wide rebate programs through MWDs Save-A-Buck and SoCal Water$mart rebate programs. Central Basin adds additional funding to qualifying Washing Machine devices and receives supplementary funding from participating retail agencies.

6.4. 7 BMP#7 – Public Information Programs

Central Basin's public information efforts consist of a variety of programs and practices that are used to educate the public about water conservation. Conservation literature is provided to the public at various one-day programs and at community events.

Central Basin also provides the community with a Speakers Bureau in which or through which Directors and staff work with local civic organizations and service clubs to provide information on a variety of programs and projects that promote conservation. Additionally, Central Basin provides education through a website, an interactive Blog, and various publication materials.

<u>Website and Social Media</u>

Central Basin has effectively bolstered its community outreach and public education programs by integrating social marketing strategies with existing outreach programs. Central Basin uses social media to disseminate information through websites such as Twitter, Facebook and YouTube. Central Basin has realized many campaign successes of increased community involvement, which is reflective in the upward curve of its website traffic.

By utilizing technology, Central Basin has connected with residents and businesses in a new and exciting way to promote the benefits and importance of water conservation. From Central Basin's Watercooler Blog—*the "First Official Water Blog in California*"—to Facebook and Twitter, the District's social media strategy is tailored to meet the needs of the local community.

6.4. 8 BMP#8 – School Education Programs

Collaborative classroom visitation programs are a key element in Central Basin's student outreach efforts. The following is a brief description of the **free** water education programs offered by Central Basin:

- Water Squad Investigations (Grades 4 – 12)
- Water Wanderings (Grades 4 – 5)
- Think Watershed (Grades 4 – 6)
- Think Earth! It's Magic (Grades K – 5)
- Think Water! It's Magic (After School Program for Grades K – 5)
- "Water Is Life" Poster Contest (Grades 4 – 8)
- Waterlogged (Grades 9 – 12)
- Sewer Science (Grades 9-12)
- Conservation Connection: Water & Energy in Southern California (Grades 5 – 8)
- Water for the City: Southern California Urban Water Cycle (Grades 4 –8)

6.4. 9 BMP#9 – Conservation Programs for Commercial, Industrial and Institutional Facilities Accounts

Central Basin participates in MWD's region-wide commercial "Save A Buck" rebate program, which provides water conservation devices to be utilized in commercial, industrial and institutional facilities and settings. The devices include but are not limited to High-Efficiency Toilets, Ultra Low and Zero Water Urinals, Weather-based Irrigation Controllers, Nozzles, Water Brooms and various industrial process devices.

In addition, Central Basin distributed conservation Water Brooms to all 31 Los Angeles County Fire Stations within the District's service area. In addition, 49 brooms were distributed to local municipalities, and 30 brooms to schools. Water Brooms provide an estimated 150 gallons of water savings with each cleaning.

In addition, Central Basin has implemented Commercial, Industrial and Institutional direct installation programs for HETs and Low and Zero water use Urinal Direct Installs through grant programs and local water retail agency partnerships. The District has also partnered with local agencies to install Smart Irrigation Controllers in City parks, street medians and City facilities.

6.4. 10 BMP #10 – Wholesale Agency Assistance Programs

As a part of Central Basin's "Shut Your Tap!" Conservation Campaign, the District hosts a bi-monthly event called the "Shut Your Tap! Roundtable". The Roundtable provides a forum for cities, water agencies, and interested parties to share ideas and information on conservation trends and issues. The setting provides a great forum for interaction and networking among water stakeholders.

In an effort to provide Central Basin cities with support for their marketing, outreach, and enforcement of local mandatory water conservation ordinances, a "Water Use Efficiency Ordinance Tool Kit" was developed and provided to each city. The Tool Kit included a cover letter, sample ordinances, a sample staff report template, sample violation notices, and ordinance enforcement collateral.

To add to the advertising opportunities of our campaign partners, a Conservation Messaging Tool Kit was also provided to cities and water retail agencies. Each kit includes water conservation tip sheets, door hangers, bill inserts, local cable TV announcements, countertop tent cards, and sample newsletter articles.

6.4. 11 BMP #11 - Conservation Pricing

Although the Conservation Pricing BMP refers to the rate structures of a retail water agency to encourage customers to use less water, Central Basin, as a wholesale water agency, employs a similar model for its customers by incentivizing the large scale sale of imported water. Central Basin employs a two-tier rate structure in which cities and agencies are invited to enter into 5-year "purchase agreements." The agreements provide Central Basin with a longer term guarantee of water sales while providing the city or agency access to a discounted imported water rate.

6.4. 12 BMP #12 – Conservation Coordinator

As the regional wholesaler, Central Basin employs one full-time Conservation Coordinator who works throughout the District's service area to promote water conservation. The coordinator also works with cities and water agencies to foster consumer behavioral change and implement various conservation programs that result in significant reduction in overall retail water use.

6.4.13 BMP #13 – Water Waste Prohibition

In response to the State of California's 20X2020 campaign announcement, MWD developed a model "Mandatory Water Use Efficiency Ordinance", and appealed to all MWD Member Agencies to work within their respective service areas to urge cities to adopt the MWD model ordinance.

Strategic outreach and a broad collaborative effort were needed to introduce the Water Use Efficiency (WUE) ordinance to the 24 cities within Central Basin's service area. As a first step, Central Basin created a WUE Ordinance Task Force, comprised of members from surrounding cities and retail agencies, to reach out to the District's 24 cities and unincorporated communities. In addition, each city was provided with a Water-Use Efficiency Ordinance Tool Kit, compliments of Central Basin.

6.4. 14 BMP #14 – Residential Ultra Low Flow Toilet (ULFT) Replacement Programs

Although BMP #14 is listed under the CUWCC standards as Ultra Low Flow Toilets (ULFT), technology standards have replaced the 1.6 gpf ULFT with High-Efficiency 1.28 gpf Toilets (HET). Today, the District only uses HETs and continues to report the activity under BMP #14.

HET Distribution Events

HETs have been a key element in the conservation success Central Basin has experienced over the years. Free HET Distribution events have provided thousands of free toilets to local residents throughout Central Basin's service area. The District's HET programs have been initiated through various partnerships and grant programs, and have been made available throughout Central Basin's service area.

HET Direct Installation Programs
Since 2005, Central Basin has completed more than 5,000 High-Efficiency Toilet (HET) direct installations in single family, multifamily, and commercial, industrial and institutional (CII) facilities throughout Central Basin's service area.

Local HET Partnership Programs
Central Basin receives requests to participate in various local partnerships to provide disadvantaged residents with HETs. Central Basin's service area is home to many disadvantaged residents, and the need for free, water-conserving toilets remains high. Given the current economic down-turn, the conservation coordinator is focusing attention on securing additional sources of funding to make HET programs possible.

6.4. 15 ADDITIONAL CONSERVATION PROGRAMS

CONSERVATION PARTNERSHIPS

Central Basin continues to take advantage of opportunities to achieve additional water savings through new and creative partnerships with local cities, schools, government agencies and non-profit organizations. One such partnership with the Los Angeles County Conservation Corps brought free, educational gardening workshops to local residents. The workshops, which are offered in English and Spanish, provide information on California native plants and gardening tips for residents, business owners, and local landscapers. In another example, ongoing partnerships with Southern California Edison and the Gas Company have made it possible to provide educational conservation programs to sixth grade students throughout the service area.

These partnerships have proven to be diverse in nature and valuable in strengthening the conservation efforts within Central Basin's service area, particularly within the more disadvantaged areas.

Water Wasting Prohibition City Ordinances
Following the call for increased conservation efforts under the state's 20X2020 Plan, the District formed a *Shut Your Tap!* Water Conservation Ordinance Task Force to advocate the adoption of mandatory water conservation ordinances in each city in the District's service area. As a result of the efforts of the Task Force's efforts, 18 cities now have mandatory conservation ordinances in place.

6.4. 16 GRANT PROGRAMS

Central Basin has been successful in receiving grant funding for conservation programs at the federal, state, and local levels through agencies such as the United States Department of Energy (DOE), the Department of Water Resources (DWR), and MWD. The following list provides a brief summary of the individual water conservation grants that have been implemented since 2005:

MWD Grant (Innovative Conservation Program Grant) - 200 HET Direct Install
Central Basin has successfully completed a MWD Innovative Conservation Grant Program, installing 200 HETs in multi-family homes and commercial facilities. The total budget for this grant was $43,800.

MWD Grant (Innovative Conservation Program Grant) – Bell Gardens: California Friendly City – A Model for Inner City Transformation
In 2006, Central Basin was awarded $102,250 to transform the City of Bell Gardens into the first California Friendly City in the State of California through the installation of water saving devices and systems throughout the City's public facilities. These included high-efficiency toilets, urinals, synthetic turf at the public soccer field, water-brooms, native plants and a weather-based irrigation system.

MWD (Enhanced Conservation Program Grant) – Landscape High Efficiency Living Program (HELP)
In 2008, Central Basin was awarded a MWD Enhanced Conservation Program Grant in the amount of $90,000 to provide HELP Landscape Workshops to local residents to teach the benefits of utilizing an MP Rotator irrigation device and planting low water-use plants. The use of MP Rotators alone can save 4.16 to 16.8 gallons of water per minute.

DWR Grant (Prop 50) – High Efficiency Living Program (HELP) 10,000 HET Direct Install
In 2007, Central Basin was awarded a DWR grant in the amount of $1,563,900. The grant program provides funding to market, purchase and install 10,000 HETs in multi-family residential units throughout the service area. The water savings for this program will reach 242 acre-feet annually for 25 years.

DWR Grant (Prop 50) - Conservation Outreach Targeting Multicultural Communities
In 2007, Central Basin was awarded a DWR grant program in the amount of $100,000 to provide cities and water retailers with conservation outreach training and tools. The funding provides for website design, research services and bill-stuffer templates to be used by the District's water retailers. The purpose of the program is to promote water conservation within the multicultural and multilingual communities prevalent in the service area.

DWR Grant (Prop 50) – Urban City Makeover Program
Through the DWR Prop 50 Urban City Makeover Program, grant funding in the amount of $113,746 will provide nine disadvantaged cities with a number of

water-saving resources. These include: high-efficiency toilets (HETs), Waterfree urinals, native plants, weather-based irrigation controllers and water brooms. The participating cities are: Bell Gardens, Commerce, Cudahy, Hawaiian Gardens, Huntington Park, Lynwood, Maywood, Paramount, and South Gate.

DWR Grant (Prop 50) – Helping Our People and Environment (HOPE) 3,000 HET Direct Install

Since 2009, Central Basin has administered the "Helping Our People and Environment" (HOPE) grant program on behalf of the City of Maywood. This Prop 50 grant program provides funding to install 3,000 High-Efficiency Toilets (HETs) in residences throughout the city of Maywood.

DWR Grant (Prop 50) – Zero Water Consumption Urinal Retrofit Program – 2,600 Urinal Retrofit Program

In 2003, Central Basin secured a DWR grant entitled Zero Water Consumption Urinal Retrofit Program in the amount of $780,000. The program provided no-cost installations of 2,600 water-free urinals to qualified commercial, industrial, and institutional buildings located within the Central Basin service area.

DWR Grant (Prop 50) – Commercial Landscape Wireless Valve End Use Management Research Project

The Commercial Landscape Wireless Valve End Use Management Research Project awarded to Central Basin by DWR in the amount of $302,052, involves the implementation of wireless valve evapotranspiration (ET) controllers in non-residential sites. The research goal is to enhance water management and water efficiency at the local, regional, and statewide levels.

DWR Grant (Prop 50) – Large Landscape Water Conservation, Runoff Reduction and Educational Program

The Large Landscape Water Conservation, Runoff Reduction and Educational Program provides $900,000 in funding for the implementation of a water management program using weather-based irrigation controllers and wireless technologies to significantly reduce the amount of runoff from large landscapes, street medians, and residential properties.

Included in the grant funding are five large community demonstration gardens. Central Basin will partner with local public agencies such as cities and school Districts to create Demonstration Gardens that enrich the environmental awareness of the community and promote the benefits of water efficient gardens.

U.S. D.O.E. (Energy Efficiency Conservation Block) Water and Energy Emergency End Use Demand Management Measures Grant

The Water and Energy Emergency End Use Demand Management Measures Grant in the amount of $2,000,000 was awarded to Central Basin under the United States Department of Energy Recovery Act - Energy Efficiency and Conservation Block Grant Program. Under this program, funding will be provided to purchase and install a series of wireless (ET) controllers in residential and commercial settings that utilize radio commands for periodic pressure and management adjustments. A second element of the grant addresses water and energy demand management in recycled pipelines.

6.5 CURRENT AND FUTURE EDUCATION PROGRAMS

6.5. 1 CURRENT PROGRAMS

Water Squad Investigations (Grades 4 – 12)

Launched in September 2006, Water Squad Investigations is a collaborative environmental education program that joins Central Basin, the Los Angeles County Sanitation Districts and LA County's Whittier Narrows Center to provide students with a fun-filled day of water awareness. By the end of June 2010, over 5,000 primary through secondary school students will have participated in the program. Table 6-1 shows the number of students who have participated in Central basin education programs since 2005.

Each Friday morning throughout the school year, participating students are driven from their school to the San Jose Creek Water Recycling Plant (SJCWRP), and later, to the Whittier Narrows Nature Center in a charter bus provided by Central Basin. At these sites, students are introduced to the concepts of water recycling and conservation through multimedia presentations, fun activity book exercises and guided tours of the facilities.

By the day's end, students gain a solid understanding of how water recycling can help conserve valuable drinking water and about the simple but effective ways they can conserve at home.

From September 2005 through June 2010, 5,835 students have participated in Water Squad Investigations.

Water Wanderings (Grades 4 – 5)

Water Wanderings is a collaborative classroom visitation program between Central Basin and the S.E.A. Lab in Redondo Beach, a program of the Los Angeles Conservation Corps. This collaborative hands-on classroom program takes fourth and fifth graders on a 2 ½-hour journey through California's water.

Each class that participates will have the opportunity to visit three action-packed stations where they will experience a multimedia game called California Water Jeopardy, a food chain/food web activity and touch live marine animals and plants on board the "traveling tidepool," a van outfitted with touch tanks.

Water Wanderings is correlated to many of the fourth through fifth grade State standards for social science and science. By participating in this free program, students learn to appreciate California's water as a scarce, valuable resource.

From September 2005 through June 2010, 26,670 students have participated in Water Wanderings.

Think Watershed (Grades 4 – 6)
Think Watershed educates students about the San Gabriel River Watershed's impact on our coastal waters and inspires them to become stewards of the environment. Students participate in hands-on activities to see how human behavior affects the quality of air, water, and habitat, as well as plant, animal, and human life.

Components of Think Watershed include:

Floating Lab Boat Trip – On a 3-hour cruise through the Long Beach Harbor, with a morning or an afternoon departure, students will participate in: a plankton lab, ocean bottom sediment study, water visibility testing, water chemistry interactions, and wildlife observation.

Curriculum – Aligned to the California Content Standards, a Think Watershed Teacher's Guide is distributed to all participating classroom teachers. The guide includes: pre-trip activities, cruise plan and preparation guidelines, and post-trip activities such as website data reporting and service learning projects.

Bus Transportation – Free transportation from the students' school to the Long Beach Harbor is provided to schools that qualify.

From September 2008 through June 2010, over 5,000 students have participated in Think Watershed.

Think Earth! It's Magic (Grades K – 5)
What does a magician have to do with water conservation? On the surface, it wouldn't seem like much, but *Think Earth! It's Magic* is a collaborative program between Central Basin and the Think Earth Environmental Education Foundation that uses an award-winning curriculum and magic shows to teach elementary school students about their environment.

As the magician makes water disappear, he teaches the importance of water conservation. As he makes a rabbit disappear, he explains the effects of toxic waste on the environment. The magician's show follows the curriculum of the Think Earth Environmental Education Foundation and correlates to the California State Content Standards in the areas of Language Arts, Science, Social Science, and Mathematics. The Think Earth Environmental Education Foundation is a non-profit organization dedicated to developing and maintaining a sustainable environment through education.

Each year, elementary schools throughout Central Basin's service area enhance their Think Earth curriculum with this exciting magic show. It is an opportunity to reinforce the classroom lessons and remind students about the importance of implementing environmentally sound practices around their homes and schools.
From September 2005 through June 2010, 37,800 students have participated in Think Earth! It's Magic.

Think Water! It's Magic (After School Program for Grades K – 5)
Think Water! It's Magic is a **FREE** environmental education program for students in extended daycare/after school programs. This innovative program features an energetic *Think Water! It's Magic* assembly by eco-magician Paul Cash that students will remember for many years.

The *Think Water! It's Magic* shows are approximately 45-minutes in duration. While performing magic tricks and illusions, eco-magician Paul Cash engages students in a fun way and teach them about the limited water availability on Earth, the water cycle, water quality, and water recycling. Most importantly, Mr. Cash also teaches students about the amount of water used during everyday tasks and how they can conserve water by just making some simple behavioral changes.

This exciting environmental education assembly program is offered **FREE** to all Central Basin elementary schools (K-5) that have an extended daycare/after school program.

From September 2008 through June 2010, over 6,000 students have participated in Think Water! It's Magic.

"Water Is Life" Poster Contest (Grades 4 – 8)
As part of an annual recognition of Water Awareness Month, the "Water Is Life" Poster Contest is a collaborative arts program between Central Basin and the MWD. Celebrated every May, Water Awareness Month encourages wise water use, conservation, recycling, and water education. Students in grades 4 – 8, are encouraged to depict on posters various water uses and/or wise water use at home or school, in industry or business, in the environment, in agriculture, or in recreation. Central Basin then selects a grand-prize winner who is awarded a fully-loaded laptop computer and receives a special recognition at Central Basin's headquarters. The grand-prize winner's poster is then submitted to MWD to be included in calendars, and featured on water bottles, screen savers, mouse pads, etc.

From September 2005 through June 2010, over 80,000 students have had an opportunity to participate in the "Water Is Life" Poster Contest.

Waterlogged (Grades 9 – 12)

Waterlogged is a collaborative high school visitation program between Central Basin and the Roundhouse Marine Studies Lab and Aquarium, an oceanographic teaching station. Through specimen dissections, examples of current aquatic/marine science research, and practical hands-on activities, students will learn more about the scientific method, habitats and inhabitants of the Pacific Ocean, and the overall effect of unintended human impacts on the aquatic/marine environment.

Waterlogged offers five exciting classroom visitation topics, which are each aligned to the California State Science Content Standards.

This exciting aquatic/marine science education program is offered FREE to all Central Basin Waterlogged High Schools.

From September 2007 through June 2010, 15,925 students have participated in Waterlogged.

Sewer Science (Grades 9-12)
Sewer Science is an award-winning, hands-on laboratory program that teaches high school students in Central Basin's service area about wastewater treatment.

During a week-long lab course, students create fake wastewater and employ physical, biological and chemical treatment methods and procedures to test its quality. The lab is facilitated by biologists and chemists from the County Sanitation Districts of Los Angeles County, allowing students the opportunity to learn first-hand from experienced science professionals.

From September 2005 through June 2010, 8,875 students have participated in Sewer Science.

6.5. 2 FUTURE PROGRAMS

Conservation Connection: Water & Energy in Southern California (Grades 5 – 8)

We turn the tap and water flows out. We turn on a lamp and light fills the room. We depend on water and energy. We need the water and energy to live in Southern California and elsewhere in the world too. But where do we get the water and energy that we use? Will we always have enough to meet our needs?

Conservation Connection answers those questions, showing the connections between California, our water and energy supply, and us. But providing information is only part of Conservation Connection. The goal of the curriculum is to get students actively involved – in their homes and at school – in conserving water and energy. Within the program, students have the opportunity to survey their family's water and energy use and survey water and energy use at their school.

After gathering data, analyzing their findings and reviewing recommendations, students make, implement, and monitor plans to decrease water and energy use. By participating in this action-based curriculum, students will learn to look critically at important environmental issues and take responsibility for finding solutions.

Water for the City: Southern California's Urban Water Cycle (Grades 4 – 8)
Water for the City: Southern California's Urban Water Cycle is a partnership between Central Basin, Los Angeles County Sanitation District, Water Replenishment District, MWD, Los Angeles County Office of Education, and the Center for Global Environmental Education at Hamline University. This interactive, multi-media water education curriculum has lessons for upper elementary through middle school students, as well as a teacher's guide. Lessons and animation elements will cover the following topics: Watershed Awareness, Where Southern California gets its water from, Surface and Ground Water, Water Storage and Delivery, A Raindrop's Journey, Water Recycling, Water Conservation, Water Planning, Dams and Reservoirs, Point and Non-Point Pollution, and an interactive Urban Water Cycle game that will address water supply and management issues.

Table 6-1
School Education Program
(Number of Participating Students)

Grade Level	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	Total
K - 3rd	3,360	3,100	6,460	8,828	6,140	27,888
4th - 6th	6,040	9,520	11,163	14,499	13,825	55,047
7th - 8th	500	0	105	105	0	710
9th - 12th	905	1,925	4,900	9,265	8,015	25,010
Total	10,805	14,545	22,628	32,697	27,980	108,655

6.6 CENTRAL BASIN'S WATER USE EFFICIENCY MASTER PLAN

In 2006, Central Basin adopted a five-year Conservation Master Plan (CMP) to expand long-term water saving efforts and introduce new regionally tailored programs.

The CMP will be ending in 2011 and an updated CMP, is in the process of being developed. A number of factors, including new state and federal legislation, funding limitations from partnering agencies, and new state standards have changed the dynamics of conservation throughout the last few years. The new Master Plan will reflect those changes and continue to serve as a supportive water conservation guide for Central Basin.

7
Water Rates & Charges

This section discusses Central Basin's Water Rates & Charges

7.1 OVERVIEW

The residential water bill in Southern California is most likely the least expensive of a typical household's major utility bills. In fact, tap water can be purchased for much less than a penny per gallon– remarkable considering investments by water utilities into regulatory compliance, water use efficiency, infrastructure and other reliability programs. This paradox applies to Central Basin's service area as well, although residential water bills vary from retail water agency to retail water agency depending primarily on the mix of source water purchased and/or produced.

Retail agencies that exclusively serve groundwater, tend to have water rates that are lower than those that serve all imported water or a mix of groundwater and imported water. Imported water purchased from Central Basin and provided by MWD carries not only the cost of acquiring importing, purifying (treating) and distributing the commodity throughout the region but also a long-term action plan for ensuring adequate supplies to meet growing demands through conservation, education and new locally produced supplies.

7.2 MWD RATE STRUCTURE

In 2002, the Metropolitan Water District (MWD) Board of Directors adopted a rate structure to support its strategic planning vision as a regional provider of services, encourage the development of local supplies such as recycled water and conservation, and ensure a reliable supply of imported water. To achieve these objectives, MWD called for voluntary purchase orders from its member agencies, unbundled its water rates, established a two-tiered supply rate system and added a capacity charge. Together, these rate structure components provide a better opportunity for MWD and its member agencies to manage their water supplies and proactively plan for future demands.

7.2.1 PURCHASE ORDERS

The Purchase Order is an agreement between MWD and a member agency, whereby the member agency agrees to purchase a minimum amount (60 percent of their highest year's delivery of non-interruptible water times 10) of non-interruptible water during a 10-year period - "Purchase Commitment." The economic incentive for a Purchase Commitment is that it entitles the member agency to purchase annually a set amount of non-interruptible water (Tier 1 Annual Maximum) at the lower Tier 1 rate, which is 90 percent of its highest year's delivery of non-interruptible water.

In the case of Central Basin, a 10-Year Purchase Agreement was signed in 2002 (with an effective date of January 1, 2003) which has a base allocation of 80,400 AF. The purchase order is included in Appendix H. As shown below in Table 7-1, Central Basin's Tier 1 Annual Maximum is 90percent of the base allocation, which is 72,360 AF. There is a purchase commitment of 482,400 AF by the end of 2012. Through December 2010, Central Basin purchased 487,220 AF, which satisfies its purchase commitment to MWD. A new purchase order will be developed over the next 18 months and will be effective January 2013.

Table 7-1
Central Basin Purchase Order Terms

Initial Base Allocation	Tier 1 Annual Maximum (90percent of Base)	Purchase Commitment (60percent of Base x 10)
80,400 AF	72,360 AF	482,400 AF

7.2.2 UNBUNDLED RATES AND TIER 1 & 2

In order to clearly justify the different components of the costs of water on a per acre foot basis, MWD unbundled its full service water rate. Among the components MWD established are:

Supply Rate Tier 1 – Reflects the average supply cost of water from the Colorado River and State Water Project.

Supply Rate Tier 2 – Reflects the MWD costs associated with developing new supplies, which are assessed when an agency exceeds its Tier 1 limit of firm deliveries.

System Access Rate – Recovers a portion of the costs associated with the conveyance and distribution system, including capital and operating and maintenance costs.

Water Stewardship Rate – Recovers MWD's cost of providing incentives to member agencies for conservation, water recycling, groundwater recovery and other water management programs approved by the MWD Board.

System Power Rate – Recovers MWD's electricity- related costs, such as the pumping of water through the conveyance and distribution system.

Treatment Surcharge – Recovers the treatment cost and is assessed only for treated water deliveries, whether firm or non-firm.

Table 7-2
Metropolitan Water District Unbundled Water Rate Components Adopted for 2011

Category of Water	$/AF
Supply Rate Tier 1	$155
Supply Rate Tier 2	$280
System Access Rate	$204
Water Stewardship Rate	$41
System Power Rate	$127
Treatment Surcharge	$217
Total Tier 1 Treated Rate	**$744**
Total Tier 2 Treated Rate	**$869**

The unbundled MWD water rates for calendar year (CY) 2011 are displayed in Table 7-2. Central Basin's complete rate schedule is included in Appendix I.

7.2.3 REPLENISHMENT SERVICE

Although a majority of the MWD water sold is full service at the Tier 1 rate, there is imported water sold at a discounted rate, better known as Replenishment Service Water. This type of water is used for groundwater storage and/or replenishment. There are two main types of replenishment water – treated and untreated. Because the replenishment water can be interrupted at anytime, MWD has provided a discount to the rates. However, the rates are not tied to the unbundled rate structure illustrated above. The rates are established by MWD to provide the best incentive to replenish the groundwater basins. Replenishment Service rates for 2011 are shown in Table 7-3.

Table 7-3
Metropolitan Water District
Replenishment Service Rate Adopted for 2011

Category of Water	$/AF
Replenishment Water Rate Untreated	$409
Treated Replenishment Water Rate	$601

7.2.4 MWD CAPACITY CHARGE

MWD's rate structure also established a charge labeled "Capacity Charge." The charge was developed to recover the costs of providing distribution capacity use during peak summer demands. The aim of the new charge is to encourage member agencies to reduce peak day demands during the summer months (May 1 through September 30) and shift usages to the winter months (October 1 through April 30), which will result in a more efficient utilization of MWD's existing infrastructure and defers capacity expansion costs. Currently, MWD's Capacity Charge for 2011 is set at $7,200/cubic feet per second (cfs).

The Capacity Charge is assessed by multiplying Central Basin's maximum usage by the rate. The maximum usage is determined by a member agency's highest daily average usage (per cfs) for the past three summer periods, as shown in Table 7-4, below, for Central Basin's maximum usage for CY 2011 – 125.9 cfs.

Table 7-4
Metropolitan Water District Capacity Charge for 2011

	Peak Flow 2007	Peak Flow 2008	Peak Flow 2009	3-Year Max
Central Basin	125.9 cfs	102.7 cfs	94.7 cfs	125.9 cfs

Note: These peak flows are based upon Central Basin's coincident peak of all its MWD connections.

7.2.5 READINESS-TO-SERVE CHARGE

The Readiness-to-Serve Charge (RTS) recovers a portion of MWD's debt service costs associated with regional infrastructure improvements. The RTS charge is a fixed charge assessed to each member agency regardless of the amount of imported water delivered in the current year. Rather, it is determined by the member agencies' firm imported deliveries for the past 10 years. All member agencies of MWD have the right chose how that designated amount is collected. Central Basin elected to have MWD collect the majority of the RTS obligation through a "Standby Charge" assessed on all parcels within its service area. The remainder is collected as a surcharge on Central Basin's commodity rates. The surcharge is discussed in section 7.3.3.

7.2.6 MWD STANDBY CHARGE

In 1992, the State Legislature authorized MWD to levy a standby charge that recognized that there are economic benefits to lands that have access to a water supply, whether or not such lands are using it. A fraction of the value of the benefit accruing to all landowners in MWD's service territory can therefore be recovered through the imposition of a standby charge. MWD assessed this charge only within the service area of the member agencies that requested such a parcel charge to help fund a member agency's RTS obligation as discussed in section 7.2.5. Within Central Basin, the MWD Standby Charge is currently $10.44 per parcel.

7.3 CENTRAL BASIN'S IMPORTED WATER RATES

As MWD adopted a new rate structure so did Central Basin. In 2003, Central Basin passed through MWD's Purchase Order by offering customer agencies voluntary purchase agreements and assessing MWD's new Capacity Charge. Central Basin also revised the administrative surcharge to be applied uniformly to all classes of imported water sold. It has been, and continues to be the policy of Central Basin to pass through imported water rate increases from MWD to all cities and agencies in the Central Basin service area. Described below are elements of the rate structure that Central Basin applies to the delivery of imported water.

7.3.1 PURCHASE AGREEMENTS

In order to meet the Purchase Order Commitment with MWD, Central Basin established its own purchase contract policy with its customer agencies. Central Basin's Imported Water Purchase Agreements mimic the MWD version in terms of an Annual Tier 1 Maximum and Total Purchase Commitment but offer more flexibility to the customer. Central Basin requires only a five-year commitment, as opposed to a 10-year term. Furthermore, retail agencies have the option to adjust their Tier 1 and Purchase Commitment amounts annually if certain conditions are favorable and can also reduce their commitment amounts by offsetting imported water demand with recycled water purchased from Central Basin. For purchases above the Tier 1 limit, or in the absence of a Purchase Agreement, the customer agency pays the Tier 2 rate (as of January 1, 2011, $125/AF above the Tier 1 rate).

Out of the 26 cities, water agencies and private water companies that have an imported water connection, five do not currently have a purchase agreement with Central Basin.

7.3.2 ADMINISTRATIVE SURCHARGE

One of the main revenue sources for Central Basin is the Administrative Surcharge applied to all imported water sold. In 2003, Central Basin revised the Administrative Surcharge to be uniformly applied to all imported water regardless of the type delivered. Revenue from the surcharge recovers Central Basin's administrative costs including planning, outreach and education, and conservation efforts. As of July 1, 2010, Central Basin's Administrative Surcharge is $86/AF.

7.3.3 READINESS-TO-SERVICE SURCHARGE

As described above, MWD levies Central Basin with a RTS charge to recover a portion of its debt service costs, which is covered mostly by the MWD Standby Charge. However, the remaining balance is collected on the commodity rate. This RTS surcharge is added to Central Basin's commodity rates for only non-interruptible water. As of July 1, 2010, Central Basin's RTS surcharge is $18/AF.

7.3.4 WATER SERVICE CHARGE

Water utility revenue structures benefit from a mix of fixed and variable sources. Central Basin's Water Service Charge recovers a portion of the agency's fixed administrative costs but is a relatively small portion of its overall revenue from water rates. As of July 1, 2010, the Water Service Charge is $69/cfs of a customer agency's meter capacity for imported water meters.

7.3.5 CENTRAL BASIN'S CAPACITY CHARGE

This charge, as described in Section 7.2.4, is intended to encourage customers to reduce peak day demands during the summer months, which will result in more efficient utilization of MWD's existing infrastructure. Central Basin has passed through this MWD charge to its customer agencies by applying MWD's methodology. Each customer's Capacity Charge is determined from their highest daily average usage (per cfs) for the past three completed summer periods of May 1 through September 30. However, because MWD assesses Central Basin on the coincident daily peak of all the connections and aggregate of all its customers' daily peak as the non-coincident peak, Central Basin is able to keep the Capacity Charge rate lower than the MWD rate to its customers. Central Basin charges $5,700/cfs instead of $7,200/cfs from MWD.

7.4 RECYCLED WATER RATES

Central Basin's recycled water program is comprised of two distribution systems: the E. Thornton Ibbetson Century Water Recycling Project and the Esteban Torres Rio Hondo Water Recycling Project with more than 50 miles of pipeline and three pump stations. Since 1992, Central Basin has encouraged the maximum use of recycled water to industries, cities and landscape irrigation sites through the economic incentive of its rates and charges. Central Basin's recycled water rate schedule is shown in Appendix I.

7.4.1 RECYCLED WATER RATES

Central Basin commodity rates cover the operation and maintenance and labor and power costs associated with the delivery of recycled water. The rates are set up in a two-tiered, declining block rate structure so they may further encourage the use of recycled water. Furthermore, the rates are wholesaled at a significant reduction to imported rates to promote the usage of recycled water.

The "outside of the Central Basin service area" rate is assessed to customers outside of Central Basin's service boundaries which pay an additional $20/AF in each tier. This additional charge is applied to make up for the recycled water Standby Charge they are not levied on their parcels.

7.4.2 RECYCLED WATER STANDBY CHARGE

In addition to the MWD Standby Charge, there is a recycled water standby charge that is levied by Central Basin to each parcel within its service area. A $10 per parcel charge is administered by Central Basin to provide a source of non-potable water completely independent of drought-sensitive supplies. The revenue collected from this charge is used to pay the debt service obligations on Central Basin's water recycling facilities. Each year the Board holds a public hearing where they adopt Central Basin's Engineer's Report and Resolution to assess this charge. The stand-by charge generates about $3.1 million annually which is applied exclusively to retire Central Basin's debt obligation for construction of the recycled water system.

7.5 FUTURE WATER RATE PROJECTIONS

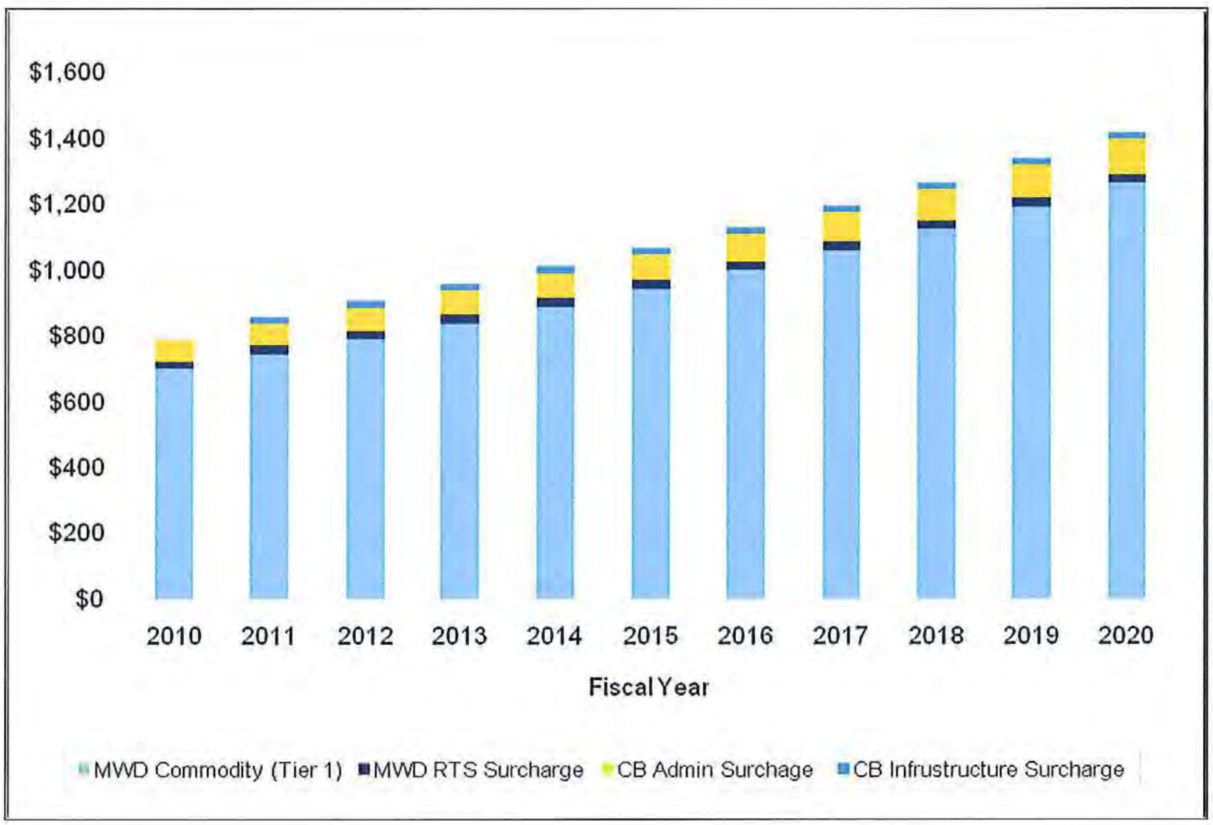
As the demand for water increases in Southern California so does the cost to administer, treat and distribute imported and recycled water. However, Central Basin has worked diligently to ensure that stable and predictable rates are managed for the future. Below are discussions of imported and recycled water rate trends during the next 10 years.

7.5.1 IMPORTED WATER RATE PROJECTIONS

In 2004, the MWD Board adopted its first "Long Range Finance Plan." This plan was developed to forecast future costs and revenues necessary to support its operations and capital investments and provide some level of rate certainty to the member agencies and sub-agencies throughout Southern California. Unfortunately, events of the last several years (drought, federal water restrictions from the Delta, national economic distress, etc.) have caused imported water rates to increase much faster than predicted. MWD is now pursuing an update of the Long Range Finance Plan that is expected to provide some measure of predictability in an increasingly unpredictable world. Over the last ten years, the MWD Tier I treated rate has increased an average of 6percent annually. For the next 10 years, we can assume an annual increase of 6 percent through the year 2020.

Central Basin's Administrative Surcharge is projected to increase at an annual average rate of 4 percent through 2015, and then 6 percent annually through 2020. This increase is an estimate that will be reviewed and modified annually based on the budget's revenue requirements. In FY 2010-11, Central Basin introduced a new Infrastructure Surcharge of $20 per AF for all water sold, including recycled water. The purpose of this fee is to help cover the costs of expanded infrastructure to support regional reliability. Figure 7-1 displays Central Basin's imported water rate projections for the next 10 years.

Figure 7-1
Central Basin Imported Water Rates
10 Year Projections

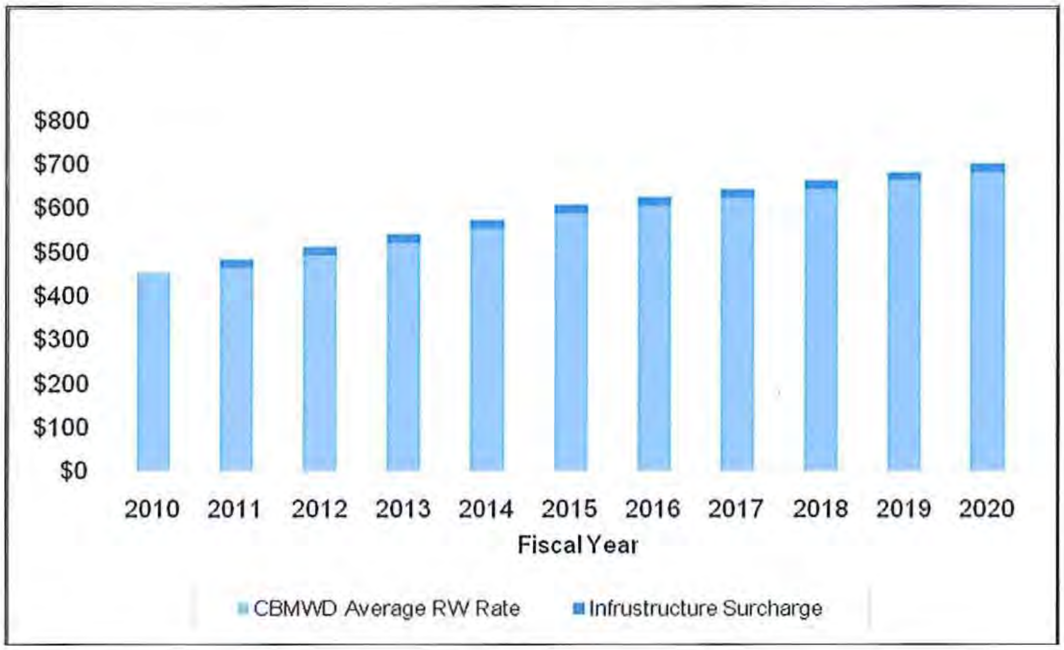


Source: Central Basin Estimates

7.5.2 RECYCLED WATER RATE PROJECTIONS

Similar to imported water, recycled water rates are broken up into a two-tier system reflecting a declining block rate to encourage its use. The first Tier is all agency recycled water sales up to 50 AF per month. After 50 AF, the rate drops by about 9 percent. Overall, recycled water rates are expected to increase because of higher treatment, maintenance and power costs. However, Central Basin believes in setting the rate of recycled water at a competitive level to help offset imported water. In order to achieve this economic incentive, recycled water rates have been projected by Central Basin to increase at a slightly lower level than imported water. Recycled water rate increases are projected to be 6 percent annually through 2015 leveling off to 3 percent through 2020. As mentioned above, Central Basin introduced a new infrastructure surcharge in FY 2010-11 for all water sold. The charge will help offset the costs for expanded infrastructure to support regional reliability. As shown in Figure 7-2, Central Basin's average recycled water rate will be at a competitive level versus imported water rates during the next 10 years. The average is the difference between the first tier and second tier.

Figure 7-2
Central Basin Average Recycled Water Rates / AF
10 Year Projection



8

Water Recycling

This section discusses Water Recycling Efforts within Central Basin's service area

8.1 OVERVIEW

Recycled water is a cornerstone of Central Basin's efforts to augment local supplies and reduce dependence on imported water. Since planning and constructing its recycled water systems in the early 1990s, Central Basin has become an industry leader in water re-use. Recycled water is used for non-potable applications such as landscape irrigation, commercial and industrial processes such as cooling, and indirect potable use through groundwater replenishment.

In FY 2006-07, recycled water demand within Central Basin's service area peaked at 5,311 AF. This amount represented about 2 percent of the Central Basin service area total water demand of 280,500 AF. However, recycled water demand is projected to reach 16,000 AF by 2025, which should represent about percent of expected total water demand, which effectively triples recycled water usage in the Central Basin service area. Table 8-1 shows the projected use of recycled water over the next 25 years.

This section provides an overview of the District's water recycling system and water treatment and distribution. In addition, this section includes a discussion of the District's past, current and projected sales as well as the District's system expansion projects and Master Plan. The section concludes with a brief description of the Cerritos and Lakewood recycled water programs within Central Basin service area and WRD's use of recycled water as a groundwater replenishment supply within the region.

8.2 RECYCLED WATER SOURCES AND TREATMENT

8.2.1 CENTRAL BASIN'S SOURCE WATER

The source of Central Basin's recycled water is the County Sanitation Districts of Los Angeles County (CSDLAC). CSDLAC operates six water recycling plants in the Los Angeles Basin. These combined systems produce approximately 457 million gallons per day (MGD) of effluent of which approximately one-third is available for municipal and industrial use. Central Basin purchases a portion of this recycled water from two reclamation plants, Los Coyotes and San Jose Creek. Both of these plants provide approximately 100 MGD of tertiary-treated (Title-22) water for distribution. Below is a detailed description of the two recycling plants.

San Jose Creek Water Recycling Plant

The San Jose Creek WRP is located in the City of Whittier and has a treatment capacity of about 100 MGD of wastewater. Approximately 71 MGD of recycled water is produced for use at locations throughout the region. These locations include groundwater recharge at the San Gabriel River and Rio Hondo Spreading Grounds as well as irrigation of parks, schools and greenbelts and commercial-industrial uses. The San Jose Creek WRP was built in the early 1970s as part of the region's Joint Outfall System and serves a largely residential population of approximately one million people. This Joint Outfall System uses six water reclamation plants and the Joint Water Pollution Control Plant in Carson to serve a major portion of metropolitan Los Angeles County.

The goal of the CSDLAC is to recycle as much of the reclaimed water from its water reclamation plants as possible. Approximately 31 MGD of the recycled water from San Jose Creek WRP is sent to percolation basins for groundwater recharge. In 1992, the San Jose Creek WRP was connected to the E. Thornton Ibbetson Century and Esteban Torres Rio Hondo Water Recycling projects which supply the water recycling needs of more than a dozen cities combined from the Central Basin water recycling distribution system. The high quality San Jose Creek WRP final effluent meets the National Pollution Discharge Elimination System (NPDES) requirements for water quality.

Los Coyotes Water Recycling Plant

The Los Coyotes WRP is located in Cerritos and has a treatment capacity of 37 MGD of wastewater. About 27 MGD of recycled water is produced and used at sites throughout the region. Sites include irrigation of schools, golf courses, parks, nurseries and greenbelts and industrial use at local companies for carpet dying and concrete mixing. The Los Coyotes WRP serves a population of approximately 370,000 people.

More than 200 sites in the Central Basin service area are now utilizing recycled water. The irrigation of parks, golf courses, schools, nurseries, freeway and street medians, and slopes and other greenbelt areas. In addition, various industries, such as the Shaw-Tuftex Carpet Mill (right) will use recycled water for carpet and textile dyeing, metal finishing, concrete mixing and cooling tower supply. Other industrial uses include concrete mixing (Robertson's Ready-Mix in Paramount and Santa Fe Springs), sand mold manufacturing process (Pacific Alloy Castings in South Gate), cooling plant operations at co-gen facilities (Metropolitan State Hospital in Norwalk) and power plant cooling (Malburg Power Plant in Vernon).

8.2.2 Recycled Water Quality

CSDLAC operates 10 laboratories including the San Jose Creek Water Quality Lab and Treatment Plant Laboratories. The laboratories have greatly increased the capability to control plant water quality and quality assurances and offer laboratory services to monitor the quality of effluent before it reaches recycled water users. More than 300,000 water quality tests on over 20,000 samples are performed annually at their facilities.

Although recycled water is not used as a drinking water supply, it still has to meet water quality standards. The standards come from the California Code of Regulations under Title 22 and Title 17. Title 22 establishes the requirements for recycled water treatment, quality and allowable uses. Title 17 establishes the requirements for backflow protection of the potable water supply.

One of the major concerns for the use of recycled water is the level of TDS (Total Dissolved Solids) in the product water coming out of the treatment plant, also referred to as effluent. The higher the TDS levels, the more damaging the recycled water is for landscape irrigation, so it is important to keep the levels as low as possible. The limit for TDS at San Jose Creek and Los Coyotes is 800 and 1,000 mg/l, respectively. Typically, San Jose Creek TDS effluent levels are just over 500 mg/l while Los Coyotes TDS effluent levels are a bit higher at 800 mg/l.

One of the major components of TDS is chloride. The Regional Water Quality Control Board (RWQCB) established a limit for chloride levels through Resolution No. 97-02 in 2002. The resolution was adopted to provide a measure of drought relief for those treatment plants with higher chloride levels in their tributary waters. Requirements include monitoring data and assessment reports on chloride by Publicly Owned Treatment Waterworks (POTW's) on an annual basis. In 2008, chloride levels in the final effluent of San Jose Creek WRP were just over 100 mg/l (or 100 parts per million), while Los Coyotes were just under 200 mg/l, which is significantly below the limit of 250 mg/l.

All of the effluent water from the treatment plants in 2008 was adequately chlorinated to comply with the total coliform limit and all effluent recycled water discharged to the San Gabriel River from both treatment facilities was properly disinfected and dechlorinated.

Table 8-1
Projected Future Use of Recycled Water in Service Area
(in Acre-Feet)

Type of Use	2015	2020	2025	2030	2035
Irrigation	5,300	6,500	11,200	11,200	11,200
Commercial	150	250	300	300	300
Industrial	1,250	4,250	4,500	4,500	4,500
Total Projected Use of Recycled Water	**6,700**	**11,000**	**16,000**	**16,000**	**16,000**

Table 8-2
Projected Wastewater Collected and Treated[1]
(In Acre-Feet)

	2015	2020	2025	2030	2035
Wastewater Collected & Treated[2]	110,000	135,000	145,000	154,000	154,000
Recycled Water Delivered[3]	21,300	24,600	25,000	26,000	27,000

[1] Data supplied by the County Sanitation Districts of Los Angeles County.

[2] From both the Los Coyotes WRP and the San Jose Creek WRP

[3] Includes recycled water for Central Basin, Cerritos, and Lakewood, but does not include recycled water for groundwater recharge.

8.2.3 TREATMENT PROCESS

The wastewater that is recycled at the San Jose Creek and the Los Coyotes treatment plants undergoes tertiary treatment and denitrification. Tertiary recycled water begins with secondary treated water that undergoes coagulation, flocculation, filtration and disinfection. Tertiary treated water can be used for a wide variety of industrial and irrigation purposes where high-quality, non-potable water is needed. Section 5 (Water Quality) explains in more detail the wastewater treatment facilities that provide Central Basin with recycled water.

Recycled water undergoes a rigorous, multi-stage treatment process to clarify it to high quality standards. The level of treatment necessary is approved by the California Department of Public Health (CDPH). CDPH requires recycled water to meet California Code of Regulations Title 22 standards (Title 22). Title 22 standards address specific treatment requirements for recycled water and lists approved uses. Approximately 2,000 tests are performed monthly to ensure water quality meets or exceed all State requirements.

Table 8-2 illustrates the past, current and projected amount of wastewater collected and treated as well as the amount of recycled water delivered by these two plants to Central Basin's distribution system. Table 8-3 shows the projected disposal of Title 22 water not used in recycled water programs.

The amount of wastewater collected and treated by these two reclamation plants is expected to remain relatively consistent during the next 25 years, despite population increases. According to CSDLAC analysis, population increases are not projected to be significant enough to make it economically feasible to expand these CSDLAC facilities. Indeed, since 1999, CSDLAC effluent has been trending down annually due to conservation efforts and because of negative economic conditions, despite population increases. Based on CSDLAC's "FY 2008-09 Annual Report on Recycled Water", the San Jose Creek plant is treating wastewater at about 29 percent below the plant capacity. The Los Coyotes plant is treating wastewater at about 27 percent below its capacity. At this time, effluent production is at 1980 levels.

8.3 CENTRAL BASIN'S RECYCLED WATER SYSTEM

8.3.1 EXISTING SYSTEM

Central Basin's recycling system is comprised of two separate projects: E. Thornton Ibbetson Century Water Recycling Project (Ibbetson Century Project) and the Esteban E. Torres Rio Hondo Water Recycling Project (Torres Project). Both projects deliver recycled water for landscape irrigation and industrial uses throughout the Central Basin service area.

The whole recycled water system is comprised of about 50 miles of pipeline with diameters ranging from 2" service laterals all the way up to 30" trunk pipelines, two pump stations, and three booster pump stations.

Table 8-3
Projected Disposal of Wastewater (Non-Recycled) AF Year

Method of Disposal	2015	2020	2025	2030	2035
San Gabriel River	77,850	79,600	78,350	82,100	82,100
Total	**72,850**	**79,850**	**78,350**	**82,100**	**82,100**

The Ibbetson Century Project began delivering recycled water in 1992. The project currently delivers tertiary-treated recycled water from the CSDLAC's Los Coyotes Water Recycling Plant (WRP) and serves the cities of Bellflower, Bell Gardens, Compton, Cudahy, Downey, Lakewood, Lynwood, Norwalk, Paramount, Santa Fe Springs and South Gate.

In 1994, the Ibbetson Century Project was extended into the northern portion of Central Basin's service area. The extension, known as the Torres Project, delivers tertiary-treated recycled water from CSDLAC's San Jose Creek WRP and serves the cities of Bell, Bell Gardens, Commerce, Huntington Park, Montebello, Pico Rivera, Santa Fe Springs and Whittier.

In fiscal year 2009-2010, Central Basin's recycled water system delivered 4,316 AFY to more than 200 sites. It is anticipated, during the next 10 years that Central Basin will triple its sales with new connections across the northern portion of the service area.

Every year Central Basin connects new customers to recycled water and further reduces demands on potable water.

8.3.2 RECYCLED WATER USE BY TYPE

The types of sites that Central Basin currently serves, as shown in Table 8-4, vary from parks and landscape medians to textile industries and cooling towers.

Table 8-4
Types of Recycled Water Customers

• Landscape Irrigation	• Textile
• Golf Courses	• Median
• Co-Generation (Cooling Tower)	• Plant Nurseries
• Cemeteries	• Parks
• Concrete Mixing	• School Irrigation
• Cal-Trans (Irrigation)	• Others

As illustrated in Figure 8-1, the predominate use of recycled water deliveries is landscape irrigation, which account for 74percent of the total use. Of that amount, irrigation at parks and schools make up the majority when we look at the type of sites being served. The remainder of recycled water used in the Central Basin supports commercial uses, which include textile manufacturing and concrete mixing. Recycled water in industry is used predominantly in cooling towers for industrial cooling.

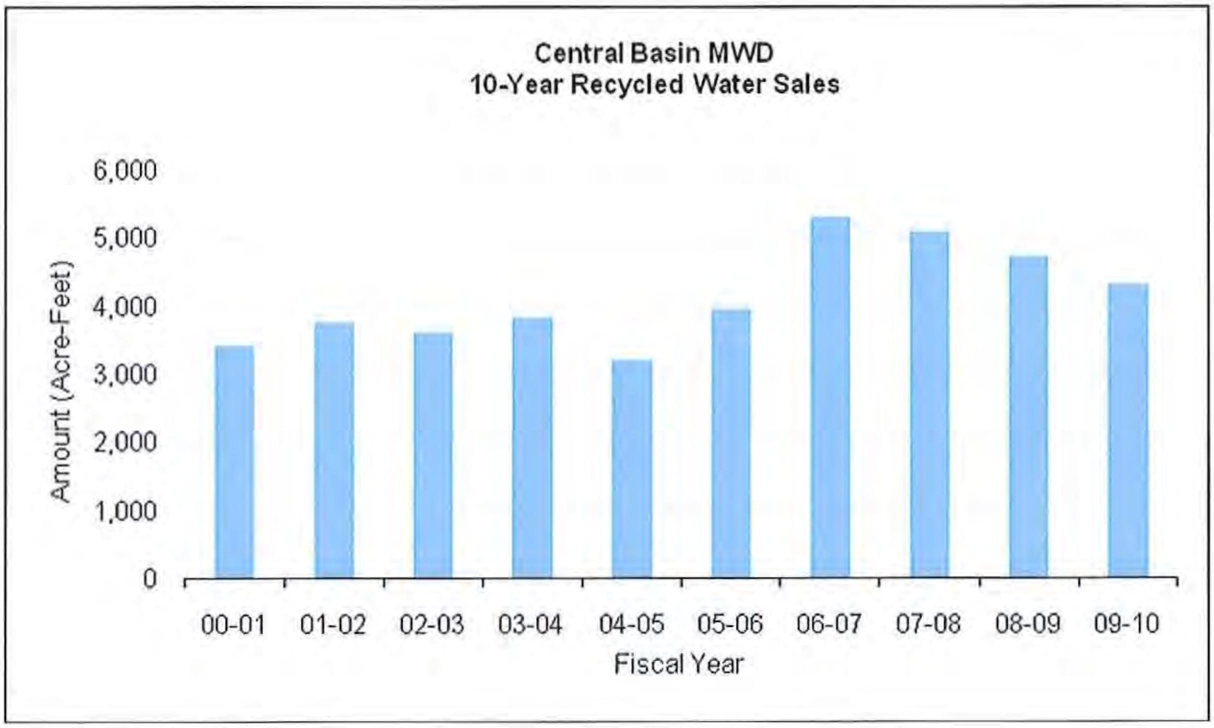
Table 8-5
Central Basin Recycled Water Use for FY 2009-10 by Type of Site

To Be Developed

8.3.3 HISTORIC AND CURRENT SALES

For the past 10 years, Central Basin has seen its recycled water sales gradually increase each year to peak in FY 2006-07 at just over 5,300 AF. Since landscape irrigation constitutes about three-fourths of Central Basin's current recycled water use, water sales are highly impacted by rainfall in the region. For example, 2007 had one of the warmest spring, summer, and fall seasons in many years. That year proceeded two more years of similar drought conditions. In 2008 and 2009, economic conditions helped bring down recycled water usage even further. This is apparent in Figure 8-2, which shows Central Basin's recycled water sales for the last 10 years.

Figure 8-1
Historic Recycled Water Sales
FY 2001 - 2010



The amount of recycled water supplied by Central Basin during the last 10 years has totaled more than 41,100 AF, replacing enough potable water to supply the needs of approximately 82,000 families for more than a year. Central Basin anticipates recycled water sales to increase in the future as more customers switch from potable water to recycled water due to the reliability of the supply and the economic incentives associated with converting from potable water to recycled water.

Table 8-5, on page 8-6, displays a more detailed breakdown of annual sales by showing each retail customer agency's yearly purchases from Central Basin for fiscal years 2001 to 2010.

Actual sales for FY 2009-10 were below the peak year of FY 2006-07 when Central Basin sold over 5,300 AF. An above average rainfall year for Southern California combined with a poor economy to reduce recycled water sales for past last two years. Still, Central Basin anticipates large increases in sales during the next 5 - 10 years due to completion of a significant recycled water project to expand the system along with the completion of several important connections to new customers.

8.3.4 SYSTEM EXPANSIONS AND PROJECTED SALES

In 2008, Central Basin developed a Recycled Water Program Master Plan (Master Plan) to help identify all of the potential customers that could benefit from recycled water. In addition, the Master Plan would provide the best system expansion routes to benefit the entire system from which the following system expansion projects were devised:

Southeast Water Reliability Project

In early 2010, Central Basin began construction of the Southeast Water Reliability Project (SWRP). When completed, SWRP will consist of about 11 miles of recycled water transmission pipeline extending from the City of Pi co Rivera to the City of Vernon. SWRP will complete Central Basin recycled water transmission system by connecting the existing Rio Hondo and Century system pipelines across the northern portion of the service area. The "loop" will increase available flow and pressure in many areas of the entire distribution system that are currently not adequately served. Also SWRP itself will provide recycled water to new customers in the Cities of Pico Rivera, Montebello, Vernon, and Los Angeles, and the unincorporated county area of East Los Angeles,

Table 8-6
Historical Recycled Water Sales by Retail Customer Agency of Central Basin
FY 2001 to 2010
(In Acre-Feet)

Central Basin	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	Total
Bellflower Municipal	21	22	17	20	16	14	18	19	13	10	**170**
Bellflower-Somerset Mutual	131	159	118	125	108	103	119	123	122	104	**1,199**
City of Cudahy	9	8	7	7	6	6	7	7	7	6	**68**
City of Downey	642	733	664	686	617	609	861	742	753	742	**7,048**
City of Huntington Park	49	60	48	64	49	45	59	60	54	51	**539**
City of Lynwood	69	66	70	67	46	32	25	19	5	2	**399**
City of Norwalk	100	120	109	111	92	75	113	121	100	94	**1,035**
City of Paramount	429	453	431	443	360	372	451	395	339	354	**4,027**
City of Pico Rivera	-	-	35	39	28	36	37	28	28	17	**251**
City of Santa Fe Springs	858	893	815	774	630	959	794	838	647	562	**7,771**
City of South Gate	164	191	162	177	213	153	176	210	127	113	**1,685**
City of Vernon	-	-	-	-	-	578	855	759	831	752	**3,775**
City of Whittier	78	77	82	98	66	61	116	108	87	70	**843**
Golden State Water Company	358	418	506	610	523	477	549	565	566	495	**5,069**
Park Water Company	428	469	471	489	341	307	416	355	319	271	**3,867**
San Gabriel Valley Water Co	72	77	65	76	48	56	74	65	59	52	**646**
Upper San Gabriel Valley MWD	-	-	7	35	45	52	642	661	659	621	**2,722**
Total	**3,408**	**3,747**	**3,606**	**3,822**	**3,189**	**3,936**	**5,311**	**5,073**	**4,716**	**4,317**	**41,126**

Upper San Gabriel Valley Municipal Water District and the San Gabriel Valley Water Company.

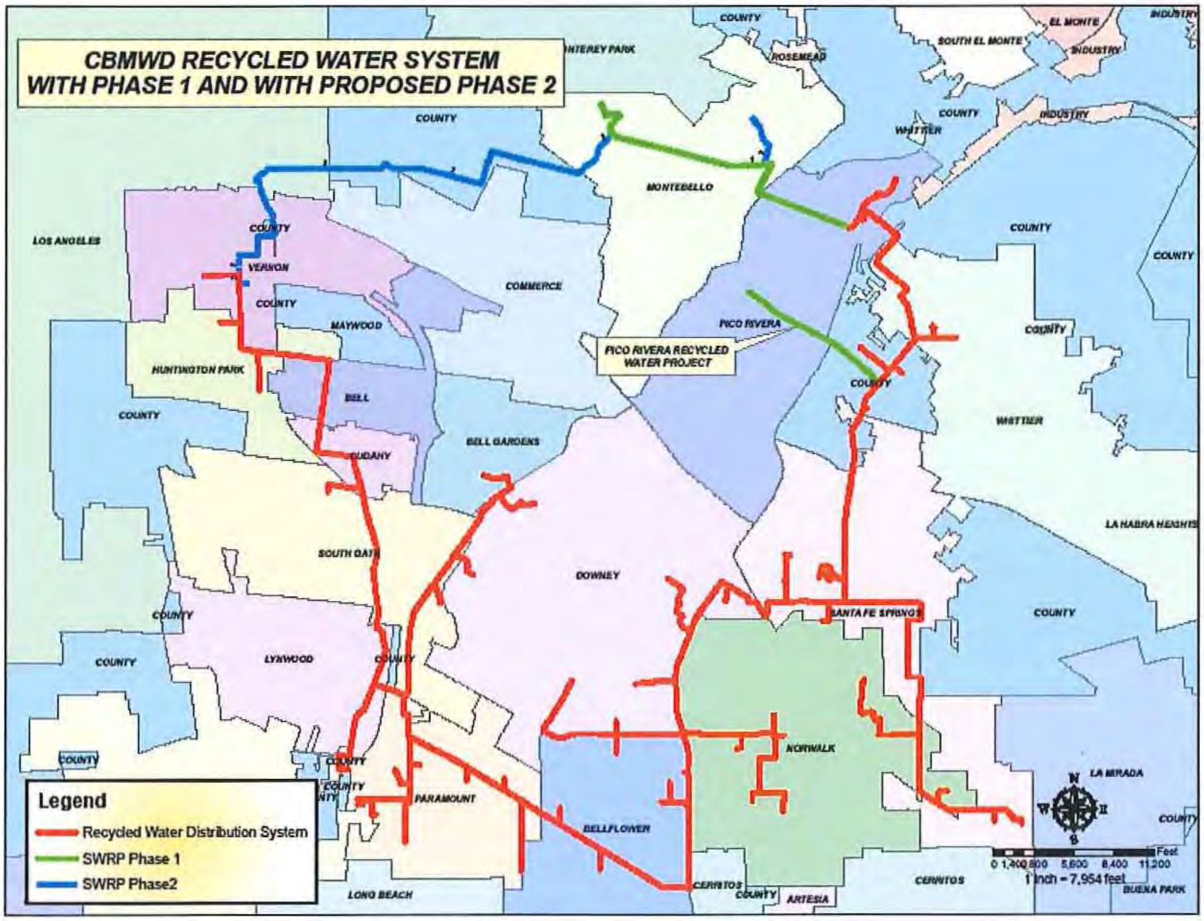
SWRP is broken out into two phases - Phase I, which is under construction in 2010, consists of 6.2 miles of 30-inch mainline from Pico Rivera to Montebello. Phase II will probably be built at some in the near future, depending on customer demand. When the entire project is completed, SWRP is expected to increase recycled water deliveries to approximately 11,000 AFY within the first few years and ultimately to about 16,000 AFY. The SWRP project is shown in Figure 8-3 in relation to the existing recycled water system.

Pico Rivera Recycled Water Project

As part of SWRP, Central Basin is expanding recycled water service in the central area of the City of Pico Rivera. The Pico Rivera Recycled Water Project is being constructed on Mines Avenue in conjunction with the Los Angeles County Department of Public Works (LACDPW) and the City of Pico Rivera. While LACDPW is constructing an unrelated 78" conduit pipeline project in Mines Avenue, the three agencies agreed to split the costs of a separate 8-inch recycled water pipeline on Mines Avenue that can meet the irrigation demands at several publically owned sites in the immediate area, as well as the irrigation demands of the San Gabriel River and the Rio Hondo Spreading Grounds. A connecting pipeline is being built by Central Basin to the existing recycled water facilities in the unincorporated county area of Whittier. The Pico Rivera Recycled Water Project is shown Figure 8-3 on the next page.

Because the 2008 Master Plan may not accurately reflect recent changes in the industrial base of the areas to be served by the SWRP project, a Master Plan update will be completed in 2012. The Master Plan update will allow Central Basin to refine the list of potential sites and staff to forecast more accurately future recycled water sales.

Figure 8-2
CBMWD Recycled Water Distribution System with SWRP



System Storage

Storage capability within Central Basin's recycled water distribution system has been anticipated since the inception of the system. The system's peak demand occurs between a relatively narrow time period of 10:00 PM through 6:00 AM, but conversely, that is when CSDLAC recycled water effluent is at its lowest availability. Combined with the further expansion and demands of the recycled water system will only exacerbate the problem. The best way to offset this discrepancy between flow and demand is to build storage. Central Basin has proposed to construct a 3 million gallon recycled water storage tank using one of two options. Option one is to build the storage tank in the hills of Montebello. Option two is to construct a tank at the site of the Rio Hondo Pump Station in Pico Rivera. Option one is the preferred option because by placing the tank at a higher elevation, the recycled water system can be served by gravity flow without additional pumps.

Potential New Connections

These potential new connections will be planned either concurrently or subsequently to the SWRP, since they are dependent on the hydraulic benefits of the larger project. Other potential capital projects planned for the next five years include:

- In partnership with Suburban Water Systems, a La Mirada Lateral to serve the La Mirada Civic Center as well as the High School, Golf Course, and Park. Potential use is 1,200 AF per Year (AFY).
- A Santa Fe Springs Lateral to serve the Air Products cooling towers. Estimated use is 225 AFY.
- A Norwalk Lateral to serve the Norwalk City Hall. Estimated use is 17 AFY.

Projected Recycled Water Sales

According to the Master Plan, Central Basin's recycled water system is projected to increase from its current sales of about 5,000 AF to 16,000 AF by 2030.

8.3.5 POTENTIAL RECYCLED WATER USE

The potential of recycled water use will increase among cities, water agencies and businesses/ industries through the years. The increased cost of imported and groundwater will enhance the beneficial usages of recycled water. Central Basin will continue to pursue new cost-effective projects both within its service area and in partnership with willing neighboring agencies. Efforts are currently focused on maximizing the potential of the original regional system, for which Central Basin receives an incentive payment from MWD for every acre-foot delivered up to 10,500 AFY through 2019. Although current projections discussed above show Central Basin exceeding that amount by 2020, it is preparing for the long-term financial viability of the water recycling system.

Although there is great potential to increase recycled water use in Central Basin, there are challenges and limitations in connecting customers. Among them are proximity to recycled water pipelines, capacity and pressure to serve, and retrofit cost-feasibility. These factors play a significant role in meeting the potential growth of recycled water. The ability to connect new customers dictates when and how much recycled water will be sold in the future.

In 2008, the Master Plan identified and prioritized areas within Central Basin's service area where recycled water has the potential to expand. In this study, a database was established to locate and identify future customers. The approach considered pipeline routing, hydraulic analysis and economic interests to predict the growth of recycled water in Central Basin's service area.

Although the Master Plan is currently being updated and could influence Central Basin's near-term and long-term projections depending primarily on the potential changes to industrial water, the principle goal of maximizing the potential usage of recycled water throughout the service area will not change.

Partnerships with neighboring agencies have already resulted in projects that expand the Central Basin system and sales beyond the service area limits.

8.3.6 ENCOURAGING RECYCLED WATER USE

Central Basin's marketing efforts have been successful in changing the perception of recycled water from merely a conservation tool with minimal application to a business enhancement tool that lowers operating costs while increasing the reliability of the water supply. Central Basin markets recycled water as a resource that:

- Is less expensive than potable water;
- Is more reliable than imported water in a drought and
- Is consistent with statewide goals for water supply and ecosystem improvement on both the SWP and Colorado River systems.

The target customer is expanding from traditional irrigation users such as golf courses and parks to unconventional commercial and industrial users.

In addition to Central Basin wholesaling recycled water at a rate lower than potable water, Central Basin provides other financial incentives as well to encourage recycled water use. Some potential recycled water customers do not have the financial capability to pay for the onsite plumbing retrofits necessary to accept recycled water. Therefore, Central Basin will advance the funds necessary for retrofit expenses. The funds are reimbursed on monthly basis through direct billings from Central Basin. The on-site plumbing retrofit costs are amortized through a period of time, up to 10 years at Central Basin's cost of funds. Once the loan is repaid, the customer will enjoy the full benefit of potable water savings.

Optimizing Recycling Water Use

Central Basin's plan for optimizing the use of recycled water will be carried out through Central Basin's Recycled Water Master Plan update. The Master Plan is Central Basin's guiding document for identifying and prioritizing potential customers. The 2008 Master Plan is currently being updated to capture changes in the industrial and commercial base within the service area, particularly in the northern portion to be served by SWRP.

8.3.7 FUNDING

Capital costs for projects planned over the next five years have been budgeted to an annual average of approximately $8,500,000[1]. The costs will be covered by the following sources identified here and other sources as they become available:

- MWD Local Resources Program Incentive. To qualify, proposed recycled water projects by member agencies must cost more than projected MWD treated non-interruptible water rates and reduce potable water needs. Since founding MWD with other municipal water utilities in 1928, Central Basin has remained affiliated as a member agency and is therefore considered for the rebates for up to $250/AF offered under the program.

- Grant Funding. Central Basin continuously applies for Federal and State grant funding for recycled water projects as they become available. In 2005, Central Basin was awarded a $3.5 million grant for the Southeast Water Reliability Project through the Greater Los Angeles Integrated Regional Water Management Plan. In addition, in 2009, Central Basin was awarded a $5.6 million dollar grant from the American Reinvestment and Recovery Act (ARRA).

8.4 RECYCLED WATER PROJECTS WITHIN CBMWD SERVICE AREA

8.4.1 CITY OF CERRITOS WATER RECYCLING PROGRAM

The City of Cerritos has had its own water recycling system since 1988 and recently celebrated the project's 20th anniversary. This 22-mile system has saved Cerritos about $6 million in water costs with an initial investment of about $9 million. Even though the Cerritos system is not interconnected with Central Basin's system, Cerritos is an important partner because Central Basin's system shares the Cerritos Pump Station for a portion of its recycled water supply from CSDLAC's Los Coyotes Water Recycling Plant. The Cerritos system serves about 2,000 acre-feet each year (400 acre-feet of that supply goes to Lakewood) at approximately 80 sites within the two cities. In looking at Cerritos' overall water demand, recycled water makes up about 13 percent of their total water supply portfolio making it one of the most successful recycled water systems in the country.

8.4.2 CITY OF LAKEWOOD WATER RECYCLING PROGRAM

The City of Lakewood purchases about 400 AFY of recycled water from the City of Cerritos to help offset an equal demand of potable water.

8.4.3 WATER REPLENISHMENT DISTRICT-RECYCLED WATER OPERATIONS

For almost 50 years, the Water Replenishment District (WRD) has been purchasing recycled water from the CSDLAC to be melded with imported and storm water within the recharge grounds of the with CSDLAC and Los Angeles County Department of Public Works (LACDPW). The WRD has an agreement to recharge the basin with recycled water. LACDPW owns and operates the recharge facilities, while WRD purchases the recycled water from the CSDLAC. Under the conditions of a regulation permit from the Los Angeles Regional Water Quality Control Board, the WRD is limited to spreading 35 percent recycled water over a five year period based on the total inflow of all waters (storm water, imported water, and recycled water) entering the Montebello Forebay. For planning purposes, the amount is estimated to grow to 50,000 AF per year.

8.5 TOTAL RECYCLED WATER USE IN CENTRAL BASIN

Within Central Basin's service area there are three key water recycling programs that help offset potable water usage and provide groundwater replenishment. Among the three are the Central Basin Recycled Water System, the City of Cerritos Recycled Water Program, and WRD use of recycled water for replenishment. As illustrated in Table 8-7, together these programs delivered over 46,000 AF of recycled water in the region in 2008-09 which is about 22percent of all water used in the Central Basin area.

FOOTNOTES:

1 Approximation is an average based on fiscal year capital project projections during a five year period (FY: 2010-11 to 2014-15).

Table 8-7
Total Projected Recycled Water Use in Central Basin's Service Area
(in Acre-Feet)

	2010	2015	2020	2025	2030	2035
Central Basin						
Century/Rio Hondo Projects	4,700	6,700	11,000	16,000	16,000	16,000
Total	**4,700**	**6,700**	**11,000**	**16,000**	**16,000**	**16,000**
Other Programs within Central Basin						
City of Cerritos	1,500	1,500	1,500	1,500	1,500	1,500
City of Lakewood[1]	400	400	400	400	400	400
WRD (Replenishment)[2]	40,000	50,000	50,000	50,000	50,000	50,000
Total	**41,900**	**51,900**	**51,900**	**51,900**	**51,900**	**51,900**
Central Basin's Service Area Total	**46,600**	**58,600**	**62,900**	**67,900**	**67,900**	**67,900**

[1] City of Lakewood receives its recycled water from the Cerritos Recycled Water Distribution System.

[2] Data from WRD's 2009 Engineering Survey and Report

Appendix A

Review for Completeness Form

Appendix B

Notice of Public Hearing &

Resolution of Plan Adoption

Appendix C

Notice of Adoption

Appendix D

Central Groundwater Basin Judgment

LAGERLOF, SENECAL, DRESCHER & SWIFT
301 North Lake Avenue, 10th Floor
Pasadena, California 91101
(818) 793-9400 or (213) 385-4345

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT, etc., Plaintiff, v. CHARLES E. ADAMS, et al., Defendants.	No. 786,656 SECOND AMENDED JUDGMENT (Declaring and establishing water rights in Central Basin and enjoining extractions therefrom in excess of specified quantities.)
CITY OF LAKEWOOD, a municipal corporation, Cross-Complainant, v. CHARLES E. ADAMS, et al., Cross-Defendants.	

The above-entitled matter duly and regularly came on for trial in Department 73 of the above-entitled Court (having been transferred thereto from Department 75 by order of the presiding Judge), before the Honorable Edmund M. Moor, specially assigned Judge, on May 17, 1965, at 10:00 a.m. Plaintiff was represented by its attorneys BEWLEY, KNOOP, LASSLEBEN & WHELAN,

Twenty- Third
ANNUAL STATUS REPORT

ON

RECYCLED WATER USE

Fiscal Year 2011-12

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

DOC NO. 20356355

PREFACE

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 continue developing 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 various aspects of the Sanitation Districts' water reuse program, this fiscal year report has been prepared for distribution to interested parties. This report is the twenty-third of its kind and includes: historic recycled water use activities, descriptions of plant operations, 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 Whittier Narrows Recreation Area 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 and all of the individual effluent quality tables.

A "Facts-at-a-Glance" summary page containing a brief list of data regarding the Sanitation Districts' water recycling program for the fiscal year appears before Chapter 1.

If you would like additional copies of this report (paper or electronic), 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@lacsd.org*. Further information regarding the Sanitation Districts and its water recycling activities can be found at the Sanitation Districts' website at *http://www.lacsd.org/waterreuse/*.

Cover Photo: Shaw Industries' Tuftex Carpet Mill in Santa Fe Springs has successfully been using just under 100 acre-feet per year of recycled water from the San Jose Creek Water Reclamation Plant for the dyeing of carpet since September 1993. This quantity of recycled water has only served about 30% of this mill's industrial water needs, so mill staff have recently undertaken the conversion of more of the dye processes to recycled water use, with the intent of reaching 100% recycled water use.

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FY 11-12 FACTS-AT-A-GLANCE

Sanitation Districts

Total Effluent Produced: 431.39 MGD (484,720 AFY), 2.2% decrease
Total Recycled Water Produced: 165.92 MGD (186,435 AFY), 66.3% of capacity, 38.5% of the total produced, 1.5% increase
Total Recycled Water Used: 84.74 MGD (95,211 AFY), 51.1% of recycled water produced, 11.4% increase, 706 sites (55 new sites added, 1 site disconnected)

Groundwater replenishment (4) -	47.99 MGD (53,922 AFY)	56.6% of total reuse	18.8% increase
Landscape irrigation (667) -	14.85 MGD (16,682 AFY)	17.5% of total reuse	9.0% increase
Agriculture (10) -	12.59 MGD (14,148 AFY)	14.9% of total reuse	4.1% increase
Industrial (24) -	2.96 MGD (3,325 AFY)	3.5% of total reuse	6.2% increase
Environmental (1) -	6.35 MGD (7,133 AFY)	7.5% of total reuse	11.0% increase

Total Reuse Since Inception: 2,592,849 AF (844.6 billion gallons)

Transmission lines: 1,317,860 linear feet (250 miles)

Acreage Served: 14,558 acres (direct non-potable use)

Jurisdictions Served: 31 (30 cities plus Los Angeles County Unincorporated Areas)

Recycled Water Purveyors: 31

Recycled Water Contracts: 24

Chemical Savings[1]: $134,935

Greenhouse Gas Reduction[2]: 214,225 tons of carbon dioxide

Capacity of Future Planned Reuse Projects: 77,245 AFY (68.93 MGD)

Joint Outfall System

Total Effluent Produced: 391.49 MGD (439,882 AFY), 2.5% decrease
Total Recycled Water Produced: 126.02 MGD (141,597 AFY), 32.2% of the total produced, 1.9% increase
Total Recycled Water Used: 65.81 MGD (73,944 AFY), 52.2% of recycled water produced, 15.8% increase

Santa Clarita

Total Recycled Water Produced: 19.82 MGD (22,271 AFY), 0.4% decrease
Total Recycled Water Used: 0.339 MGD (381 AFY), 1.7% of recycled water produced, 13.1% increase

Antelope Valley

Total Wastewater Treated: 23.29 MGD, 0.8% increase
Total Recycled Water Produced: 20.08 MGD (22,567 AFY), 0.7% increase
Total Recycled Water Used: 18.59 MGD (20,886 AFY), 92.6% of recycled water produced, 1.8% decrease

1 Recycled water delivered to the various distribution systems is not dosed with either sulfur dioxide or sodium bisulfate for dechlorination or with defoamant.

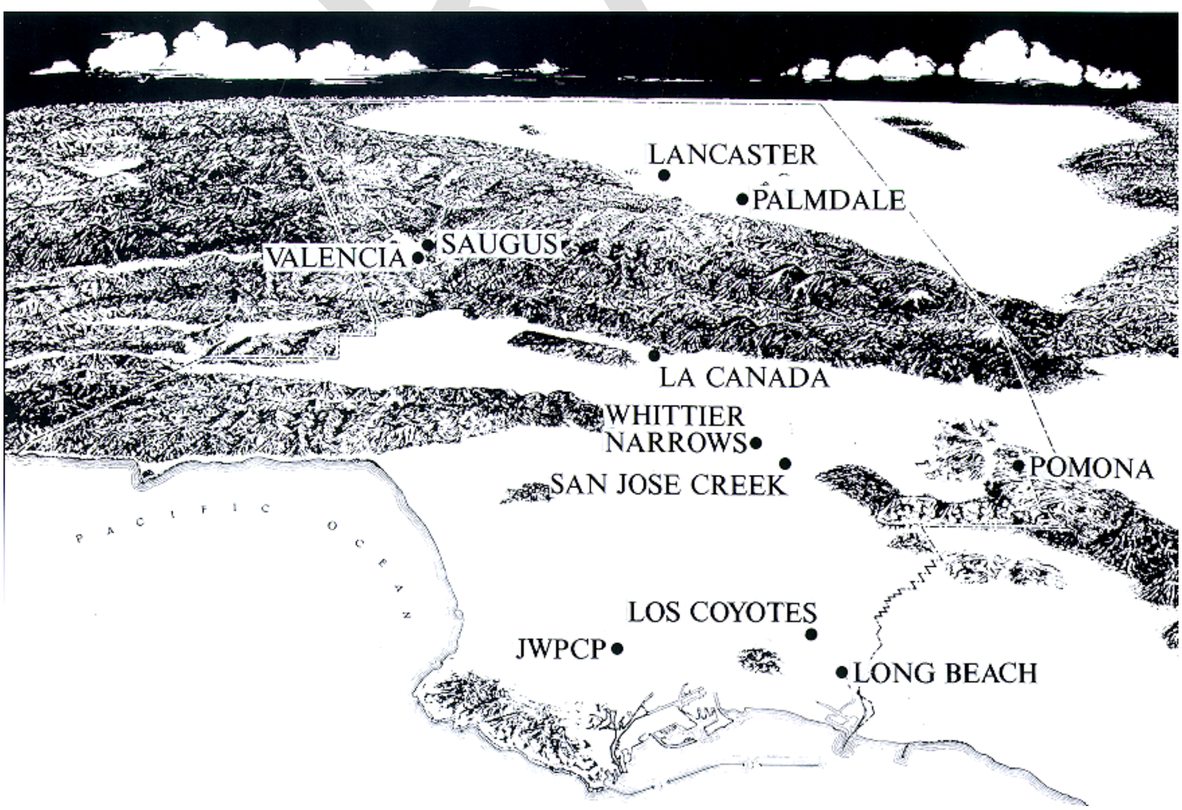
2 The use of locally produced recycled water eliminates the need to pump State Project water into the Los Angeles Basin at an energy cost of approximately 3,000 kWh/AF with the attendant CO_2 production.

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 quality recycled water to filtered, disinfected tertiary quality recycled water. During Fiscal Year 2011-12 (FY 11-12), Sanitation Districts' facilities produced an average of 431.39 million gallons per day (MGD), or 484,720 acre-feet per year (AFY) of effluent, which is a decrease of 2.2% from the preceding fiscal year, and a 19.5% 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 continued decreasing despite population growth in the Sanitation Districts' service area. The 16.4% decrease in effluent production since FY 04-05 is a result of a downturn in local economic activity combined with increasing water conservation efforts (low flow toilets, waterless urinals, water efficient washing machines, etc.) due to a three-year statewide drought (2006-09). Effluent production at Sanitation Districts' facilities is currently at levels last seen in the late 1970s.

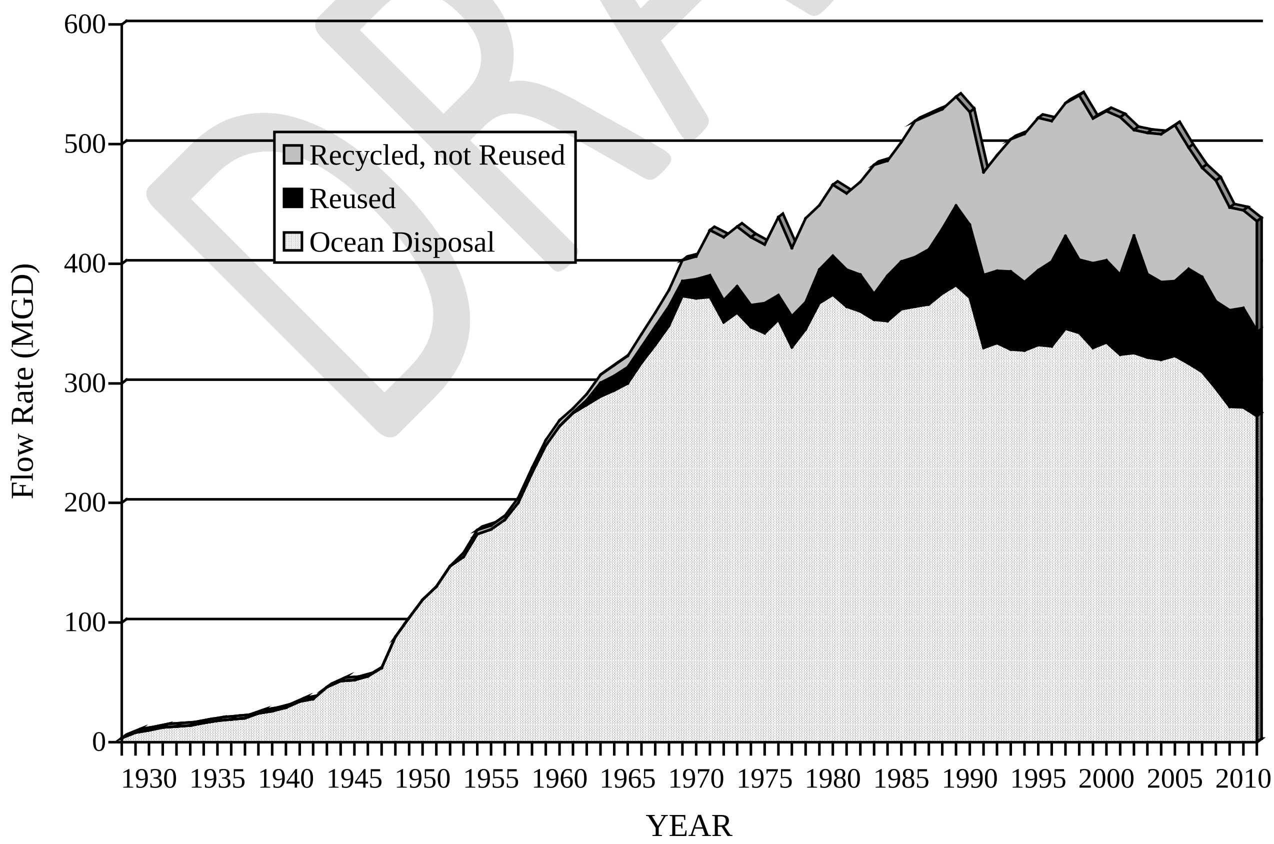
FIGURE 1
LOCATION OF SANITATION DISTRICTS' WASTEWATER TREATMENT FACILITIES



Capacity at the ten Sanitation Districts' WRPs is 250.8 MGD (281,040 AFY) as of the end of FY 11-12. However, of the total effluent produced, only 165.92 MGD (186,435 AFY) consisted of recycled water available for reuse from these 10 facilities (66.3% of capacity). This amount is 38.5% of the total amount of effluent produced, and an increase of 1.5% over the preceding fiscal year. The remaining 265.47 MGD (298,285 AFY) was effluent discharged to the ocean from the Sanitation Districts' Joint Water Pollution Control Plant (JWPCP) in the City of Carson, a 4.4% decrease from the preceding fiscal year.

For the past half century, the Sanitation Districts have diverted high quality wastewater flows away from direct ocean disposal to the upstream WRPs in order to provide recycled water supplies for eventual reuse, as illustrated in Figure 2 (data through the end of calendar year 2011). 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 combined 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 actually 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
1928-2011



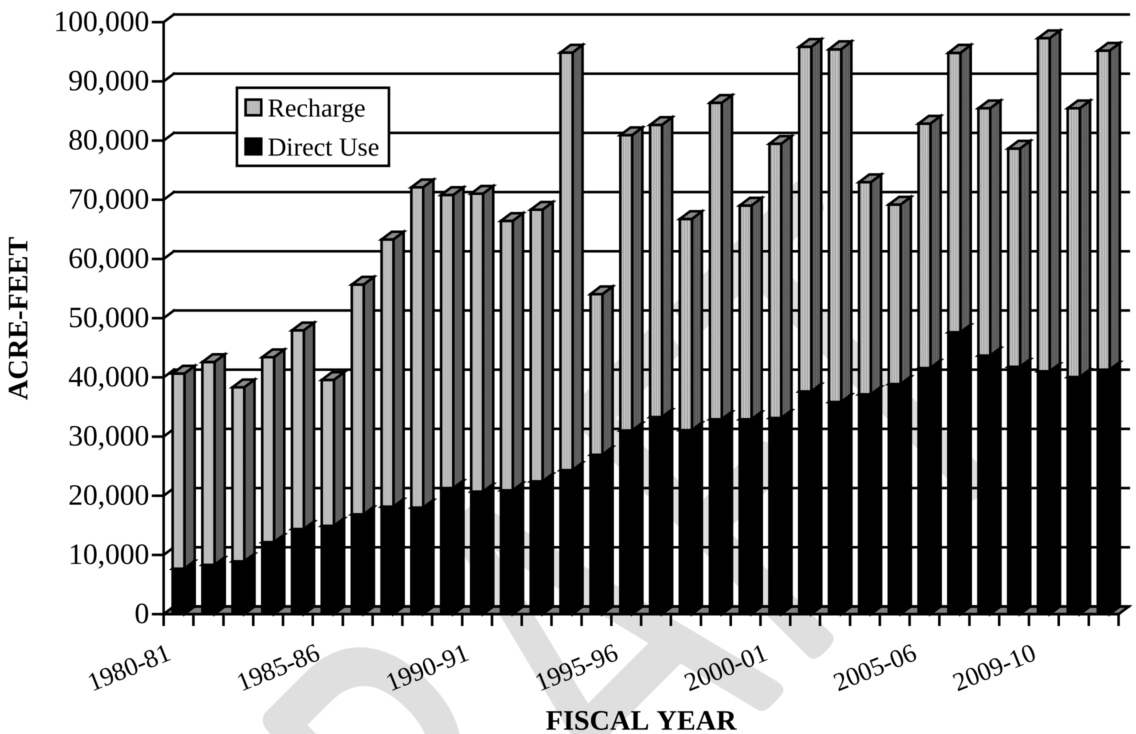
Of the total amount of recycled water produced, 84.736 MGD (95,211 AFY) was actively reused for a variety of applications including urban landscape irrigation, agricultural irrigation, recreational impoundments, industrial process water, wildlife habitat maintenance, and groundwater replenishment. The 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 51.1% of the recycled water produced, an 11.4% increase over the preceding fiscal year. During FY 11-12, 54 new landscape irrigation sites and one industrial site began receiving Sanitation Districts' recycled water (with one reuse site ceasing operations).

TABLE 1
RECYCLED WATER PRODUCED AND REUSED AT WATER RECLAMATION PLANTS
FISCAL YEAR 2011-12

Water Reclamation Plant	Nominal Treatment Capacity (AFY)	Quantity Recycled (AFY)	Percent Change from FY 10-11 (+/-)	Quantity Reused (AFY)	Percent Change from FY 10-11 (+/-)	Percent of Recycled Water Used
La Cañada	225	93	-12.3	93	-12.3	100
Long Beach	28,015	20,472	-2.8	6,868	+6.8	33.5
Los Coyotes	42,020	26,018	+11.2	5,982	+6.5	23.0
Pomona	16,810	9,541	-5.4	8,241	+8.1	86.0
San Jose Creek	112,055	75,849	+0.4	43,266	+21.1	57.0
Whittier Narrows	16,810	9,624	+10.6	9,494	+14.0	98.6
Valencia	24,205	16,695	-0.3	381	+13.4	2.3
Saugus	7,285	5,576	-0.7	0	0	0
Lancaster	20,170	12,869	-3.4	12,765	-3.9	99.2
Palmdale	13,445	9,698	+6.6	8,121	+1.6	83.7
TOTAL	281,040	186,435	+1.5	95,211	+11.4	51.1

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, non-potable 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, non-potable reuse through FY 11-12.

FIGURE 3
DIRECT NON-POTABLE REUSE VS. GROUNDWATER RECHARGE
1980-81 TO 2011-12



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 706 reuse sites on approximately 14,558 acres, utilizing approximately 1,317,860 linear feet (almost 250 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-2012.

Cities with Sites Using Sanitation Districts' Recycled Water

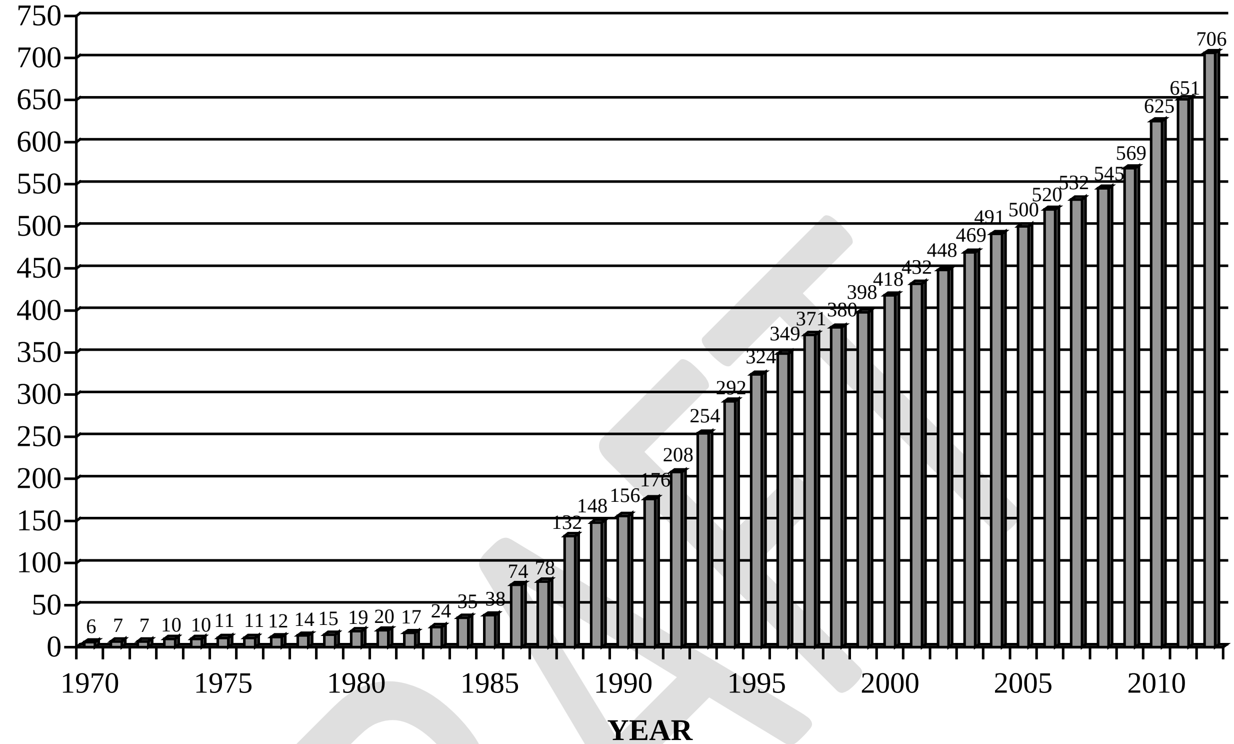
Bellflower	Norwalk
Bell Gardens	Palmdale
Cerritos	Paramount
Compton	Pico Rivera
Cudahy	Pomona
Diamond Bar	Rowland Heights
Downey	Santa Clarita
El Monte	Santa Fe Springs
Huntington Park	Signal Hill
Industry	South El Monte
La Cañada	South Gate
Lakewood	Vernon
Lancaster	Walnut
Long Beach	West Covina
Lynwood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

Note: Recycled water is also used in areas of Unincorporated Los Angeles County

Table 2
Recycled Water Used by Water Recycling Project
Fiscal Year 2011-12

Project Name	Pipeline Length (linear feet)	Recycled Water Used (AFY)	Percent Change from FY 10-11 (+/-)	No. of New Reuse Sites
La Cañada-Flintridge Country Club		93	-12.3	
Long Beach Water Department	179,680	4,697	+15.8	4
Alamitos Seawater Barrier		2,171	-8.5	
City of Bellflower	1,900	47	+11.9	
City of Cerritos	142,600	1,871	+2.6	2
City of Lakewood	28,300	474	+7.0	
Central Basin MWD (Century)	107,160	3,590	+8.5	
Pomona Water Department	37,000	1,560	+15.8	
Spadra Landfill		434	+24.0	
Walnut Valley Water District	166,320	1,247	+6.8	2
Water Replenishment District		51,750	+20.3	
City of Industry	44,350	903	-5.6	
Rowland Water District	85,540	94	+25.3	27
California Country Club		423	0	
LA Sanchez Nursery		13	+8.3	
Central Basin MWD (Rio Hondo)	290,400	253	+11.5	5
Puente Hills/Rose Hills	8,900	2,231	+5.8	
USGVMWD Rio Hondo Extension	11,020	636	+16.9	
Whittier Narrows Recreation Area	18,900	1,457	+1.7	15
Castaic Lake Water Agency	16,490	381	+13.1	
Piute Pond		7,133	-11.0	
Nebeker Ranch	15,900	4,311	+4.9	
Apollo Community Regional Park	23,800	254	+23.3	
Eastern Agricultural Site	96,600	1,063	+12.2	
City of Lancaster	29,800	4	+300.0	
Los Angeles World Airports Lease	13,200	8,121	+1.6	
TOTALS	1,317,860	95,211	+11.4	55

FIGURE 4
INCREASE IN NUMBER OF REUSE SITES
1970-2012



During FY 11-12, 41.607 MGD (46,751 AFY) was used for groundwater replenishment from the San Jose Creek and Whittier Narrows WRPs. Approximately 1,581,214 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 11-12. Another 4.450 MGD (5,000 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, because 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 requires 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 11-12, as the Alamitos Seawater Intrusion Barrier received 1.933 MGD (2,171 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. Due to operational limitations, the full capacity of the Leo Vander Lans advanced treatment plant that supplies the Alamitos Barrier is still not being realized.

During FY 11-12, the total of 47.990 MGD (53,921 AFY) that went to groundwater replenishment was an 18.8% increase over the preceding fiscal year. Of the total amount of water reused during FY 11-12, 56.6% went for groundwater replenishment, which is only the third time in the past eight years that this reuse application has made up more than half of total reuse. In previous years, concerns over the potential for a fish kill of a colony of non-native *Tilapia* fish living in the lined portion of the San Gabriel River necessitated the continued discharge of effluent from the San Jose Creek WRP to that point, thus preventing its diversion directly into the San Gabriel Coastal Spreading Grounds from the San Jose Creek Outfall line. 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 diverted for recharge. The small amount of effluent being discharged to the lined portion of the San Gabriel River is sufficient 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 667 of the individual reuse sites used recycled water for some form of landscape irrigation, and approximately 14.847 MGD (16,682 AFY), or 17.5% of the total water reused, went toward this application. These sites include 107 parks, 110 schools, 231 commercial and office buildings (e.g., offices, warehouses, retail, car dealerships, hotels, restaurants, etc.), 112 roadway greenbelts, 28 public facilities (e.g., police station, post office, libraries, landfills, etc.), 23 golf courses, 21 nurseries, 17 residential developments, 11 churches, and 7 cemeteries.

- Agricultural usage at 10 reuse sites accounted for approximately 12.591 MGD (14,148 AFY), or 14.9% of the total reused.

- Twenty-four industrial applications of recycled water (which include carpet dyeing, oil field injection, power plant cooling towers, metal finishing, street sweeping, sewer flushing, and construction applications such as dust control and concrete mixing) totaled 2.960 MGD (3,325 AFY), or 3.5% of the total reused.

- Approximately, 6.348 MGD (7,133 AFY), or 7.5% of the total reused, went to environmental enhancement of a wildlife habitat (Piute Ponds) in the Mojave Desert.

TOP TEN – LARGEST DIRECT REUSE SITES OF 2011-12*

1. **Antelope Valley Farms** — **8,030 AFY**
   Palmdale WRP *(agricultural irrigation of alfalfa)*
2. **Nebeker Ranch** — **4,311 AFY**
   Lancaster WRP *(agricultural irrigation of alfalfa)*
3. **Alamitos Intrusion Barrier** — **2, 171 AFY**
   Long Beach WRP *(seawater barrier injection)*
4. **THUMS** — **1,412 AFY**
   Long Beach WRP *(oil zone repressurization)*
5. **Puente Hills Landfill** — **1,109 AFY**
   San Jose Creek WRP *(irrigation & dust control)*
6. **Rose Hills Memorial Park** — **1,077 AFY**
   San Jose Creek WRP *(landscape irrigation)*
7. **Eastern Agricultural Site** — **1,063 AFY**
   Lancaster WRP *(agricultural irrigation of alfalfa)*
8. **Industry Hills Recreation Area** — **903 AFY**
   San Jose Creek WRP *(landscape irrigation)*
9. **Bonelli County Regional Park** — **841 AFY**
   Pomona WRP *(landscape irrigation)*
10. **Whittier Narrows Recreation Area** — **771 AFY**
    Whittier Narrows 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.

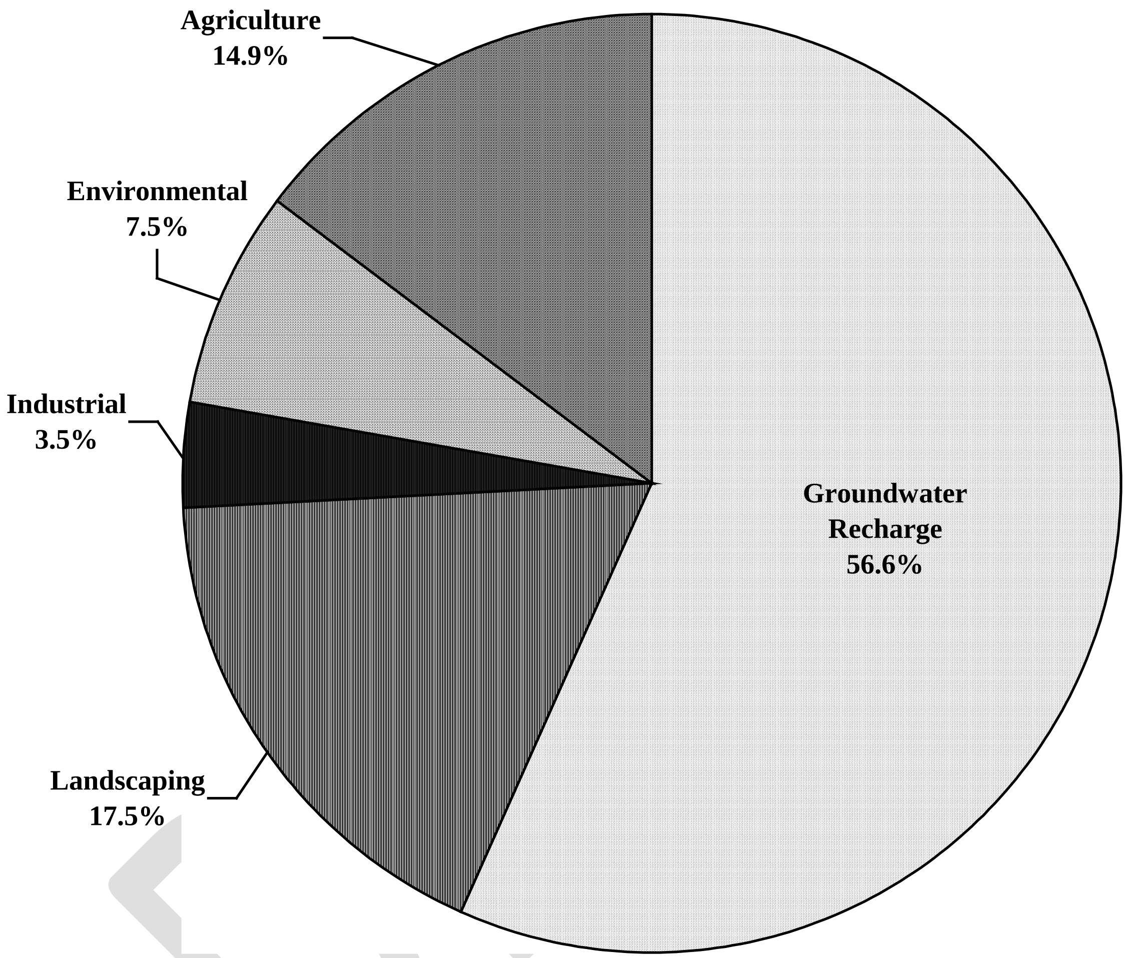
TABLE 3
CATEGORIES OF RECYCLED WATER USAGE
FISCAL YEAR 2011-12

Reuse Application	No. of Sites	Area Applied (acres)	Usage (MGD)
Parks	107	3,477.9	4.093
Golf Courses	23	2,665.8	4.138
Schools	110	1,267.1	1.871
Roadway Greenbelts	112	647.8	0.881
Public Facilities[1]	28	497.5	1.247
Commercial Buildings[2]	231	520.4	0.979
Nurseries	21	118.9	0.139
Cemeteries	7	701.4	1.187
Residential Developments	17	114.3	0.274
Churches	11	12.5	0.037
Industrial[3]	24	157.5	2.960
Agriculture[4]	10	3,977.0	12.591
Environmental Enhancement	1	400	6.348
SUBTOTAL	702	14,558.0	36.745
Groundwater Recharge	4	646	47.990
TOTAL	706	15,204.0	84.735

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 carpet dyeing, concrete mixing, cooling towers, metal finishing, oil field injection, toilet flushing and construction applications such as soil compaction and dust control.
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 2011-12



1.3 ECONOMIC AND ENVIRONMENTAL IMPACTS

At the end of FY 11-12, the Sanitation Districts had 24 contracts (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 $134,935 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).

Table 4 compares selected potable water rates and recycled water rates (in effect as of the end of FY 11-12), 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 2011-12

Purveyor	Potable Water ($/AF)	Recycled Water ($/AF)	Discount (%)
Long Beach Water Department	1,062.43	531.43 – 744.00	30 – 50
City of Cerritos	614.20	326.70	47
City of Lakewood	1,089.00	444.31	59
Central Basin MWD	859.00 – 984.00	291.00 – 536.00	37 – 70
Pomona Water Department	1,271.95	533.66	58
Walnut Valley Water District	1,041.08	649.04	36
Rowland Water District	1,010.59	635.98	38
San Gabriel Valley Water Co.	907.79	220.00 – 771.62	15 – 76
Valencia Water Company	609.40	511.83	16

To put things into perspective, the 95,211 AF of water reused in FY 11-12 is equivalent to the water supply for a population of 476,055, between the cities of Fresno and Sacramento, CA, the 34th and 35th largest cities in the U.S.[3] 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.[4] Thus, approximately 285.6 million kWh of electricity were conserved in FY 11-12, which is equivalent to the annual output of a 32.6-megawatt power plant consuming nearly 155,000 barrels of oil. At $0.15/kWh (based on Southern California Edison residential billing rate), this equates to an annual savings of approximately $43 million in electricity. At $106.16/barrel,[5] this equates to an annual savings of approximately $16.4 million in oil.

The conservation of fossil fuels and energy also resulted in significant reductions in potential air pollutants. During FY 11-12, 164.2 tons of nitrogen oxide, 28.6 tons of carbon monoxide, 17.1 tons of sulfur oxides, 5.7 tons of particulates, and 1.4 tons of reactive organic gases were kept out of the atmosphere.[6] Perhaps more important, the use of local recycled water avoided the production of approximately 214,225 tons of carbon dioxide, a greenhouse gas that contributes to global warming.[7]

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

3 2010 Census.
4 "Refining Estimates of Water-Related Energy Use in California," California Energy Commission, December 2006.
5 May 1, 2012 spot price for "West Texas Intermediate crude oil".
6 Estimates based upon emission factors from "Power Plant Fuel Use and Emissions," South Coast Air Quality Management District, May 1986.
7 Estimate based upon data from "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 183rd 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

Golden State Water Company
110 E. Live Oak Avenue
Arcadia, CA 91006
(626) 446-1372

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 2011-12

Category	Units	Savings
Water Supply	acre-feet	95,211
Water Supply	No. of People	476,055
Energy	kilowatt-hours	285,633,000
Energy	megawatts	32.6
Energy	barrels of oil	154,786
Electricity	dollars	42,844,950
Petroleum	dollars	16,432,082
WRP chemicals	dollars	134,935
Nitrogen oxide	tons	164.2
Carbon monoxide	tons	28.6
Sulfur oxides	tons	17.1
Particulates	tons	5.7
Reactive organic gases	tons	1.4
Carbon dioxide	tons	214,225

1.4 SUMMARY

Of the 431.39 MGD of treated effluent produced by the Sanitation Districts, 165.92 MGD (38.5%) was treated to a suitable level for reuse, with 84.74 MGD (19.6%) actually being reused at 706 individual sites in 30 cities for numerous diverse applications (with more than half of the reuse being for groundwater replenishment). This level of reuse represented more than half of the recycled water available for reuse. Effluent production continued to decrease due to increased conservation and reduced commercial/industrial activity. The top 10 largest direct reuse sites (less than 2% of all sites, excluding recharge and environmental) used almost 23% of the recycled water delivered during the fiscal year. Fifty-five new reuse sites were added during FY 11-12 (one site ceased operation), and the amount of recycled water used increased by 11.4% over the preceding fiscal year mostly due to a significant increase in the amount of groundwater replenishment. The use of 95,211 AF of locally produced recycled water essentially resulted in the conservation of the water supply needs of nearly half a million 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 2,592,849 AF (844.6 billion gallons) of recycled water produced by Sanitation Districts' facilities have been beneficially used. This use of recycled water has avoided the release of approximately 5.83 million tons of carbon dioxide and 5,912 tons of other 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 11-12 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 FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 1 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Water Replenishment District (WNWRP)	Aug 62	--	R	7.153	8,037
La Cañada-Flintridge Country Club (La Cañada)	Oct 62	105	L,P	0.083	93
Apollo Lakes Community Regional Park (Lancaster)	Jun 69	56	L,P	0.226	254
Water Replenishment District(SJCWRP)	Jun 71	--	R	34.454	38,713
Cal Poly, Pomona-Kellogg (Pomona)	Dec 73	500	AG,L,O,P,AF	0.566	636
Lanterman Hospital (Pomona)	Dec 73	100	AG	0	0
South Campus Drive Parkway (Pomona)	Dec 73	8	L	0.012	13
Route 57 and 10 Freeways (Pomona)	May 75	18	L	0.051	57
Bonelli Regional County Park (San Dimas)	Apr 77	789	L	0.749	841
California Country Club (Industry)	Jun 78	120	L,P	0.376	423
Ironwood 9 Golf Course (Cerritos)	Nov 78	25	L,P	0.089	100
Caruthers Park (Bellflower)	Nov 78	5	L	0.042	47
El Dorado Park West (Long Beach)	Aug 80	135	L	0.125	141
El Dorado Golf Course (Long Beach)	Aug 80	150	L	0.179	201
Suzanne Park (Walnut)	Oct 80	12	L	0.016	18
Route 71 and 10 Freeways (Pomona)	Apr 81	12	L	0.005	6
Piute Ponds (Lancaster)	May 81	400	E	6.348	7,133
Recreation Park (Long Beach)	Oct 82	26	L	0.053	59
Recreation Golf Course (Long Beach)	Oct 82	149	L	0.226	253
Whaley Park (Long Beach)	Jun 83	9	L	0.024	27
Industry Hills Recreation Area (Industry)	Aug 83	600	L,P	0.804	903
El Dorado Park East (Long Beach)	Jan 84	300	L	0.375	422
Nature Center (Long Beach)	Jan 84	60	L	0.042	47
605 Freeway at Wardlow (Long Beach)	Feb 84	50	L	0.021	24
Heartwell Park (Long Beach)	Feb 84	120	L	0.137	153
Skylinks Golf Course (Long Beach)	Apr 84	155	L,P	0.240	270
Douglas Park (Long Beach)	Apr 84	3	L	0.005	5
405 Freeway at Atherton (Long Beach)	May 84	5	L	0.00004	0.05
DeMille Junior High School (Long Beach)	Jun 84	5	AF,L	0.0005	1
Heartwell Golf Park (Long Beach)	Jun 84	30	L	0.064	72
Spadra Landfill landscape (Walnut)	Jul 84	53	L	0.327	368
Spadra Landfill dust control (Walnut)	Jul 84	--	I	0.003	4
Veterans Memorial Stadium (Long Beach)	Jan 85	6	AF	0.018	20
Harrington Farms Pistachio Orchard (Palmdale)	Apr 85	23	AG	0.076	85
Recreation Park Bowling Green (Long Beach)	Aug 85	3	L	0.005	6
California State University, Long Beach	Dec 85	52	AF,L	0.141	159
Long Beach City College (Long Beach)	Feb 86	15	AF,L	0.183	206
Recreation 9-Hole Golf Course (Long Beach)	Mar 86	37	L	0.073	83
Blair Field (Long Beach)	Apr 86	5	AF	0.012	13
Woodlands Park (Long Beach)	Apr 86	7	L	0.012	13
Colorado Lagoon Park (Long Beach)	Apr 86	4	L	0.0002	0.3
Marina Vista Park (Long Beach)	Apr 86	30	L	0.033	37
Suzanne Middle School (Walnut)	May 86	4	AF,L	0.011	12
Walnut High School (Walnut)	May 86	15	AF,L	0.019	21
Vejar School (Walnut)	May 86	3	AF,L	0.009	10
Morris School (Walnut)	May 86	9	AF,L	0.010	12
Snow Creek Park (Walnut)	May 86	7	L	0.011	12
Snow Creek Landscape Maintenance Dist. (Walnut)	May 86	13.5	L	0.048	54
Lemon Creek Park (Walnut)	May 86	5	L	0.006	7
Friendship Park (West Covina)	May 86	6	L	0.008	9
Hollingworth School (West Covina)	May 86	3	AF,L	0.006	7
Lanesboro Park (West Covina)	May 86	2	L	0.008	9
Rincon Middle School (West Covina)	May 86	3	AF,L	0.009	11
Route 57 and 60 Freeways (Rowland Heights)	May 86	19.7	L	0.019	21

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 FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 2 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Rowland Heights Reg. Co. Park (Rowland Heights)	May 86	11	L	0.013	15
Rowland High School (Rowland Heights)	May 86	9	AF,L	0.017	20
Killian Elementary School (Rowland Heights)	May 86	3	AF,L	0.005	5
Walnut Elementary School (Walnut)	May 86	4	AF,L	0.001	1
WUSD Administrative Service Center (Walnut)	May 86	4	L	0.003	3
Walnut Ranch Park (Walnut)	Jun 86	26	L	0.022	25
Amar Road greenbelt (Walnut)	Jun 86	16	L	0.035	40
Diamond Bar Golf Course (Diamond Bar)	Jul 86	174	L,P	0.192	215
Walnut Ridge Landscape Maintenance Dist. (Walnut)	Mar 87	25.5	L	0.040	45
Morningside Park (Walnut)	Mar 87	4	L	0.006	7
Gateway Corporate Center (Diamond Bar)	Jun 87	45	L	0.038	43
Library/Civic Center (Cerritos)	Dec 87	4	L	0.016	18
Olympic Natatorium (Cerritos)	Dec 87	6	L	0.018	20
Whitney Learning Center (Cerritos)	Dec 87	10	AF,L	0.020	23
Gonsalves Elementary School (Cerritos)	Dec 87	5	AF,L	0.010	11
Wittman Elementary School (Cerritos)	Dec 87	5	AF,L	0.010	11
Gahr High School (Cerritos)	Dec 87	28	AF,L	0.055	62
Area Development Project No. 2 (Cerritos)	Jan 88	11.5	L,P	0.061	69
Medians/Parkways (Cerritos)	Jan 88	42.8	L	0.146	164
605 Freeway (Cerritos)	Jan 88	58.6	L	0.104	117
91 Freeway (Cerritos)	Jan 88	70	L	0.032	36
Frontier Park (Cerritos)	Jan 88	2.5	L	0.010	11
Carmenita Junior High School (Cerritos)	Jan 88	5	AF,L	0.016	18
Cerritos Elementary School (Cerritos)	Jan 88	6	AF,L	0.009	10
Stowers Elementary School (Cerritos)	Jan 88	6	AF,L	0.019	22
Kennedy Elementary School (Cerritos)	Jan 88	7	AF,L	0.016	18
City Park East (Cerritos)	Jan 88	18	L	0.047	52
Satellite Park (Cerritos)	Jan 88	2	L	0.004	4
Leal Elementary School (Cerritos)	Jan 88	6	AF,L	0.007	8
Cerritos High School (Cerritos)	Jan 88	20	AF,L	0.044	49
Elliott Elementary School (Cerritos)	Jan 88	7	AF,L	0.012	14
Carmenita Park (Cerritos)	Jan 88	4.5	L	0.016	17
Juarez Elementary School(Cerritos)	Jan 88	7	AF,L	0.018	20
ABC Adult School & Office (Cerritos)	Jan 88	3	L	0.014	16
Tracy Education Center (Cerritos)	Jan 88	6	AF,L	0.003	3
Liberty Park (Cerritos)	Jan 88	20	L	0.072	80
Gridley Park (Cerritos)	Jan 88	9	L	0.026	30
Jacob Park (Cerritos)	Jan 88	4.5	L	0.016	18
Heritage Park (Cerritos)	Feb 88	12	L	0.034	39
Bragg Elementary School (Cerritos)	Feb 88	7	AF,L	0.015	17
Haskell Junior High School (Cerritos)	Feb 88	18	AF,L	0.045	51
Pat Nixon Elementary School(Cerritos)	Feb 88	5	AF,L	0.009	11
Cabrillo Lane Elementary School (Cerritos)	Feb 88	9	AF,L	0.001	1
Sunshine Park (Cerritos)	Feb 88	3.5	L	0.010	11
Friendship Park (Cerritos)	Feb 88	4	L	0.009	10
Bettencourt Park (Cerritos)	Feb 88	2	L	0.005	6
Brookhaven Park (Cerritos)	Feb 88	2	L	0.005	6
Saddleback Park (Cerritos)	Feb 88	2	L	0.005	5
Westgate Park (Cerritos)	Feb 88	4	L	0.009	11
Rainbow Park (Cerritos)	Mar 88	2.5	L	0.005	6
Bellflower Christian School	Mar 88	31.4	AF,L	0.035	39
Cerritos Community College (Cerritos)	Mar 88	55	AF,L	0.094	106
Cerritos Regional County Park (Cerritos)	Apr 88	59	L	0.113	127
Artesia Cemetery District (Cerritos)	Apr 88	10.9	L	0.024	26

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 Fiscal Year 11-12 Recycled Water Usage
(Page 3 of 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Rosewood Park (Cerritos)	Apr 88	2.7	L	0.015	17
20659 E. Valley Blvd. (Walnut)	May 88	7	O	0.00001	0.01
Nebeker Ranch (Lancaster)	Jun 88	600	AG	3.837	4,311
Lakewood 1st Presbyterian Church (Long Beach)	Sep 88	1	L	0.0001	0.1
Westhoff Elementary School (Walnut)	Sep 88	8	AF,L	0.005	6
Tree Farm (Palmdale)	Feb 89	46	O	0.006	6
Virginia Country Club (Long Beach)	Mar 89	135	L,P	0.076	85
Lakewood Golf Course (Long Beach)	Mar 89	128	L,P	0.293	330
Scherer Park (Long Beach)	Mar 89	24	L	0.036	41
Sports Complex (Cerritos)	Mar 89	25	AF,L	0.052	59
Sunnyside Memorial Park (Long Beach)	Apr 89	35	L	0.073	82
All Soul's Cemetery (Long Beach)	Apr 89	40	L	0.100	112
Cherry Avenue Park (Long Beach)	May 89	10	L	0.014	16
River (Rynerson) Park (Lakewood)	Aug 89	40	L	0.076	85
Monte Verde Park (Lakewood)	Aug 89	4	L	0.053	60
Mae Boyer Park (Lakewood)	Aug 89	8	L	0.027	31
Jose Del Valle Park (Lakewood)	Aug 89	12	L	0.031	35
Jose San Martin Park (Lakewood)	Aug 89	9.3	L	0.021	23
City Water Yard (Lakewood)	Aug 89	1	L	0.008	9
Woodruff Avenue greenbelt (Lakewood)	Aug 89	4.1	L	0.012	13
South Street greenbelt (Lakewood)	Aug 89	3.3	L	0.008	9
Mayfair Park (Lakewood)	Dec 89	18	L	0.041	47
Shoemaker On/Off Ramp - 91 Freeway (Cerritos)	Dec 89	4.6	L	0.013	15
Temple Avenue greenbelt (Walnut)	Jan 90	1	L	0.001	1
Transpacific Development Co. (Cerritos)	Feb 90	6.9	L	0.010	12
Automated Data Processing (Cerritos)	Feb 90	0.7	L	0.004	4
Sheraton Hotel (Cerritos)	Mar 90	0.6	L	0.003	4
Walnut Tech Business Center (Walnut)	Apr 90	1	L	0.002	2
Cerritos Pontiac/GMC Truck (Cerritos)	May 90	0.5	L	0.002	2
Moothart Chrysler (Cerritos)	May 90	0.4	L	0.005	5
St. Joseph Parish School (Lakewood)	Aug 90	3.5	AF,L	0.010	11
Foster Elementary School (Lakewood)	Sep 90	6	AF,L	0.016	18
Windjammer Off Ramp - 91 Freeway (Cerritos)	Sep 90	0.8	L	0.002	3
Browning Oldsmobile (Cerritos)	Sep 90	0.1	L	0.002	2
Civic Center Way and City Hall (Lakewood)	Nov 90	2.8	L	0.018	21
Los Coyotes Diagonal (Long Beach)	Mar 91	1	L	0.005	6
City Water Truck (Cerritos)	May 91	--	L	0.0001	0.1
Private Haulers (Cerritos)	May 91	--	I	0	0
Parkside Condominiums (Cerritos)	May 91	1.8	L	0.005	6
Mayfair High School (Lakewood)	May 91	36.5	AF,L	0.044	50
Wilson High School (Long Beach)	Jun 91	5	AF,L	0.023	26
Concordia Church (Cerritos)	Jun 91	4	L	0.003	4
Church of the Nazarene (Cerritos)	Aug 91	1	L	0.003	4
B&B Stables (Cerritos)	Aug 91	18	I	0.004	5
Lemon Avenue greenbelt (Walnut)	Sep 91	4.3	L	0.007	8
Lindstrom Elementary School (Lakewood)	Sep 91	12	AF,L	0.015	16
Lakewood High School (Lakewood)	Sep 91	25	AF,L	0.026	29
Shadow Park Homeowner's Association (Cerritos)	Nov 91	6	L	0.019	21
South Coast AQMD Headquarters (Diamond Bar)	Nov 91	2	L	0.005	5
Long Beach Water Department office (Long Beach)	Jan 92	2	L	0.0003	0.3
Reservoir Park (Signal Hill)	Feb 92	2	L	0.008	8
Burroughs Elementary School (Signal Hill)	Feb 92	4	AF,L	0.002	2
Andy's Nursery (Bellflower)	Feb 92	9	O	0	0
Lake Center Park (Santa Fe Springs)	Mar 92	8	L	0.019	22

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 FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 4 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Lake Center School (Santa Fe Springs)	Mar 92	8	AF,L	0.018	20
Clarkman Walkway (Santa Fe Springs)	Mar 92	0.1	L	0.0004	0.4
Towne Center Walkway (Santa Fe Springs)	Apr 92	0.1	L	0.0002	0.2
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	0
Hughes Middle School (Long Beach)	Apr 92	3	AF,L	0.010	11
405 Freeway at Walnut (Long Beach)	Apr 92	9	L	0.004	5
Area Development Project No. 6 (Cerritos)	Apr 92	9	L	0.054	60
Somerset Park (Long Beach)	May 92	3	L	0.002	3
Longfellow Elementary School (Long Beach)	May 92	1	AF,L	0.001	1
Granada Park Homeowners Association (Cerritos)	May 92	3.8	L	0.008	10
Walnut Valley Water Dist. reservoir (Diamond Bar)	May 92	1	L	0.006	7
Florence Avenue medians (Santa Fe Springs)	Jun 92	3	L	0.006	6
Gauldin Elementary School (Downey)	Jun 92	8.4	AF,L	0.006	7
Rio San Gabriel School (Downey)	Jun 92	14.8	AF,L	0.016	18
Bellflower High School (Bellflower)	Jul 92	28.4	AF,L	0.070	78
Ernie Pyle Elementary School (Bellflower)	Aug 92	4.9	AF,L	0.011	13
Telegraph Road medians (Santa Fe Springs)	Aug 92	0.5	L	0.003	3
Lakeview Park (Santa Fe Springs)	Aug 92	6.7	L	0.013	14
Clark Estate (Santa Fe Springs)	Aug 92	4.3	L	0.006	6
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	0.028	32
Police Station (Santa Fe Springs)	Sep 92	0.2	L	0.002	2
Aquatic Center (Santa Fe Springs)	Sep 92	0.5	L	0.004	5
Lewis School (Downey)	Nov 92	4.6	AF,L	0.006	7
Wilderness Park (Downey)	Nov 92	24	L	0.089	100
First Chinese Baptist Church (Walnut)	Dec 92	0.3	L	0.002	2
605 Freeway at Foster (Bellflower)	Jan 93	14	L	0.005	5
Promenade Walkway (Santa Fe Springs)	Jan 93	0.3	L	0.002	2
Rio San Gabriel Park (Downey)	Jan 93	6.4	L	0.042	47
East Middle School (Downey)	Jan 93	26	AF,L	0.023	25
Zinn Park (Bellflower)	Jan 93	1.7	L	0.009	10
Cerritos Post Office (Cerritos)	Feb 93	0.7	L	0.005	5
605/105 Interchange (Bellflower)	Feb 93	22	L	0.0002	0.3
Hollywood Sports Center (Bellflower)	Feb 93	22.5	L	0.002	2
Santa Fe Springs High School (Santa Fe Springs)	Feb 93	14.5	AF,L	0.022	25
605/5 Freeway at Florence (Santa Fe Springs)	Feb 93	17	L	0	0
Center for the Performing Arts (Cerritos)	Mar 93	1	L	0.004	5
Old Downey Cemetery (Downey)	Apr 93	7.5	L	0.022	25
Thompson Park (Bellflower)	Apr 93	15	L	0.022	25
My Hoa Farm (Lakewood)	May 93	5	AG	0.013	15
105 Freeway at Bellflower (Downey)	May 93	17.9	L	0.009	10
Palms Park (Lakewood)	May 93	20	L	0.004	5
Crawford Park (Downey)	Jul 93	2.1	L	0.008	10
Humedo Nursery (Downey)	Aug 93	11	O	0.005	6
105 Freeway at Lakewood (Downey)	Sep 93	25	L	0.003	3
Shaw Industries Carpet Mill (Santa Fe Springs)	Sep 93	--	I	0.068	76
Palms Elementary School (Lakewood)	Sep 93	3.5	AF,L	0.013	14
Artesia High School (Lakewood)	Sep 93	20.9	AF,L	0.033	37
West Middle School (Downey)	Oct 93	19.5	AF,L	0.019	21
Circle Park (South Gate)	Oct 93	4	L	0.013	15
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	0.003	3
General Electric, 19705 E. Business Pkwy (Walnut)	Nov 93	1.6	L	0.006	7

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TABLE 7
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
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Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Hollydale Park (South Gate)	Nov 93	46	L	0.089	100
Delta Dental (Cerritos)	Nov 93	1.8	L	0.003	3
Cal Poly LandLab (Pomona)	Nov 93	2.5	AG,L	0.010	12
Rodeo Ridge Estates (Walnut)	Dec 93	6.3	L	0.006	7
Robertson's Ready-Mix (Santa Fe Springs)	Dec 93	--	I	0.005	6
710/105 Interchange (Paramount)	Dec 93	18.5	L	0.001	1
Downey/Contreras greenbelt (Paramount)	Dec 93	0.1	L	0.001	1
Compton Golf Course (Paramount)	Dec 93	13	L	0.023	26
Alondra Junior High School (Paramount)	Dec 93	14	AF,L	0.029	32
Mokler Elementary School (Paramount)	Dec 93	10	AF,L	0.009	10
Los Cerritos Elementary School (Paramount)	Dec 93	8	AF,L	0.013	15
Wirtz Elementary School (Paramount)	Dec 93	9	AF,L	0.011	12
Keppel Elementary School (Paramount)	Dec 93	4	AF,L	0.002	2
Billy Lee Nursery (Paramount)	Dec 93	2.5	O	0.009	10
Golden Springs Drive medians (Diamond Bar)	Jan 94	1.3	L	0.006	7
105 Freeway at Wright (Lynwood)	Jan 94	19.6	L	0.001	1
710 Freeway at M.L. King (Lynwood)	Jan 94	15.5	L	0	0
710 Freeway at Rosecrans (Compton)	Jan 94	24.2	L	0	0
Independence Park (Downey)	Feb 94	10.4	L	0.012	14
Paramount Park (Paramount)	Feb 94	9	L	0.023	26
Paramount High School (Paramount)	Feb 94	19	AF,L	0.030	34
Southern California Edison nursery (Cerritos)	Mar 94	3.5	O	0.004	5
Walnut Hills Village Shopping Center (Walnut)	Mar 94	2.4	L	0.005	6
Rosecrans/Paramount medians (Paramount)	Mar 94	0.2	L	0.001	1
Somerset medians (Paramount)	Apr 94	0.9	L	0.005	6
Rio Hondo Golf Course (Downey)	Apr 94	92.4	L	0.231	259
Zimmerman Park (Norwalk)	Apr 94	9.5	L	0.015	17
Vista Verde Park (Norwalk)	Apr 94	6.5	L	0.010	12
Gerdes Park (Norwalk)	Apr 94	8.6	L	0.017	19
Clearwater Junior High School (Paramount)	Apr 94	4	AF,L	0.033	37
Vestar Development (Cerritos)	Jun 94	9.6	L	0.032	36
Steam Engine Park (Paramount)	Jun 94	0.6	L	0.002	2
5 Freeway at Shoemaker/Firestone (Norwalk)	Jul 94	0.8	L	0.002	2
Spane Park (Paramount)	Jul 94	5	L	0.009	11
Orange/Cortland Parkway (Paramount)	Jul 94	1.3	L	0.003	3
Carpenter School (Downey)	Aug 94	7.4	AF,L	0.006	6
Brookside Equestrian Center (Walnut)	Aug 94	13.6	L	0.002	2
Field, S/W corner Norwalk/Telegraph (S.F. Spgs.)	Aug 94	5.2	L	0.012	13
Washington Elementary School (Whittier)	Sep 94	5	AF,L	0.010	11
605 Freeway at Beverly (Whittier)	Sep 94	30	L	0.011	12
John Anson Ford Park (Bell Gardens)	Sep 94	45	L	0.065	73
Ramona Park (Norwalk)	Oct 94	4.8	L	0.007	8
Alondra median (Paramount)	Oct 94	0.6	L	0.007	8
Imperial/Wright Road medians (Lynwood)	Oct 94	0.2	L	0.002	2
Walnut Valley Water District Office (Walnut)	Oct 94	0.2	L	0.002	2
Cattelus Development (Walnut)	Oct 94	18.9	L	0.013	15
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	0.004	4
Sorenson Elementary School (Whittier)	Oct 94	4	AF,L	0.005	6
Palm Park West (Whittier)	Nov 94	5	L	0.008	9
Metrolink Station (Industry)	Nov 94	0.6	L	0.002	2
Little Lake Park (Santa Fe Springs)	Dec 94	18	L	0.038	43
Sundance Condominiums (Cerritos)	Jan 95	9	L	0.033	37
Del Paso High School (Walnut)	Jan 95	3	AF,L	0.004	4

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TABLE 7
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 6 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
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	0.008	9
Sysco Food Service, 20701 Currier Road (Walnut)	Apr 95	2.3	L	0.008	9
Tung Hsin Trading, 20420 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.003	4
Amergence Tech. Inc., 20480 E. Bus. Pkwy (Walnut)	Apr 95	0.9	L	0.003	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
Dura Freight Lines , 20275 Bus. Parkway (Walnut)	Apr 95	1.3	L	0.003	3
Coaster Co. of America, 20300 Bus. Parkway (Walnut)	Apr 95	0.7	L	0.002	3
Dura Freight Lines, 20405 Bus. Parkway (Walnut)	Apr 95	1	L	0.002	3
Dura Freight Lines, 20595 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.004	4
Dura Freight Lines, 20445 E. Business Pkwy (Walnut)	Apr 95	0.7	L	0.002	2
Orange Grove School (Whittier)	Apr 95	6.6	AF,L	0.008	9
South Middle School (Downey)	May 95	15.8	AF,L	0.017	19
Nuffer Elementary School (Norwalk)	Jun 95	10.4	AF,L	0.009	10
Lampton Middle School (Norwalk)	Jun 95	9.5	AF,L	0.014	15
THUMS (Long Beach)	Jun 95	8	I	1.256	1,412
820 Fairway Drive medians (Industry)	Jun 95	0.1	L	0.001	1
Spencer N Enterprises, Inc., 435 S. Lemon (Walnut)	Jun 95	0.5	L	0.001	2
General Electric, 19805 E Business Pkwy (Walnut)	Jun 95	1.1	L	0.007	7
Menlo Logistics, 20002 E. Business Pkwy (Walnut)	Jun 95	4	L	0.006	7
General Electric, 20005 E. Business Parkway (Walnut)	Jun 95	6.7	L	0.010	11
Hargitt Middle School (Norwalk)	Jul 95	9.5	AF,L	0.022	24
Norwalk Adult School (Norwalk)	Jul 95	17.2	AF,L	0.026	29
John Glenn High School (Norwalk)	Jul 95	38.8	AF,L	0.045	50
Ramona Elementary School (Norwalk)	Jul 95	6.8	AF,L	0.007	8
New River Elementary School (Norwalk)	Jul 95	10.3	AF,L	0.010	12
Morrison Elementary School (Norwalk)	Sep 95	7.7	AF,L	0.009	10
Katherine Edwards Middle School (Whittier)	Sep 95	19	AF,L	0.018	20
Longfellow Elementary School (Whittier)	Sep 95	4.5	AF,L	0.003	3
Walter Dexter Middle School (Whittier)	Sep 95	15.5	AF,L	0.008	9
D.D. Johnston Elementary School (Norwalk)	Sep 95	8.9	AF,L	0.008	9
Corvallis Middle School (Norwalk)	Sep 95	16.9	AF,L	0.022	24
Norwalk High School (Norwalk)	Sep 95	35.1	AF,L	0.034	38
Heritage Park (Santa Fe Springs)	Oct 95	9.2	L	0.009	10
Belloso Farm Nursery (Paramount)	Oct 95	2.5	O	0	0
Robertson's Ready-Mix (Paramount)	Nov 95	--	I	0.008	8
Cerritos Nursery (Cerritos)	Dec 95	3	O	0.004	4
Spadra Gas-to-Energy Plant (Walnut)	Dec 95	--	I	0.045	51
Founders Memorial Park (Whittier)	Jan 96	4	L	0.011	12
Los Nietos Park (Santa Fe Springs)	Jan 96	11.2	L	0.016	19
Bell Gardens Soccer Field (Bell Gardens)	Feb 96	2.6	AF	0.011	12
Jersey Ave. School/city athl. fields (S.F. Springs)	Mar 96	8	AF	0.007	8
Salt Lake Municipal Park (Huntington Park)	Apr 96	20.9	L	0.044	50
Sorenson Park (Whittier)	May 96	10.7	L	0.017	20
Sorenson Library (Whittier)	May 96	0.4	L	0	0
Encore Maintenance-Warmington Homes (Cerritos)	May 96	1.1	L	0.003	3
Bellflower Blvd. medians (Bellflower)	Jul 96	0.3	L	0.002	2
Alta Produce (Paramount)	Aug 96	4	AG	0.002	2
Artesia Off Ramp - 91 Freeway (Cerritos)	Aug 96	3.3	L	0.006	6
Ping Ting Hsu, 20701 Currier Road (Walnut)	Aug 96	0.1	L	0.0005	1
Belloso Farm Nursery (South Gate)	Sep 96	2.5	O	0.002	2
Temple Park (Downey)	Oct 96	1	L	0.001	2
Woodruff Avenue medians (Bellflower)	Oct 96	0.8	L	0.005	5

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TABLE 7
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 7 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Lawrence Allen & Assoc., 20822 Currier Rd. (Walnut)	Oct 96	0.1	L	0.001	1
Fairway Business Cntr., 19700 Business Pkwy (Walnut)	Nov 96	0.4	L	0.002	3
Joe Rodgers Park (Long Beach)	Nov 96	4.5	L	0.008	9
Ham Park (Lynwood)	Dec 96	10	L	0	0
Jauregui Nursery (Paramount)	Dec 96	2	O	0.002	3
Heritage Corporate Center (Santa Fe Springs)	Jan 97	29.9	L	0.027	31
Belloso Farm Nursery (Bellflower)	Jan 97	8	O	0	0
Foster Road medians (Norwalk)	Jan 97	0.3	L	0.002	3
Rowland Heights Christian Church (Rowland Heights)	Feb 97	0.5	L	0.0004	0.4
Rosecrans Avenue medians (Paramount)	Mar 97	0.2	L	0.002	3
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	0
L.A. County Vector Control Bldg. (Santa Fe 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	0.010	11
Jauregui Nursery (Long Beach)	Jul 97	5	O	0.031	35
McNab Avenue medians (Bellflower)	Jul 97	0.1	L	0.0004	0.4
Foster Road/Premier Ave. medians (Downey)	Aug 97	0.1	L	0.00005	0.1
Palm Growers Nursery (Downey)	Oct 97	7.3	O	0	0
Alondra Blvd medians @ SGR (Bellflower)	Oct 97	0.1	L	0.001	1
Puente Hills Landfill irrigation (Industry)	Nov 97	320	L	0.824	926
Puente Hills Landfill dust control (Industry)	Nov 97	130	I	0.155	175
Puente Hills Gas-to-Energy Facility (Industry)	Nov 97	--	I	0.563	632
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	0.436	490
El Dorado Lakes Condominiums (Long Beach)	Aug 98	11	L	0.025	28
Bloomfield Associates, 17871 Park Plaza Dr. (Cerritos)	Sep 98	0.5	L	0.001	1
Maruichi American building (Santa Fe Springs)	Oct 98	0.4	L	0.002	2
Diamond Crest Homeowners Assn. (Diamond Bar)	Oct 98	14	L	0.024	26
Norm Ashley Park (Walnut)	Nov 98	0.2	L	0.001	1
Play Hut, 368 Cheryl Lane (Walnut)	Nov 98	0.8	L	0.002	3
Waterfall Estates (Rowland Heights)	Dec 98	1.2	L	0.004	4
WalMart (Long Beach)	Dec 98	3	L	0.020	22
Norwalk Golf Course (Norwalk)	Jan 99	8	L	0.024	26
Vestar Development (Long Beach)	Feb 99	8	L	0.029	32
Soco-Lynch Corp. building (Santa Fe Springs)	Feb 99	1	L	0.003	3
183rd 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	0.008	9
Lakewood Blvd. medians (Paramount)	Mar 99	0.2	L	0.002	2
Progress Park (Paramount)	Mar 99	6.2	L	0.014	15
Garfield Avenue medians (Paramount)	Apr 99	0.1	L	0.002	2
Calvary Chapel (Diamond Bar)	Apr 99	1	L	0.017	20
B&B Pallet Co. (South Gate)	May 99	--	I	0	0
Hi-Tek Warehouse, 20851 Currier Road (Walnut)	Jun 99	0.2	L	0.001	2
Garcia's Nursery (Bellflower)	Jun 99	6	O	0.001	1
Campus Group Inc, 319 Cheryl Road (Walnut)	Jul 99	0.1	L	0	0
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	0.010	11
Orange Avenue medians (Paramount)	Aug 99	0.1	L	0.003	4
Metropolitan State Hospital (Norwalk)	Sep 99	80	L	0	0
Moffit School (Norwalk)	Sep 99	1.6	AF,L	0.007	8

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TABLE 7
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 8 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
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	0.001	1
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	0.0002	0.2
Nu-Health Products, 20875-85-95 Currier (Walnut)	Oct 99	0.1	L	0	0
Rio Hondo Channel (Downey)	Nov 99	0.8	L	0.0003	0.3
Simms Park (Bellflower)	Dec 99	12.5	L	0.017	19
Lemon Avenue medians (Industry)	Dec 99	0.1	L	0.0004	0.4
Prudential Insurance Co., 21558 Ferraro (Walnut)	Jan 00	3.5	L	0.007	8
Foster Road Greenbelt (Norwalk)	Mar 00	3.3	L	0.005	6
McDonald's Restaurant (Diamond Bar)	Mar 00	0.1	L	0.001	1
San Luis Street @ flood channel (Paramount)	Apr 00	3	L	0.0003	0.4
J&L Footwear, 250 Benton Court (Industry)	Jul 00	0.6	L	0.001	1
Jefferson School (Paramount)	Jul 00	0.5	AF,L	0.003	3
Columbus High School (Downey)	Aug 00	25	AF,L	0.019	22
Triangle Park (South Gate)	Nov 00	0.4	L	0.002	3
Markwins Inter. Corp., 22067 Ferraro (Industry)	Nov 00	1.9	L	0.004	4
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	0.001	1
SL Investment Group LLC, 218 Maclin Ct. (Industry)	Nov 00	1.5	L	0.002	2
Morrow Meadows, 231 Benton Court (Industry)	Apr 01	0.9	L	0.003	3
Golden Springs Business Park (Santa Fe Springs)	Apr 01	31.4	L	0.117	132
The Cross Schools of Education (Walnut)	May 01	0.6	AF,L	0.001	1
Bellflower Storage (Bellflower)	Jun 01	3	L	0.002	2
Railroad Beautification (Paramount)	Jul 01	0.5	L	0	0
Rio Hondo Channel (Bell Gardens)	Jul 01	0.3	L	0.002	2
Bank of the West (Rowland Heights)	Sep 01	0.1	L	0.0001	0.1
Gym/Teen Center (Walnut)	Sep 01	0.6	L	0.002	2
CDM building (Santa Fe Springs)	Oct 01	0.1	L	0.002	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	0.004	4
Yellow Box Corp., 19835 Walnut Drive (Walnut)	Dec 01	0.3	L	0.001	1
Harvard Estates (Rowland Heights)	Dec 01	2	L	0.002	2
L.A. County Recorder's Office (Norwalk)	Jan 02	2.7	L	0.012	14
Tays Cool Fuel (Paramount)	Feb 02	0.2	L	0.002	2
Walnut Nazarene Church (Walnut)	Feb 02	0.8	L	0.0002	0.3
Antelope Valley Farms (Palmdale)	Mar 02	2,100	AG	7.146	8,030
L.A. River landscaping (South Gate)	Mar 02	2.5	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	3
Majestic Management, 108-288 Mayo Drive (Walnut)	Apr 02	0.1	L	0.006	7
Holiday Inn Express (Walnut)	May 02	0.4	L	0.002	2
Lemon Avenue Investments (Walnut)	Jun 02	0.6	L	0.002	3
Magnolia at Snow Creek (Walnut)	Jul 02	5.4	L	0.023	25
Lakewood-Adoree medians (Downey)	Jul 02	3.4	L	0.045	50
River Ridge Golf Course (Pico Rivera)	Jul 02	21.3	L	0.028	31
Long Beach Water Dept. Impoundment (Long Beach)	Jul 02	--	I	0.001	1
Everbright Management, 1163 Fairway (Industry)	Sep 02	0.6	L	0.002	2
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	0.0002	0.2
V-Tec Automotive, 19677 Valley Blvd. (Walnut)	Sep 02	0.1	L	0.0002	0.2
Grand and Valley landscaping (Walnut)	Sep 02	0.1	L	0.005	6
Extra Space Storage (Walnut)	Oct 02	0.8	L	0.002	2

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Table 7
Summary of Fiscal Year 11-12 Recycled Water Usage
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Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Latter Days Saints Church (Walnut)	Oct 02	0.9	L	0.003	3
Nogales and Killian landscaping (Rowland Heights)	Oct 02	0.1	L	0.0005	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	0.001	1
Foster/Coldbrook medians (Bellflower)	Nov 02	0.1	L	0.0003	0.3
L.A. County Library (Norwalk)	Nov 02	0.9	L	0.005	5
Metro State/Wheelabrator (Norwalk)	Jan 03	B	I	0.192	216
Alamitos Seawater Intrusion Barrier (Long Beach)	Feb 03	--	R	1.933	2,171
Boeing (Long Beach)	Mar 03	52	L	0.016	18
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	0.023	25
Mill Elementary School (Whittier)	Jun 03	15	AF,L	0.005	6
Del Amo Blvd. greenbelt (Lakewood)	Jul 03	0.3	L	0.002	3
Imperial Equestrian (South Gate)	Jul 03	1.5	L	0.003	4
Norwalk Walkway/Parking (Santa Fe Springs)	Jul 03	1	L	0.004	5
Tournament Players Club at Valencia (Santa Clarita)	Aug 03	120	L	0.311	349
26840-27236 The Old Road medians (Santa Clarita)	Aug 03	5.8	L	0.020	22
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	0.003	3
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	0.001	1
San Malone Enterprises, 19865 Harrison (Industry)	Aug 03	0.3	L	0.002	2
Shinetec Group, Inc., 19685 Harrison Ave. (Industry)	Aug 03	0.4	L	0.0004	0.5
Majestic Realty, Grand Ave./Village Staples (Walnut)	Aug 03	1.6	L	0.006	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	0.004	5
NP 21301 Ferraro Pkwy., 21301 Ferraro (Industry)	Sep 03	0.8	L	0.003	3
568 TriNet Court (Walnut)	Oct 03	0.3	L	0.001	1
Steve Horn Way/Bellflower medians (Downey)	Nov 03	0.3	L	0.015	17
Walnut City Hall (Walnut)	Dec 03	0.6	L	0.001	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	0.006	6
Young Hoon Cho, 1709 Nogales St. (Rowland Heights)	Mar 04	0.1	L	0.0004	0.4
Shell Station, 21103 Golden Springs Dr. (Diamond Bar)	Mar 04	0.1	L	0.0002	0.2
Ferraro/Grand East ramp (Industry)	Apr 04	3.8	L	0.005	5
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	5
Southcoast Cabinet, 20625 Lycoming St. (Walnut)	Jun 04	0.3	L	0.001	1
APL Logistics, 408 Brea Canyon Rd. (Walnut)	Jun 04	2.1	L	0.005	6
Alamitos Hill Reservoir landscaping (Long Beach)	Jul 04	8.6	L	0.0003	0.3
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	0.0003	0.4
Pro Growers Nursery (Norwalk)	Sep 04	11.3	O	0.063	71
Kaiser Administration building (Downey)	Oct 04	2.5	L	0.005	6
Downey Studios (Downey)	Oct 04	1	L	0.004	4
Community Day School (Walnut)	Nov 04	0.1	AF,L	0.0004	0.4
Majestic Mgmt., Bldg. 25 on Mayo Dr. (Walnut)	Jan 05	0.1	L	0.00003	0.03
Gateway Pointe (Whittier)	Jan 05	8	L	0.016	18
Puente Hill Materials Recovery Facility (Industry)	Feb 05	2.4	L	0.007	8
Sy Develop. condos, 20118-20138 Colima, (Walnut)	Jun 05	0.1	L	0.0002	0.2
Dills Park (Paramount)	Jul 05	12.5	L	0.031	34

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial,
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TABLE 7
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 10 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
N/E corner Cheryl Lane/Baker Parkway (Industry)	Aug 05	3.3	L	0.014	16
Jakk's Pacific, Inc. 21733-21749 Baker (Industry)	Aug 05	1.2	L	0.003	4
20813 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
20265 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
19849 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
Kohl's Center (Walnut)	Sep 05	2	L	0.009	11
Hollydale Elementary (South Gate)	Sep 05	3	AF,L	0.001	1
Malburg Generation Station (Vernon)	Oct 05	B	I	0.624	701
Phoenix Private Schools (Rowland Heights)	Dec 05	0.1	AF,L	0	0
The Home Depot, 21535-21651 Baker (Industry)	Jan 06	2.8	L	0.009	10
Industry East Land LLC, 21415 Baker (Industry)	Jan 06	2.3	L	0.006	7
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	0.006	6
LA Sanchez Nursery (Industry)	Apr 06	5	O	0.011	13
Sculpture Garden (Santa Fe Springs)	May 06	0.6	L	0	0
Fairway median@ Brea Canyon (Walnut)	Jun 06	0.3	L	0.001	1
Grand Avenue Crossing (Industry)	Jul 06	18.5	L	0.019	22
22002 Valley Blvd. (Industry)	Jul 06	1.6	L	0.003	4
Foster Road medians (Santa Fe Springs)	Jul 06	1	L	0.009	10
Rose Hills Memorial Park – lower area (Whittier)	Aug 06	275	L	0.523	587
Christian Chapel of Walnut Valley (Walnut)	Aug 06	2.2	L	0.007	8
Target Store T-2179, 747 Grand Ave. (Walnut)	Sep 06	3.9	L	0.005	6
Whittier Narrows Recreation Area (South El Monte)	Sep 06	568	L	0.686	771
Leg Avenue, 19601 E. Walnut Dr. (Walnut)	Oct 06	0.5	L	0.002	3
LandRover (Cerritos)	Dec. 06	0.3	L	0.002	3
Harold M. Pitman Co., 21908-21958 Baker (Industry)	Jan 07	0.8	L	0.002	2
Eastern Agricultural Site (Lancaster)	Feb 07	696	AG	0.946	1,063
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	0.012	13
Currier Road Devel. Inc., 20819 Currier Rd. (Walnut)	May 07	0.3	L	0.001	1
Bluff Park (Long Beach)	Jul 07	25.8	L	0.020	22
Stearns Park (Long Beach)	Jul 07	21	L	0.025	28
Bixby Park (Long Beach)	Jul 07	12.5	L	0.014	15
South El Monte High School (South El Monte)	Aug 07	16.1	AF, L	0.065	73
Williams-Sonoma, 21700 Baker (Industry)	Aug 07	2	L	0.005	6
Douglas Park development (Long Beach)	Nov 07	2.1	L	0.088	99
21350 Valley Blvd. (Industry)	Feb 08	0.4	L	0.001	1
Grand Avenue Venture, 21508 Ferraro Pkwy (Walnut)	Apr 08	3.5	L	0.004	4
Space Learning Center (Downey)	Apr 08	10.5	L	0.025	28
Surgical Center, Carmenita & 166th (Cerritos)	May 08	0.1	L	0.0002	0.3
UPS Parking Structure, 13150 Moore (Cerritos)	May 08	0.5	L	0.002	2
Grand Avenue/Baker Parkway medians (Industry)	May 08	6.7	L	0.011	12
Majestic Management, 21530-21590 Baker (Industry)	May 08	2	L	0.009	10
Cornerstone Commerce Center (Downey)	Jun 08	0.8	L	0.007	8
Gomez Upholstery, 19935 Valley Blvd. (Walnut)	Jul 08	2	L	0	0
Susann Sutseng Lee, 1335-1337 Otterbein (Row. Hts.)	Jul 08	0.1	L	0.0003	0.3
Golden Springs Plaza (20657 Golden Sprgs (Dia. Bar)	Aug 08	0.4	L	0.001	2
Chili's Restaurant, Golden Springs Dr. (Diamond Bar)	Sep 08	0.01	L	0.001	1
Majestic Management, 21808 Garcia Ln. (Industry)	Sep 08	0.5	L	0.002	2
Majestic Management, 21858 Garcia Ln. (Industry)	Sep 08	0.4	L	0.002	2
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	2
CFT Development, Golden Springs Dr. (Diamond Bar)	Oct 08	0.01	L	0.0004	0.5

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TABLE 7
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
(PAGE 11 OF 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Mora Drive medians (Santa Fe Springs)	Oct 08		L	0.006	7
Jenny Hsieh, 20125 Valley Blvd. (Walnut)	Nov 08	0.03	L	0.00003	0.03
UPS Main Building, 13233 Moore (Cerritos)	Nov 08	4.4	L	0.012	13
Fountain Walk Housing, 18310 Carmenita (Cerritos)	Nov 08	0.1	L	0.0002	0.3
Public Works Dept. sewer flushing (Lancaster)	Jan 09	--	I	0.004	4
Public Works Dept. street sweeping (Lancaster)	Feb 09	--	I	0.0004	0.4
ASCIP Building, 16550 Bloomfield (Cerritos)	Feb 09	0.1	L	0.0004	0.4
Tincher Elementary School (Long Beach)	Feb 09	1.5	AF, L	0.003	3
Firestone Blvd. medians (Downey)	Feb 09	0.1	L	0.0004	0.4
Citibank, 8764 Firestone Blvd. (Downey)	Feb 09	0.1	L	0.001	1
Brea Canyon Rd./Currier Road median (Walnut)	Feb 09	2	L	0.006	7
Cardinal Capital Partners, Currier/Lemon (Walnut)	Mar 09	2.5	L	0	0
Family Property Holdings, 20888 Amar Rd. (Walnut)	May 09	0.04	L	0.0004	0.4
KW Global Inc., 293 Brea Canyon Drive (Walnut)	May 09	0.3	L	0.001	1
Steve Horn Pkwy. medians @ Kaiser (Downey)	May 09	1.4	L	0.027	30
Walgreens/Big Lots, 9018 Firestone (Downey)	May 09	0.4	L	0.003	3
Lancaster University Center (Lancaster)	May 09	2	L	0	0
12800 Center Court (Cerritos)	Jul 09	0.4	L	0.001	2
Pacific Alloy Casting (South Gate)	Jul 09	--	I	0.016	18
Sunshine Park (L.A. County)	Jul 09 (May 86)	4	L	0.003	3
Rowland Elementary School (Rowland Heights)	Jul 09 (May 86)	3	AF,L	0.002	2
Farjardo School (Rowland Heights)	Jul 09 (May 86)	4	AF,L	0.0004	0.5
Farjardo Park (Rowland Heights)	Jul 09 (May 86)	4	L	0.002	2
Nogales High School (L.A. County)	Jul 09 (Jun 86)	11	AF,L	0.004	4
Queen of Heaven Cemetery (Rowland Heights)	Jul 09 (Jun 86)	35	L	0.010	11
Schabarum Regional County Park (L.A. County)	Jul 09 (Sep 86)	233	L	0.016	18
Pepperbrook Park (Hacienda Heights)	Jul 09	4.4	L	0.002	2
Countrywood Park (Hacienda Heights)	Jul 09	5.4	L	0.002	2
Rowland Heights Golf Center (Rowland Heights)	Jul 09	8	L	0.002	3
Medians at 755 Nogales (Industry)	Jul 09	0.1	L	0.0001	0.1
Medians at 4115-1/2 Nogales (West Covina)	Jul 09	0.1	L	0.001	2
Medians at 2654-1/2 Valley (West Covina)	Jul 09	0.2	L	0.0001	0.1
Bu Sha Temple, 4111 Nogales (West Covina)	Jul 09	0.5	L	0.0001	0.1
Megan Racing, 788 Phillips (Industry)	Jul 09	0.1	L	0.0005	1
JJ Plaza, 18253 Colima (Rowland Heights)	Jul 09	0.1	L	0.0001	0.1
New World RTCI-LP, 18958 Daisetta St. (Row. Hts.)	Jul 09	0.1	L	0.00003	0.03
Battery Technology, 16651 Johnson (Industry)	Jul 09	0.1	L	0.00001	0.01
FTH Group Inc., 16685 Johnson (Industry)	Jul 09	0.1	L	0.0001	0.1
Ancillary Provider 16664 Johnson (Industry)	Jul 09	0.1	L	0.0001	0.2
Ancillary Provider 16666 Johnson (Industry)	Jul 09	0.2	L	0.0002	0.3
Pan American, 16610 Gale Ave. (Industry)	Jul 09	0.2	L	0.0001	0.1
Blue Pacific, 1354 Marion Ct. (Industry)	Jul 09	0.2	L	0.0002	0.3
Romano’s Macaroni Grill, 17603 Colima (Row. Hts.)	Jul 09	0.1	L	0.0004	0.4
Acosta Growers, 16412 Wedgeworth Dr. (Industry)	Jul 09	5	O	0.001	1
Wedgeworth Elementary School (Hacienda Heights)	Aug 09	2.5	AF,L	0.001	1
Wilson High School (Hacienda Heights)	Aug 09	18.3	AF,L	0.005	6
Light of America, Inc. (20722 Currier Rd.) (Walnut)	Sep 09	0.1	L	0.0003	0.3
Ybarra Elementary School (Rowland Heights)	Sep 09	5.6	AF,L	0.007	8
Bixby Elementary School (Hacienda Heights)	Sep 09	6.1	AF,L	0.002	2
Jade Fashion, 1350 Bixby (Industry)	Sep 09	0.1	L	0.0002	0.2
Gutierrez Nursery, 16411 Wedgeworth (Industry)	Sep 09	4	O	0.001	1
Robertson’s Ready-Mix (Pomona)	Oct 09	--	I	0.007	7
MTA Bike Trail (Bellflower)	Nov 09	0.1	L	0.009	10
Whittier Narrows Golf Course (South El Monte)	Dec 09	260	L	0.476	535

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Table 7
Summary of Fiscal Year 11-12 Recycled Water Usage
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Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Frank Raper, 1215 Bixby (Industry)	Dec 09	0.1	L	0.0002	0.2
Laido International, 16710-12 Johnson (Industry)	Dec 09	0.1	L	0.0002	0.2
Bolt Products, 16725 Johnson Dr. (Industry)	Dec 09	0.1	L	0.0001	0.1
Ily Enterprise, 783 Phillips (Industry)	Jan 10	0.1	L	0.0001	0.2
Superior Profiles, 1325 Bixby (Industry)	Jan 10	0.2	L	0.0002	0.2
60 Fwy., Countrywood & Fullerton (Industry)	Jan 10	5	L	0.001	1
Camacho Strawberries (Industry)	Jan 10	3	O	0.0002	0.2
Advanced Media, 881 Azusa (Industry)	Jan 10	0.1	L	0.0001	0.1
East Group Prop., 855 Anaheim-Puente (Industry)	Mar 10	0.6	L	0.0005	1
So.Cal. Air Condition, 16950 Chestnut (Industry)	Mar 10	2	L	0.0002	0.3
USACD, 17101 Chestnut (Industry)	Mar 10	0.3	L	0.0002	0.2
Azusa Blvd Medians (Industry)	Mar 10	0.2	L	0.0001	0.1
Acosta Growers, 17101 Chestnut (Industry)	Mar 10	2.4	O	0	0
Paramount Blvd. Medians (Paramount)	Mar 10		L	0.006	7
L.A. County ISD bldg., 16610 Chestnut (Industry)	Apr 10	0.5	L	0.0003	0.3
Azusa Property Co., 885 Azusa (Industry)	Apr 10	0.2	L	0.0002	0.2
Golden West Footwear, 16750 Chestnut (Industry)	Apr 10	0.3	L	0.0002	0.2
Teledyne Instruments, 16830 Chestnut (Industry)	Apr 10	0.4	L	0.0005	1
Medians, 18927 Daisetta St. (Rowland Heights)	Apr 10	0.2	L	0.0001	0.1
Colima Medians (L.A. County)	Apr 10	0.1	L	0.0001	0.1
Medians, 1442 Fullerton (Industry)	Apr 10	0.3	L	0.00003	0.03
Teledyne Picco, 16800 Chestnut (Industry)	May 10	0.4	L	0.0003	0.4
Hou Yi Mao Nursery, 18002 Colima (Rowland Hts.)	May 10	1.3	O	0.0002	0.2
East Group Prop., 16700 Chestnut (Industry)	Jun 10	0.6	L	0.001	1
Pro Motion Distribution, 883 Azusa (Industry)	Jun 10	0.1	L	0.0001	0.2
New Age Kaleidoscope, 7 Colima (Industry)	Jun 10	0.6	L	0.001	1
Min Maw Intl. Inc., 18350 San Jose (Industry)	Jun 10	0.7	L	0.0003	0.3
Hot Topic, 18305 San Jose Ave. (Industry)	Jul 10	0.6	L	0.001	1
FedEx, 1081 Fullerton Rd. (Industry)	Jul 10	0.6	L	0.001	1
Long Beach DPW sewer flushing (Long Beach)	Aug 10	--	I	0.002	3
Long Beach DPW street sweeping (Long Beach)	Aug 10	--	I	0.001	1
Los Amigos Golf Course (L.A. County)	Aug 10	110	L	0.168	189
Public Works Dept. dust control (Lancaster)	Sep 10	--	I	0.00001	0.01
Donald Miller, 19803 Valley (Walnut)	Sep 10	0.1	L	0.0003	0.4
Hudd Distribution, 18215 Rowland St. (Industry)	Sep 10	0.6	L	0.001	1
New Age Kaleidoscope, 5 Stoner Creek (Industry)	Oct 10	1.4	L	0.001	1
Perrin Manufacturing, 1020 Bixby (Industry)	Oct 10	0.1	L	0.0002	0.2
Centro Watt Operating, 17518A Colima (Industry)	Oct 10	0.4	L	0.001	1
Centro Watt Operating, 17414 Colima (Industry)	Oct 10	0.5	L	0.001	1
717 Nogales LLC, 717 Nogales (Industry)	Oct 10	0.5	L	0.0004	0.4
The Old Road/Magic Mtn. Pkwy medians (Snt Clarita)	Nov 10	2.8	L	0.008	9
Walgreens, 18308 Colima (Industry)	Dec 10	0.1	L	0.0001	0.1
RWD Office, 3021 S. Fullerton (Industry)	Dec 10	0.3	L	0.0001	0.2
Bell Memorial Church, 1747 Nogales (Rowland Hts.)	Dec 10	0.3	L	0.001	1
Atlantic Ave. medians (South Gate)	Mar 11	16.3	L	0.003	4
Pathfinder Park (Rowland Heights) (Industry)	May 11	29	L	0.005	5
USGVMWD site, 401 Nogales St. (Industry)	May 11	0.5	L	0.0001	0.1
East Group Prop., 18551 Arenth Ave. (Industry)	May 11	0.7	L	0.001	1
717 Nogales LLC, 18961 Arenth Ave. (Industry)	May 11	0.5	L	0.0005	1
Kimco Realty, 17100 Colima Rd. (Industry)	May 11	3	L	0.001	1
Acme Trading Group, 18501 Arenth (Industry)	May 11	0.9	L	0.001	1
Third Party Enterprises, 18501 Arenth (Industry)	May 11	0.6	L	0.001	1
Floria International, 18701 Arenth (Industry)	May 11	0.4	L	0.0004	0.4
Chugh Firm, 15925 Carmenita Road (Cerritos)	Jan 11	0.2	L	0.001	1

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Table 7

Summary of Fiscal Year 11-12 Recycled Water Usage (Page 13 of 13)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Chevron, 17255 Bloomfield (Cerritos)	Mar 11	0.1	L	0.0004	0.4
YHS Trading, 755 Epperson Dr. (Industry)	Jul 11	0.1	L	0.0003	0.4
TriVantage LLC, 745 Epperson Dr. (Industry)	Jul 11	0.1	L	0.0003	0.3
Floria International Inc., 18689 Arenth (Industry)	Aug 11	0.4	L	0.0003	0.4
HT Window Fashions, 770 Epperson (Industry)	Aug 11	0.1	L	0.0002	0.2
Royal Crown Enterprise, 780 Epperson (Industry)	Aug 11	0.1	L	0.0004	0.4
HD Technology, 738 Epperson Dr. (Industry)	Aug 11	0.2	L	0.0001	0.2
Kiewit Power Constructors, 911 Bixby (Industry)	Aug 11	--	I	0.002	2
Sanchez Elementary/Temple Middle (Rosemead)	Aug 11	12.8	AF, L	0.003	3
Loma Elementary School (South El Monte)	Aug 11	1.9	AF, L	0.005	6
Guardian Life Insurance, 710 Epperson (Industry)	Sep 11	0.2	L	0.0005	1
Valor Communication, 18701 Arenth (Industry)	Sep 11	0.1	L	0.0004	0.5
Rubbercraft, 3701 Conant St. (Long Beach)	Sep 11	0.9	L	0.002	2
Jess Gonzales Sports Park (Rosemead)	Oct 11	4	L	0.005	6
Southern California Edison corporate offices	Oct 11	53	L	0.025	28
Eldridge Rice Elementary School (Rosemead)	Oct 11	8.3	AF, L	0.006	6
Millikin High School (Long Beach)	Oct 11	12	AF, L	0.016	18
K-1 Printing, 17989 Arenth Ave. (Industry)	Oct 11	0.2	L	0.00004	0.05
K-1 Printing, 17979 Arenth Ave. (Industry)	Oct 11	0.2	L	0.0001	0.1
Private Label PC Inc., 748 Epperson (Industry)	Nov 11	0.2	L	0.0001	0.2
Penske Truck Leasing, 18305 Arenth (Industry)	Nov 11	0.6	L	0.0002	0.2
Schurr High School (Montebello)	Nov 11	11	AF,L	0.011	12
Commercial Cooling, 17855 Arenth (Industry)	Dec 11	0.4	L	0.0001	0.1
Forever Link, 18738 San Jose (Industry)	Dec 11	0.4	L	0.0002	0.2
Majestic Realty (179 S. Grand Ave.) (Walnut)	Dec 11	2.5	L	0.002	2
Garvey Ave. medians (Rosemead)	Dec 11	0.1	L	0.002	2
Walnut Grove Ave. medians (Rosemead)	Dec 11	0.1	L	0.001	1
Rush St. medians (South El Monte)	Dec 11	0.1	L	0	0
Sunshine Nursery, 8448 Dorothy St. (Rosemead)	Dec 11	4.6	L	0.004	5
WalMart, 1827 Walnut Grove Ave. (Rosemead)	Dec 11	17.7	L	0.006	6
Panda Restaurant Grp. 1683 Walnut Grove (Rosemead)	Dec 11	8.9	L	0.007	8
Willard Elementary School (Rosemead)	Jan 12	6	AF, L	0.001	1
Brook Furniture, 18960 San Jose (Industry)	Jan 12	0.4	L	0.0002	0.2
Rio Hondo Park (Pico Rivera)	Jan 12	8	L	0.018	20
Beverly Blvd. medians (Pico Rivera)	Jan 12	1	L	0.002	3
University of the West, 1409 Walnut Grove (Rosemead)	Feb 12	0.4	L	0.001	1
LD Products, 3700 Cover Street (Long Beach)	Feb 12	0.7	L	0.0003	0.3
LD Products, 3700 Cover Street (Long Beach)	Feb 12	--	I	0.0001	0.2
Hot Topic, 18385 San Jose Ave. (Industry)	Feb 12	0.8	L	0.0003	0.4
Prologis Fund, 18901 Railroad (Industry)	Feb 12	0.4	L	0.0001	0.1
AMB-SGP CIF, 18825 Railroad St. (Industry)	Feb 12	0.2	L	0.00002	0.02
Ko Amex, 18965 San Jose Ave. (Industry)	Feb 12	0.5	L	0.0001	0.2
Ferguson Fire, 18825 San Jose Ave. (Industry)	Feb 12	0.3	L	0.0001	0.2
MA Labs Inc., 18755 San Jose Ave. (Industry)	Feb 12	0.4	L	0.0002	0.2
Majestic Management, 18691 San Jose (Industry)	Mar 12	0.3	L	0.0001	0.2
Majestic Management, 18601 San Jose (Industry)	Mar 12	0.6	L	0.0002	0.2
Third Party Entrprs., 18501 San Jose (Industry)	Mar 12	0.6	L	0.0002	0.2
Third Party Entrprs, 18591 San Jose (Industry)	Mar 12	0.6	L	0.00003	0.04
Shoe Magnate Inc., 18560 San Jose (Industry)	Mar 12	0.4	L	0.0001	0.1
Pinky Footware Shoes, 18600 San Jose (Industry)	Mar 12	0.8	L	0.0003	0.4
Zapopan Park (Rosemead)	Apr 12	7	L	0.005	5
Garvey Blvd. medians (Rosemead)	Apr 12	0.2	L	0.001	1
WVWD Parker Canyon Reservoir (Walnut)	May 12	3.5	L	0.001	1
La Merced Elementary School (Montebello)	Jun 12	10	AF,L	0.004	4
Montebello Gardens Elementary (Pico Rivera)	Jun 12	1	AF,L	0.001	1

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

The treatment plants operated by the Sanitation Districts 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 comprise the Joint Outfall System (JOS) and together produced 391.49 MGD (439,882 AFY) of effluent in FY 11-12, a decrease of 2.5% from the preceding fiscal year. This decrease was due to the on-going effects of water conservation in response to the 2006-2009 drought and to the lingering effects of the recent 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, 126.02 MGD (141,597 AFY), or 32.2 %, was recycled water available for reuse, an increase of 1.9% in total flow over the preceding fiscal year. During FY 11-12, 65.81 MGD (73,944 AFY) was actively reused, a 15.8% increase over the preceding fiscal year, due mainly to below average rainfall during that year that allowed for the use of greater amounts of recycled water for both groundwater replenishment and landscape irrigation. This quantity was 52.2% of the recycled water available and 16.8% of the total effluent produced in the JOS (both percentages increasing somewhat substantially over the preceding year).

2.1 La Cañada WRP

This treatment facility, completed in 1962 and expanded in 1971, 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 0.083 MGD (93 AFY) of wastewater generated by the 425 homes surrounding the country club in FY 11-12 (0.07% of the effluent produced in the JOS). This flow rate represents a 12.3% decrease in average daily flows over the preceding fiscal year. The operation and maintenance (O&M) cost in FY 11-12 to produce this water was approximately $3,358/AF.

LA CAÑADA WRP FACTS

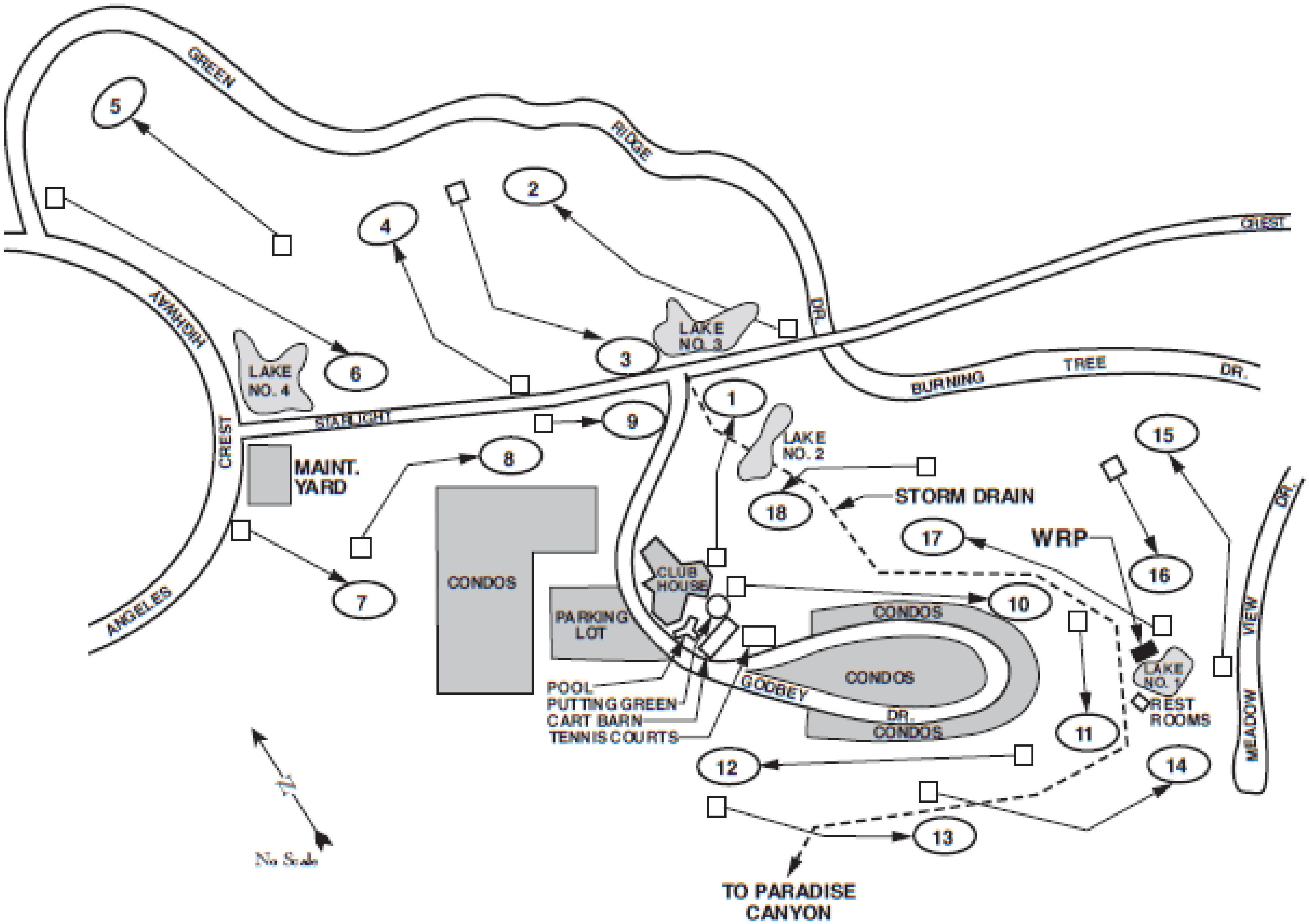
Plant capacity:	0.2 MGD
Water produced and reused:	0.083 MGD 93 AFY 12.3% FY decrease
FY11-12 O&M:	$3,358/AF
No. of reuse sites:	1 105 acres

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 18.22 MGD

FIGURE 6
LA CANADA-FLINTRIDGE COUNTRY CLUB



LONG BEACH WRP FACTS	
Plant capacity:	25 MGD
Water produced:	18.22 MGD 20,472 AFY 2.8% FY decrease
FY11-12 O&M:	$270/AF
Water reused:	6.112 MGD 6,868 AFY 6.8% FY increase 33.5% of production
Delivery systems:	2 179,680 ft. of pipe
No. of reuse sites:	62 1,941.9 acres

(20,472 AFY) of coagulated, filtered, disinfected tertiary recycled water in FY 11-12 (4.6% of the effluent produced in the JOS), which was a 2.8% decrease from the preceding fiscal year, at an O&M cost of approximately $270/AF. The increase in recycled water production was the result of completed upgrades to the secondary treatment process facilities.

Recycled water quality for FY 11-12 is presented in Table B-1 of Appendix B. An average of 6.112 MGD (6,868 AFY), or 33.5% of the recycled water produced at this plant was delivered for reuse during FY 11-12. This represents a 6.8% increase over the preceding fiscal year. Use of recycled water from this facility during this fiscal year was permitted under LARWQCB Order Nos. 87-47 and 97-072 (for direct, non-potable reuse), R4-2009-0049 (for non-irrigation uses), and R4-2005-0061 (for seawater intrusion 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, mainly for landscape irrigation (Figure 7). (Note: All recycled water produced at this plant goes to LBWD in exchange for the land on which the Sanitation Districts built the Long Beach WRP.) 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. 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 11-12.

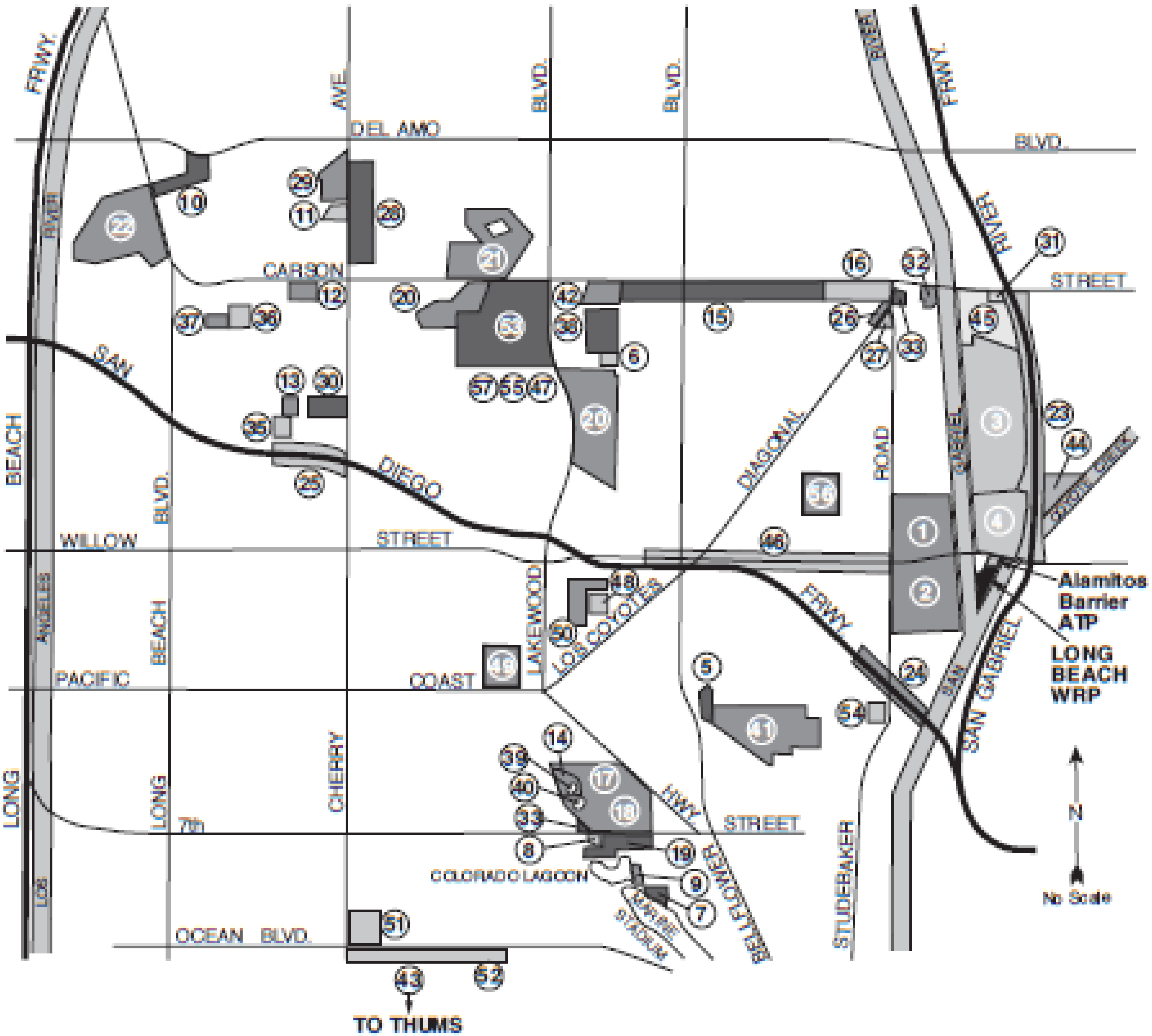
In FY 11-12, four new sites were added to the LBWD distribution system. In September 2011, the landscaping around the Rubbercraft building at 3701 Conant St. was connected. In October 2011, the athletic fields at Millikin High School were connected. In February 2012, the landscaping around and the toilets inside LD Products (3700 Cover St.) were connected through separate meters. During FY 11-12, LBWD served 4.180 MGD (4,697 AFY), or 22.9% of the recycled water produced at this plant, through approximately 179,680 feet of pipeline (6- to 24-inches in diameter) to 61 direct, non-potable reuse sites encompassing 1,942 acres (additional recycled water was delivered by LBWD to the Alamitos Seawater Intrusion Barrier project, see Section 2.2.2, below). This was a 15.8% increase over the preceding fiscal year.

LBWD sells the recycled water at a rate of $744.00/AF for peak demand (nighttime) usage or $531.43/AF for off-peak demand (daytime) usage, or between 50-70% of the potable water rate of $1,062.43/AF.

2.2.2 ALAMITOS SEAWATER INTRUSION BARRIER

Due to over-drafting of the Central Basin aquifer, which underlies and supplies water to the Metropolitan Los Angeles area, the groundwater level in that basin dropped below sea level by the 1950's. This condition allowed salt water to move inland into the aquifer at various points along the coastline leading to contamination of the groundwater supplies. In response, the Los Angeles County Department of Public Works (LACDPW) 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, straddling

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
55 Rubbercraft (3701 Conant St.)
56 Millikan High School
57. LD Products (3700 Cover St.)

Table 8
Summary of Fiscal Year 11-12 Recycled Water Usage
Long Beach Water Department
(Page 1 of 2)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
El Dorado Park West	Aug 80	135	L	0.125	141
El Dorado Golf Course	Aug 80	150	L	0.179	201
Recreation Park	Oct 82	26	L	0.053	59
Recreation Golf Course	Oct 82	149	L	0.226	253
Whaley Park	Jun 83	9	L	0.024	27
El Dorado Park East	Jan 84	300	L	0.375	422
Nature Center	Jan 84	60	L	0.042	47
605 Freeway at Wardlow	Feb 84	50	L	0.021	24
Heartwell Park	Feb 84	120	L	0.137	153
Skylinks Golf Course	Apr 84	155	L,P	0.240	270
Douglas Park	Apr 84	3	L	0.005	5
405 Freeway at Atherton	May 84	5	L	0.00004	0.05
DeMille Junior High School	Jun 84	5	AF,L	0.0005	1
Heartwell Golf Park	Jun 84	30	L	0.064	72
Veterans Memorial Stadium	Jan 85	6	AF	0.018	20
Recreation Park Bowling Green	Aug 85	3	L	0.005	6
California State University, Long Beach	Dec 85	52	AF,L	0.141	159
Long Beach City College	Feb 86	15	AF,L	0.183	206
Recreation 9-Hole Golf Course	Mar 86	37	L	0.073	83
Blair Field	Apr 86	5	AF	0.012	13
Woodlands Park	Apr 86	7	L	0.012	13
Colorado Lagoon Park	Apr 86	4	L	0.0002	0.3
Marina Vista Park	Apr 86	30	L	0.033	37
Lakewood 1st Presbyterian Church	Sep 88	1	L	0.0001	0.1
Virginia Country Club	Mar 89	135	L,P	0.076	85
Lakewood Golf Course	Mar 89	128	L,P	0.293	330
Scherer Park	Mar 89	24	L	0.036	41
Sunnyside Memorial Park	Apr 89	35	L	0.073	82
All Soul's Cemetery	Apr 89	40	L	0.100	112
Cherry Avenue Park	May 89	10	L	0.014	16
Los Coyotes Diagonal	Mar 91	1	L	0.005	6
Wilson High School	Jun 91	5	AF,L	0.023	26
Long Beach Water Department office	Jan 92	2	L	0.0003	0.3
Reservoir Park (Signal Hill)	Feb 92	2	L	0.008	8
Burroughs Elementary School (Signal Hill)	Feb 92	4	AF,L	0.002	2
Hughes Middle School	Apr 92	3	AF,L	0.010	11
405 Freeway at Walnut	Apr 92	9	L	0.004	5
Somerset Park	May 92	3	L	0.002	3
Longfellow Elementary School	May 92	1	AF,L	0.001	1
THUMS	Jun 95	8	I	1.256	1,412
Joe Rodgers Park	Nov 96	4.5	L	0.008	9
Jauregui Nursery	Jul 97	5	O	0.031	35
El Dorado Lakes Condominiums	Aug 98	11	L	0.025	28
WalMart	Dec 98	3	L	0.020	22
Vestar Development	Feb 99	8	L	0.029	32
Willow Street medians	Dec 01	2.4	L	0.004	4
Long Beach Water Department Impoundment	Jul 02	--	I	0.001	1
Alamitos Seawater Intrusion Barrier (WRD)	Feb 03	--	R	1.933	2,171
Boeing	Mar 03	52	L	0.016	18
Tucker Elementary School	May 04	3	AF, L	0.005	5
Alamitos Hill Reservoir landscaping	Jul 04	8.6	L	0.0003	0.3
Bluff Park	Jul 07	25.8	L	0.020	22
Stearns Park	Jul 07	21	L	0.025	28

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 FISCAL YEAR 11-12 RECYCLED WATER USAGE
LONG BEACH WATER DEPARTMENT
(PAGE 2 OF 2)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Bixby Park	Jul 07	12.5	L	0.014	15
Douglas Park residential/commercial development	Nov 07	2.1	L	0.088	99
Tincher Elementary School	Feb 09	1.5	AF, L	0.003	3
Long Beach Public Works sewer flushing	Aug 10	--	I	0.002	3
Long Beach Public Works street sweeping	Aug 10	--	I	0.001	1
Rubbercraft (3701 Conant St.)	Sep 11	0.9	L	0.002	2
Millikin High School	Oct 11	12	AF, L	0.016	18
LD Products (3700 Cover Street)	Feb 12	0.7	L	0.0003	0.3
LD Products (3700 Cover Street)	Feb 12	--	I	0.0001	0.2
TOTALS		**1,941.9**		**6.112**	**6,688**

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 San Gabriel River and the Los Angeles/Orange County line and creating 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.

Originally conceived of in the late 1980's, the Leo J. Vander Lans Advanced Water Treatment Facility (LVLAWTF) treats tertiary effluent from the Long Beach WRP with microfiltration 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 early 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 LVLAWTF was funded in part by MWD's Local Resource Program and the federal government.

During FY 11-12, the LVLAWTF produced 1.933 MGD (2,171 AFY) of advanced treated recycled water that was injected into the Alamitos Barrier, or 10.6% of the effluent produced at the Long Beach WRP. This was an 8.5% decrease in the amount of recycled water used for this application from the preceding fiscal year, and still below the production capacity of the LVLAWTF.

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 23.16 MGD (26,018 AFY) of coagulated, filtered, disinfected tertiary recycled water during FY 11-12 (5.9% of the effluent produced in the JOS), which was an increase of 11.2% over the preceding fiscal year, at an O&M cost of approximately $293/AF. Effluent water quality for FY 11-12 is presented in Table B-2 of Appendix B.

LOS COYOTES WRP FACTS

Plant capacity:	37.5 MGD
Water produced:	23.16 MGD 26,018 AFY 11.2% FY increase
FY11-12 O&M:	$293/AF
Water reused:	5.323 MGD 5,982 AFY 6.5% FY increase 23.0% of production
Delivery systems:	4 279,960 ft. of pipe
No. of reuse sites:	275 2,471.8 acres

Through three contracts, an average of 5.323 MGD (5,982 AFY), or 23.0% of the recycled water produced at this plant was delivered during FY 11-12 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 6.5% increase in reuse flows over the preceding fiscal year. Use of recycled water from this facility is permitted under LARWQCB Order Nos. 87-51 and 97-072.

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 11-12, an average of 0.042 MGD (47 AFY), or about 0.2% of the recycled water produced at this plant, was used at this site for landscape irrigation. This was an 11.9% increase over the preceding fiscal year.

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, including 142,600 feet of pipeline (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 11-12.

Two new users of recycled water were added to the City of Cerritos distribution system during FY 11-12. In January 2012, the landscaping around the Chugh Firm (15925 Carmenita Road) was connected. In March 2012, the landscaping around the Chevron station (17255 Bloomfield Ave.) was connected. During FY 11-12, the City of Cerritos used 1.665 MGD (1,871 AFY), or 7.2% of the recycled water produced at the Los Coyotes WRP, for landscape irrigation and impoundments on 755.7 acres at 85 individual sites. This was an increase of 2.6% over 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. In FY 11-12, 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 of pipelines that initially served eight sites. 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 11-12, 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 11-12, the City of Lakewood used 0.421 MGD (474 AFY), or 1.8% 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 an increase of 7.0% over the preceding fiscal year. No new reuse sites were added to City's recycled water distribution system in FY 11-12.

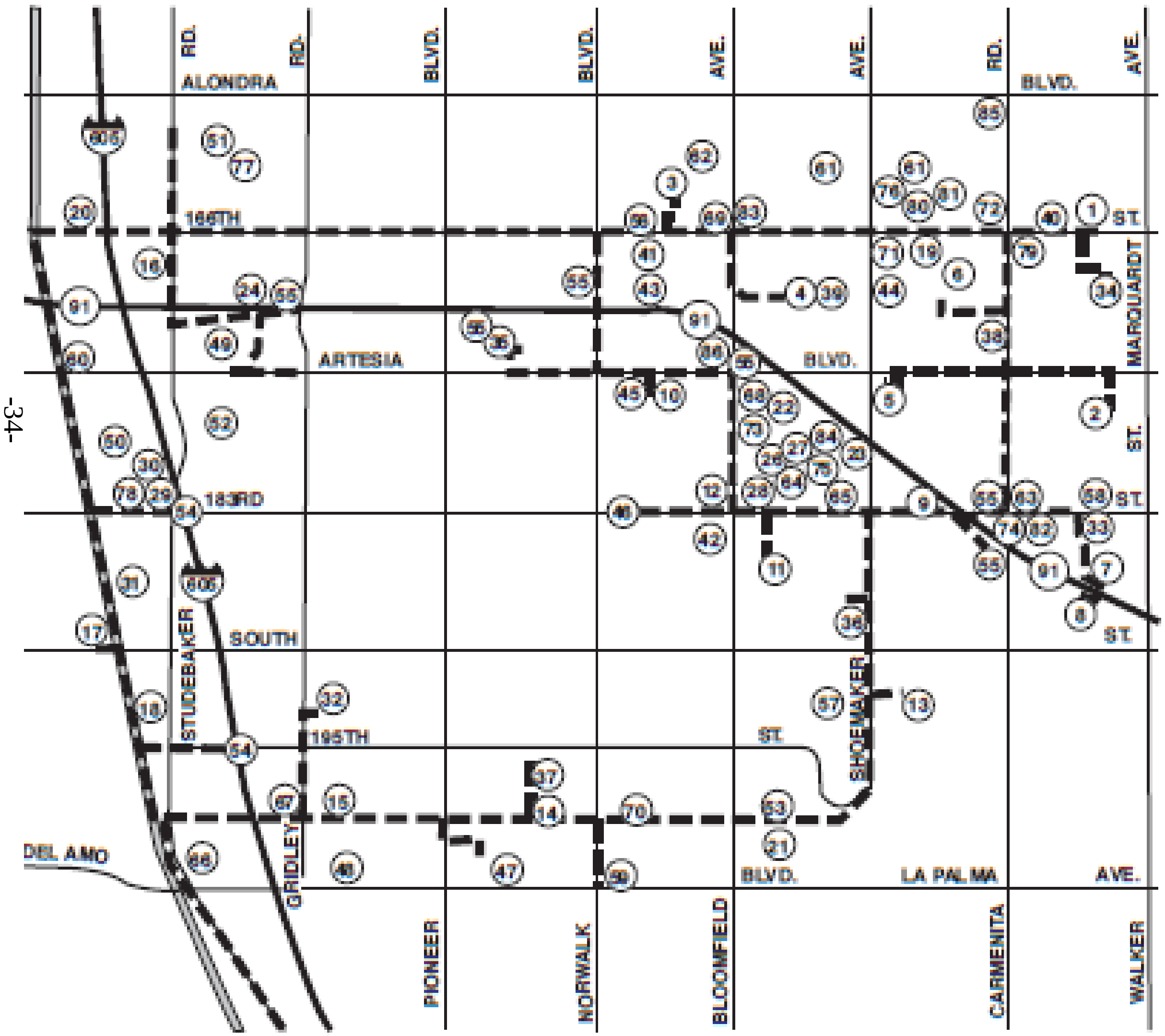
The City of Lakewood was charged $479.00/AF by the City of Cerritos during FY 11-12. The City of Lakewood, in turn, retailed the recycled water to its customers for $444.31/AF, or 41% of its potable rate of $1,089/AF. However, it is the City's policy to reimburse its recycled water customers for their 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, and now has 189,800 feet of pipeline. The backbone of the distribution system is a 30-inch pipeline paralleling the San Gabriel River.

FIGURE 8

CITY OF CERRITOS RECLAIMED WATER DISTRIBUTION SYSTEM



1. Carmenita Park	44. Whitney Learning Center
2. Friendship Park	45. Kennedy Elementary
3. Satellite Park	46. Elliott Elementary
4. Frontier Park	47. Cabrillo Lane Elementary
5. Saddleback Park	48. Haskell Junior High
6. City Park West	49. Gahr High School
7. Rainbow Park	50. Bellflower Christian School
8. Bettencourt Park	51. Cerritos Community College
9. Brookhaven Park	52. Artesia Cemetery Dist.
10. Rosewood Park	53. Cerritos Reg. Co. Park
11. Heritage Park	54. CalTrans 605 Freeway
12. Library/Civic Center	55. CalTrans 91 Freeway
13. Sunshine Park	56. Parkside Condominiums
14. Jacob Park	57. Shadow Park HOA
15. Gridley Park	58. Concordia Church
16. Reservoir Hill Park	59. Church of Nazarene
17. Westgate Park	60. B&B Stables
18. Liberty Park	61. ADP No. 6
19. Olympic Natatorium	62. Granada Park HOA
20. Ironwood 9 Golf Course	63. Cerritos Post Office
21. Sports Complex	64. Performing Arts Center
22. ADP No. 2	65. Delta Dental
23. Shoemaker on/off ramp	66. Orange County Nursery
24. Windjammer off-ramp	67. SCE Nursery
25. Medians/Parkways	68. Vestar Development
26. Transpacific Devel. Co.	69. Sundance Condos
27. Sheraton Hotel	70. Cerritos Nursery
28. Automated Data Proc.	71. Warmington Homes
29. Cerritos Pontiac/GMC	72. Midway International
30. Moothart Chrysler	73. Bloomfield Associates
31. Browning Oldsmobile	74. 183rd St. on-ramp
32. Bragg Elementary	75. AT&T Headquarters
33. Cerritos Elementary	76. Laskey-Weil
34. Gonsalves Elementary	77. Chancellor Village
35. Juarez Elementary	78. Land Rover
36. Leal Elementary	79. Surgical Center
37. Pat Nixon Elementary	80. UPS parking structure
38. Stowers Elementary	81. UPS main building
39. Whitman Elementary	82. Fountain Walk Senior Housing
40. Carmenita Junior High	83. ASCIP Building
41. ABC Adult School/Office	84. 12800 Center Court
42. Cerritos High School	85. Chugh Firm
43. Tracy Education Center	86. Chevron

N

1 REUSE SITES

TRANSMISSION LINE

Table 9
Summary of Fiscal Year 11-12 Recycled Water Usage
City of Cerritos
(Page 1 of 2)

Reuse Site	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Ironwood 9 Golf Course	Nov 78	25	L,P	0.089	100
Library/Civic Center	Dec 87	4	L	0.016	18
Olympic Natatorium	Dec 87	6	L	0.018	20
Whitney Learning Center	Dec 87	10	AF,L	0.020	23
Gonsalves Elementary School	Dec 87	5	AF,L	0.010	11
Wittman Elementary School	Dec 87	5	AF,L	0.010	11
Gahr High School	Dec 87	28	AF,L	0.055	62
Area Development Project No. 2	Jan 88	11.5	L,P	0.061	69
Medians/Parkways	Jan 88	42.8	L	0.146	164
605 Freeway	Jan 88	58.6	L	0.104	117
91 Freeway	Jan 88	70	L	0.032	36
Frontier Park	Jan 88	2.5	L	0.010	11
Carmenita Junior High School	Jan 88	5	AF,L	0.016	18
Cerritos Elementary School	Jan 88	6	AF,L	0.009	10
Stowers Elementary School	Jan 88	6	AF,L	0.019	22
Kennedy Elementary School	Jan 88	7	AF,L	0.016	18
City Park East	Jan 88	18	L	0.047	52
Satellite Park	Jan 88	2	L	0.004	4
Leal Elementary School	Jan 88	6	AF,L	0.007	8
Cerritos High School	Jan 88	20	AF,L	0.044	49
Elliott Elementary School	Jan 88	7	AF,L	0.012	14
Carmenita Park	Jan 88	4.5	L	0.016	17
Juarez Elementary School	Jan 88	7	AF,L	0.018	20
ABC Adult School & Office	Jan 88	3	L	0.014	16
Tracy Education Center	Jan 88	6	AF,L	0.003	3
Liberty Park	Jan 88	20	L	0.072	80
Gridley Park	Jan 88	9	L	0.026	30
Jacob Park	Jan 88	4.5	L	0.016	18
Heritage Park	Feb 88	12	L	0.034	39
Bragg Elementary School	Feb 88	7	AF,L	0.015	17
Haskell Junior High School	Feb 88	18	AF,L	0.045	51
Pat Nixon Elementary School	Feb 88	5	AF,L	0.009	11
Cabrillo Lane Elementary School	Feb 88	9	AF,L	0.001	1
Sunshine Park	Feb 88	3.5	L	0.010	11
Friendship Park	Feb 88	4	L	0.009	10
Bettencourt Park	Feb 88	2	L	0.005	6
Brookhaven Park	Feb 88	2	L	0.005	6
Saddleback Park	Feb 88	2	L	0.005	5
Westgate Park	Feb 88	4	L	0.009	11
Rainbow Park	Mar 88	2.5	L	0.005	6
Bellflower Christian School	Mar 88	31.4	AF,L	0.035	39
Cerritos Community College	Mar 88	55	AF,L	0.094	106
Cerritos Regional County Park	Apr 88	59	L	0.113	127
Artesia Cemetery District	Apr 88	10.9	L	0.024	26
Rosewood Park	Apr 88	2.7	L	0.015	17
Sports Complex	Mar 89	25	AF,L	0.052	59
Shoemaker On/Off Ramp - 91 Freeway	Dec 89	4.6	L	0.013	15
Transpacific Development Co.	Feb 90	6.9	L	0.010	12
Automated Data Processing	Feb 90	0.7	L	0.004	4
Sheraton Hotel	Mar 90	0.6	L	0.003	4
Cerritos Pontiac/GMC Truck	May 90	0.5	L	0.002	2
Moothart Chrysler	May 90	0.4	L	0.005	5
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 FISCAL YEAR 11-12 RECYCLED WATER USAGE
CITY OF CERRITOS
(PAGE 2 OF 2)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Browning Oldsmobile	Sep 90	0.1	L	0.002	2
City Water Truck	May 91	--	L	0.0001	0.1
Private Haulers	May 91	--	I	0	0
Parkside Condominiums	May 91	1.8	L	0.005	6
Concordia Church	Jun 91	4	L	0.003	4
Church of the Nazarene	Aug 91	1	L	0.003	4
B&B Stables	Aug 91	18	I	0.004	5
Shadow Park Homeowner's Association	Nov 91	6	L	0.019	21
Area Development Project No. 6	Apr 92	9	L	0.054	60
Granada Park Homeowners Association	May 92	3.8	L	0.008	10
Cerritos Post Office	Feb 93	0.7	L	0.005	5
Center for the Performing Arts	Mar 93	1	L	0.004	5
Delta Dental	Nov 93	1.8	L	0.003	3
Southern California Edison nursery	Mar 94	3.5	O	0.004	5
Vestar Development	Jun 94	9.6	L	0.032	36
Sundance Condominiums	Jan 95	9	L	0.033	37
Cerritos Nursery	Dec 95	3	O	0.004	4
Encore Maintenance-Warmington Homes	May 96	1.1	L	0.003	3
Artesia Off Ramp - 91 Freeway	Aug 96	3.3	L	0.006	6
Midway International	Feb 98	0.3	L	0.001	1
Bloomfield Associates, 17871 Park Plaza Drive	Sep 98	0.5	L	0.001	1
183rd 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	0.010	11
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	0.002	3
Surgical Center, Carmenita & 166th	May 08	0.1	L	0.0002	0.3
UPS Parking Structure, 13150 Moore	May 08	0.5	L	0.002	2
UPS Main Building, 13233 Moore	Nov 08	4.4	L	0.012	13
Fountain Walk Senior Housing, 18310 Carmenita	Nov 08	0.1	L	0.0002	0.3
ASCIP Building, 16550 Bloomfield	Feb 09	0.1	L	0.0004	0.4
12800 Center Court	Jul 09	0.4	L	0.001	2
Chugh Firm, 15925 Carmenita Road	Jan 11	0.2	L	0.001	1
Chevron, 17255 Bloomfield	Mar 11	0.1	L	0.0004	0.4
TOTALS		**755.6**		**1.665**	**1,871**

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

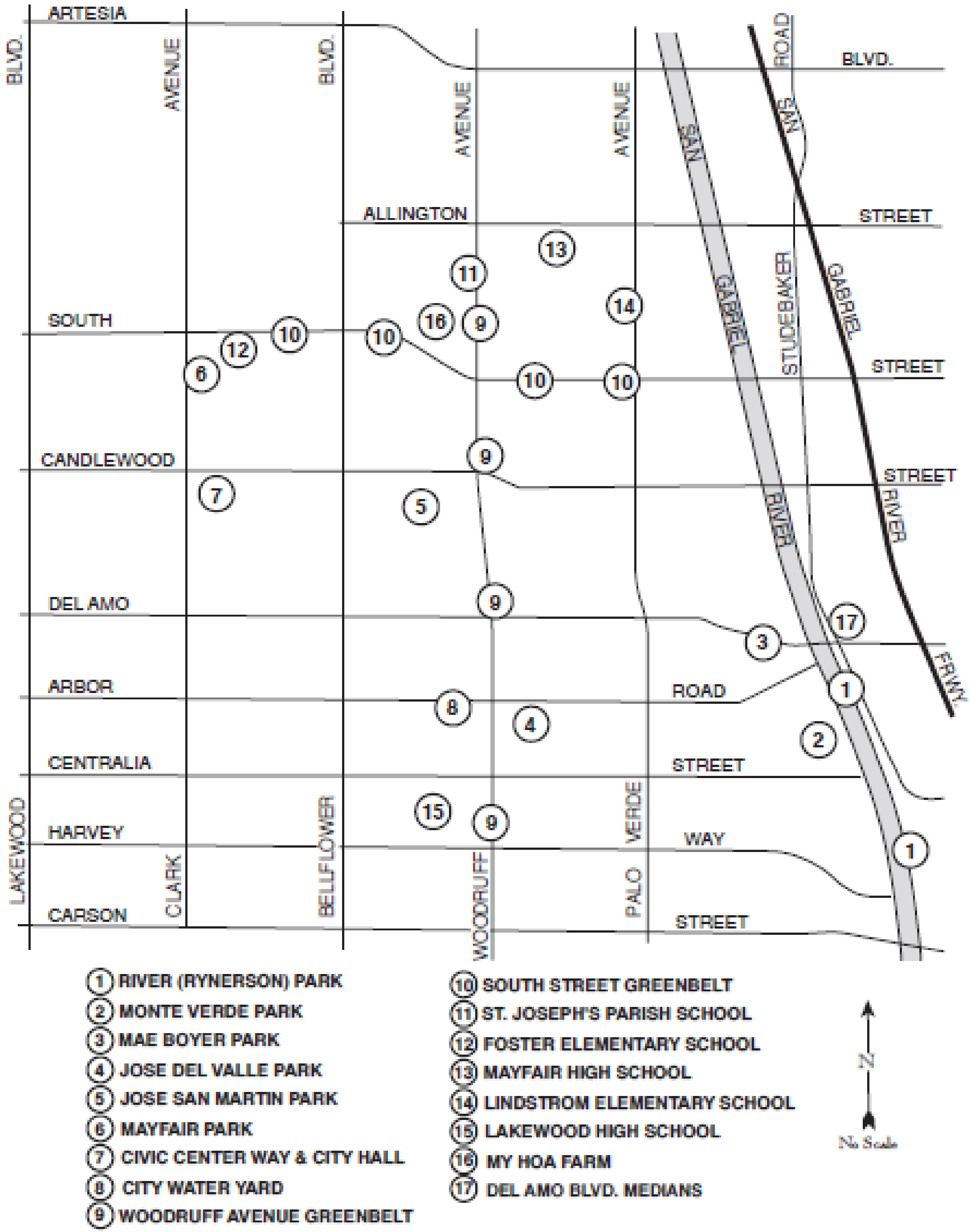


Table 10
Summary of Fiscal Year 11-12 Recycled Water Usage
City of Lakewood

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
River (Rynerson) Park	Aug 89	40	L	0.076	85
Monte Verde Park	Aug 89	4	L	0.053	60
Mae Boyer Park	Aug 89	8	L	0.027	31
Jose Del Valle Park	Aug 89	12	L	0.031	35
Jose San Martin Park	Aug 89	9.3	L	0.021	23
City Water Yard	Aug 89	1	L	0.008	9
Woodruff Avenue greenbelt	Aug 89	4.1	L	0.012	13
South Street greenbelt	Aug 89	3.3	L	0.008	9
Mayfair Park	Dec 89	18	L	0.041	47
St. Joseph Parish School	Aug 90	3.5	AF,L	0.010	11
Foster Elementary School	Sep 90	6	AF,L	0.016	18
Civic Center Way and City Hall	Nov 90	2.8	L	0.018	21
Mayfair High School	May 91	36.5	AF,L	0.044	50
Lindstrom Elementary School	Sep 91	12	AF,L	0.015	16
Lakewood High School	Sep 91	25	AF,L	0.026	29
My Hoa Farm	May 93	5	AG	0.013	15
Del Amo Blvd. greenbelt	Jul 03	0.3	L	0.002	3
TOTALS		**190.8**		**0.421**	**474**

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.

Construction of the initial system was completed in 1992, with the delivery of recycled water for applications such as landscape irrigation of parks, schools, and freeway slopes, nursery stock irrigation, and various industrial applications. To ensure reliable and efficient delivery of recycled water to the City of Vernon's Malburg Electrical 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 2.5.6 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. Most of the recycled water delivered through the Century distribution 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. Therefore, 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 11-12.

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 few years, three of the retail purveyors, the cities of Downey, Santa Fe Springs and Lynwood, constructed an additional 20,800 feet of pipelines connecting to the CBMWD distribution system. During FY 11-12, no new sites were added to the Century recycled water distribution system.

During FY 11-12, CBMWD delivered 3.195 MGD (3,590 AFY) of recycled water), or 13.8% of recycled water produced at the Los Coyotes WRP, through 11 retail water purveyors to 172 individual sites for landscape and athletic field irrigation on approximately 1,520 acres and for industrial process water. This was an increase of 8.5% over the preceding fiscal year.

In FY 11-12, CBMWD sold the recycled water on a wholesale basis to its retail water purveyor customers on a monthly use, tiered rate schedule of $536 for the first 50 AF, and $488 for anything above 50 AF. This price is between 57% and 62% of the rate of $859/AF it charges for Tier 1 non-interruptible potable water supplied by MWD, and between 50% and 54% of the rate of $984/AF it charges for Tier 2 supplies. Recycled water delivered outside of CBMWD's service area was subject to a $21-22/AF surcharge for each of the two tiers. Recycled water deliveries to the Malburg power plant in Vernon received an industrial use rate of $368 for the first 25 AF, $342 for the next 25 AF, $317 for the next 50 AF, and $291 for anything above 100 AF. Once they receive recycled water from CBMWD, the retail purveyors then set their own rates for the recycled water delivered to individual customers.

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 1991, allowing the plant to treat up to 15 MGD. In FY 11-12, the plant produced 8.49 MGD (9,541 AFY) of coagulated, filtered, disinfected tertiary recycled water (2.0% of the effluent produced in the JOS), which was a 5.7% decrease from the preceding fiscal year, at a FY 11-12

FIGURE 10
CENTRAL BASIN MUNICIPAL WATER DISTRICT
RECLAIMED WATER DISTRIBUTION SYSTEM

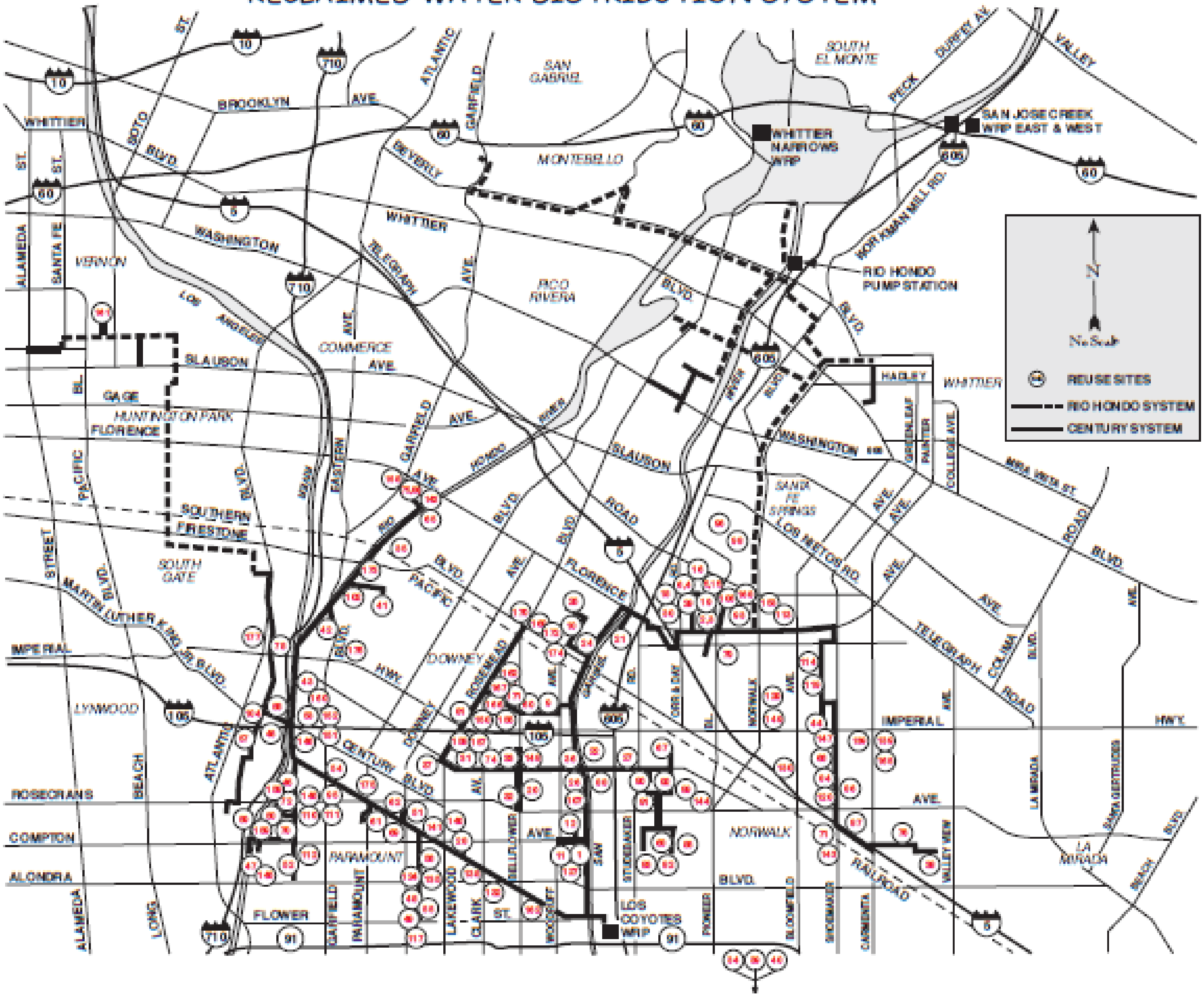


TABLE 11
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
CENTURY DISTRIBUTION SYSTEM
(PAGE 1 OF 4)

Reuse Site (City) (Map No.)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Andy's Nursery (Bellflower) (1)	Feb 92	9	O	0	0
Lake Center Park (Santa Fe Springs) (2)	Mar 92	8	L	0.019	22
Lake Center School (Santa Fe Springs) (3)	Mar 92	8	AF,L	0.018	20
Clarkman Walkway (Santa Fe Springs) (4)	Mar 92	0.1	L	0.0004	0.4
Towne Center Walkway (Santa Fe Springs) (5)	Apr 92	0.1	L	0.0002	0.2
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	0
Florence Avenue medians (Santa Fe Springs) (8)	Jun 92	3	L	0.006	6
Gauldin Elementary School (Downey) (9)	Jun 92	8.4	AF,L	0.006	7
Rio San Gabriel School (Downey) (10)	Jun 92	14.8	AF,L	0.016	18
Bellflower High School (Bellflower) (11)	Jul 92	28.4	AF,L	0.070	78
Ernie Pyle Elementary School (Bellflower) (12)	Aug 92	4.9	AF,L	0.011	13
Telegraph Road medians (Santa Fe Springs) (13)	Aug 92	0.5	L	0.003	3
Lakeview Park (Santa Fe Springs) (14)	Aug 92	6.7	L	0.013	14
Clark Estate (Santa Fe Springs) (15)	Aug 92	4.3	L	0.006	6
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	0.028	32
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	0.004	5
Lewis School (Downey) (20)	Nov 92	4.6	AF,L	0.006	7
Wilderness Park (Downey) (21)	Nov 92	24	L	0.089	100
605 Freeway at Foster (Bellflower) (22)	Jan 93	14	L	0.005	5
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	0.042	47
East Middle School (Downey) (25)	Jan 93	26	AF,L	0.023	25
Zinn Park (Bellflower) (26)	Jan 93	1.7	L	0.009	10
605/105 Interchange (Bellflower) (27)	Feb 93	22	L	0.0002	0.3
Hollywood Sports Center (Bellflower) (28)	Feb 93	22.5	L	0.002	2
Santa Fe Springs High School (Santa Fe Springs) (29)	Feb 93	14.5	AF,L	0.022	25
605/5 Freeway at Florence (Santa Fe Springs) (30)	Feb 93	17	L	0	0
Old Downey Cemetery (Downey) (31)	Apr 93	7.5	L	0.022	25
Thompson Park (Bellflower) (32)	Apr 93	15	L	0.022	25
105 Freeway at Bellflower (Downey) (33)	May 93	17.9	L	0.009	10
Palms Park (Lakewood) (34)	May 93	20	L	0.004	5
Crawford Park (Downey) (35)	Jul 93	2.1	L	0.008	10
Humedo Nursery (Downey) (36)	Aug 93	11	O	0.005	6
105 Freeway at Lakewood (Downey) (37)	Sep 93	25	L	0.003	3
Shaw Industries Carpet Mill (Santa Fe Springs) (38)	Sep 93	--	I	0.068	76
Palms Elementary School (Lakewood) (39)	Sep 93	3.5	AF,L	0.013	14
Artesia High School (Lakewood) (40)	Sep 93	20.9	AF,L	0.033	37
West Middle School (Downey) (41)	Oct 93	19.5	AF,L	0.019	21
Circle Park (South Gate) (42)	Oct 93	4	L	0.013	15
Hollydale Park (South Gate) (43)	Nov 93	46	L	0.089	100
Robertson's Ready-Mix (Santa Fe Springs) (44)	Dec 93	--	I	0.005	6
710/105 Interchange (Paramount) (45)	Dec 93	18.5	L	0.001	1
Downey/Contreras greenbelt (Paramount) (46)	Dec 93	0.1	L	0.001	1
Compton Golf Course (Paramount) (47)	Dec 93	13	L	0.023	26
Alondra Junior High School (Paramount) (48)	Dec 93	14	AF,L	0.029	32
Mokler Elementary School (Paramount) (49)	Dec 93	10	AF,L	0.009	10
Los Cerritos Elementary School (Paramount) (50)	Dec 93	8	AF,L	0.013	15
Wirtz Elementary School (Paramount) (51)	Dec 93	9	AF,L	0.011	12
Keppel Elementary School (Paramount) (52)	Dec 93	4	AF,L	0.002	2
Billy Lee Nursery (Paramount) (56)	Dec 93	2.5	O	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 11
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
CENTURY DISTRIBUTION SYSTEM
(PAGE 2 OF 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
105 Freeway at Wright (Lynwood) (57)	Jan 94	19.6	L	0.001	1
710 Freeway at M.L. King (Lynwood) (58)	Jan 94	15.5	L	0	0
710 Freeway at Rosecrans (Compton) (59)	Jan 94	24.2	L	0	0
Independence Park (Downey) (60)	Feb 94	10.4	L	0.012	14
Paramount Park (Paramount) (61)	Feb 94	9	L	0.023	26
Paramount High School (Paramount) (62)	Feb 94	19	AF,L	0.030	34
Rosecrans/Paramount medians (Paramount) (63)	Mar 94	0.2	L	0.001	1
Somerset medians (Paramount) (64)	Apr 94	0.9	L	0.005	6
Rio Hondo Golf Course (Downey) (65)	Apr 94	92.4	L	0.231	259
Zimmerman Park (Norwalk) (66)	Apr 94	9.5	L	0.015	17
Vista Verde Park (Norwalk) (67)	Apr 94	6.5	L	0.010	12
Gerdes Park (Norwalk) (68)	Apr 94	8.6	L	0.017	19
Clearwater Junior High School (Paramount) (69)	Apr 94	4	AF,L	0.033	37
Steam Engine Park (Paramount) (70)	Jun 94	0.6	L	0.002	2
5 Freeway at Shoemaker/Firestone (Norwalk) (71)	Jul 94	0.8	L	0.002	2
Spane Park (Paramount) (72)	Jul 94	5	L	0.009	11
Orange/Cortland Parkway (Paramount) (73)	Jul 94	1.3	L	0.003	3
Carpenter School (Downey) (74)	Aug 94	7.4	AF,L	0.006	6
John Anson Ford Park (Bell Gardens) (75)	Sep 94	45	L	0.065	73
Ramona Park (Norwalk) (76)	Oct 94	4.8	L	0.007	8
Alondra median (Paramount) (77)	Oct 94	0.6	L	0.007	8
Imperial/Wright Road medians (Lynwood) (78)	Oct 94	0.2	L	0.002	2
Little Lake Park (Santa Fe Springs) (79)	Dec 94	18	L	0.038	43
John Anson Ford Golf Course (Bell Gardens) (80)	Feb 95	13.6	L	--	--
South Middle School (Downey) (81)	May 95	15.8	AF,L	0.017	19
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	0.014	15
Hargitt Middle School (Norwalk) (84)	Jul 95	9.5	AF,L	0.022	24
Norwalk Adult School (Norwalk) (85)	Jul 95	17.2	AF,L	0.026	29
John Glenn High School (Norwalk) (86)	Jul 95	38.8	AF,L	0.045	50
Ramona Elementary School (Norwalk) (87)	Jul 95	6.8	AF,L	0.007	8
New River Elementary School (Norwalk) (88)	Jul 95	10.3	AF,L	0.010	12
Morrison Elementary School (Norwalk) (89)	Sep 95	7.7	AF,L	0.009	10
D.D. Johnston Elementary School (Norwalk) (90)	Sep 95	8.9	AF,L	0.008	9
Corvallis Middle School (Norwalk) (91)	Sep 95	16.9	AF,L	0.022	24
Norwalk High School (Norwalk) (92)	Sep 95	35.1	AF,L	0.034	38
Heritage Park (Santa Fe Springs) (93)	Oct 95	9.2	L	0.009	10
Belloso Farm Nursery (Paramount) (94)	Oct 95	2.5	O	0	0
Robertson's Ready-Mix (Paramount) (95)	Nov 95	--	I	0.008	8
Los Nietos Park (Santa Fe Springs) (96)	Jan 96	11.2	L	0.016	19
Bell Gardens Soccer Field (Bell Gardens) (97)	Feb 96	2.6	AF	0.011	12
Jersey Ave. School/city athl. fields (S.F. Springs) (98)	Mar 96	8	AF	0.007	8
Bellflower Blvd. medians (Bellflower) (99)	Jul 96	0.3	L	0.002	2
Alta Produce (Paramount) (100)	Aug 96	4	AG	0.002	2
Belloso Farm Nursery (South Gate) (101)	Sep 96	2.5	O	0.002	2
Temple Park (Downey) (102)	Oct 96	1	L	0.001	2
Woodruff Avenue medians (Bellflower) (103)	Oct 96	0.8	L	0.005	5
Ham Park (Lynwood) (104)	Dec 96	10	L	0	0
Jauregui Nursery (Paramount) (105)	Dec 96	2	O	0.002	3
Heritage Corporate Center (Santa Fe Springs) (106)	Jan 97	29.9	L	0.027	31
Belloso Farm Nursery (Bellflower) (107)	Jan 97	8	O	0	0
Foster Road medians (Norwalk) (108)	Jan 97	0.3	L	0.002	3
Rosecrans Avenue medians (Paramount) (109)	Mar 97	0.2	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 11
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
CENTURY DISTRIBUTION SYSTEM
(PAGE 3 OF 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
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	0
L.A. County 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	0.0004	0.4
Foster Road/Premier Ave. medians (Downey) (116)	Aug 97	0.1	L	0.00005	0.1
Palm Growers Nursery (Downey) (117)	Oct 97	7.3	O	0	0
Alondra Blvd medians @ SGR (Bellflower) (118)	Oct 97	0.1	L	0.001	1
Maruichi American building (Santa Fe Springs) (119)	Oct 98	0.4	L	0.002	2
Norwalk Golf Course (Norwalk) (120)	Jan 99	8	L	0.024	26
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	0.008	9
Lakewood Blvd. medians (Paramount) (123)	Mar 99	0.2	L	0.002	2
Progress Park (Paramount) (124)	Mar 99	6.2	L	0.014	15
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	0.001	1
Orange Avenue medians (Paramount) (128)	Aug 99	0.1	L	0.003	4
Metropolitan State Hospital (Norwalk) (129)	Sep 99	80	L	0	0
Moffit School (Norwalk) (130)	Sep 99	1.6	AF,L	0.007	8
Rio Hondo Channel (Downey) (131)	Nov 99	0.8	L	0.0003	0.3
Simms Park (Bellflower) (132)	Dec 99	12.5	L	0.017	19
Foster Road Greenbelt (Norwalk) (133)	Mar 00	3.3	L	0.005	6
San Luis Street @ flood channel (Paramount) (134)	Apr 00	3	L	0.0003	0.4
Jefferson School (Paramount) (135)	Jul 00	0.5	AF,L	0.003	3
Columbus High School (Downey) (136)	Aug 00	25	AF,L	0.019	22
Triangle Park (South Gate) (137)	Nov 00	0.4	L	0.002	3
Golden Springs Business Park (Santa Fe Springs) (139)	Apr 01	31.4	L	0.117	132
Bellflower Storage (Bellflower) (140)	Jun 01	3	L	0.002	2
Railroad Beautification (Paramount) (141)	Jul 01	0.5	L	0	0
Rio Hondo Channel (Bell Gardens) (142)	Jul 01	0.3	L	0.002	2
CDM building (Santa Fe Springs) (143)	Oct 01	0.1	L	0.002	3
L.A. County Recorder's Office (Norwalk) (144)	Jan 02	2.7	L	0.012	14
Tays Cool Fuel (Paramount) (145)	Feb 02	0.2	L	0.002	2
L.A. River landscaping (South Gate) (146)	Mar 02	2.5	L	0.0003	0.3
Lakewood-Adoree medians (Downey) (150)	Jul 02	3.4	L	0.045	50
Simon Trucking (Santa Fe Springs) (147)	Nov 02	0.9	L	0.001	1
Foster/Coldbrook medians (Bellflower) (148)	Nov 02	0.1	L	0.0003	0.3
L.A. County Library (Norwalk) (149)	Nov 02	0.9	L	0.005	5
Metro State/Wheelabrator (Norwalk) (129)	Jan 03	B	I	0.192	216
Imperial Equestrian (South Gate) (152)	Jul 03	1.5	L	0.003	4
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	0.015	17
Pro Growers Nursery (Norwalk) (156)	Sep 04	11.3	O	0.063	71
Kaiser Administration building (Downey) (157)	Oct 04	2.5	L	0.005	6
Downey Studios (Downey) (158)	Oct 04	1	L	0.004	4
Dills Park (Paramount) (159)	Jul 05	12.5	L	0.031	34
Hollydale Elementary (South Gate) (160)	Sep 05	3	AF,L	0.001	1
Malburg Generation Station (Vernon) (161)	Oct 05	B	I	0.624	701
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	0

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 Fiscal Year 11-12 Recycled Water Usage
Century Distribution System
(Page 4 of 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Foster Road medians (Santa Fe Springs) (165)	Jul 06	1	L	0.009	10
Space Learning Center (Downey) (166)	Apr 08	10.5	L	0.025	28
Cornerstone Commerce Center (Downey) (167)	Jun 08	0.8	L	0.007	8
Mora Drive medians (Santa Fe Springs) (168)	Oct 08		L	0.006	7
Firestone Blvd. medians (Downey) (169)	Feb 09	0.1	L	0.0004	0.4
Citibank, 8764 Firestone Blvd. (Downey) (170)	Feb 09	0.1	L	0.001	1
Steve Horn Pkwy. medians @ Kaiser (Downey) (171)	May 09	1.4	L	0.027	30
Walgreens/Big Lots, 9018 Firestone (Downey) (172)	May 09	0.4	L	0.003	3
Pacific Alloy Casting (South Gate) (173)	Jul 09	--	I	0.016	18
MTA Bike Trail (Bellflower) (174)	Nov 09	0.1	L	0.009	10
Paramount Blvd. Medians (Paramount) (175)	Mar 10		L	0.006	7
Los Amigos Golf Course (L.A. County) (176)	Aug 10	110	L	0.168	189
Atlantic Ave. medians (South Gate) (177)	Mar 11	16.3	L	0.003	4
TOTALS		**1,520.3**		**3.195**	**3,590**

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.

POMONA WRP FACTS

Plant capacity:	15 MGD
Water produced:	8.49 MGD 9,541 AFY 5.7% FY decrease
FY11-12 O&M:	$328/AF
Water reused: (excluding recharge)	2.885 MGD 3,241 AFY 13.1% FY increase 34.0% of production
Delivery systems:	2 190,100 ft. of pipe
No. of reuse sites:	196 2,197.0 acres

O&M cost of approximately $328/AF. Recycled water quality for FY 11-12 is presented in Table B-3 of Appendix B.

Two agencies, the Pomona Water Department (PWD) and the Walnut Valley Water District (WVWD), along with the Sanitation Districts' Spadra Landfill, together used 2.885 MGD (3,241 AFY) or 34.0% of the plant's total production. This was a 13.1% increase over the preceding fiscal year. A third purveyor, Rowland Water District (RWD), took over operation of that portion of the WVWD recycled water distribution system that ran through its service area and has connected to the City of Industry system which gets its recycled water from the San Jose Creek WRP (Section 2.5.3).

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, non-potable applications, and No. 91-100 for groundwater replenishment.

2.4.1 POMONA WATER DEPARTMENT

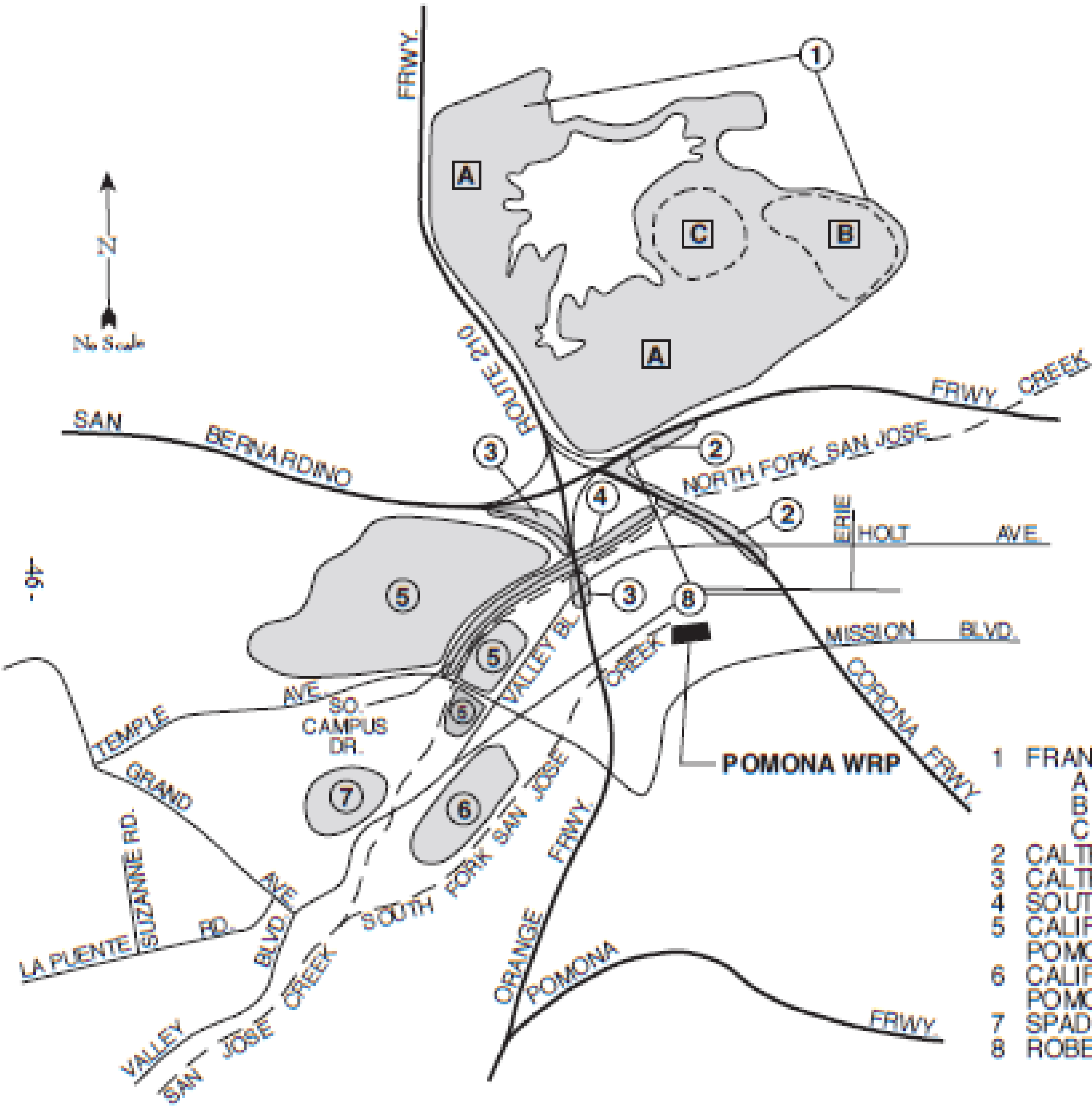
Documented use of recycled water in the Pomona area goes as far back as 1904 when effluents treated to various levels were used on the many farms and ranches in the area. The PWD began using recycled water from the Sanitation Districts' current treatment facility in December 1973 when agricultural irrigation at California State Polytechnic University, Pomona (Cal Poly) and its occasional satellite farming operation at Lanterman State Hospital, and landscape irrigation along South Campus Drive Parkway were connected to a recycled water distribution system.

The distribution system consists of a 490 HP, 9,000 gpm pump station that feeds two, 21-inch pipelines. 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. Lanterman Hospital had been served by a 21-inch unreinforced concrete gravity line from the Pomona WRP that currently serves the former Landfill site and the WVWD pump station (discussed in Sections 2.4.2 and 2.4.3, below).

During FY 11-12, the PWD delivered 1.389 MGD (1,560 AFY), or 16.3% of the recycled water from the Pomona WRP though 37,000 feet of pipeline, to seven retail customers on 1,427 acres as shown in Figure 11. This was a 15.8% increase over the preceding fiscal year. Table 12 lists the users of the PWD system as of the end of FY 11-12. No new users were added during this fiscal year.

During FY 11-12, the PWD sold the recycled water to its customers from its pressure system at a rate of $533.66/AF. This is 42% of its potable water rate of $1,271.95/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
8 ROBERTSON'S READY MIX

TABLE 12
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
POMONA WATER DEPARTMENT & SANITATION DISTRICTS' SPADRA SITE

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Cal Poly, Pomona-Kellogg	Dec 73	500	AG,L,O,P,AF	0.566	636
Lanterman Hospital	Dec 73	100	AG	0	0
South Campus Drive Parkway	Dec 73	8	L	0.012	13
Route 57 and 10 Freeways	May 75	18	L	0.051	57
Bonelli Regional County Park	Apr 77	789	L	0.749	841
Route 71 and 10 Freeways	Apr 81	12	L	0.005	6
Spadra Landfill landscape	Jul 84	53	L	0.327	368
Spadra Landfill dust control	Jul 84	--	I	0.003	4
Cal Poly LandLab	Nov 93	2.5	AG,L	0.010	12
Spadra Gas-to-Energy Plant	Dec 95	--	I	0.045	51
Robertson's Ready-Mix	Oct 09	--	I	0.007	7
TOTALS		**1,482.5**		**1.775**	**1,994**

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 operate. 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 are also listed in Table 12 along with the users of the Pomona Water Department system.

During FY 11-12, 0.386 MGD (434 AFY), or 4.5% 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 24.0% increase over 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 feet of pipeline, and a 2 million gallon reservoir. A second, 2 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 non-potable 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. In January 2003, the RWD assumed operation of the 29,280 feet of the WVWD recycled water system pipeline serving seven reuse sites in RWD's service area which was connected to the City of Industry main recycled transmission line in July 2009 (see Section 2.5.3 below). Figure 12 and Table 13 present the users of the WVWD system as of the end of FY 11-12. A narrative description of the layout of the WVWD recycled water distribution system is contained in Appendix G.

In FY 11-12, two new sites were added to the WVWD distribution system. In December 2011, the landscaping around Majestic Realty (179 S. Grand Ave.) was connected. In May 2012, the landscaping around the Parker Canyon Storage Reservoir was connected. During FY 11-12, WVWD delivered 1.110 MGD (1,247 AFY), or 13.1% of the recycled water produced at the Pomona WRP, an increase of 6.8% over the preceding fiscal year. WVWD received the recycled water directly from the Sanitation Districts and retailed it to its 185 customers (which irrigate approximately 714.5 acres) at 62% of its potable water rate of $1,041.08/AF, or $649.04/AF.

2.5 San Jose Creek WRP

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 in 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 11-12, Stages I & II (east side) produced 47.65 MGD (53,542 AFY) and Stage III (west side) produced 19.85 MGD (22,307 AFY), at O&M costs of $212/AF and $241/AF, respectively. The entire facility, therefore, produced a total of 67.50 MGD (75,849 AFY) of coagulated, filtered, disinfected tertiary recycled water (17.2% of the effluent produced in the JOS), a 0.4% increase over the preceding fiscal year.

Recycled water quality from both the east and west sides of the plant for FY 11-12 is presented in Tables B-4 and B-5, respectively, of Appendix B. Of the total amount of recycled water produced, 38.506 MGD (43,266

FIGURE 12
WALNUT VALLEY WATER DISTRICT RECLAIMED WATER DISTRIBUTION SYSTEM

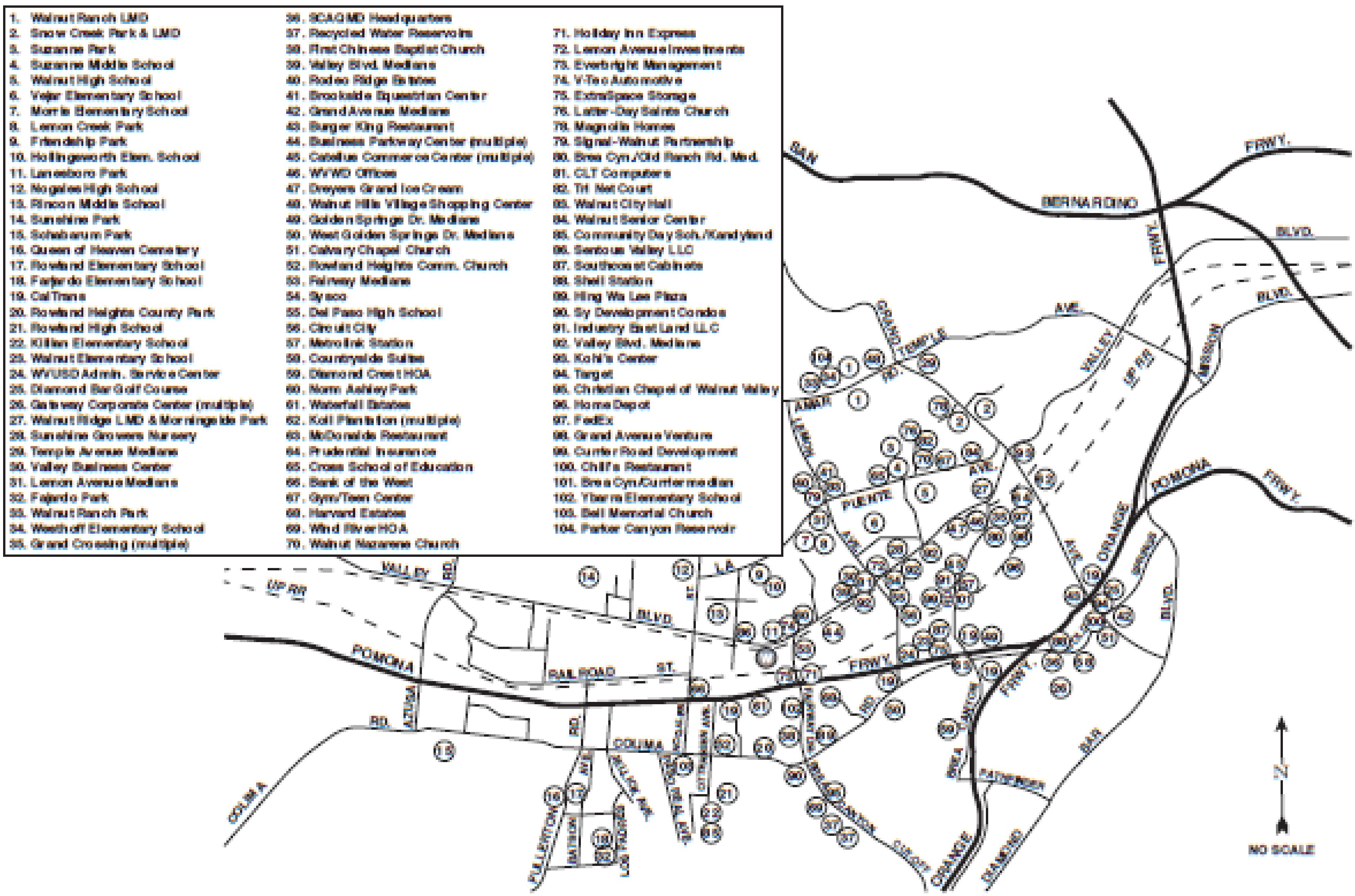


Table 13
Summary of Fiscal Year 11-12 Recycled Water Usage
Walnut Valley Water District
(Page 1 of 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Suzanne Park (Walnut)	Oct 80	12	L	0.016	18
Suzanne Middle School (Walnut)	May 86	4	AF,L	0.011	12
Walnut High School (Walnut)	May 86	15	AF,L	0.019	21
Vejar School (Walnut)	May 86	3	AF,L	0.009	10
Morris School (Walnut)	May 86	9	AF,L	0.010	12
Snow Creek Park (Walnut)	May 86	7	L	0.011	12
Snow Creek Landscape Maintenance Dist. (Walnut)	May 86	13.5	L	0.048	54
Lemon Creek Park (Walnut)	May 86	5	L	0.006	7
Friendship Park (West Covina)	May 86	6	L	0.008	9
Hollingworth School (West Covina)	May 86	3	AF,L	0.006	7
Lanesboro Park (West Covina)	May 86	2	L	0.008	9
Rincon Middle School (West Covina)	May 86	3	AF,L	0.009	11
Route 57 and 60 Freeways (Rowland Heights)	May 86	19.7	L	0.019	21
Rowland Heights Reg. Co. Park (Rowland Heights)	May 86	11	L	0.013	15
Rowland High School (Rowland Heights)	May 86	9	AF,L	0.017	20
Killian Elementary School (Rowland Heights)	May 86	3	AF,L	0.005	5
Walnut Elementary School (Walnut)	May 86	4	AF,L	0.001	1
WUSD Administrative Service Center (Walnut)	May 86	4	L	0.003	3
Walnut Ranch Park (Walnut)	Jun 86	26	L	0.022	25
Amar Road greenbelt (Walnut)	Jun 86	16	L	0.035	40
Diamond Bar Golf Course (Diamond Bar)	Jul 86	174	L,P	0.192	215
Walnut Ridge Landscape Maintenance Dist. (Walnut)	Mar 87	25.5	L	0.040	45
Morningside Park (Walnut)	Mar 87	4	L	0.006	7
Gateway Corporate Center (Diamond Bar)	Jun 87	45	L	0.038	43
20659 E. Valley Blvd. (Walnut)	May 88	7	O	0.00001	0.01
Westhoff Elementary School (Walnut)	Sep 88	8	AF,L	0.005	6
Temple Avenue greenbelt (Walnut)	Jan 90	1	L	0.001	1
Walnut Tech Business Center (Walnut)	Apr 90	1	L	0.002	2
Lemon Avenue greenbelt (Walnut)	Sep 91	4.3	L	0.007	8
South Coast AQMD Headquarters (Diamond Bar)	Nov 91	2	L	0.005	5
WVWD reservoir (Diamond Bar)	May 92	1	L	0.006	7
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	0.003	3
General Electric, 19705 E. Business Pkwy (Walnut)	Nov 93	1.6	L	0.006	7
Rodeo Ridge Estates (Walnut)	Dec 93	6.3	L	0.006	7
Golden Springs Drive medians (Diamond Bar)	Jan 94	1.3	L	0.006	7
Walnut Hills Village Shopping Center (Walnut)	Mar 94	2.4	L	0.005	6
Brookside Equestrian Center (Walnut)	Aug 94	13.6	L	0.002	2
WVWD Office (Walnut)	Oct 94	0.2	L	0.002	2
Cattelus Development (Walnut)	Oct 94	18.9	L	0.013	15
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	0.004	4
Metrolink Station (Industry)	Nov 94	0.6	L	0.002	2
Del Paso High School (Walnut)	Jan 95	3	AF,L	0.004	4
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	0.008	9
Sysco Food Service, 20701 Currier Road (Walnut)	Apr 95	2.3	L	0.008	9
Tung Hsin Trading, 20420 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.003	4
Amergence Tech. Inc., 20480 E. Bus. Pkwy (Walnut)	Apr 95	0.9	L	0.003	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
Dura Freight Lines , 20275 Bus. Parkway (Walnut)	Apr 95	1.3	L	0.003	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 FISCAL YEAR 11-12 RECYCLED WATER USAGE
WALNUT VALLEY WATER DISTRICT
(PAGE 2 OF 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Coaster Co. of America, 20300 Bus. Parkway (Walnut)	Apr 95	0.7	L	0.002	3
Dura Freight Lines, 20405 Bus. Parkway (Walnut)	Apr 95	1	L	0.002	3
Dura Freight Lines, 20595 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.004	4
Dura Freight Lines, 20445 E. Business Pkwy (Walnut)	Apr 95	0.7	L	0.002	2
820 Fairway Drive medians (Industry)	Jun 95	0.1	L	0.001	1
Spencer N Enterprises, Inc., 435 S. Lemon (Walnut)	Jun 95	0.5	L	0.001	2
General Electric, 19805 E Business Pkwy (Walnut)	Jun 95	1.1	L	0.007	7
Menlo Logistics, 20002 E. Business Pkwy (Walnut)	Jun 95	4	L	0.006	7
General Electric, 20005 E. Business Parkway (Walnut)	Jun 95	6.7	L	0.010	11
Ping Ting Hsu, 20701 Currier Road (Walnut)	Aug 96	0.1	L	0.0005	1
Lawrence Allen & Assoc., 20822 Currier Rd. (Walnut)	Oct 96	0.1	L	0.001	1
Fairway Business Cntr., 19700 Bus. Parkway (Walnut)	Nov 96	0.4	L	0.002	3
Rowland Heights Christian Church (Rowland Hghts.)	Feb 97	0.5	L	0.0004	0.4
Viewsonic, 510 Cheryl/455 Brea Canyon (Walnut)	Jul 97	1.8	L	0.010	11
Countryside Suites (Diamond Bar)	Mar 98	1.4	L	0.003	3
Diamond Crest Homeowners Assn. (Diamond Bar)	Oct 98	14	L	0.024	26
Norm Ashley Park (Walnut)	Nov 98	0.2	L	0.001	1
Play Hut, 368 Cheryl Lane (Walnut)	Nov 98	0.8	L	0.002	3
Waterfall Estates (Rowland Heights)	Dec 98	1.2	L	0.004	4
Calvary Chapel (Diamond Bar)	Apr 99	1	L	0.017	20
Hi-Tek Warehouse, 20851 Currier Road (Walnut)	Jun 99	0.2	L	0.001	2
Campus Group Inc, 319 Cheryl Road (Walnut)	Jul 99	0.1	L	0	0
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	0.001	1
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	0.0002	0.2
Nu-Health Products, 20875-85-95 Currier (Walnut)	Oct 99	0.1	L	0	0
Lemon Avenue medians (Industry)	Dec 99	0.1	L	0.0004	0.4
Prudential Insurance Co., 21558 Ferraro. (Walnut)	Jan 00	3.5	L	0.007	8
McDonald’s Restaurant (Diamond Bar)	Mar 00	0.1	L	0.001	1
J&L Footwear, 250 Benton Court (Industry)	Jul 00	0.6	L	0.001	1
Markwins Inter. Corp., 22067 Ferraro (Industry)	Nov 00	1.9	L	0.004	4
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	0.001	1
SL Investment Group LLC, 218 Maclin Ct. (Industry)	Nov 00	1.5	L	0.002	2
Morrow Meadows, 231 Benton Court (Industry)	Apr 01	0.9	L	0.003	3
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	0.0001	0.1
Gym/Teen Center (Walnut)	Sep 01	0.6	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	0.002	2
Walnut Nazarene Church (Walnut)	Feb 02	0.8	L	0.0002	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	3
Majestic Management, 108-288 Mayo Drive (Walnut)	Apr 02	0.1	L	0.006	7
Holiday Inn Express (Walnut)	May 02	0.4	L	0.002	2
Lemon Avenue Investments (Walnut)	Jun 02	0.6	L	0.002	3
Magnolia at Snow Creek (Walnut)	Jul 02	5.4	L	0.023	25
Everbright Management, 1163 Fairway (Industry)	Sep 02	0.6	L	0.002	2
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	0.0002	0.2

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.

Table 13
Summary of Fiscal Year 11-12 Recycled Water Usage
Walnut Valley Water District
(Page 3 of 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
V-Tec Automotive, 19677 Valley Blvd. (Walnut)	Sep 02	0.1	L	0.0002	0.2
Grand and Valley landscaping (Walnut)	Sep 02	0.1	L	0.005	6
Extra Space Storage (Walnut)	Oct 02	0.8	L	0.002	2
Latter Days Saints Church (Walnut)	Oct 02	0.9	L	0.003	3
Nogales and Killian landscaping (Rowland Heights)	Oct 02	0.1	L	0.0005	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	0.003	3
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	0.001	1
San Malone Enterprises, 19865 Harrison (Industry)	Aug 03	0.3	L	0.002	2
Shinetec Group, Inc., 19685 Harrison Ave. (Industry)	Aug 03	0.4	L	0.0004	0.5
Majestic Realty, Grand Ave./Village Staples (Walnut)	Aug 03	1.6	L	0.006	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	0.004	5
NP 21301 Ferraro Pkwy., 21301 Ferraro (Industry)	Sep 03	0.8	L	0.003	3
568 TriNet Court (Walnut)	Oct 03	0.3	L	0.001	1
Walnut City Hall (Walnut)	Dec 03	0.6	L	0.001	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	0.006	6
Young Hoon Cho, 1709 Nogales St. (Rowland Heights)	Mar 04	0.1	L	0.0004	0.4
Shell Station, 21103 Golden Springs Dr. (Diamond Bar)	Mar 04	0.1	L	0.0002	0.2
Ferraro/Grand East ramp (Industry)	Apr 04	3.8	L	0.005	5
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	0.001	1
APL Logistics, 408 Brea Canyon Rd. (Walnut)	Jun 04	2.1	L	0.005	6
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	0.0003	0.4
Community Day School (Walnut)	Nov 04	0.1	AF,L	0.0004	0.4
Majestic Mgmt., Bldg. 25 on Mayo Dr. (Walnut)	Jan 05	0.1	L	0.00003	0.03
Sy Develop. condos, 20118-20138 Colima, (Walnut)	Jun 05	0.1	L	0.0002	0.2
N/E corner Cheryl Lane/Baker Parkway (Industry)	Aug 05	3.3	L	0.014	16
Jakk's Pacific, Inc. 21733-21749 Baker (Industry)	Aug 05	1.2	L	0.003	4
20813 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
20265 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
19849 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
Kohl's Center (Walnut)	Sep 05	2	L	0.009	11
Phoenix Private Schools (Rowland Heights)	Dec 05	0.1	AF,L	0	0
The Home Depot, 21535-21651 Baker (Industry)	Jan 06	2.8	L	0.009	10
Industry East Land LLC, 21415 Baker (Industry)	Jan 06	2.3	L	0.006	7
Charles Hailong Cui, 350 Cheryl Lane (Walnut)	Apr 06	0.7	L	0.006	6
Fairway median@ Brea Canyon (Walnut)	Jun 06	0.3	L	0.001	1
Grand Avenue Crossing (Industry)	Jul 06	18.5	L	0.019	22
22002 Valley Blvd. (Industry)	Jul 06	1.6	L	0.003	4
Christian Chapel of Walnut Valley (Walnut)	Aug 06	2.2	L	0.007	8
Target Store T-2179, 747 Grand Ave. (Walnut)	Sep 06	3.9	L	0.005	6
Leg Avenue, 19601 E. Walnut Dr. (Walnut)	Oct 06	0.5	L	0.002	3
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	0.012	13

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 Fiscal Year 11-12 Recycled Water Usage
Walnut Valley Water District
(Page 4 of 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Currier Road Devel. Inc., 20819 Currier Rd. (Walnut)	May 07	0.3	L	0.001	1
Williams-Sonoma, 21700 Baker (Industry)	Aug 07	2	L	0.005	6
21350 Valley Blvd. (Industry)	Feb 08	0.4	L	0.001	1
Grand Avenue Venture, 21508 Ferraro Pkwy (Walnut)	Apr 08	3.5	L	0.004	4
Grand Avenue/Baker Parkway medians (Industry)	May 08	6.7	L	0.011	12
Majestic Management, 21530-21590 Baker (Industry)	May 08	2	L	0.009	10
Gomez Upholstery, 19935 Valley Blvd. (Walnut)	Jul 08	2	L	0	0
Susann Sutseng Lee, 1335-1337 Otterbein (Row. Hts.)	Jul 08	0.1	L	0.0003	0.3
Golden Springs Plaza (20657 Golden Sprgs (Dia. Bar)	Aug 08	0.4	L	0.001	2
Chili's Restaurant, Golden Springs Dr. (Diamond Bar)	Sep 08	0.01	L	0.001	1
Majestic Management, 21808 Garcia Ln. (Industry)	Sep 08	0.5	L	0.002	2
Majestic Management, 21858 Garcia Ln. (Industry)	Sep 08	0.4	L	0.002	2
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	2
CFT Development, Golden Springs Dr. (Diamond Bar)	Oct 08	0.01	L	0.0004	0.5
Jenny Hsieh, 20125 Valley Blvd. (Walnut)	Nov 08	0.03	L	0.00003	0.03
Brea Canyon Rd./Currier Road median (Walnut)	Feb 09	2	L	0.006	7
Cardinal Capital Partners, Currier/Lemon (Walnut)	Mar 09	2.5	L	0	0
Family Property Holdings, 20888 Amar Rd. (Walnut)	May 09	0.04	L	0.0004	0.4
KW Global Inc., 293 Brea Canyon Drive (Walnut)	May 09	0.3	L	0.001	1
Light of America, Inc. (20722 Currier Rd.) (Walnut)	Sep 09	0.1	L	0.0003	0.3
Ybarra Elementary School (Rowland Heights)	Sep 09	5.6	AF,L	0.007	8
Donald Miller, 19803 Valley (Walnut)	Sep 10	0.1	L	0.0003	0.4
Bell Memorial Church, 1747 Nogales (Rowland Hts.)	Dec 10	0.3	L	0.001	1
Majestic Realty (179 S. Grand Ave.) (Walnut)	Dec 11	2.5	L	0.002	2
WVWD Parker Canyon Reservoir (Walnut)	May 12	3.5	L	0.001	1
TOTALS		**714.5**		**1.110**	**1,247**

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.

AFY), or 57.0% of the plant's combined production, was actively reused, a 21.1% increase over the preceding fiscal year. This increase was mainly due to above average rainfall that greatly reduced the amount of recycled water used for groundwater replenishment during this 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 134 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, non-potable applications, and Nos. 91-100 and R4-2009-0048 for groundwater replenishment.

SAN JOSE CREEK WRP FACTS

Plant capacity:	100 MGD
Water produced:	67.50 MGD 75,849 AFY 0.4% FY increase
FY11-12 O&M:	$212/AF (east) $241/AF (west)
Water reused:	38.506 MGD 43,266 AFY 21.1% FY increase 57.0% of production
Delivery systems:	7 440,210 ft. of pipe
No. of reuse sites:	134 2,922.4 acres

2.5.1 WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

The great majority (89.8%) of recycled water actively used from the San Jose Creek WRP goes to recharge the Central Basin groundwater aquifer, which in FY 11-12 was 34.454 MGD (38,713 AFY), a 23.3% increase over the preceding fiscal year and 51.0% of the recycled water produced by this plant. In FY 11-12, 19.17 MGD (21,545 AFY) was directed either to the San Gabriel Coastal Spreading Grounds or to the Rio Hondo Spreading Grounds via the plant's discharge point from the east side to the San Jose Creek channel (58.7%). Another 0.012 MGD (14 AFY), or <0.1%, 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 in March 2009 as the diversion gate began to be incrementally opened to the spreading grounds. The new gate operations and meter allowed for 13.459 MGD (15,122 AFY), or 41.2%, was able to be recharged directly during this fiscal year, significantly more than had been conserved in previous years.

Of the total amount of recycled water delivered from the San Jose Creek WRP, 11.395 MGD (12,804 AFY), or 32.9%, went to the Rio Hondo Spreading Grounds and 23.132 MGD (25,992 AFY), or 66.9%, went to the San Gabriel Coastal Spreading Grounds. Another 0.073 MGD (82 AFY), or 0.2% of the recycled water delivered, was bypassed around the spreading grounds and lost to the ocean during October 2011. 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 has been increased from bimonthly to weekly during 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.

FIGURE 13
SAN JOSE CREEK WRP REUSE SITES

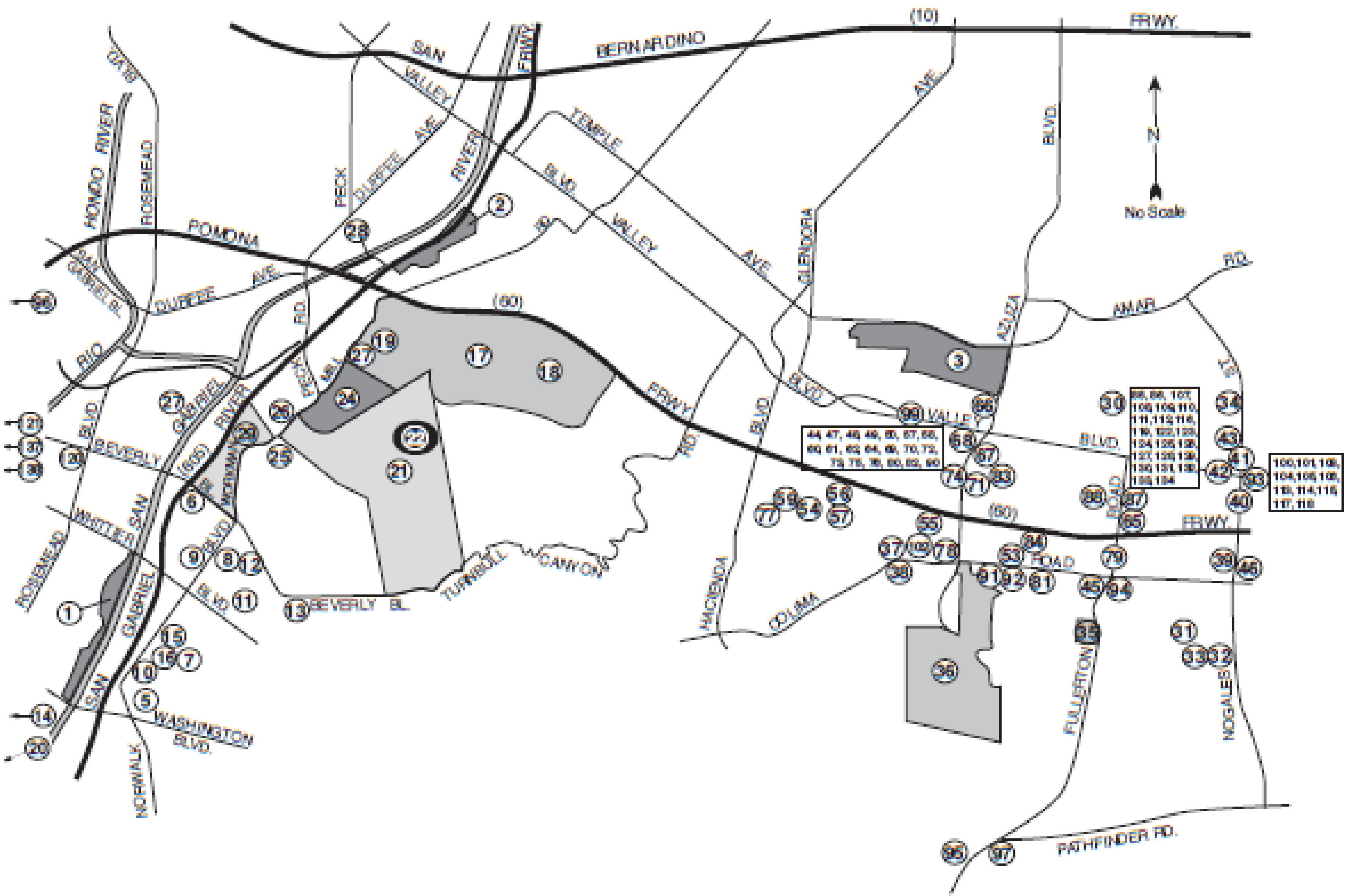


Table 14
Summary of Fiscal Year 11-12 Recycled Water Usage
San Jose Creek WRP
(Page 1 of 3)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Water Replenishment District (1)	Jun 71	--	R	34.454	38,713
California Country Club (Industry) (2)	Jun 78	120	L,P	0.376	423
Industry Hills Recreation Area (Industry) (3)	Aug 83	600	L,P	0.804	903
Field, S/W corner Norwalk/Telegraph (S.F. Spgs.) (4)	Aug 94	5.2	L	0.012	13
Washington Elementary School (Whittier) (5)	Sep 94	5	AF,L	0.010	11
605 Freeway at Beverly (Whittier) (6)	Sep 94	30	L	0.011	12
Sorenson Elementary School (Whittier) (7)	Oct 94	4	AF,L	0.005	6
Palm Park West (Whittier) (8)	Nov 94	5	L	0.008	9
Orange Grove School (Whittier) (9)	Apr 95	6.6	AF,L	0.008	9
Katherine Edwards Middle School (Whittier) (10)	Sep 95	19	AF,L	0.018	20
Longfellow Elementary School (Whittier) (11)	Sep 95	4.5	AF,L	0.003	3
Walter Dexter Middle School (Whittier) (12)	Sep 95	15.5	AF,L	0.008	9
Founders Memorial Park (Whittier) (13)	Jan 96	4	L	0.011	12
Salt Lake Municipal Park (Huntington Park) (14)	Apr 96	20.9	L	0.044	50
Sorenson Park (Whittier) (15)	May 96	10.7	L	0.017	20
Sorenson Library (Whittier) (16)	May 96	0.4	L	0	0
Puente Hills Landfill irrigation (Industry) (17)	Nov 97	320	L	0.824	926
Puente Hills Landfill dust control (Industry) (18)	Nov 97	130	I	0.155	175
Puente Hills Gas-to-Energy Facility (Industry) (19)	Nov 97	--	I	0.563	632
Lugo Park (Cudahy) (20)	Apr 98	7	L	0.006	7
Rose Hills Memorial Park – upper area (Whittier) (21)	Jun 98	298	L	0.436	490
River Ridge Golf Course (Pico Rivera) (23)	Jul 02	21.3	L	0.028	31
Rio Hondo College (Whittier) (24)	Jun 03	85	AF,L	0.023	25
Mill Elementary School (Whittier) (25)	Jun 03	15	AF,L	0.005	6
Gateway Pointe (Whittier) (26)	Jan 05	8	L	0.016	18
Puente Hill Materials Recovery Facility (Industry) (27)	Feb 05	2.4	L	0.007	8
LA Sanchez Nursery (Industry) (28)	Apr 06	5	O	0.011	13
Rose Hills Memorial Park – lower area (Whittier) (29)	Aug 06	275	L	0.523	587
Sunshine Park (L.A. County) (30)	Jul 09 (May 86)	4	L	0.003	3
Rowland Elementary School (Rowland Hts.) (31)	Jul 09 (May 86)	3	AF,L	0.002	2
Farjardo School (Rowland Heights) (32)	Jul 09 (May 86)	4	AF,L	0.0004	0.5
Farjardo Park (Rowland Heights) (33)	Jul 09 (May 86)	4	L	0.002	2
Nogales High School (L.A. County) (34)	Jul 09 (Jun 86)	11	AF,L	0.004	4
Queen of Heaven Cemetery (Rowland Hts.) (35)	Jul 09 (Jun 86)	35	L	0.010	11
Schabarum Regional County Park (L.A. Co.) (36)	Jul 09 (Sep 86)	233	L	0.016	18
Pepperbrook Park (Hacienda Heights) (37)	Jul 09	4.4	L	0.002	2
Countrywood Park (Hacienda Heights) (38)	Jul 09	5.4	L	0.002	2
Rowland Heights Golf Center (Rowland Heights) (39)	Jul 09	8	L	0.002	3
Medians at 755 Nogales (Industry) (40)	Jul 09	0.1	L	0.0001	0.1
Medians at 4115-1/2 Nogales (West Covina) (41)	Jul 09	0.1	L	0.001	2
Medians at 2654-1/2 Valley (West Covina) (42)	Jul 09	0.2	L	0.0001	0.1
Bu Sha Temple, 4111 Nogales (West Covina) (43)	Jul 09	0.5	L	0.0001	0.1
Megan Racing, 788 Phillips (Industry) (44)	Jul 09	0.1	L	0.0005	1
JJ Plaza, 18253 Colima (Rowland Heights) (45)	Jul 09	0.1	L	0.0001	0.1
New World RTCI-LP, 18958 Daisetta (Row. Hts.) (46)	Jul 09	0.1	L	0.00003	0.03
Battery Technology, 16651 Johnson (Industry) (47)	Jul 09	0.1	L	0.00001	0.01
FTH Group Inc., 16685 Johnson (Industry) (48)	Jul 09	0.1	L	0.0001	0.1
Ancillary Provider 16664 Johnson (Industry) (49)	Jul 09	0.1	L	0.0001	0.2
Ancillary Provider 16666 Johnson (Industry) (50)	Jul 09	0.2	L	0.0002	0.3
Pan American, 16610 Gale Ave. (Industry) (51)	Jul 09	0.2	L	0.0001	0.1
Blue Pacific, 1354 Marion Ct. (Industry) (52)	Jul 09	0.2	L	0.0002	0.3
Romano's Macaroni Grill, 17603 Colima (R. Hts.) (53)	Jul 09	0.1	L	0.0004	0.4
Acosta Growers, 16412 Wedgeworth Dr. (Industry) (54)	Jul 09	5	O	0.001	1

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 14
Summary of Fiscal Year 11-12 Recycled Water Usage
San Jose Creek WRP
(Page 2 of 3)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Wedgeworth Elementary School (Hacienda Hts.) (55)	Aug 09	2.5	AF,L	0.001	1
Wilson High School (Hacienda Heights) (56)	Aug 09	18.3	AF,L	0.005	6
Bixby Elementary School (Hacienda Heights) (57)	Sep 09	6.1	AF,L	0.002	2
Jade Fashion, 1350 Bixby (Industry) (58)	Sep 09	0.1	L	0.0002	0.2
Gutierrez Nursery, 16411 Wedgeworth (Industry) (59)	Sep 09	4	O	0.001	1
Frank Raper, 1215 Bixby (Industry) (60)	Dec 09	0.1	L	0.0002	0.2
Laido International, 16710-12 Johnson (Industry) (61)	Dec 09	0.1	L	0.0002	0.2
Bolt Products, 16725 Johnson Dr. (Industry) (62)	Dec 09	0.1	L	0.0001	0.1
Ily Enterprise, 783 Phillips (Industry) (63)	Jan 10	0.1	L	0.0001	0.2
Superior Profiles, 1325 Bixby (Industry) (64)	Jan 10	0.2	L	0.0002	0.2
60 Fwy., Countrywood & Fullerton (Industry) (65)	Jan 10	5	L	0.001	1
Camacho Strawberries (Industry) (66)	Jan 10	3	O	0.0002	0.2
Advanced Media, 881 Azusa (Industry) (67)	Jan 10	0.1	L	0.0001	0.1
East Group Prop., 855 Anaheim-Puente (Industry) (68)	Mar 10	0.6	L	0.0005	1
So.Cal. Air Condition, 16950 Chestnut (Industry) (69)	Mar 10	2	L	0.0002	0.3
USACD, 17101 Chestnut (Industry) (70)	Mar 10	0.3	L	0.0002	0.2
Azusa Blvd Medians (Industry) (71)	Mar 10	0.2	L	0.0001	0.1
Acosta Growers, 17101 Chestnut (Industry) (72)	Mar 10	2.4	O	0	0
L.A. Co. ISD bldg., 16610 Chestnut (Industry) (73)	Apr 10	0.5	L	0.0003	0.3
Azusa Property Co., 885 Azusa (Industry) (74)	Apr 10	0.2	L	0.0002	0.2
Golden West Footwear, 16750 Chestnut (Industry) (75)	Apr 10	0.3	L	0.0002	0.2
Teledyne Instruments, 16830 Chestnut (Industry) (76)	Apr 10	0.4	L	0.0005	1
Medians, 18927 Daisetta St. (Rowland Heights) (77)	Apr 10	0.2	L	0.0001	0.1
Colima Medians (L.A. County) (78)	Apr 10	0.1	L	0.0001	0.1
Medians, 1442 Fullerton (Industry) (79)	Apr 10	0.3	L	0.00003	0.03
Teledyne Picco, 16800 Chestnut (Industry) (80)	May 10	0.4	L	0.0003	0.4
Hou Yi Mao Nursery, 18002 Colima (Row. Hts.) (81)	May 10	1.3	O	0.0002	0.2
East Group Prop., 16700 Chestnut (Industry) (82)	Jun 10	0.6	L	0.001	1
Pro Motion Distribution, 883 Azusa (Industry) (83)	Jun 10	0.1	L	0.0001	0.2
New Age Kaleidoscope, 7 Colima (Industry) (84)	Jun 10	0.6	L	0.001	1
Min Maw Intl. Inc., 18350 San Jose (Industry) (85)	Jun 10	0.7	L	0.0003	0.3
Hot Topic, 18305 San Jose Ave. (Industry) (86)	Jul 10	0.6	L	0.001	1
FedEx, 1081 Fullerton Rd. (Industry) (87)	Jul 10	0.6	L	0.001	1
Hudd Distribution, 18215 Rowland St. (Industry)(88)	Sep 10	0.6	L	0.001	1
New Age Kaleidoscope, 5 Stoner Creek (Industry) (89)	Oct 10	1.4	L	0.001	1
Perrin Manufacturing, 1020 Bixby (Industry) (90)	Oct 10	0.1	L	0.0002	0.2
Centro Watt Operating, 17518A Colima (Industry) (91)	Oct 10	0.4	L	0.001	1
Centro Watt Operating, 17414 Colima (Industry) (92)	Oct 10	0.5	L	0.001	1
717 Nogales LLC, 717 Nogales (Industry) (93)	Oct 10	0.5	L	0.0004	0.4
Walgreens, 18308 Colima (Industry) (94)	Dec 10	0.1	L	0.0001	0.1
RWD Office, 3021 S. Fullerton (Industry) (95)	Dec 10	0.3	L	0.0001	0.2
Pathfinder Park (Rowland Heights) (Industry) (97)	May 11	29	L	0.005	5
USGVMWD site, 401 Nogales St. (Industry) (98)	May 11	0.5	L	0.0001	0.1
East Group Prop., 18551 Arenth Ave. (Industry) (100)	May 11	0.7	L	0.001	1
717 Nogales LLC, 18961 Arenth Ave. (Industry) (101)	May 11	0.5	L	0.0005	1
Kimco Realty, 17100 Colima Rd. (Industry) (102)	May 11	3	L	0.001	1
Acme Trading Group, 18501 Arenth (Industry) (103)	May 11	0.9	L	0.001	1
Third Party Enterprises, 18501 Arenth (Industry) (104)	May 11	0.6	L	0.001	1
Floria International, 18701 Arenth (Industry) (105)	May 11	0.4	L	0.0004	0.4
YHS Trading, 755 Epperson Dr. (Industry) (106)	Jul 11	0.1	L	0.0003	0.4
TriVantage LLC, 745 Epperson Dr. (Industry) (107)	Jul 11	0.1	L	0.0003	0.3
Floria International Inc., 18689 Arenth (Industry) (108)	Aug 11	0.4	L	0.0003	0.4
HT Window Fashions, 770 Epperson (Industry) (109)	Aug 11	0.1	L	0.0002	0.2

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.

TABLE 14
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
SAN JOSE CREEK WRP
(PAGE 3 OF 3)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Royal Crown Enterprise, 780 Epperson (Industry) (110)	Aug 11	0.1	L	0.0004	0.4
HD Technology, 738 Epperson Dr. (Industry) (111)	Aug 11	0.2	L	0.0001	0.2
Kiewit Power Constructors, 911 Bixby (Industry) (112)	Aug 11	--	I	0.002	2
Guardian Life Insurance, 710 Epperson (Industry) (113)	Sep 11	0.2	L	0.0005	1
Valor Communication, 18701 Arenth (Industry) (114)	Sep 11	0.1	L	0.0004	0.5
K-1 Printing, 17989 Arenth Ave. (Industry) (115)	Oct 11	0.2	L	0.00004	0.05
K-1 Printing, 17979 Arenth Ave. (Industry) (116)	Oct 11	0.2	L	0.0001	0.1
Private Label PC Inc., 748 Epperson (Industry) (117)	Nov 11	0.2	L	0.0001	0.2
Penske Truck Leasing, 18305 Arenth (Industry) (118)	Nov 11	0.6	L	0.0002	0.2
Schurr High School (Montebello) (119)	Nov 11	11	AF,L	0.011	12
Commercial Cooling, 17855 Arenth (Industry) (120)	Dec 11	0.4	L	0.0001	0.1
Forever Link, 18738 San Jose (Industry) (121)	Dec 11	0.4	L	0.0002	0.2
Brook Furniture, 18960 San Jose (Industry) (122)	Jan 12	0.4	L	0.0002	0.2
Rio Hondo Park (Pico Rivera) (123)	Jan 12	8	L	0.018	20
Beverly Blvd. medians (Pico Rivera) (124)	Jan 12	1	L	0.002	3
Hot Topic, 18385 San Jose Ave. (Industry) (125)	Feb 12	0.8	L	0.0003	0.4
Prologis Fund, 18901 Railroad (Industry) (126)	Feb 12	0.4	L	0.0001	0.1
AMB-SGP CIF, 18825 Railroad St. (Industry) (127)	Feb 12	0.2	L	0.00002	0.02
Ko Amex, 18965 San Jose Ave. (Industry) (128)	Feb 12	0.5	L	0.0001	0.2
Ferguson Fire, 18825 San Jose Ave. (Industry) (129)	Feb 12	0.3	L	0.0001	0.2
MA Labs Inc., 18755 San Jose Ave. (Industry) (130)	Feb 12	0.4	L	0.0002	0.2
Majestic Management, 18691 San Jose (Industry)(131)	Mar 12	0.3	L	0.0001	0.2
Majestic Management, 18601 San Jose (Industry) (132)	Mar 12	0.6	L	0.0002	0.2
Third Party Entrprs., 18501 San Jose (Industry) (133)	Mar 12	0.6	L	0.0002	0.2
Third Party Entrprs, 18591 San Jose (Industry) (134)	Mar 12	0.6	L	0.00003	0.04
Shoe Magnate Inc., 18560 San Jose (Industry) (135)	Mar 12	0.4	L	0.0001	0.1
Pinky Footware Shoes, 18600 San Jose (Industry) (136)	Mar 12	0.8	L	0.0003	0.4
La Merced Elementary School (Montebello) (137)	Jun 12	10	AF,L	0.004	4
Montebello Gardens Elementary (Pico Rivera) (138)	Jun 12	1	AF,L	0.001	1
TOTALS		**2,922.4**		**38.506**	**43,266**

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.

2.5.2 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 includes a 13,500 gpm pump station at the San Jose Creek WRP, 36,960 feet of 36-inch pipe following the San Jose Creek Channel, and a 2 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 11-12, 0.804 MGD (903 AFY), or 1.2% of recycled water produced at this plant, was delivered through a total of 44,350 feet of pipeline and used at this site, a 5.6% decrease from the preceding fiscal year. While no new sites were directly connected to the Industry distribution system, RWD did, however, continue connecting sites to its own extension off the Industry system throughout the fiscal year. This system is discussed in the following section.

2.5.3 ROWLAND WATER DISTRICT

In July 2009, RWD began recycled water deliveries through a new distribution system that branched off the City of Industry pipeline. In FY 11-12, RWD connected 27 new reuse sites to its distribution system: In July 2011, the landscaping around YHS Trading (755 Epperson Dr.) and TriVantage LLC (745 Epperson Dr.) were connected. In August 2011, the landscaping around Floria International Inc. (18689 Arenth Ave.), HT Window Fashions (770 Epperson Dr.), Royal Crown Enterprise (780 Epperson Dr.), and HD Technology (738 Epperson Dr.). Also this month, Kiewit Power Constructors (911 Bixby Dr.), was also connected and is using recycled water for the construction of a new power plant for Mission Energy, which is expected to come on-line in 2013. In September 2011, the landscaping around Guardian Life Insurance (710 Epperson Dr.) and Valor Communication (18701 Arenth Ave.) were connected. In October 2011, the landscaping around two K-1 Printing buildings (17989 and 17979 Arenth Ave.) was connected. In November 2011, Private Label PC Inc. (748 Epperson Dr.) and Penske Truck Leasing (18305 Arenth Ave.) were connected. In December 2011, Commercial Cooling (17855 Arenth Ave.) and P Forever Link International (18738 San Jose Ave.) were connected. In February 2012, the landscaping around Hot Topic (18385 San Jose Ave.), Prologis Targeted US Fund (18901 Railroad St.), AMB-SGP CIF (18825 Railroad St.), Ko Amex (18965 San Jose Ave.), Ferguson Fire and Fabrication (18825 San Jose Ave.) and MA Labs Inc. (18755 San Jose Ave.) were connected. In March 2012, the landscaping around Majestic Management (18601 and 18691 San Jose Ave.), Third Party Enterprises (18501 and 18591 San Jose Ave.) and Shoe Magnate Inc. (18560 San Jose Ave.) were connected. n April 2012, the landscaping around Pinky Footware Shoes (18600 San Jose Ave.) was connected.

During FY 11-12, RWD delivered 0.083 MGD (94 AFY), or 0.1% of the recycled water produced at the San Jose Creek WRP to 102 sites serving 873.4 acres listed in Table 14 and shown in Figure 13. This was a 25.3% increase over the preceding fiscal year. RWD purchased the recycled water from the City of Industry, retailing it at 63% of its potable rate of $1,010.59/AF (for "Zone I" elevation), or $635.98/AF.

2.5.4 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 11-12, 0.376 MGD (423 AFY), or 0.6% of recycled water produced at this plant, was delivered to this site, the same as the preceding fiscal year.

2.5.5 San Gabriel Valley Water Company - LA Sanchez 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, Chuy's, J&E's and Ortiz's nurseries. During FY 11-12, 0.011 MGD (13 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. This was an 8.3% increase over the preceding fiscal year. 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. SGVWC resold the recycled water to the nursery for $381.79/AF, a 58% discount from its corresponding potable water rate of $907.79/AF.

2.5.6 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 distribution system originating from the Los Coyotes WRP will allow for a looped system (once the western connection is completed, see Section 5.4.4) served by both 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 11-12, CBMWD delivered 0.225 MGD (253 AFY), or 0.3% of the recycled water produced at this plant, through 290,400 feet of pipeline 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 approximately 191 acres at the 20 sites. This represents an 11.5% increase over 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. Five new sites were connected to the Rio Hondo recycled water distribution system during FY 11-12. In November 2011, Schurr High School in Montebello was connected. In January 2012, Rio Hondo Park and the Beverly Blvd medians in the City of Pico Rivera were connected. In June 2012, the athletic fields at the La Merced and Montebello Gardens elementary schools in the San Gabriel Valley Water Company and City of Pico Rivera service areas, respectively, were connected.

In FY 11-12, CBMWD wholesaled the recycled water to its customers, the retail water purveyors, on a monthly use, tiered rate schedule ($536 for the first 50 AF, and $488 for anything above 50 AF). This is between 57% and 62% of the rate of $859/AF it charges for Tier 1 non-interruptible potable water supplied by MWD, and between 50% and 54% of the rate of $984/AF it charges for Tier 2 supplies. Recycled water delivered outside of CBMWD's service area was subject to a $21-22/AF surcharge on each of the two tiers. Recycled water deliveries to the Malburg power plant in Vernon received an industrial use rate ($368 for the first 25 AF, $342 for the next 25 AF, $317 for the next 50 AF, and $291 for anything above 100 AF). The retail purveyors then set their own rates for the recycled water.

2.5.7 PUENTE HILLS/ROSE HILLS

A distribution system was constructed to deliver recycled water from the San Jose Creek WRP to the Sanitation Districts' nearby Puente Hills Landfill, Materials Recovery Facility (MRF), Puente Hills Energy Recovery from Landfill Gas (PERG) Facility, and to 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 11-12, the Puente Hills/Rose Hills distribution system delivered 1.986 MGD (2,231 AFY), or 2.9% of the recycled water produced at this plant, through 8,900 feet of pipeline to five users on approximately 855 acres, an increase of 5.8% over 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, and for landscape irrigation and impoundments at Rose Hills Memorial Park.

2.5.8 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 275 acres of the lower, older portion of Rose Hills Memorial Park began (acreage was erroneously reported as 858 previously). 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 11-12, the USGVMWD distribution system delivered 0.566 MGD (636 AFY), or 0.8% of the recycled water produced at this plant, through 11,020 feet of pipeline to four users on 383 acres, an increase of 16.9% over 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 $771.62/AF, or 85% of its corresponding potable water rate of $907.79/AF. Since Rose Hills Memorial Park is not a part of SGVWC's service area, it received recycled water at a contract rate of $220/AF.

2.6 WHITTIER NARROWS WRP

WHITTIER NARROWS WRP FACTS

Plant capacity:	15 MGD
Water produced:	8.57 MGD 9,624 AFY 10.6% FY increase
FY11-12 O&M:	$405/AF
Water reused:	8.449 MGD 9,494 AFY 14.0% FY increase 98.6% of production
Delivery systems:	1 18,900 ft. of pipe
No. of reuse sites:	18 969.2 acres

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 8.57 MGD (9,624 AFY) of coagulated, filtered, disinfected tertiary recycled water produced during FY 11-12 (2.2% of the effluent produced in the JOS) at an O&M cost of $405/AF, 8.449 MGD (9,494 AFY) was actively reused. The amount produced was a 10.6% increase in recycled water production over the preceding fiscal year, while the amount reused was a 14.0% increase, both as a direct result of completion of the plant's conversion to the NDN secondary treatment process and the subsequent ability to divert more flow through the plant.

Recycled water quality for FY 11-12 is presented in Table B-6 of Appendix B. Recycled water from this plant is used at eighteen direct, non-potable 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, non-potable applications, and Nos. 91-100 and R4-2009-0048 for groundwater replenishment (see Section 2.5.1 for a discussion on the amended groundwater recharge permit).

2.6.1 WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

The majority (82.6%) of recycled water actively used from this plant went to recharge the Central Basin aquifer. In FY 11-12, 7.153 MGD (8,037 AFY) was used to replenish the groundwater supply, a 16.8% increase over the preceding fiscal year and 83.5% of the plant's production. In FY 11-12, 5.337 MGD (5,997 AFY) was delivered to the Rio Hondo Spreading Grounds via the plant's main discharge point to the Rio Hondo (73.7%), with another 1.900 MGD (2,135 AFY), or 26.3%, 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, was not used during the fiscal year.

Of the total amount of recycled water delivered from the Whittier Narrows WRP, 5.221 MGD (5,866 AFY), or 72.5%, went to the Rio Hondo Spreading Grounds and 1.983 MGD (2,228 AFY), or 27.5%, went to the San Gabriel Coastal Spreading Grounds. Another 0.051 MGD (57 AFY), or 0.7% of the recycled water delivered, was bypassed around the spreading grounds and lost to the ocean during October 2011 and March and April 2012 as a result of rainfall runoff. 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.

FIGURE 14
WHITTIER NARROWS WRP REUSE SITES

1. Whittier Narrows Recreation Area
2. South El Monte High School
3. Whittier Narrows Golf Course
4. Sanchez Elementary/Temple Middle Schools
5. Loma Elementary School
6. Jess Gonzales Sports Park
7. Garvey Medians
8. Walnut Grove Medians
9. Rush Street Medians
10. SCE Campus
11. WalMart
12. Panda restaurant Group
13. Sunshine Nursery
14. Rice Elementary School
15. Willard Elementary School
16. University of the West
17. Zapopan Park
18. Garvey Medians

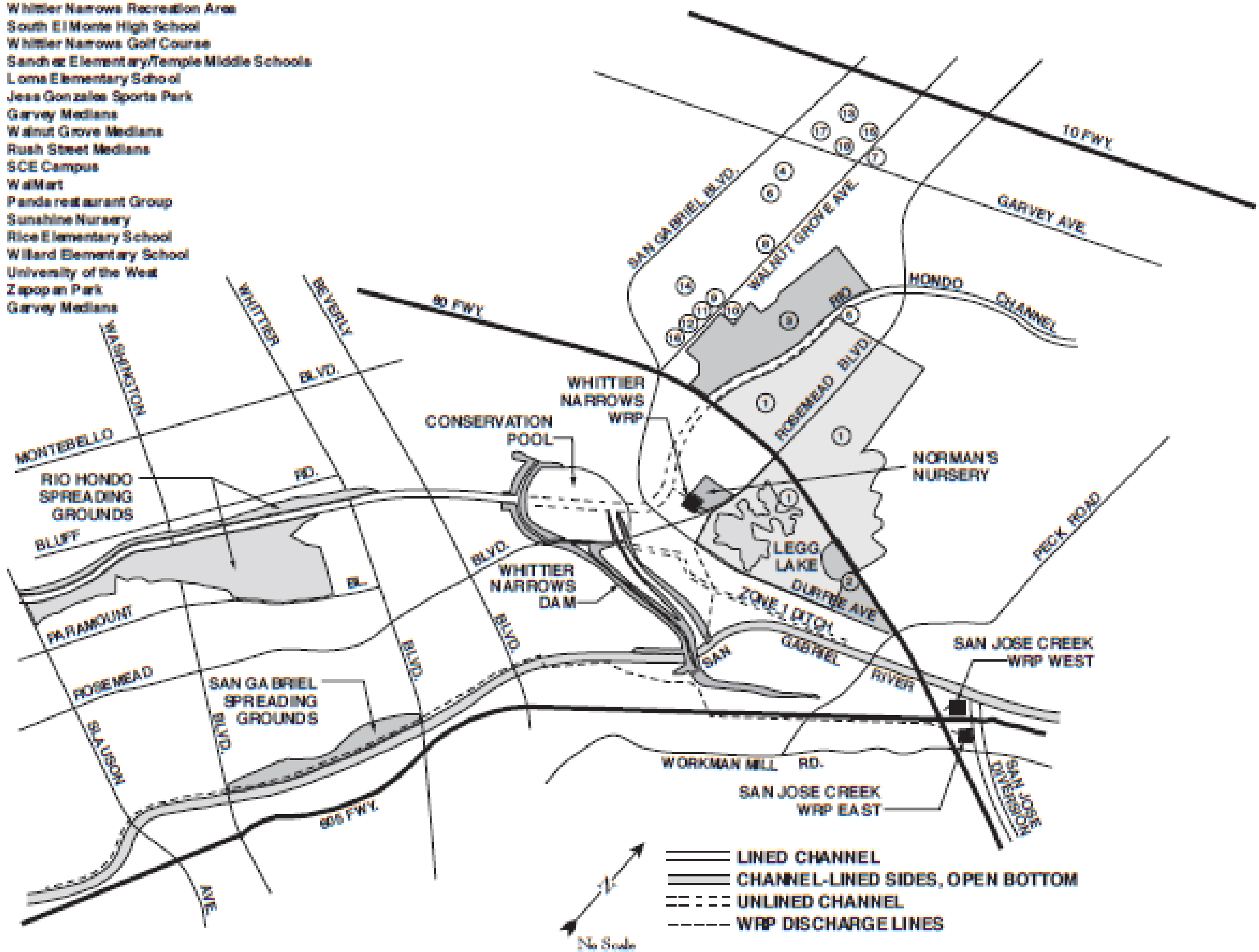


TABLE 15
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
WHITTIER NARROWS WRP

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Water Replenishment District	Aug 62	--	R	7.153	8,037
Whittier Narrows Recreation Area	Sep 06	568	L	0.686	771
South El Monte High School	Aug 07	16.1	AF, L	0.065	73
Whittier Narrows Golf Course	Dec 09	260	L	0.476	535
Sanchez Elementary/Temple Middle School	Aug 11	12.8	AF, L	0.003	3
Loma Elementary School	Aug 11	1.9	AF, L	0.005	6
Jess Gonzales Sports Park	Oct 11	4	L	0.005	6
Southern California Edison corporate offices	Oct 11	53	L	0.025	28
Eldridge Rice Elementary School	Oct 11	8.3	AF, L	0.006	6
Garvey Ave. medians	Dec 11	0.1	L	0.002	2
Walnut Grove Ave. medians	Dec 11	0.1	L	0.001	1
Rush St. medians	Dec 11	0.1	L	0	0
Sunshine Nursery, 8448 Dorothy St.	Dec 11	4.6	L	0.004	5
WalMart, 1827 Walnut Grove Ave.	Dec 11	17.7	L	0.006	6
Panda Restaurant Group, 1683 Walnut Grove Ave.	Dec 11	8.9	L	0.007	8
Willard Elementary School	Jan 12	6	AF, L	0.001	1
University of the West, 1409 Walnut Grove Ave.	Feb 12	0.4	L	0.001	1
Zapopan Park	Apr 12	7	L	0.005	5
Garvey Blvd. medians	Apr 12	0.2	L	0.001	1
TOTALS		**969.2**		**8.449**	9,494

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.

2.6.2 UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT (PHASE II-A EXTENSION) – WHITTIER NARROWS RECREATION AREA

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 was completed and the golf course connected in December 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. A mitigated Negative Declaration for the "Rosemead Extension" to this project was adopted in April 2009, with construction beginning in the fall of 2009 on 14,467 linear feet of pipeline from the existing recycled water system. All of the pipelines had been installed by the end of 2010, with retrofits and connections completed in early 2012.

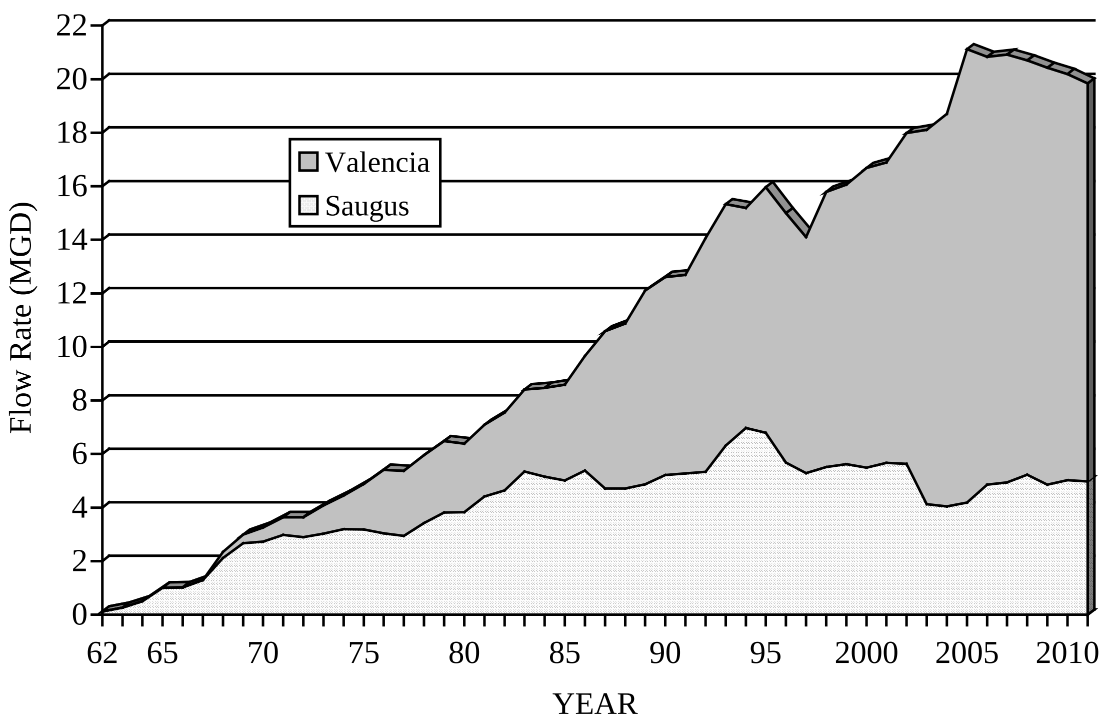
During FY 11-12, the USGVMWD distribution system delivered 1.297 MGD (1,457 AFY) through 18,900 feet of pipeline for use on 969.2 acres. This was 15.1% of the recycled water produced at this plant and a 1.7% increase over the preceding fiscal year. Fifteen new sites were added to the system during FY 11-12 in the service areas of SGVWC and Golden State Water Company, as construction of the Rosemead extension to this system was completed. In August 2011, Sanchez Elementary/Temple Middle School and Loma Elementary School were connected. In October 2011, Jess Gonzales Sports Park, Rice Elementary School and the Southern California Edison corporate office park were connected. In December 2011, the medians along Garvey Ave., Walnut Grove Ave. and Rush St., Sunshine Nursery (8448 Dorothy St.), and the landscaping around Walmart (1827 Walnut Grove Ave.) and Panda Restaurant Group (1683 Walnut Grove Ave.) were connected. In January 2012, Willard Elementary School was connected. In February 2012, the University of the West (1409 Walnut Grove Ave.) was connected. In April 2012, and Zapopan Park and another section of medians along Garvey Blvd. were connected.

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 $696.00/AF, or 77% of its corresponding potable water rate of $907.79/AF. LACDPR then leases a portion of its groundwater pumping rights to SGVWC in exchange, resulting in a lower effective rate for the recycled water. The golf course and high school were charged their tariff rate of $771.62/AF, 85% of the potable water rate.

3. SANTA CLARITA VALLEY

This area, which includes the City of Santa Clarita, is 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 11-12, these plants produced 19.82 MGD (22,271 AFY) of recycled water available for reuse, a 0.4% 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 2011. During most of the history of these plants, only occasional reuse via water truck hauling occurred. The use of recycled water through a permanent distribution system began during FY 03-04, with 0.339 MGD (381 AFY), or 1.7% of the total amount of recycled water produced in the SCVJSS, being delivered from the Valencia WRP during FY 11-12. This was a 13.1% increase over the preceding fiscal year.

FIGURE 15
SANTA CLARITA VALLEY JOINT SEWERAGE SYSTEM RECYCLED WATER PRODUCTION
1962-2011



3.1 VALENCIA WRP

The Valencia WRP, located at 28185 The Old Road, Valencia, CA 91355, was completed in 1967. Following several expansions, the construction of a 4.4 million gallon flow equalization tank in February 1995, a solids handling expansion in August 2002, and the construction of additional aeration tanks for NDN in May 2003, the Valencia WRP now has a capacity of 21.6 MGD. In FY 11-12, the plant produced an average of 14.86 MGD (16,695 AFY) of recycled water, a 0.3% decrease from the preceding fiscal year. The FY 11-12 O&M cost to produce this water was approximately $645/AF, which includes solids processing for both the Saugus and Valencia WRPs. Recycled water quality for FY 11-12 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. During FY 11-12, 0.339 MGD (381 AF), or 2.3% of the recycled water produced was actively reused, a 13.1% increase over the preceding year.

VALENCIA WRP FACTS

Plant capacity:	21.6 MGD
Water produced:	14.86 MGD 16,695 AFY 0.3% FY decrease
FY11-12 O&M:	$645/AF
Water reused:	0.339 MGD 381 AFY 2.3% of production 13.1% FY increase
Delivery systems:	1
No. of reuse sites:	3 129 acres

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 pipeline 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 and listed in Table 16.

During FY 11-12, 0.339 MGD (381 AF), or 2.3% of the recycled water produced at the Valencia WRP was delivered through 16,490 feet of pipeline, a 13.1% increase over the preceding fiscal year.

Valencia Water Company, the retail purveyor for this system, purchased the recycled water from CLWA for $479.87/AF and resold it at its tariff rate of $511.83/AF, or 84% of its corresponding potable water rate of $609.40/AF.

3.2 Saugus WRP

SAUGUS WRP FACTS

Plant capacity:	6.5 MGD
Water produced:	4.96 MGD 5,576 AFY 0.7% FY decrease
FY11-12 O&M:	$614/AF
Water reused:	none

The Saugus WRP, located at 26200 Springbrook Avenue, Saugus, CA 91350, was completed in 1962. Three subsequent expansions in 1964, 1965, and 1968 and flow equalization facilities in 1991 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 11-12, the plant produced an average of 4.96 MGD (5,576 AFY) of recycled water, which was a 0.7% decrease from the preceding fiscal year, at an O&M cost of $614/AF. Recycled water quality for FY 11-12 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 FY 11-12.

FIGURE 16
CASTAIC LAKE WATER AGENCY
RECLAIMED WATER DISTRIBUTION SYSTEM

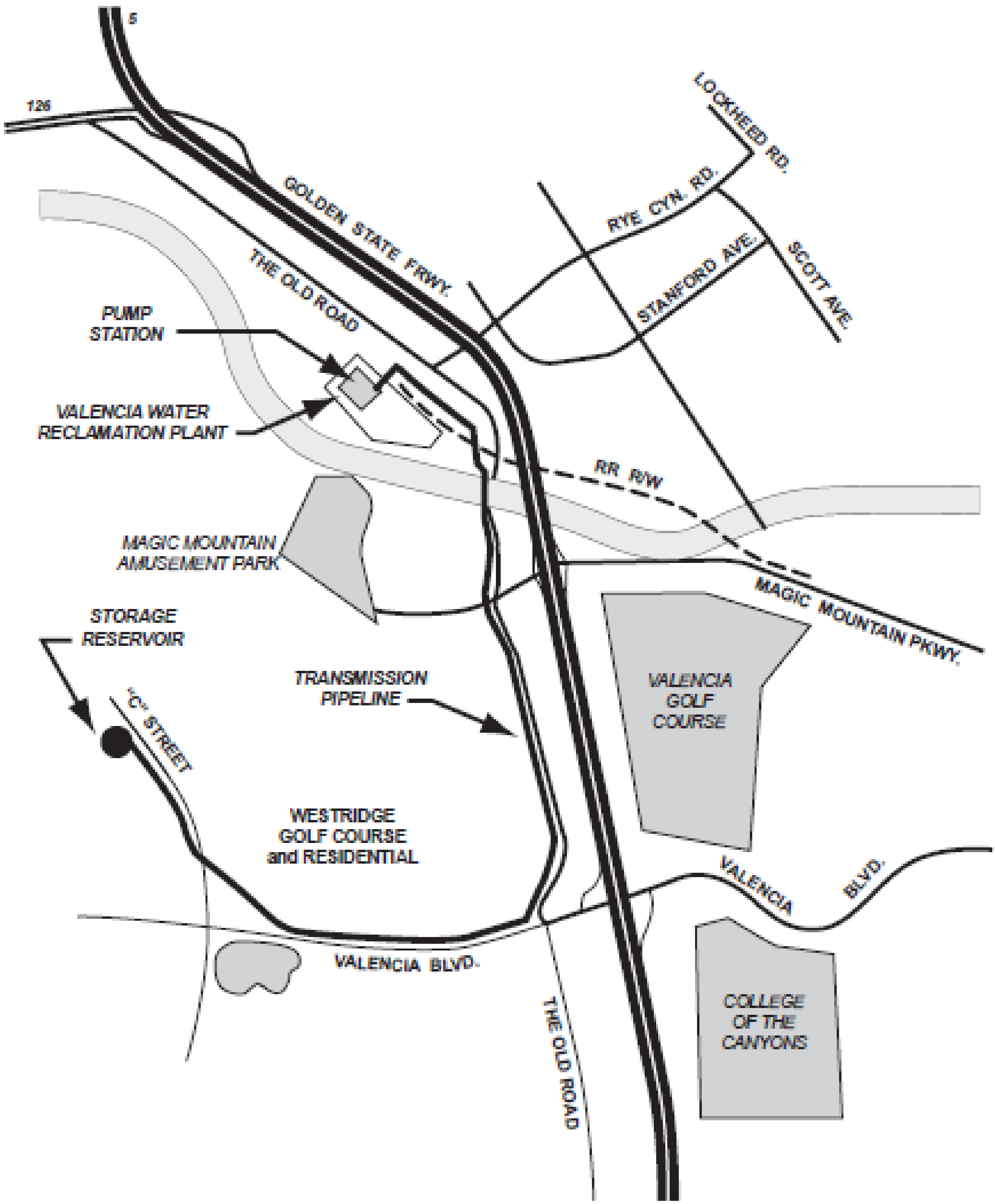


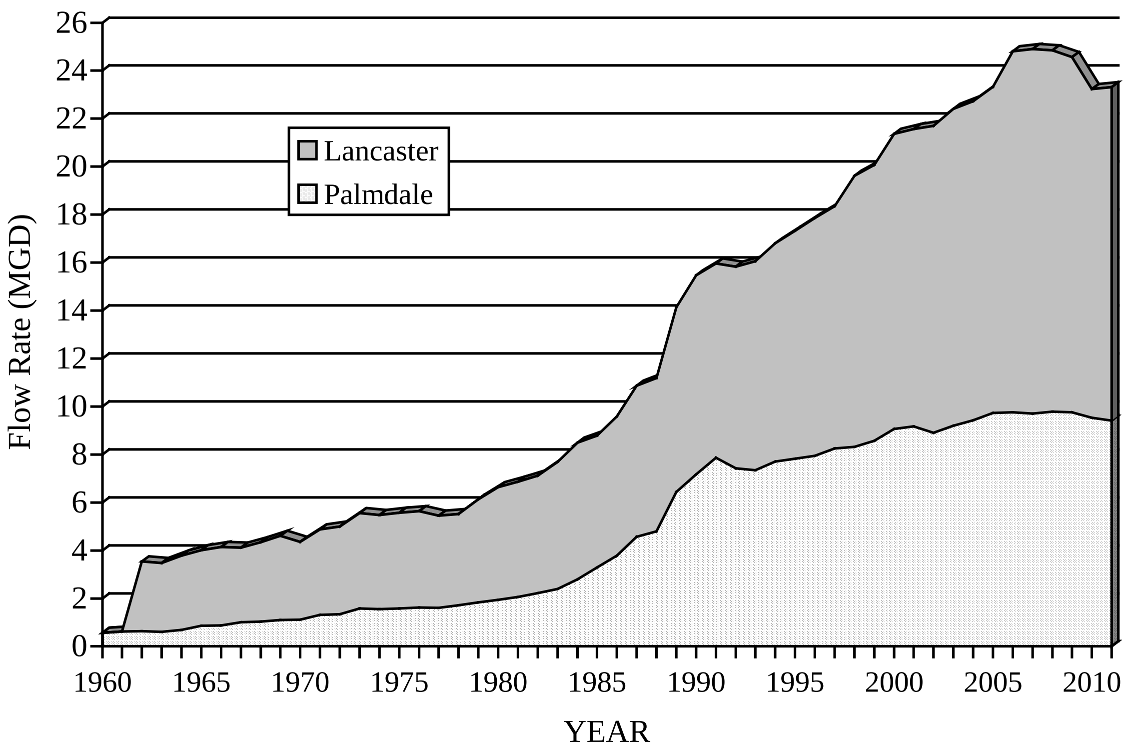
Table 16
Summary of Fiscal Year 11-12 Recycled Water Usage
Valencia WRP

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Tournament Players Club at Valencia	Aug 03	120	L	0.311	349
The Old Road medians, (26840-27236 The Old Road)	Aug 03	5.8	L	0.020	22
The Old Road/Magic Mtn. Pkwy medians	Nov 10	2.8	L	0.008	9
TOTALS		**128.6**		**0.339**	**381**

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.

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 use anaerobic digesters and drying beds for solids processing and both are in the process of being converted to activated sludge with tertiary filtration and disinfection (the conversion of the Palmdale WRP actually completed in December 2011). Together, during FY 11-12 the two WRPs treated approximately 23.29 MGD of wastewater to produce 20.08 MGD (22,567 AFY) of effluent available for reuse, an increase of 0.7% over the preceding fiscal year. Figure 17 illustrates the growth of influent flows at the Lancaster and Palmdale WRPs from 1960 through the end of 2011. 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. From this graph, it appears from the decrease in influent flows over the past few years that water conservation and the economic slowdown have finally outweighed population growth in regard to wastewater generation in the Antelope Valley. During FY 11-12, 18.59 MGD (20,886 AFY), or 92.6% of the recycled water produced, was actively reused, a 1.8% decrease from the preceding fiscal year. Reuse flows from both WRPs are presented in Table 17.

FIGURE 17
ANTELOPE VALLEY WRPs INFLUENT FLOW
1960-2011



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

TABLE 17
SUMMARY OF FISCAL YEAR 11-12 RECYCLED WATER USAGE
LANCASTER AND PALMDALE WRPS

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Apollo Lakes Community Regional Park (Lancaster)	Jun 69	56	L,P	0.226	254
Piute Ponds (Lancaster)	May 81	400	E	6.348	7,133
Harrington Farms Pistachio Orchard (Palmdale)	Apr 85	23	AG	0.076	85
Nebeker Ranch (Lancaster)	Jun 88	600	AG	3.837	4,311
Tree Farm (Palmdale)	Feb 89	46	O	0.006	6
Antelope Valley Farms (Palmdale)	Mar 02	2,100	AG	7.146	8,030
Eastern Agricultural Site (Lancaster)	Feb 07	696	AG	0.946	1,063
Public Works Dept. sewer flushing (Lancaster)	Jan 09	--	I	0.004	4
Public Works Dept. street sweeping (Lancaster)	Feb 09	--	I	0.0004	0.4
Lancaster University Center (Lancaster)	May 09	2	L	0	0
Public Works Dept. dust control (Lancaster)	Sep 10		I	0.00001	0.01
TOTALS		**3,920**		**18.588**	**20,886**

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.

LANCASTER WRP FACTS	
Plant capacity:	18 MGD
Water produced	11.45 MGD 12,869 AFY 3.1% FY decrease
FY11-12 O&M:	$373/AF
Water reused:	11.36 MGD 12,765 AFY 99.2% of production 3.9% FY decrease
Delivery systems:	5
No. of reuse sites:	6 1,752 acres

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 MBR plant that went into operation in February 2007 raised the total plant treatment capacity to 17 MGD. In June 1969, the Antelope Valley Tertiary Treatment Plant (AVTTP) was placed in operation with the ability to treat 0.6 MGD of Lancaster WRP secondary effluent to tertiary quality. This plant completed its conversion to full tertiary treatment in mid-2012 with a capacity of 18 MGD, after which the AVTTP and MBR facilities were taken off-line.

This plant treated an average of 14.03 MGD in FY 11-12, utilizing oxidation ponds to produce 10.19 MGD (11,446 AFY) of recycled water, or a 14.1% decrease over the preceding fiscal year. Approximately 11.0% of the plant production was tertiary effluent being produced by both the AVTTP and the MBR plant (1.266 MGD, 1,422 AFY), 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 FY 11-12 O&M cost to produce secondary effluent (based on influent flow) was approximately $373/AF (including 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 fixed sites and two hauled uses shown in Figure 18, and presented in Table 17.

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 1-⅓ mile long dike was constructed in 1960 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 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.

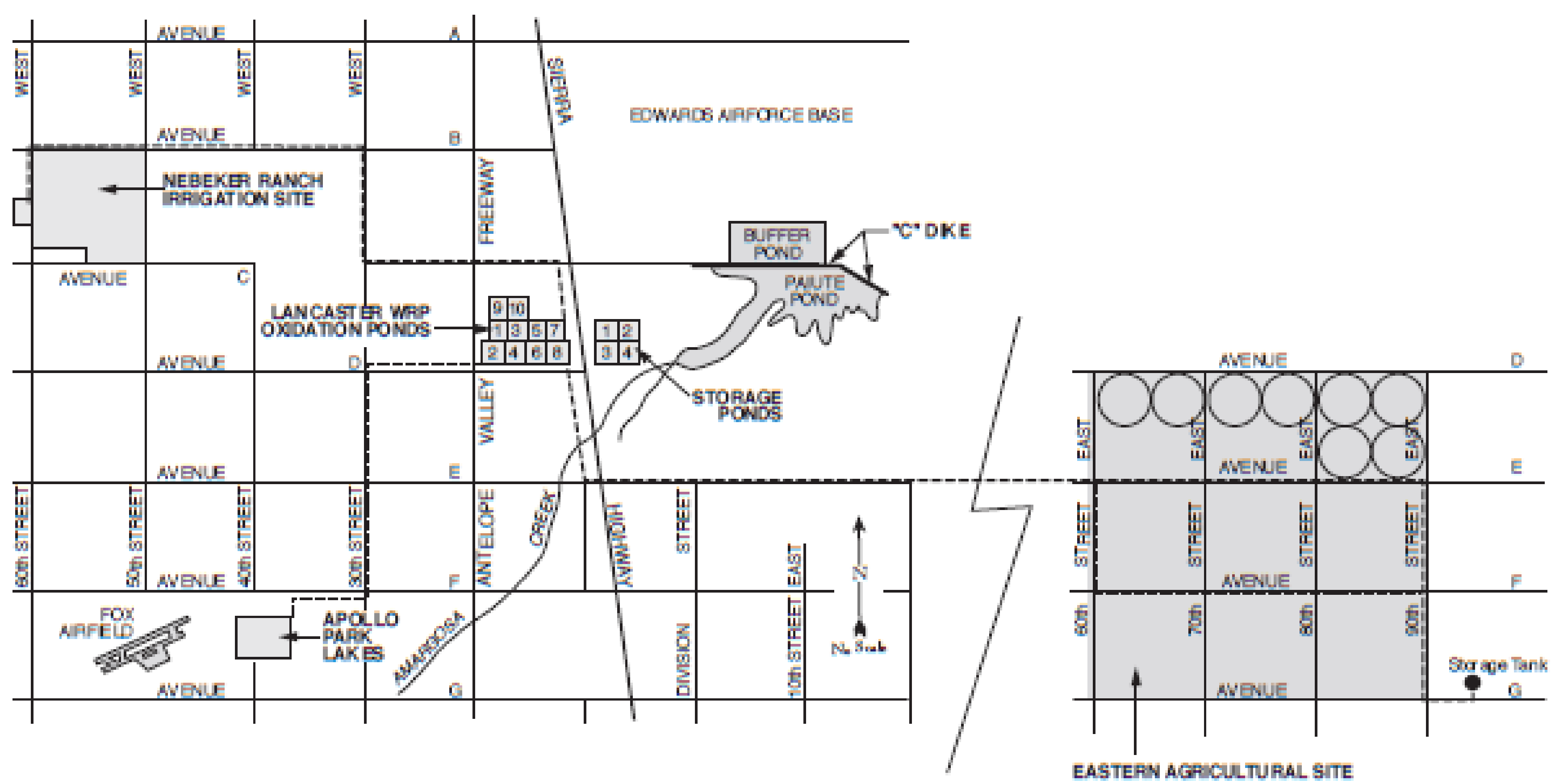
In FY 11-12, 6.348 MGD (7,133 AFY) was delivered to Piute Ponds, a decrease of 11.0% from the preceding fiscal year. This reuse constitutes 55.4% of the recycled water produced at this facility.

4.1.2 Nebeker Ranch

The dike constructed by the Air Force did not completely 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

FIGURE 18

LANCASTER WATER RECLAMATION PLANT FACILITIES



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 15,900 feet of 24-inch force main.

During FY 11-12, 3.837 MGD (4,311 AFY) of recycled water was used for agricultural irrigation at this site, an increase of 4.9% over the preceding fiscal year. This reuse constitutes 33.5% of the recycled water produced at this plant. Deliveries of recycled water to this site will cease in the near future following the upgrade of the Lancaster WRP to full tertiary treatment and the full utilization of recycled water by the Eastern Agricultural site (Section 4.1.4) and the planned recycled water distribution systems by the City of Lancaster (Section 4.1.5) and the Los Angeles County Waterworks (Section 5.8.1).

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 AVTTP was placed in operation in June 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 11-12, 0.226 MGD (254 AFY) of recycled water was delivered through 23,800 feet of pipeline 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, an increase of 23.3% over the preceding fiscal year. This reuse constitutes 2.0% 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 County of Los Angeles reimburse the Sanitation Districts for all of the O&M costs incurred in operating the AVTTP. The upgrade of the Lancaster WRP to tertiary treatment may render the AVTTP superfluous if nutrients can be managed.

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 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). This plant expansion is currently under construction. Additionally, since demand for recycled water is seasonal and weather dependent, approximately 4,000 AF of storage ponds have been constructed in advance of startup of the new treatment facilities.

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. In February 2006, construction of the 18.3-mile distribution pipeline was completed. A narrative description of the layout of this system is included in Appendix K.

In the interim, while the new treatment facilities were 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 effluent from this plant is being delivered to the first agricultural area consisting of eight center pivot irrigation systems in the area bounded by 70th and 90th Streets East and Avenues D and E, which is being operated by Harrington Farms under contract to the Sanitation Districts. During FY 11-12, 0.946 MGD (1,063 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 8.3% of the recycled water produced at this plant, and an increase of 12.2% from the preceding fiscal year.

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, in collaboration with the U.S. Army Corps of Engineers, has begun construction of distribution system that will eventually deliver recycled water from the Lancaster WRP following its upgrade to tertiary treatment. Through the Sanitation Districts' Supplementary Environmental Project Fund, $1 million was contributed to the construction of this system. The remaining financing consisted of City and American Recovery and Reinvestment Act funds. During FY 11-12, a total of 0.004 MGD (4 AFY) was delivered through 29,800 feet of pipeline, a 300% increase over the preceding fiscal year. For the time being, production from the MBR plant is being delivered to the following reuse sites: the City's Public Works Department used 0.004 MGD (4 AFY) for sewer flushing and 0.0004 MGD (0.4 AFY) for street sweeping of 2,125 curb-miles of roadways and parking lots. The City has an existing storage reservoir to serve their planned system, and a permanent pump station is under development.

4.2 Palmdale WRP

PALMDALE WRP FACTS	
Plant capacity:	12 MGD
Water produced:	8.63 MGD 9,698 AFY 6.6% FY increase
FY11-12 O&M:	$598/AF
Water reused:	7.228 MGD 8,121 AFY 1.6% FY increase 83.7% of production
Delivery systems:	1
No. of reuse sites:	3 2,069 acres

This treatment facility, located at 39300 30th 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 completed its conversion to full tertiary treatment in December 2011, although with only a capacity of 12 MGD through the filters. Additional filters can be added in the future as influent flow to this plant increases.

This plant treated an average of 9.25 MGD in FY 11-12 using oxidation ponds to produce 8.63 MGD (9,698 AFY) of secondary effluent, or a 6.6% increase over the preceding fiscal year. The O&M cost to produce this water (based on influent flow) was approximately $598/AF (including solids processing).

During FY 11-12, 7.228 MGD (8,121 AFY), or 83.7% 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 1.6% increase in reuse over the preceding fiscal year. 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.

4.2.1 CITY OF LOS ANGELES WORLD AIRPORTS LEASE

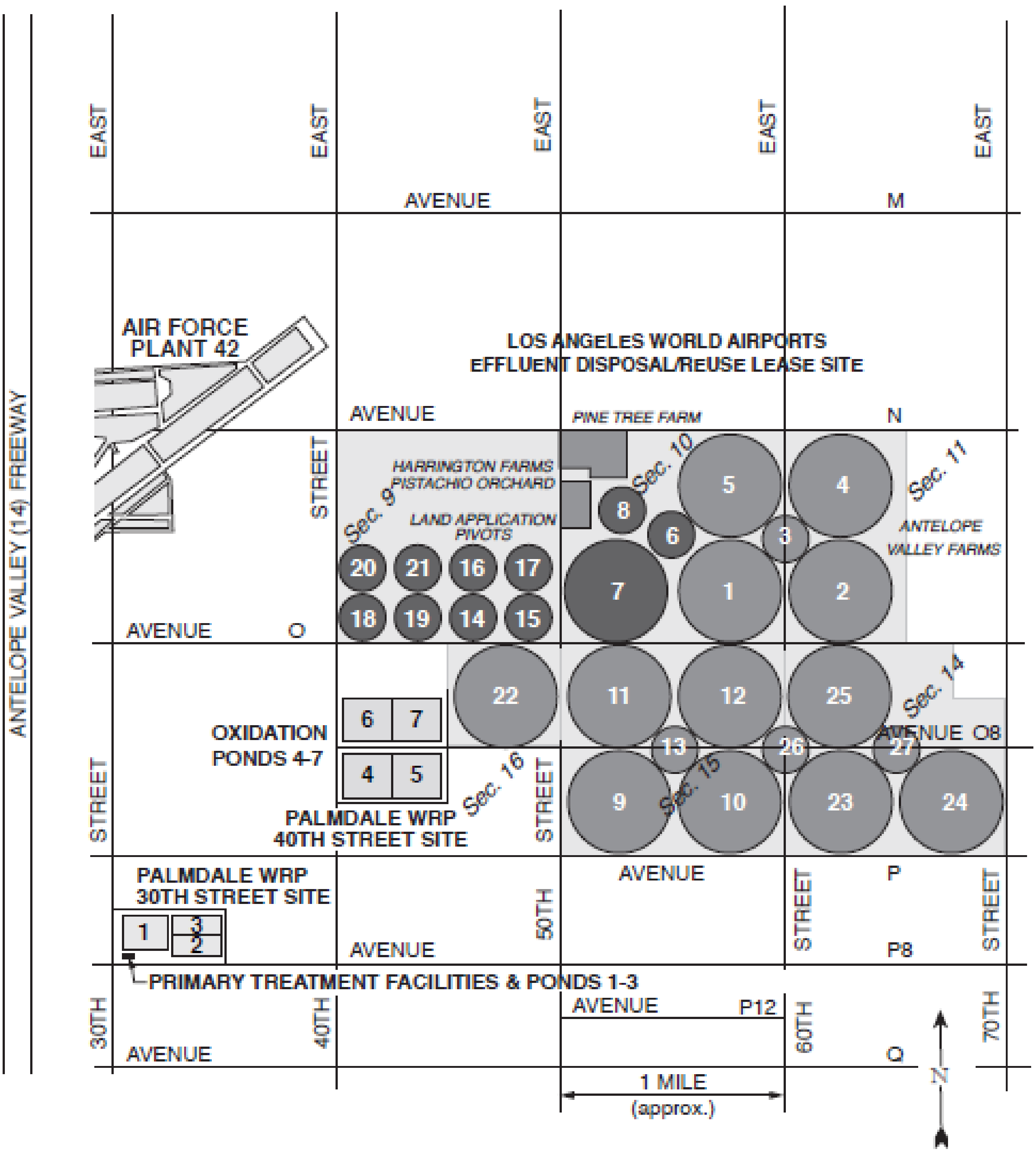
Recycled water from the Palmdale WRP has been sold to a series of local farmers since 1959. However, since the recycled water produced at the Palmdale WRP was historically secondary effluent, its applications have been limited. In January 1981, the Sanitation Districts signed Contract No. 2474 for the delivery of all the plant's effluent to City of Los Angeles World Airports (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 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 plant's 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 permit, Order No. 6-00-57. As a means of implementing the FMP, the Sanitation Districts signed a long-term lease with LAWA for four square miles of land to allow for the development of an integrated reuse system for water produced by 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, have implemented 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 13,200 feet of 36-inch DIP force main. An average of 0.076 MGD (85 AFY) was used during FY 11-12 to irrigate 23 acres of the Pistachio Orchard (previously planted and maintained by LAWA). Another 0.006 MGD (6 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 part of the FMP implementation, 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 11-12, a total of 13 center pivots and 14 mini-pivots had been installed. Previously, the 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, therefore is now counted as reuse. During FY 11-12, this 2,000-acre site used 7.146 MGD (8,030 AFY), or 82.8% of the recycled water produced by the Palmdale WRP to grow livestock feed (first oats and later alfalfa). This was a 1.8% increase over the preceding fiscal year.

FIGURE 19
PALMDALE WATER RECLAMATION PLANT FACILITIES



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 60,645 AFY of the remaining recycled water currently produced but not yet beneficially reused, with the possibility of another 16,600 AFY of effluent from JWPCP receiving additional treatment prior to reuse. These projects are listed in Table 17 along with the WRP that would supply the recycled water, the estimated quantities of recycled water, and the anticipated completion date. Unsecured funding, institutional concerns, and lack of regulatory approval make the anticipated completion dates for several projects uncertain. In addition to the projects listed in Table 18, there are a number of other potential reuse projects that are much more conceptual at this time that are described in Section 5.8 below.

TABLE 18

SUMMARY OF FUTURE WATER RECYCLING PROJECTS

Project Name	Recycled Water Source	Quantity (AFY)	Anticipated Completion
Long Beach Water Department	Long Beach WRP	4,510	TBD
City of Lakewood	Los Coyotes WRP	160	TBD
Walnut Valley Water District	Pomona WRP	4,550	TBD
City of Pomona Master Plan (recommended projects)	Pomona WRP	1,500	2030
Groundwater Reliability Improvement Program	San Jose Creek WRP	21,000	TBD
East San Gabriel Valley Regional	San Jose Creek WRP	1,710	Spring 2013
La Puente Valley County Water District	San Jose Creek WRP	280	TBD
Southeast Water Reliability Project	San Jose Creek WRP	1,000	2013
CBMWD La Mirada Extension	San Jose Creek WRP	1,200	TBD
CBMWD Santa Fe Springs Extension	San Jose Creek WRP	225	Late 2013
CBMWD South Gate Extension	San Jose Creek WRP	40	TBD
CBMWD Pico Rivera Rosemead Lateral	San Jose Creek WRP	30	TBD
City of Arcadia	Whittier Narrows WRP	740	2013
West Basin Municipal Water District	JWPCP	16,600	2020-25
Castaic Lake Water Agency	Valencia & Saugus WRPs	17,400	2030
County Waterworks – Backbone System	Palmdale or Lancaster WRP	4,300	Early 2012
City of Palmdale	Palmdale or Lancaster WRP	2,000	Spring 2018
TOTAL		77,245	
TBD = to be determined			

5.1 Long Beach WRP

5.1.1 *Long Beach Water Department Master Plan*

In August 2010, the LBWD, with the assistance of Montgomery-Watson-Harza (MWH) and in conjunction with WRD, released a draft update of its recycled water Master Plan. MWH identified an additional 49 irrigation and industrial potable water customers with a demand of approximately 4,510 AFY that could be converted to recycled water, including the Haynes and AES power plants and the Southeast Resource Recovery Facility (SERRF), a number of residential developments, several industrial users and commercial laundries, and numerous greenbelts (schools, parks, golf courses, commercial nurseries, etc.). The revised Master Plan also took into consideration the expansion of the LVLAWTF for increased seawater intrusion barrier injection and recommended the construction of two, 3.3 MG storage tanks at the Alamitos Reservoir site. Seventeen of these customers with a demand of 2,505 AFY have been identified as the "most probable" for conversion to recycled water in the near term, as they are either located near an existing recycled water line or have expressed interest in conversion.

Eleven alternative construction projects were identified, with six being recommended for implementation:

Alternative 8 – A 6-inch pipeline west along Anaheim St. and north on Orizaba Ave. at a capital cost of $240,000 to serve 102 AFY to American Textile Maintenance Company (laundry).

Alternative 4 – A 4-inch pipeline north on Palo Verde Avenue at a capital cost of $320,000 to serve 39 AFY to Millikan High School.

Alternative 7 – A 16-inch pipeline beginning at the intersection of Vuelte Grand Ave. and Atherton St. at a capital cost of $7 million to serve 1,000 AFY to the Haynes Generating Station.

Alternative 6 – A 4-inch pipeline west on Spring St. at a capital cost of $250,000 to serve 20 AFY to Long Beach Airport Marriott Hotel.

Alternative 1A – 6- and 12-inch pipelines beginning at the intersection of 46th St. and Atlantic Ave. at a capital cost of $750,000 to serve 52 AFY to Los Angeles County Community Development (residential).

Alternative 9 – Sub-project 9A will begin at the intersection of 11th St. and Obispo Ave. and run to the intersection of Pico Ave. and Ocean Blvd. to serve 93 AFY to the Hyatt Regency Hotel, Rainbow Harbor Esplanade, Long Beach Shoreline Marina and Cesar Chavez Elementary School. Sub-projects 9B, 9C and 9D all require Subproject 9A to be built, although they each can be constructed individually. Sub-project 9B will serve 488 AFY to TOPKO and Montenay Pacific Power Corp. Sub-project 9C will serve 797 AFY to Nation Gypsum and BP West Coast Products. Sub-project 9D will serve 628 AFY for industrial uses at THUMS Long Beach and TOPKO. The four sub-projects will use 6- to 20-inch pipelines and are projected to have a capital cost of $32.9 million.

Alternative 4 has already been implemented by LBWD, as recycled water deliveries to Millikan High School began in October 2011. There is currently no time schedule for implementation of the other projects.

5.2 Los Coyotes WRP

5.2.1 City of Lakewood Master Plan

The City of Lakewood 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 159 AFY to city parks (e.g., Bolivar and Biscailuz Parks), numerous medians and parkways, and a number of public and private schools (e.g., Craig William and Lakewood Elementary Schools, the Intensive Learning Center, St. Pancratius School, and Hoover Junior High School). Such an extension would require about 7.7 miles of pipeline to be built in five phases and could cost as much as $7.25 million. This study was completed in July 2010; however, there is no implementation schedule as funding is currently unavailable.

5.3 Pomona WRP

5.3.1 Walnut Valley Water District

WVWD contracts directly with the Sanitation Districts for the purchase of recycled water, instead of receiving recycled water 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.

WVWD contracted with HDR 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, although the currently proposed additional reuse sites have an expected demand of 1,676 AFY. This master plan, which is expected to be completed in May 2013, will detail the potential for expansion, primarily into the City of Diamond Bar, and determine what new infrastructure and facilities would be required. In addition to pipelines (ranging from 6- to 24-inch), seven pump stations, six reservoirs reservoir (one being a conversion), and six back-up wells would need to be added to the recycled water distribution system to accommodate the expansion. Completion of this $24 million system expansion is contingent upon the construction of a storage reservoir, as there are insufficient flows in the gravity distribution system as currently configured. In addition to its continued use of recycled water from the Pomona WRP, WVWD is expected to connect to the East San Gabriel Regional Recycled Water System detailed in Section 5.4.2.

5.3.2 City of Pomona Master Plan

The City's consultant, Carollo Engineers, completed a master plan for expanding their recycled water distribution system in November 2009. The additional demand for their entire potential customer base was estimated at 6,150 AFY. However, the estimated maximum daily 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., process optimization/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 seven 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.

Independent work has already begun on the delivery of recycled water from Cal Poly to Forest Lawn's Covina Hills cemetery. A potable water standby agreement has negotiated with Golden State Water Company that will allow recycled water irrigation use at this site. As part of an amendment to their recycled water agreement, Forest Lawn will construct a pump station and piping to lift recycled water from Cal Poly's recycled water reservoir up to Forest Lawn's irrigation water tanks, and the Cal Poly irrigation water lift station will be upgraded to increase maximum flow rate from 3,000 to 4,000 gpm to accommodate the cemetery's demands. Forest Lawn expects to begin using 300 AFY of recycled water in 2013, which will increase gradually until the final build-out of the cemetery occurs in the year 2160, with an ultimate projected irrigation demand of 900 AFY.

5.4 San Jose Creek WRP

5.4.1 Groundwater Recharge 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 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.

Interest in this project was rekindled following MWD's May 2007 cessation of all deliveries of imported water for spreading. USGVMWD, WRD and the Sanitation Districts entered into a Memorandum of Understanding (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. In November 2010, a Joint Powers Authority was formed by USGVMWD, WRD, and the Sanitation Districts to proceed with the project. However, despite initial progress, the USGVMWD Board of Directors voted in March 2011 to remove their agency from the Joint Powers Authority due to shifting replenishment needs and cost concerns. Instead, USGVMWD has received a $150,000 grant from USBR to conduct a feasibility study to offset current interruptible imported supplies with 10,000 AFY of locally supplied recycled water within the next 8 to 13 years. The feasibility study will evaluate multiple sources of recycled water and compare these alternatives against a "no project" alternative in order to determine the best method for replenishment for the study area. WRD and the Sanitation Districts are moving forward with GRIP as a 21,000 AFY project focused on replenishment at the Montebello Forebay. The two agencies have begun working on the preliminary engineering to support the environmental documentation for the project (CEQA/NEPA) and anticipate that CEQA/NEPA work will begin in 2013.

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 involved several alternatives 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, an MOU 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 1,710 AFY more, and will be developed in two separate portions: one serving the City of Industry and RWD, and the other developed by USGVMWD to serve SWS, BKK Landfill, and WVWD. These are discussed separately below.

City of Industry/RWD – The City and its recycled water system operator, RWD, have completed a new pump station and 2.1 MG reservoir at Anaheim-Puente Road. In addition, construction was completed on an expansion of the City's pump station at San Jose Creek WRP East which included the addition of a fourth pump, replacement of the existing three pumps, installation of a larger surge tank, new control panels, and a new, separate power supply from SCE. RWD continues to expand its recycled water distribution system, adding new customers on a regular basis (discussed in Section 2.5.3 above). Construction of Mission Energy's Walnut Creek Energy Park 500 MW plant in the City of Industry is nearing completion and deliveries of an estimated annual average 485 AFY (maximum estimated annual demand of 1,385 AFY) of recycled water for cooling tower use and landscape irrigation of the site are expected to begin in May 2013.

USGVMWD – USGVMWD's portion of the system is called the "Phase II-B Expansion" and will serve 1,315 AFY to 34 customers. This system is being constructed in four packages, consisting of a pump station, storage reservoir and approximately 15.1 miles of 6- to 24-inch pipeline. The first package pipeline was completed in December 2010 and connects to the City's existing 36-inch pipeline at the intersection of Azusa Avenue and Temple Avenue. The pipeline extends to the Big League Dreams Development/BKK landfill entrance and continues east to Nogales Street. A new reservoir was built as part of this package, with completion occurring in December 2011. The second package pipeline was completed in August 2011 and continues north along

Azusa Avenue to the South Hills Country Club, a proposed recycled water customer. Site connections for both sub-phases were completed in summer 2012.

The third package consists of approximately 3.8 miles of pipeline ranging in size from 4- to 12-inches in diameter. The pipelines are located in the City of West Covina and branch off of the Package 2 recycled water main installed in Azusa Avenue and Vine Avenue. The fourth package consists of approximately 3.4 miles of pipeline ranging in size from 4- to 12-inches in diameter. The pipelines are located in the cities of West Covina and Walnut along Shadow Oak Drive, Gemini Street, Stephanie Drive, Woodgate Drive and other local side streets. Construction of these packages was completed in winter 2012, with deliveries of recycled beginning in late spring 2013.

5.4.3 La Puente Valley County Water District Master Plan

The La Puente Valley County Water District (LPVCWD) hired MWH to produce a recycled water master plan for that agency, which completed the task in May 2011. LPVCWD's potable water source is groundwater and it currently pumps over its annual allotment by approximately 40%, thereby requiring them to pay replenishment fees to the basin Watermaster. A total of 74 reuse sites with a demand of 375 AFY in and adjacent to its service area within the City of Industry were identified. The most cost effective of the four alternatives evaluated has LPVCWD tapping into the City of Industry's recycled water distribution line along the San Jose Creek Channel at Hacienda Blvd., with a smaller connection to the City of Industry transmission line on Azusa Ave., serving a total of approximately 280 AFY through a new pump station at an estimated cost of $9.1 million. The LPVCWD Board of Directors has yet to finalize this document. According to the LPVCWD General Manager, the cost of recycled water for this project will be too high to allow for its construction in the foreseeable future without outside funding. However, this project could possibly be included as part of the USGVMWD Phase II-B Expansion detailed in Section 5.4.2, above.

5.4.4 Southeast Water Reliability Project

CBMWD is proceeding with this system expansion that will loop the Rio Hondo (Torres) and Century (Ibbetson) systems for flow reliability and system pressure and to aid in chlorination. The ultimate capacity for the combined, looped systems is projected to 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 cement mortar lined and coated steel 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 would serve the Montebello Golf Course and other irrigation sites and a second proposed power plant in the City of Vernon, as well as other industrial users. (However, the City of Vernon has officially cancelled its plans for this facility.) 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. Construction on the first phase from Pico Rivera to the Montebello Golf Course was completed in the fall of 2011and several sites have already been connected. Approximately 400-500 AFY of the 1,000 AFY of identified demand will begin using recycled water almost immediately. Construction of the Phase 2 from Montebello to Vernon will depend on funding, securing a customer base and other outstanding institutional issues.

In addition, CBMWD had planned to construct a four million gallon recycled water storage reservoir at its Rio Hondo pump station that would provide daily operational storage. 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 8-inch recycled water pipeline on Mines Avenue in the City of Pico Rivera that could deliver recycled water for landscape irrigation to multiple sites on or near Mines Avenue. The "Pico Rivera Recycled Water Project – Phase I" is a sub-project to LADPW's "San Gabriel River Coastal Basin Spreading Grounds Pump Station and Pipeline" project, a 78-inch pipeline that will act as conduit for moving storm water, imported water, or recycled water between the San Gabriel and Rio Hondo spreading grounds. After much discussion with LADPW staff and the City of Pico Rivera, and with the support of Congresswoman Grace Napolitano, the 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 responsible for. The agreement divided the Pico Rivera Recycled Water Project into two phases:

Phase I – Phase I is a 1-mile long, 8-inch recycled water pipeline placed in the same trench used for the larger 78-inch conduit project. 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.

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. Customer connections began in the second half of 2012.

Since construction costs were shared with LACDPW and the City of Pico Rivera, the impact to CBMWD was greatly reduced. CBMWD applied for funding through the United States Bureau of Reclamation's (USBR's) Title XVI program. The Title XVI program provides for cost recovery on 25% of all construction costs. Finally, construction bids came in much lower than anticipated in the engineer's estimates, so this will result in additional savings to CBMWD. All construction costs will be covered through pay-go funds.

As part of its 2008 Recycled Water Master Plan, CBMWD envisioned that additional connections would be made to the SWRP line to supply recycled water into the USGVMWD service area. No further action has been taken by either agency on this potential extension. CBMWD has had a consultant start on an update of their recycled water Master Plan, with a draft report produced in mid-2012.

5.4.5 *City of La Mirada Extension*

CBMWD has just begun looking at a new recycled water trunk line from the City of Santa Fe Springs to serve an identified 1,200 AFY of demand in the City of La Mirada. Both the City and the local purveyor, Suburban Water Company, are extremely interested in getting recycled water. CBMWD is currently in the planning process and is looking at potential pipeline routes, customer base, booster pump location, etc. CBMWD expects to begin serious work on this project in the summer of 2013.

5.4.6 *City of Santa Fe Springs Extension*

CBMWD has been working with Air Products & Chemicals Incorporated (Air Products), the City of Santa Fe Springs, CDPH and LACDPH, regarding Air Product's connection to the CBMWD recycled water system for use in their cooling towers. Due to their proximal location to CBMWC's recycled water system and the cost of potable water from the City of Santa Fe Springs, the Air Products operations team at the Santa Fe Springs facility has received management approval to begin the retrofit process. Annual recycled water use is expected to be 225 AFY.

The "Scope of Work" involves furnishing all labor, equipment and materials necessary to construct approximately 3,000 linear feet of buried 8-inch PVC pipeline and 120 linear feet of 18-inch diameter steel casing. A 6-inch recycled water service connection to the existing recycled water main, surface restoration and traffic control is also included. CBMWD and Air Products agreed to have CBMWD's contractor install a portion of the on-site piping for the plant, in addition to the work in the public right-of-way. This section of the pipeline work will be owned and maintained by Air Products. Once the on-site work is complete, Air Products has agreed to reimburse CBMWD for the on-site work. Duration of the entire construction project is expected to take 120 calendar days. The estimated payback time for the entire project is eight years. CBMWD expects to begin construction work on this project in March 2013.

5.4.7 City of South Gate Extension

South Gate is currently working on improving some of their existing city streets by restoring asphalt, installing new traffic signals, construction of new street medians, replacing and/or expanding underground utilities, amongst other work items within their projects scope of work. South Gate approached the District some time ago to inquire on the possibility of expanding the existing recycled water infrastructure further into the city during the same time that the city will be renovating the streets. This is to save on costs and to avoid disrupting city streets after improvements have been completed.

The City's design consultant has submitted design plans for the first phase of their project which is a 2,800 linear foot 10-inch diameter recycled water lateral on Firestone Boulevard. This project will create two new recycled water connections within the City. The first connection will be to a new strip mall on the corner of Firestone and Atlantic Boulevard and the second to medians along Firestone Boulevard. A third possible recycled water customer connection could be Shultz Steel for industrial needs. Annual recycled water use is expected to be 2.5 AFY for the Azalea Project, 3 AFY for the medians and possibly 35 AFY for Shultz Steel. A cost-share agreement is currently being established resulting from lack of customer demand for recycled water. The City is providing design plans and establishing the contractor who will be installing the lateral under inspection by CBMWD. The City plans to begin construction work on this project in summer 2013 if an agreement is made.

5.4.8 City of Pico Rivera Rosemead Lateral

CBMWD has just begun investigating a potential recycled water lateral to serve Rio Vista Park and El Rancho School District in the City of Pico Rivera. Annual recycled water use is expected to be 30 AFY. Feasibility is currently unknown at this time.

5.5 Whittier Narrows WRP

5.5.1 City of Arcadia (USGVMWD Phase III Extension)

The City of Arcadia, along with USGVMWD, commissioned Stetson Engineers to examine the feasibility of supplying recycled water to various sites within the city. A draft report was completed in December 2006 identifying an extension of USGVMWD's distribution system from the Whittier Narrows WRP as the most feasible alternative compared with obtaining recycled water from the San Jose Creek WRP or LADWP's LA-Glendale WRP. The proposed project consists of approximately 64,100 feet of 14- and 16-inch distribution lines, a 900 HP booster pump station, and an existing 1.5 million gallon storage reservoir for an estimated cost of $7.6 million. The pipeline route is proposed to run east on Rush Street, north on Santa Anita Avenue, north along the Rio Hondo, west on Live Oak Avenue, then north again on Santa Anita to Foothill Blvd. Within the main part of Arcadia, the pipeline would form a loop going west on Foothill/Colorado Blvd., then south on Michillinda Avenue, then east on Huntington Drive back to Santa Anita. This system would provide recycled water to 23 potential customers with a total annual recycled water demand of approximately 644 AFY and a peak demand of 4.3 MGD. Another 23 sites with a total annual demand of 96 AFY were identified in the vicinity, although not adjacent to the proposed pipeline route, and would require the investment in additional service laterals. The four largest sites, Santa Anita Racetrack, the Los Angeles County Arboretum, Arcadia County Park, and Santa Anita Golf Course, make up 56% of the total identified demand for water. This study did not include any potential reuse sites that might be located along the pipeline route outside of the City of Acadia. The completion of the project was initially estimated to be approximately 2013, although no specific timetable has been set for implementation. This project has been designated Phase III by USGVMWD.

5.6 JOINT WATER POLLUTION CONTROL PLANT

5.6.1 WEST BASIN MUNICIPAL WATER DISTRICT

The WBMWD's June 2009 Master Plan outlined the expansion of its recycled water system deliveries to a potential of 70,000 AFY by 2020 and to 83,000 AFY by 2030, including expansion of their Carson Regional Water Recycling Facility (CRWRF) from 6 to 20 MGD. Their study of the options found that both their pump station at the City of Los Angeles' Hyperion treatment plant, which supplies its effluent for recycling and its distribution system would require extensive expansion in order to accommodate the additional flows from its El Segundo water recycling facility to serve reuse sites in the Carson and Palos Verdes areas. One option, which could prove more cost effective, would be to supply 20% of WBMWD's future needs, or up to approximately 16,600 AFY, from the Sanitation Districts JWPCP. This option would also help WBMWD meet its contractual obligation of using recycled water of Sanitation Districts' origin for future expansions in exchange for capacity in the JWPCP ocean outfall for disposal of brine from the CRWRF. The recommended option was a new $187.8 million, 26 MGD treatment plant at JWPCP to augment WBMWD's Title 22 distribution system and supply advanced treated recycled water to such large reuse customers at the Dominguez Gap Seawater Intrusion Barrier and the bp Carson refinery expansion, as well as for the Amoco and Watson cogeneration facilities. The option of using JWPCP effluent is expected to save WBMWD approximately $25 million in capital costs. The location of this new treatment plant could be at JWPCP, the CRWRF, or along the transmission line in route to a specific user or group of recycled water sites. Currently, plans for a major expansion of demands in the Carson and Harbor Area are being re-evaluated by WBMWD, along with the feasibility of a new treatment plant at the JWPCP. According to the Master Plan's recommended CIP, construction of the new treatment facilities is not scheduled until FY20-25.

5.7 VALENCIA AND SAUGUS WRPS

5.7.1 CASTAIC LAKE WATER AGENCY

In 2002, CLWA, the regional importer and wholesaler of State Water Project water in the Santa Clarita Valley, developed the Recycled Water Master Plan for the use of 17,400 AFY of recycled water produced at both the Sanitation District's Valencia and Saugus WRPs by the year 2030. CLWA requires an update of the 2002 Recycled Water Master Plan in order to compile the latest information with regard to potential recycled water users, design of infrastructure and the availability of recycled water to serve them. In March 2012, CLWA submitted an Integrated Regional Water Management planning grant application to the DWR for the development of the Master Plan and subsequent Environmental Impact Report (EIR). CLWA is expected to enter into a new contract with the Sanitation District the purchase and sale of recycled water to support the updated Master Plan, when completed. The updated Master Plan is anticipated to be completed in 2014. In 2012, CLWA, along with the local purveyor Valencia Water Company, were awarded Proposition 84 grant funding for the next phase of their recycled water system, Phase 2C, which is expected to deliver up to 900 AFY of recycled water.

In June 2009, CLWA began investigating the feasibility of delivering recycled water from the Sanitation Districts' Saugus WRP. This Phase 2A of the Master Plan consists of a booster pump station, several thousand feet of pipelines and a storage reservoir. This system would deliver and estimated 511 AFY of recycled water from the Saugus WRP to the 80-acre Central Park, the River Village and Bridgeport developments and assorted city landscaping. In June 2011, Mitigated Negative Declaration/Environmental Assessment (MND/EA) was completed and USEPA issued a Finding of No Significant Impact for this project. In July 2011, CLWA approved the resolution adopting the MND/EA and approving the Mitigation Monitoring and Reporting Program, and a Notice of Determination was filed with the Los Angeles County Office of Clerk/Recorder and with the California State Clearinghouse. CLWA anticipates the construction of the project to be completed in 2017.

5.8 Lancaster and Palmdale WRPs

5.8.1 Antelope Valley Regional Recycled Water Distribution Project

Sanitation Districts staff continue to work with the cities of Lancaster and Palmdale and Los Angeles County Waterworks District 40, Antelope Valley, (Waterworks) to develop a regional "backbone" recycled water distribution system for municipal and industrial users. The proposed North Los Angeles/Kern County Regional Recycled Water Project (AV Backbone) includes facilities for the primary distribution system to provide disinfected tertiary recycled water produced from the Sanitation Districts' Palmdale and Lancaster WRPs and from Rosamond Community Services District's Rosamond WRP to end users in the Antelope Valley Region. The Project is being built in phases and portions, with the Division Street Corridor and its extensions to Columbia Way and to City Park already having been constructed and partially implemented in the City of Lancaster using tertiary treated recycled water produced by the Lancaster WRP (detailed in Section 4.1.5).

The City of Palmdale and Waterworks have entered an agreement to design, construct and implement a southern segment of the AV Backbone. The main backbone pipeline will originate at the Palmdale WRP, travel west down Rancho Vista Blvd., then north on 10th St. East, west on Avenue O-8 and north along Sierra Highway, terminating at Columbia Way and connecting to the extension of the Division Street Corridor (described above). The Columbia Way lateral would serve the proposed Palmdale Hybrid Power Plant (PHPP), a 570-megawatt electric generating facility. 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 next to the Antelope Valley Freeway, at 10th St. West and Avenue O-12. Facilities will also include the pump station and forebay tank to be located at the Palmdale WRP, and a storage tank at the Waterworks' tank site. This segment of the backbone system has been designed and is planned for completion at nearly the same time as the completion of the PHPP, whose funding will also finance the recycled water pipeline. The PHPP was approved by the California Energy Commission in August 2011. The City of Palmdale will need to secure a developer and funding for the PHPP. Once initiated construction of the PHPP is estimated to take about 30 months. The PHPP is projected to use up to 4,300 AFY of recycled water, which will be distributed by Waterworks by means of a new pump station (plans for this pump station are awaiting final approval and funding of the PHPP).

5.8.2 Palmdale Recycled Water Authority (PRWA)

The PRWA was created in 2012 through an agreement between the City of Palmdale and the Palmdale Water District to jointly study, promote, develop, distribute, construct, install, finance, use and manage recycled water resources created by the Sanitation District Palmdale and Lancaster WRPs for any and all reasonable and beneficial uses, including irrigation and recharge, and to finance the acquisition and construction or installation of recycled water facilities, recharge facilities and irrigation systems. The City of Palmdale will allocate all of its contractual recycled water rights to the PRWA.

The PRWA has a contract with the Sanitation Districts for the purchase of up to 2,000 AFY of recycled water from the Palmdale and Lancaster WRPs. The PWRA is planning Phase 2 which would install a recycled water distribution line along 30th St. East, south to Avenue R-8 then east until 55th St. East with laterals to five parks: McAdam, Palmdale Oasis, Yellen and Domenic Massari. These parks are expected to use approximately 1,000 to 1,200 AFY. The PWRA 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 PWRA and Los Angeles County Waterworks are currently 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). The PWRA has installed a temporary pump station that began delivering recycled water to McAdam Park in the fall of 2012. The entire project is expected to be completed in the spring of 2018.

5.9 CONCEPTUAL WATER RECYCLING PROJECTS

The most recent statewide water crisis that ran from 2006-09 spurred numerous entities into giving more serious consideration to water recycling in their service areas. This sense of urgency was further stimulated by the passage of SB 7 in 2009 that requires urban water agencies to reduce per capita water consumption by 20 percent by the year 2020 (commonly referred to as the “20 x 2020 Plan”). And while the water supply situation in the State has improved considerably of late, several ambitious, large-scale water recycling projects involving groundwater replenishment continue to be investigated. The list of conceptual projects below is not meant to be exhaustive. Rather it is a listing of the most likely or ambitious projects the Sanitation Districts are currently tracking.

5.9.1 MWD ADVANCED TREATMENT PLANT AT JWPCP

In FY 11-12, JWPCP provided primary and secondary treatment to approximately 265.47 MGD (298,285 AFY) of wastewater prior to discharge through outfall tunnels to the Pacific Ocean, with water recycling at the facility being limited to in-plant uses. MWD and the Sanitation Districts have partnered to study the potential for a regional, indirect potable reuse program to advance treat as much as 200 MGD (224,110 AFY) of treated wastewater that is currently discharged to the Pacific Ocean. Implementation of such a large-scale regional reuse program could provide MWD with a significant supply of reliable, drought-resistant water to supplement imported raw water supplies and would be consistent with the enhanced regional approach currently being considered in their Integrated Resources Plan (IRP). Such a project would involve complex interagency agreements, extensive regulatory approvals, public outreach, and considerable capital costs.

From a technical standpoint, this project would require new advanced treatment facilities (e.g., MF/RO/UV), a regional distribution system to groundwater basins (e.g., Montebello Forebay and/or the Main San Gabriel Basin), and injection and extraction wells, modeled somewhat after the Groundwater Replenishment System in Orange County. No estimates of capital costs or timeline for implementation for such a project have been made at this time. Nevertheless, pilot scale testing of treatment systems was performed, funded with a $330,000 grant from the USBR to demonstrate the technology. Pilot scale testing concluded in June 2012 and a final report was submitted to the USBR in September 2012.

5.9.2 DOWNEY/CERRITOS ADVANCED TREATMENT PLANT FOR RECHARGE

The cities of Downey and Cerritos are jointly investigating a potential project to take 7.1 MGD (8,000 AFY) of effluent from the Los Coyotes WRP, treat it to an advanced level (MF/RO/UV), and pipe approximately 6,000 AFY (after brine losses) north to the Montebello Forebay where it will be stored underground for the exclusive use by those cities. In addition to technical, financial and permitting obstacles, implementation of this project would require that the existing Basin Adjudication would need to be significantly revised.

5.9.3 SCALPING PLANTS

The Sanitation Districts have been contacted regarding scalping plants in both the JOS and SCV systems. An evaluation of these proposals is currently underway. In general, there are several obstacles to overcome, including technical, financial, permitting, and siting. In addition, construction of scalping plants will decrease the amount of water available at the already constructed downstream WRPs. This poses a problem because recycled was has already been contracted for at these downstream WRPs.

5.9.4 NEWHALL RANCH DEVELOPMENT

The Newhall Land and Farming Company, a major landowner in the Santa Clarita Valley, has plans for a 12,000 acre residential/commercial development known as Newhall Ranch. A new sanitation district, the Newhall Ranch County Sanitation District, has been formed and is expected to join the Sanitation Districts of Los Angeles County. Construction of a Newhall Ranch Water Reclamation Plant is planned to serve the sewer needs of Newhall Ranch, along with a portion of Newhall Ranch's estimated 9,545 AFY of recycled water demand.[8] During the initial development of this project, the recycled water demand is expected to be supplied by the Sanitation Districts' Valencia WRP, which may continue supplying recycled water even after full implementation of the construction and occupation. The earliest predicted occupation of Newhall Ranch homes is 2016; however, recycled water may be needed for grading activities planned for 2014.

8 "Valencia Water Company Reclaimed Water Master Plan for Newhall Ranch", Dexter Wilson Engineering, Inc., January 2006.

LIST OF ABBREVIATIONS

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
FMWD	Foothill Municipal Water District
FWC	Foothill Water Coalition
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
LMD	Landscape Maintenance District
LPVCWD	La Puente Valley County Water District
LVLAWTF	Leo Vander Lans Advanced Water Treatment Facility
MBR	membrane bioreactor
MF/RO	microfiltration/reverse osmosis

MGD	million gallons per day
MND/EA	Mitigated Negative Declaration/Environmental Assessment
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
PHPP	Palmdale Hybrid Power Plant
PVC	polyvinyl chloride
PWD	Pomona Water Department
PRWA	Palmdale Recycled Water Authority
RWD	Rowland Water District
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SCVJSS	Santa Clarita Valley Joint Sewerage System
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
TVMWD	Three Valleys Municipal Water District
USBR	United States Bureau of Reclamation
USGS	United States Geologic Survey
USGVMWD	Upper San Gabriel Valley Municipal Water District
UV	ultraviolet light disinfection
WDR	waste discharge requirements
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 the cities of 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 WRP is placed into operation.
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 WRP is expanded from 0.36 to 1.35 MGD.
September 1953	The 0.75 MGD Palmdale WRP is placed into operation.
September 1954	Sanitation Districts assumes operations of Tri-City Plant.
November 1958	The Palmdale WRP 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	The first direct deliveries of effluent from the Palmdale WRP for alfalfa irrigation begin.
October 1959	The new 6.5 MGD Lancaster WRP is constructed and placed into operation. 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 is placed into operation, becoming first of the "upstream" treatment plants in the Sanitation Districts' JOS.
July 1962	The 0.25 MGD Saugus WRP is placed into operation, with effluent being discharged into the Santa Clarita River.
August 1962	The first deliveries of recycled water from the Whittier Narrows WRP begin for groundwater replenishment in the Montebello Forebay of the Central Basin.
November 1962	The Angeles Crest Development Company completes the 0.1 MGD 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 from 0.25 to 0.75 MGD.
October 1965	The Saugus WRP is expanded from 0.75 to 1.5 MGD.
June 1966	The 4 MGD Pomona WRP is constructed to replace Tri-City Plant.
September 1966	The La Cañada WRP is purchased by the Sanitation Districts.
July 1967	The 1.5 MGD Valencia WRP is placed into operation, with effluent begin 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.
June 1969	The County of Los Angeles constructs the 0.6 MGD Antelope Valley Tertiary Treatment Plant (AVTTP) 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 from 4 to 10 MGD.
October 1970	The 12.5 MGD Los Coyotes WRP is placed into operation.
May 1971	The La Cañada WRP is expanded from 0.1 to 0.2 MGD.
June 1971	The 37.5 MGD San Jose Creek WRP is placed into operation.
September 1972	The Palmdale WRP is expanded from 2.5 to 3.1 MGD.
May 1973	The 12.5 MGD Long Beach WRP is placed into operation.
December 1973	The first direct deliveries of recycled water from the Pomona WRP begin through the Pomona Water Department (PWD) to Cal Poly Pomona.
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 deliveries of recycled water from the San Jose Creek WRP begin with the adjacent California Country Club.
October 1978	Revised wastewater reclamation regulations are adopted by the California Department of Health Services (now California Department of Public Health, or CDPH) 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	The first direct deliveries of recycled water from the Los Coyotes WRP begin through the cities of Cerritos and Bellflower with the Ironwood 9 Golf Course and Caruthers Park, respectively.
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 deliveries of recycled water from the Long Beach WRP begin through the City of Long Beach Water Department (LBWD) with El Dorado Park West and El Dorado 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.
October 1982	The San Jose Creek WRP is expanded from 37.5 to 62.5 MGD.
August 1983	The City of Industry completes its 7,100 gpm recycled water pump station at the San Jose Creek WRP and begins deliveries of recycled water to the Industry Hills Recreation Area.
January 1984	LBWD's North Long Beach recycled water distribution system is completed.
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	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.

May 1986	Deliveries of recycled water from the Pomona WRP begin to Walnut Valley Water District (WVWD) (purchased from PWD).
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 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 (AFY).
December 1987	The City of Cerritos completes its 14,800 gpm pump station at the Los Coyotes WRP and expands delivery of recycled water throughout the city.
May 1988	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 begin to Nebeker Ranch for alfalfa irrigation.
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.
June 1989	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	Deliveries of recycled water from the Los Coyotes WRP begin to the City of Lakewood 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 AFY in any one year (150,000 acre-feet (AF) 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.
February 1992	Central Basin Municipal Water District (CBMWD) constructs its Century (E. Thornton Ibbetson) recycled water distribution system (Century System) and begins delivery of recycled water from the Los Coyotes WRP through 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 with the completion of the Stage III expansion.
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 the first time, 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 constructs the Rio Hondo (Esteban Torres) recycled water pump station and distribution system (Rio Hondo System), which was interconnected to the CBMWD Century System. For the first time, two different WRPs (Los Coyotes and San Jose Creek) are used to supply recycled water to the same regional distribution system.
November 1994	Deliveries of recycled water from the Valencia WRP begin to the City of Santa Clarita via water trucks 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
June 1995	LBWD restores recycled water service to the THUMS project on Island White for oil field repressurization.
December 1995	Sanitation Districts complete the Plan for Beneficial Use of Recycled Water, which identifies impediments to expanding water reuse, along with solutions and potential new users.
December 1995	Deliveries of recycled water from the Pomona WRP begin to the Spadra Landfill and the adjacent Gas-to-Energy Facility (SPERG).
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 8 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.

May 1997	The Los Angeles RWQCB readopts all of the Sanitation Districts' reuse permits that had been previously issued in the 1980's.
November 1997	Following years of delays, recycled water deliveries finally begin from the San Jose Creek WRP to the Puente Hills Landfill and the adjacent Gas-to-Energy Facility (PERG).
June 1998	Rose Hills Memorial Park begins receiving recycled water from the San Jose Creek WRP through the Puente Hills 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.
December 2000	CDPH 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 produces over 100,000 AF 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.
January 2003	Rowland Water District (RWD) takes over that portion of WVWD's recycled water distribution system that lies within the RWD service area.
February 2003	WRD completes construction of the Leo J. Vander Lans Treatment Facility and begins using Long Beach WRP effluent for process testing.
May 2003	The Valencia WRP is expanded from 13.5 to 17 MGD with the completion of additional aeration tanks.
June 2003	The Upper San Gabriel Valley Municipal Water District (USGVMWD) begins delivery of recycled water from the San Jose Creek WRP through the CBMWD Rio Hondo System.
August 2003	The first direct deliveries of recycled water from the Valencia WRP begin through the Castaic Lake Water Agency (CLWA) with the Tournament Players Club golf course. This is the first permanently plumbed reuse site in the Santa Clarita Valley.
February 2005	Deliveries of recycled water begin from the San Jose Creek WRP to the Puente Hills Materials Recovery Facility (MRF).
May 2005	The Valencia WRP is expanded from 17 to 21.6 MGD with the completion of the Stage V expansion.
October 2005	Recycled water deliveries through the CBMWD's Century System are extended to the City of Vernon with the start-up of the Malburg Generation Station power plant.

October 2005	Deliveries of recycled water begin from the Leo J. Vander Lans Treatment Facility to the Alamitos Seawater Intrusion Barrier for injection.
August 2006	After extensive retrofitting, a large section of the lower portion of Rose Hills Memorial Park is connected to the USGVMWD recycled water distribution system, making this site one of the largest direct users of the Sanitation Districts' recycled water.
September 2006	USGVMWD begins deliveries of recycled water from the Whittier Narrows WRP 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 non-potable users, Blue Heron Newsprint, ceases operations and stops receiving its usual 3 MGD 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.
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 begin to the City of Lancaster.
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.
July 2009	Deliveries of recycled water from the San Jose Creek WRP begin to RWD through the City of Industry distribution system.
June 2010	The Sanitation Districts and California County Club sign a new agreement for the sale of 525 AFY of recycled water from the San Jose Creek WRP.
August 2010	The City of Long Beach Department of Public Works began using recycled water this month for street sweeping and sewer flushing under the RWQCB's new, region-wide non-irrigation reuse permit.
December 2011	The Palmdale WRP conversion to tertiary treatment is completed.
May 2012	The landscaping around the Parker Canyon Storage Reservoir was connected to the WVWD distribution system, becoming the Sanitation Districts' 700th recycled water customer.

APPENDIX B

RECYCLED WATER QUALITY FROM SANITATION DISTRICTS' TERTIARY WRPS

TABLE B-1
LONG BEACH WATER RECLAMATION PLANT
RECYCLED WATER QUALITY, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.52	7.8	7.0
Turbidity	NTU	0.7	1.5	<0.1
Total Coliform	org./100 ml	<1	2	<1
Fecal Coliform	org./100 ml	<1	<1	<1
Temperature	deg. F	75	81	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	570	608	541
Total COD	mg/L	<25	41	<25
Total BOD	mg/L	<3	<3	<3
Ammonia Nitrogen	mg/L	1.29	1.74	0.92
Organic Nitrogen	mg/L	1.67	2.33	1.24
Nitrate Nitrogen	mg/L	7.01	8.27	5.41
Nitrite Nitrogen	mg/L	0.143	0.431	0.063
Fluoride	mg/L	0.690	0.743	0.654
Boron	mg/L	0.35	0.42	0.31
Cyanide	µg/L	<4.1	<5.0	1.4
Chloride	mg/L	111	127	101
Sulfate	mg/L	84.9	108	71.4
Total Hardness	mg/L	150	226	131
Total Alkalinity	mg/L	183	201	161
Antimony	µg/L	0.45	0.49	0.39
Arsenic	µg/L	2.24	2.78	1.76
Barium	µg/L	57.3	79.1	45.1
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	<0.2	<0.2	<0.2
Total Chromium	µg/L	0.28	0.39	0.21
Hexavalent Chromium	µg/L	0.2	0.4	0.2
Copper	µg/L	2.09	3.09	1.31
Lead	µg/L	0.10	0.12	0.08
Mercury	µg/L	0.000718	0.00128	0.000456
Nickel	µg/L	1.27	1.45	1.07
Selenium	µg/L	0.37	0.44	0.30
Silver	µg/L	<0.06	<0.20	0.02
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	35.6	46.1	24.1
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.5	<4.6	<4.2
Conductivity	µmhos/cm	997	1110	914

Table B-2
Los Coyotes Water Reclamation Plant
Recycled Water Quality, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.22	7.7	6.7
Turbidity	NTU	0.5	1.2	0.1
Total Coliform	org./100 ml	<1	2	<1
Fecal Coliform	org./100 ml	<1	<1	<1
Temperature	deg. F	77	82	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	713	816	558
Total COD	mg/L	<27	47	<25
Total BOD	mg/L	<4	8	<3
Ammonia Nitrogen	mg/L	1.605	2.94	0.846
Organic Nitrogen	mg/L	0.734	1.31	0.34
Nitrate Nitrogen	mg/L	6.78	8.34	4.52
Nitrite Nitrogen	mg/L	<0.066	0.221	<0.02
Fluoride	mg/L	0.459	0.541	0.343
Boron	mg/L	0.38	0.46	0.30
Cyanide	mg/L	<2.27	<5.0	1.17
Chloride	mg/L	162	188	126
Sulfate	mg/L	142	171	97.8
Total Hardness	mg/L	255	305	210
Total Alkalinity	mg/L	191	233	168
Antimony	µg/L	1.90	3.03	1.19
Arsenic	µg/L	0.90	1.15	0.57
Barium	µg/L	53.5	57.0	45.8
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	<0.156	<0.20	0.022
Total Chromium	µg/L	0.62	0.87	0.40
Hexavalent Chromium	µg/L	0.03	0.04	0.03
Copper	µg/L	2.28	5.46	1.31
Lead	µg/L	0.13	0.21	0.09
Mercury	µg/L	0.00100	0.00145	0.00061
Nickel	µg/L	5.55	10.2	2.93
Selenium	µg/L	0.55	0.78	0.41
Silver	µg/L	<0.06	<0.2	0.02
Sodium	mg/L	186	189	184
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	35.6	39.2	31.8
Detergents (MBAS)	mg/L	<0.10	0.10	<0.10
Oil and Grease	mg/L	<4.6	<4.9	<4.2
Conductivity	µmhos/cm	1370	1570	1210

Table B-3
Pomona Water Reclamation Plant
Recycled Water Quality, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.30	7.6	6.7
Turbidity	NTU	0.6	1.1	0.4
Total Coliform	org./100 ml	<1	3	<1
Fecal Coliform	org./100 ml	<1	1	<1
Temperature	deg. F	76	85	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	537	582	482
Total COD	mg/L	<28	65	<25
Total BOD	mg/L	<3	8	<1
Total Organic Carbon	mg/L	6.38	7.50	5.50
Ammonia Nitrogen	mg/L	1.73	3.14	1.17
Organic Nitrogen	mg/L	1.02	1.33	0.49
Nitrate Nitrogen	mg/L	6.58	7.46	5.34
Nitrite Nitrogen	mg/L	0.206	0.359	0.120
Fluoride	mg/L	0.321	0.368	0.281
Boron	mg/L	0.24	0.28	0.20
Cyanide	µg/L	1.4	1.8	1.0
Chloride	mg/L	124	132	109
Sulfate	mg/L	60.3	74.8	51.4
Total Alkalinity	mg/L	164	226	145
Total Hardness	mg/L	204	242	181
Calcium	mg/L	67.1	73.6	62.4
Magnesium	mg/L	13.6	14.3	12.2
Antimony	µg/L	0.40	0.45	0.32
Arsenic	µg/L	0.79	0.95	0.59
Barium	µg/L	35.8	37.6	34.4
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.044	0.05	0.034
Total Chromium	µg/L	0.98	1.52	0.69
Hexavalent Chromium	µg/L	0.04	0.07	0.03
Copper	µg/L	5.74	6.47	5.00
Iron	µg/L	39.0	66.4	26.0
Lead	µg/L	0.32	0.46	0.25
Manganese	µg/L	4.94	8.75	2.36
Mercury	µg/L	0.00160	0.00200	0.00138
Nickel	µg/L	1.75	1.93	1.67
Potassium	mg/L	14.3	14.8	13.5
Selenium	µg/L	0.34	0.39	0.30
Silver	µg/L	0.04	0.06	0.03
Sodium	mg/L	95.6	105	93.2
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	62.9	66.6	60.0
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.3	<4.4	<4.3
Conductivity	µmhos/cm	905	987	852

Table B-4
San Jose Creek Water Reclamation Plant East
Recycled Water Quality, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.03	7.4	6.5
Turbidity	NTU	0.6	0.9	0.4
Total Coliform	org./100 ml	<1	2	<1
Fecal Coliform	org./100 ml	<1	1	<1
Temperature	deg. F	77	86	71
Suspended Solids	mg/L	<2.5	2.6	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	577	662	493
Total COD	mg/L	<26	37	<25
Total BOD	mg/L	<3	3	<3
Total Organic Carbon	mg/L	6.14	7.02	5.68
Ammonia Nitrogen	mg/L	1.083	1.54	0.819
Organic Nitrogen	mg/L	1.64	3.08	0.85
Nitrate Nitrogen	mg/L	4.68	6.50	3.28
Nitrite Nitrogen	mg/L	<0.050	0.102	<0.030
Fluoride	mg/L	0.494	0.516	0.466
Boron	mg/L	0.29	0.34	0.26
Cyanide	µg/L	<2.42	<5	1.16
Chloride	mg/L	131	157	116
Sulfate	mg/L	89.7	107	67.6
Total Alkalinity	mg/L	170	214	151
Total Hardness	mg/L	207	263	176
Calcium	mg/L	61.7	67.4	55.7
Magnesium	mg/L	18.2	21.0	16.4
Antimony	µg/L	0.57	0.70	0.50
Arsenic	µg/L	1.14	1.41	0.86
Barium	µg/L	67.2	74.2	51.1
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	<0.070	<0.20	0.044
Total Chromium	µg/L	0.90	1.09	0.54
Hexavalent Chromium	µg/L	0.06	0.10	0.02
Copper	µg/L	4.03	4.97	2.70
Iron	mg/L	0.053	0.088	0.032
Lead	µg/L	0.39	0.79	0.17
Manganese	µg/L	16.9	29.6	8.92
Mercury	µg/L	0.00106	0.0015	0.00062
Nickel	µg/L	5.51	10.6	2.00
Potassium	mg/L	17.2	18.8	16.3
Selenium	µg/L	0.47	0.61	0.36
Silver	µg/L	<0.20	<0.20	<0.20
Sodium	mg/L	113	127	97.9
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	64.3	77.8	56.1
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.4	<5.2	<4.2
Conductivity	µmhos/cm	975	1140	875

TABLE B-5
SAN JOSE CREEK WATER RECLAMATION PLANT WEST
RECYCLED WATER QUALITY, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.07	7.29	6.84
Turbidity	NTU	0.6	2.1	0.4
Total Coliform	org./100 ml	<1	3	<1
Fecal Coliform	org./100 ml	<1	1	<1
Temperature	deg. F	78	85	70
Suspended Solids	mg/L	<2.5	8.8	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	516	546	493
Total COD	mg/L	<25	54	<25
Total BOD	mg/L	<3	3	<3
Total Organic Carbon	mg/L	5.01	5.74	4.56
Ammonia Nitrogen	mg/L	0.776	1.03	0.560
Organic Nitrogen	mg/L	<0.697	2.23	<0.200
Nitrate Nitrogen	mg/L	9.33	10.7	8.28
Nitrite Nitrogen	mg/L	<0.038	0.082	<0.030
Fluoride	mg/L	0.758	0.817	0.711
Boron	mg/L	0.32	0.38	0.27
Cyanide	mg/L	<4.35	<5.00	2.40
Chloride	mg/L	107	125	94.3
Sulfate	mg/L	75.1	99.2	62.2
Total Alkalinity	mg/L	151	203	134
Total Hardness	mg/L	183	238	156
Calcium	mg/L	55.5	58.4	52.8
Magnesium	mg/L	17.8	24.2	14.2
Antimony	µg/L	0.47	0.50	0.44
Arsenic	µg/L	1.15	1.35	0.99
Barium	µg/L	32.6	36.9	24.0
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.054	0.11	0.039
Total Chromium	µg/L	1.03	1.15	0.85
Hexavalent Chromium	µg/L	0.07	0.11	0.04
Copper	µg/L	6.71	7.79	5.82
Iron	mg/L	0.031	0.038	0.024
Lead	µg/L	0.22	0.26	0.14
Manganese	µg/L	8.13	13.9	4.06
Mercury	µg/L	0.00140	0.00359	0.00071
Nickel	µg/L	2.07	3.10	1.39
Potassium	mg/L	14.6	15.4	13.8
Selenium	µg/L	0.27	0.33	0.20
Silver	µg/L	<0.14	<0.2	0.02
Sodium	mg/L	102	111	97.7
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	56.1	64.3	51.0
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.4	<4.6	<4.2
Conductivity	µmhos/cm	877	1060	810

Table B-6
Whittier Narrows Water Reclamation Plant
Recycled Water Quality, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.35	7.6	6.9
Turbidity	NTU	0.5	1.3	0.3
Total Coliform	org./100 ml	<1	1	<1
Fecal Coliform	org./100 ml	<1	<1	<1
Temperature	deg. F	78	85	71
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	565	618	524
Total COD	mg/L	<25	37	<25
Total BOD	mg/L	<3	6	<3
Total Organic Carbon	mg/L	5.78	8.76	4.49
Ammonia Nitrogen	mg/L	0.404	0.781	0.243
Organic Nitrogen	mg/L	<0.690	1.17	<0.200
Nitrate Nitrogen	mg/L	6.99	8.14	4.17
Nitrite Nitrogen	mg/L	0.199	0.400	0.022
Fluoride	mg/L	0.702	0.735	0.676
Boron	mg/L	0.26	0.30	0.23
Cyanide	µg/L	<3.76	<5	1.05
Chloride	mg/L	116	142	97.7
Sulfate	mg/L	93.3	111	73.8
Total Alkalinity	mg/L	158	182	138
Total Hardness	mg/L	194	225	168
Calcium	mg/L	58.7	62.7	55.7
Magnesium	mg/L	16.1	17.2	14.7
Antimony	µg/L	0.54	0.60	0.45
Arsenic	µg/L	1.13	1.32	0.94
Barium	µg/L	30.9	46.7	15.5
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	<0.095	<2.0	0.023
Total Chromium	µg/L	1.21	1.62	1.07
Hexavalent Chromium	µg/L	0.09	0.13	0.4
Copper	µg/L	4.36	6.58	3.32
Iron	µg/L	31.9	41.9	26.0
Lead	µg/L	0.28	0.37	0.22
Manganese	µg/L	11.34	24.0	1.05
Mercury	µg/L	0.00174	0.00284	0.00026
Nickel	µg/L	5.14	7.26	3.07
Potassium	mg/L	13.7	14.2	13.2
Selenium	µg/L	0.47	0.51	0.43
Silver	µg/L	<0.05	<0.20	0.02
Sodium	mg/L	115	129	106
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	59.8	70.3	41.1
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.5	<4.7	<4.4
Conductivity	µmhos/cm	934	1130	811

Table B-7
Valencia Water Reclamation Plant
Recycled Water Quality, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.39	7.6	7.0
Turbidity	NTU	0.6	1.02	0.39
Total Coliform	org./100 ml	<1	1	<1
Fecal Coliform	org./100 ml	<1	<1	<1
Temperature	deg. F	76	83	69.1
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	665	760	609
Total COD	mg/L	<25.4	38.9	<25
Total BOD	mg/L	<3	<3	<3
Ammonia Nitrogen	mg/L	1.032	1.16	0.918
Organic Nitrogen	mg/L	0.939	1.43	0.520
Nitrate Nitrogen	mg/L	2.66	4.61	1.88
Nitrite Nitrogen	mg/L	<0.031	0.035	<0.030
Fluoride	mg/L	0.352	0.411	0.306
Boron	mg/L	0.56	0.73	0.51
Cyanide	µg/L	2.93	3.13	2.71
Chloride	mg/L	113	124	92.9
Sulfate	mg/L	170	223	139
Total Alkalinity	mg/L	188	217	164
Total Hardness	mg/L	248	306	214
Antimony	µg/L	0.52	0.57	0.47
Arsenic	µg/L	0.56	0.72	0.35
Barium	µg/L	15.4	19.6	13.7
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	<0.095	<0.20	0.020
Total Chromium	µg/L	0.33	0.62	0.19
Hexavalent Chromium	µg/L	0.04	0.07	0.02
Copper	µg/L	3.15	4.10	1.90
Iron	µg/L	65.1	89.4	47.1
Lead	µg/L	0.08	0.15	0.06
Mercury	µg/L	0.000507	0.00101	0.000074
Nickel	µg/L	2.02	2.80	1.50
Selenium	µg/L	0.34	0.40	0.24
Silver	µg/L	<0.20	<0.20	<0.20
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	36.5	47.2	27.9
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.4	<4.6	<4.0
Conductivity	µmhos/cm	1096	1230	889

Table B-8
Saugus Water Reclamation Plant
Recycled Water Quality, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.6	7.9	7.4
Turbidity	NTU	0.65	1.32	0.32
Total Coliform	org./100 ml	<1	3	<1
Fecal Coliform	org./100 ml	<1	<1	<1
Temperature	deg. F	75.5	82.5	70
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	604	698	504
Total COD	mg/L	<25.4	38.2	<25
Total BOD	mg/L	<3	3	<3
Ammonia Nitrogen	mg/L	1.33	1.68	1.08
Organic Nitrogen	mg/L	1.650	3.26	0.784
Nitrate Nitrogen	mg/L	4.33	4.74	3.14
Nitrite Nitrogen	mg/L	<0.032	0.045	<0.030
Fluoride	mg/L	0.291	0.321	0.248
Boron	mg/L	0.61	0.83	0.49
Cyanide	mg/L	<2.09	<5	1.06
Chloride	mg/L	108	117	100
Sulfate	mg/L	125	155	99
Total Alkalinity	mg/L	193	223	146
Total Hardness	mg/L	216	276	148
Antimony	µg/L	0.42	0.59	0.35
Arsenic	µg/L	0.96	1.12	0.69
Barium	µg/L	37.5	42.2	32.1
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.044	0.060	0.030
Total Chromium	µg/L	0.39	<0.5	0.28
Hexavalent Chromium	µg/L	<0.04	0.06	0.02
Copper	µg/L	7.77	8.69	6.84
Iron	µg/L	11.1	19.0	8.1
Lead	µg/L	0.14	0.16	0.12
Mercury	µg/L	0.000671	0.001040	0.000470
Nickel	µg/L	1.14	1.27	0.96
Selenium	µg/L	0.47	0.57	0.39
Silver	µg/L	<0.20	<0.20	<0.20
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	57.8	59.1	56.5
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.5	<4.6	<4.4
Conductivity	µmhos/cm	1031	1160	889

TABLE B-9
PALMDALE WATER RECLAMATION PLANT
RECYCLED WATER QUALITY, FY 2011-12

Constituent	Units	Mean	Maximum	Minimum
pH		7.5	7.9	7.0
Turbidity	NTU	0.84	1.50	0.48
Total Coliform	org./100 ml	<1	1	<1
Temperature	deg. F	68.7	77.7	62.1
Total Dissolved Solids	mg/L	448	473	422
Total COD	mg/L	<28.2	35.6	<25
Total Organic Carbon	mg/L	5.87	6.17	5.56
Ammonia Nitrogen	mg/L	6.75	15.9	1.58
Nitrate Nitrogen	mg/L	2.35	3.83	0.599
Nitrite Nitrogen	mg/L	0.257	0.679	0.058
Chloride	mg/L	135	135	135
Sulfate	mg/L	73.9	78.0	69.8
Calcium	mg/L	33.8	35.1	32.5
Magnesium	mg/L	9.9	10.4	9.4
Antimony *	µg/L	0.32	0.37	0.26
Arsenic *	µg/L	0.52	0.56	0.48
Beryllium *	µg/L	<0.25	<0.25	<0.25
Cadmium *	µg/L	0.029	0.030	0.028
Total Chromium *	µg/L	0.92	1.19	0.65
Copper *	µg/L	13.4	15.6	11.1
Lead *	µg/L	0.20	0.22	0.19
Mercury *	µg/L	0.01	0.02	0.01
Nickel *	µg/L	2.69	2.90	2.47
Selenium *	µg/L	0.44	0.46	0.43
Silver *	µg/L	0.16	0.22	0.11
Sodium	mg/L	116	117	116
Thallium *	µg/L	<0.25	<0.25	<0.25
Zinc *	µg/L	71.4	81.0	61.8
Detergents (MBAS)	mg/L	<0.14	0.17	<0.10

* Secondary effluent

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 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 Lane and 2nd 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 Recreation Park and Golf Course, at a cost of $50,000.

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. 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.

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 11th 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 6th 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.

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 45th Street where it reduces to 12-inches. The 12-inch line continues westerly along 45th Street, then north on Falcon Avenue, then southwest on San Antonio Drive, then northwest on East Goldfield Avenue, then southwest on 45th Way, then north on California Avenue, then west on 46th Street to its terminus at the Virginia Country Club.

The North Long Beach extension of Phase 5 was completed at the beginning of 1992 at a total cost of $627,000. 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 south to Marshall Place where it turns west and runs along Marshall Place to a T-section at Gaviota Avenue. This line turns south again from the T-section and runs along Gaviota Avenue to Wardlow Road. The line turns west again and runs 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 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 33rd 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 west to Walnut Avenue where it terminates in a T-section. From this point, the 6-inch line continues north another 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 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 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 33rd Street, a 6-inch DIP branches off and runs 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 and terminates in a 4-inch service to Reservoir Park.

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 along Spring Street. This line reduces to a 4-inch DIP which runs 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. 21, 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, then west along 20th Street to a T-section at Redondo Avenue. The north side of this T-section on Redondo Avenue serves a 24-inch line which was constructed in 2000 as Phase 1B. A 24-inch DIP continues westerly along 20th Street for 939 feet to a T-section at Obispo Lane. The line turns south on Obispo Lane, where it terminates in a new T-section installed in the existing 21-inch recycled water line on 11th Street. Along Obispo Lane, a 6-inch DIP branches off and runs east along 14th 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 166th 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 166th Street and Studebaker Road, then continues east along 166th Street through the City of Norwalk. This line branches into two 16-inch lines at the intersection of 166th Street 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 Boulevard to Bloomfield Avenue before it continues south. At Bloomfield Avenue and 183rd 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 Avenue and 183rd Street, 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 Boulevard and 166th Street 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 Avenue, 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 166th Street 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 166th reduces to 10-inches and turns south on Carmenita Road, 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 Road reaches 183rd, 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 183rd, a 10-inch line runs west on 183rd Street, 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 Avenue and 183rd Street, 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 183rd Street, 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 195th 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 the City of Lakewood.

At Norwalk Boulevard, the 20-inch line reduces to 16-inches and continues east to Bloomfield Avenue, 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 Avenue. 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 Avenue and 183rd Street.

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 to a T-section at Woodruff Avenue. From this T-section, a 10-inch PVC line continues west along South Street, 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 until it reaches Woodruff Avenue. At Woodruff Avenue, the 6-inch line heads north along Woodruff Avenue. 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 Avenue. 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 Avenue and runs south along Woodruff Avenue, terminating in a T-section at Centralia Street. A 6-inch PVC line branches from the T-section at Centralia Street and runs west along Centralia Street 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 Jose 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 Road. The 4-inch line runs west along Arbor Road, 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 Jose 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 Avenue), 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 Avenue 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 Street and crosses over the Los Cerritos Channel. This 4-inch line serves the west side of Mayfair Park. From the T-section at Bigelow Street, 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 Boulevard, a 4-inch PVC line branches from the 10-inch line on the east side of the San Gabriel River. The line runs 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 south, then turns west through the city yard, then south to Monte Verde Park.

- From the T-section at Mae Boyer Park, 4-inch lines run 85 feet under Del Amo Boulevard 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 Boulevard.

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 to Florence Avenue, then easterly to Fairview Avenue, where it runs to Dollison Drive. The line then follows Dollison Drive southeasterly to Buell Street, where it crosses under the Santa Ana (5) Freeway to Orr & Day Road. The line runs north on Orr & Day back to Florence Avenue, then easterly 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 to Compton Boulevard, where it continues westerly to its terminus at Bellflower High School. A 6-inch PVC line branches off this line at McNab Avenue and runs northerly.

- At a point just north of Columbus High School, another 8-inch PVC line branches off the 30-inch line and runs westerly through an easement to Woodruff Avenue, where it turns south and runs to Everest Street. This line runs westerly to Benedict Avenue, then 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 through the Rio San Gabriel Park parking lot to Newville Avenue, where it turns north and runs northerly to La Villa Street. The line then runs westerly to Pangborn Avenue, where it turns north and runs to Buell Street. The line runs westerly 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 to its terminus at Little Lake Park and School.

- At the end of the 24-inch line at Florence Avenue and Jersey Avenue, an 8-inch PVC line runs north on along an easement to Jersey Avenue, then to Joslin Avenue. This line then runs westerly along Joslin Avenue and easterly 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 Boulevard to its termination point at 5th Avenue. Three smaller lines branch off of this 12-inch line:

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

- At Stewart & Gray Road, an 8-inch line runs east to a T-section at Bellflower Boulevard, then easterly to its termination at a point just east of Coldbrook Avenue.

- At Clark Avenue, an 8-inch line runs south along Clark to a newly constructed portion of Congressman

Steve Horn Way, where it turns east and continues to Bellflower Boulevard. There is a T-section at Steve Horn Way and Bellflower Boulevard where two more 8-inch lines branch off. The first line runs north along Bellflower Boulevard 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 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 Avenue and Jersey Avenue, the Phase II 24-inch line continues east to Bloomfield Avenue, where it terminates in a 4-way X-section. From this point, the 24-inch line runs southerly to Lakeland Road, then easterly to Greenstone Avenue, where it terminates in a T-section. At this point, a 16-inch PVC pipe branches off and runs southerly to Sunshine Avenue, then easterly for to Shoemaker Avenue, then southerly to Leffingwell Avenue where the line jogs to the west into an easement parallel to Shoemaker Avenue. The 16-inch line then continues southerly to a point just south of the AT&SF railroad right-of-way where Shoemaker Avenue begins again. The line continues southerly along Shoemaker Avenue until it reaches Firestone Boulevard where the line turns southeasterly and runs to Excelsior Drive. At this point, the line continues east along Excelsior Drive until the dead-end at Marquardt Avenue. The 16-inch line then follows a storm drain easement easterly, 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, then runs easterly to its terminus at Bona Vista Avenue. At this point, an 8-inch PVC line branches off south along Bona Vista Avenue 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 to Lakeland Road, where it turns west and runs 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 north to Mapledale Street, where it turns easterly and runs 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 Avenue to its terminus.

- At the four-way cross-section at Florence Avenue and Bloomfield Avenue, an 8-inch PVC line branches off the 24-inch line and runs south along Bloomfield Avenue 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 south to Leffingwell Road where it terminates. The 12-inch line on Foster Road continues east to a T-section at McRae Avenue. From this point, one branch of the Tee, a 6-inch PVC line, runs northerly along McRae Avenue until it terminates at Ratliffe Street. From the T-section at Foster Road and McRae Avenue, a 12-inch steel line runs southerly to Leffingwell Road, then east to Gard Avenue where a T-section was installed. The 6-inch line on Leffingwell Road continues east until it terminates just east of Maidstone Avenue. From the T-section at Leffingwell Road and Gard Avenue, a 6-inch PVC line runs southerly along Gard Avenue to Taddy Street where it turns west and runs to Harvest Avenue where it turns south. The 6-inch line runs along Harvest Avenue 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 Street to Graystone Avenue where it turns south and runs to its terminus at Sibley Street. Also, from the Tee at Harvest Avenue and Mapledale Street, another 6-inch line runs easterly to Jersey Avenue. This line turns south and runs 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 Road and runs westerly along this road, which forms the boundary between the cities of Downey and Bellflower. This line runs to Lakewood Boulevard where it turns north and reduces to 8 inches. The 8-inch line runs along Lakewood Boulevard 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 Road and Bellflower Boulevard and runs southerly 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 Boulevard and Foster Road and runs northerly 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 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. 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 to Cortland Avenue, where it runs west to Orange Avenue. The line then runs north on Orange Avenue to Century Boulevard where a T-section was installed. From this point, the 24-inch line runs westerly along Century Boulevard 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 Boulevard, the line reduces to a 16-inch pipe that runs northeasterly back to the SCE right-of-way, where the line runs northerly then northeasterly to Rio Hondo Drive. The 16-inch line continues northeast along this street to the end of the cul-de-sac. At this point, the line crosses over to the Rio Hondo channel and continues northeast 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 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 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 to the west side of the SCE right-of-way. The 6-inch line continues southerly 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 to Gundry Avenue, where it turns north and runs 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 to San Antonio Avenue where another T-section was installed. The 8-inch line continues southerly along San Antonio Avenue to Somerset Boulevard, where the line turns westerly and runs to its terminus at the Los Angeles River.

- From the T-section at San Luis Street and San Antonio Avenue, a 4-inch PVC line runs westerly along San Luis Street to its terminus at Banana Park. A 6-inch PVC line branches off the 8-inch line on San Luis Street at San Jose Avenue (east of San Antonio Avenue) and runs southerly to Mark Keppel Street where it terminates in a T-section. From this point, a 6-inch line runs the west and 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 to Pernell Avenue. The 6-inch line turns south and runs to Cole Street, where it turns east back to Pernell Avenue. The line turns south and runs to the Los Amigos Country Club, where the line runs easterly 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 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 dieccentric reducer was installed to allow for a 16-inch line to be connected. The 16-inch line then runs north through the park to Scout Avenue, where it turns east. The line continues along Scout, which changes to Park Lane, 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 along Martin Luther King Jr. Boulevard 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 along Wright Road to Duncan Avenue, where both Wright Road and the 12-inch line turn north. This line runs to Atlantic Avenue, where the line turns northeast and runs to a T-section at Tweedy Boulevard, then west to its terminus.

The south section begins with an 8-inch line from the T-section at Wright Road and Martin Luther King Jr. Boulevard and runs south along Wright Road to McMillan Street. At this point, the line turns west and runs to Gibson Avenue, where it turns south and runs for 1,039 feet to a T-section a San Rafael Street. From this point, the line reduces to a 6-inch pipe and runs easterly along San Rafael Street 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 Road. An 8-inch PVC line runs westerly 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 Boulevard 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 hydropnuematic 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 Drive 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 Drive and Grand Avenue 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 Road 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 Boulevard and Pierre Avenue. This line runs north on Pierre Avenue to Puente Avenue, where it reduces to a 6-inch PVC line. The 6-inch line continues east on Puente Avenue, 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 Boulevard 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 Avenue 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 Road to its termination just east of Scherer Avenue.

- At the point where the 20-inch main line turns south off of Valley Boulevard and onto Fairway Drive, a 12-inch PVC line branches off and continues west along Valley Boulevard 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 Boulevard 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 Boulevard 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 Boulevard and Trafalgar Avenue, 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 Drive, 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 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 Road and Otterbein Avenue. The first line runs north to Addis Street, while the second runs south along Otterbein Avenue, 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 Street. 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 along Batson Avenue from Farjardo Street.

- A second 12-inch PVC line branches off the main transmission line along Fairway Drive, running east along Colima Road to Lemon Avenue, where a 6-inch PVC line branches off and runs north to serve several users. The 12-inch line continues east along Colima Road to Grand Avenue, where it turns north to a meter at the Diamond Bar Golf Course. The 12-inch line continues north along Grand Avenue, where it reconnects to the 20-inch main line on Valley Boulevard. 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 Drive, running east along Business Parkway and Currier Road, and terminating on Currier Road 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 Road. The 8-inch line also runs east on Spanish Lane, then north on Cheryl Lane and Brea Canyon Road to its terminus at the WVWD 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 WVWD office was extended north to Old Ranch Road. From this point, the line turns east and runs to a frontage road along the Union Pacific Railroad, where it turns and runs north to its terminus at Grand Avenue 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 Drive, with the new line running 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 to Brea Canyon Road. The line continues southerly 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 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 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 Boulevard, the 24-inch line expands back to 30-inches, then runs southwest to a point where it is jacked under Beverly Boulevard in a 42-inch steel casing. This portion of the pipeline construction connects to the Whittier Unit on the south side of Beverly Boulevard.

Whittier Unit: The construction for this schedule began where the Whittier Connector Unit ended on Pioneer Boulevard just south of Beverly Boulevard. From this point, the 30-inch line continues southwest along Pioneer Boulevard to Orange Grove Avenue, where it turns southeast. The line continues along Orange Grove Avenue to Norwalk Boulevard, where it turns southwest and runs to El Rancho Drive. At this point, the line turns southeast and runs along El Rancho Drive to a T-section at Broadway Road. From this T-section, an 18-inch line runs east along Broadway Road 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 Drive and Broadway Road, a 16-inch cement mortar-lined and coated steel pipeline continues southwesterly along Broadway Road to Norwalk Boulevard. Along the way, the line was jacked underneath Washington Boulevard. At Norwalk Boulevard, the 16-inch line turns south and runs 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 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 to Beverly Boulevard. 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 along Tobias Avenue 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 Boulevard 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 on Norwalk Boulevard, 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 Boulevard and Burke Street, with a 12-inch line branching off and running east 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 Road to a T-section, then east through an alley to a T-section on Sorenson Avenue, where the line reduces to 6-inches and continues south to a T-section at Santa Fe Springs Road, then southwest to a T-section at Los Nietos Road. The south portion also begins at the T-section at Burke Street and Dice Road and consists of a 12-inch line running south to Los Nietos Road, then 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 Roads (the street name changes to Bloomfield Avenue at Telegraph Road), the 12-inch line continues southwest 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 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 Appendix F. 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 along Atlantic Avenue to a T-section at Ardine Street, where a 10-inch line runs west to Quartz Avenue, then south to its terminus at Independence Avenue.

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

From the T-section at Otis Avenue and Randolph Street, a short section of 6-inch line runs east where a blind-flange was installed to allow for future construction. The 18-inch line continues west along Randolph Street to its terminus at Boyle Avenue. Along Randolph Street, an 8-inch line branches off at Newell Street and runs south 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 three 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, located at the 650,000 gallon reservoir, 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. The third pump station, located at the Rose Hills storage tank, lifts 2,200 gpm of recycled water through 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.

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. In 2001, construction of the expansion to serve the eastern portions of the landfill and the upper areas of the ever-expanding cemetery was completed.

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 northwest to the southern edge of the SCE easement, then north through the easement. 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 through an archery range and a second SCE easement to a point approximately 33 feet north of the easement where it ends in a T-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, then northwesterly, then due west again, then northwesterly until it reaches the eastern bank of the Rio Hondo. The 24-inch pipeline then follows the bike path northward along the eastern edge of the river until it passes under the Pomona (60) Freeway right-of-way. Under the freeway, the pipeline is encased in a 36-inch welded steel casing. Just north of the freeway, the 24-inch pipeline turns east and runs parallel to the freeway to Loma Avenue.

Along Loma Avenue, the 24-inch pipeline runs north where it reduces to an 18-inch Class 250 DIP. Along this run, three T-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 Avenue where it terminates with an 18-inch butterfly valve and a blind-flange for future extension. Three more T-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 Avenue on the west and Rosemead Boulevard on the east) and Area "B" (located east of Rosemead Boulevard), a 12-inch Class 350 DIP was installed. On the south side of the Rosemead Boulevard entrance to Area "A", 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 northeast to the north side of the park entrance where it was jacked under Rosemead Boulevard and encased in 18-inch welded steel casing. From the west side of Rosemead Boulevard, the 12-inch pipeline runs due east 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 T-section at Junction 1, the east branch reduces to a 16-inch Class 250 DIP through a butterfly valve, running due east to a T-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 where a second T-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 where a third T-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 to the west side of Rosemead Boulevard at the southern entrance to the Whittier Narrows Recreation Area, south of the 60 Freeway. At this point, the 16-inch pipeline was jacked under the street and encased in 24-inch welded steel casing.

From the east side of Rosemead Boulevard, the 16-inch pipeline continues due east into Area "D" of the Whittier Narrows Recreation Area where a fourth T-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 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 24-inch welded steel casing. From this point, the 16-inch pipeline continues due east where it turns southeast and runs to a T-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, where it terminates in a fifth T-section with a 6-inch stub-out and gate valve for a future extension.

Back at Junction 2 at the Santa Anita Avenue/Lexington Gallatin Road intersection, an 8-inch reducer and gate valve is connected to the T-section, and an 8-inch, Class 350 DIP pipeline runs. This pipeline then turns southeast. The pipeline then runs due east where it terminates at Andrews Street in a T-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.

For the Rosemead Extension, 3,633 feet of 12-inch line runs west from the Golf Course along Garvey Avenue between River Avenue and Earle Avenue, with two, short 6-inch laterals running north on Willard Avenue and Earle Avenue (761 and 822 feet, respectively). A 6,393 foot, 8-inch line tees off of the 12-inch line on Garvey and runs south on Walnut Grove Avenue to a point just north of Cameta Drive. From this 8-inch line, a 180 foot, 4-inch lateral branches off to the west at Gravalia Avenue, a 1,440 foot, 6-inch lateral branches off to the east on Klingerman Street, and a 1,258 foot, 6-inch line branches off to the west on Rush Street.

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 60th 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 90th Street East to Avenue G, then east again to its terminus halfway between 90th and 100th Streets. The second line runs south on 60th Street East then east on East Avenue F to 90th Street East where it reconnects with the first line.

Twenty-Second Annual Status Report on Recycled Water

Fiscal Year 2010-2011

Sanitation Districts of Los Angeles County

Twenty-Second
ANNUAL STATUS REPORT

ON

RECYCLED WATER USE

Fiscal Year 2010-11

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PREFACE

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 continue developing 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 various aspects of the Sanitation Districts' water reuse program, this fiscal year report has been prepared for distribution to interested parties. This report is the twenty-second of its kind and includes: historic recycled water use activities, descriptions of plant operations, 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 Whittier Narrows Recreation Area 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 and all of the individual effluent quality tables.

A "Facts-at-a-Glance" summary page containing a brief list of data regarding the Sanitation Districts' water recycling program for the fiscal year appears before Chapter 1.

If you would like additional copies of this report (paper or electronic), 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@lacsd.org*. Further information regarding the Sanitation Districts and its water recycling activities can be found at the Sanitation Districts' website at *http://www.lacsd.org/waterreuse/*.

Cover Photo: Rose Hills Memorial Park is the largest such facility in North America. Beginning in 1998, recycled water from the San Jose Creek Water Reclamation Plant began being delivered for irrigation, first to the upper area from the distribution system serving the Sanitation Districts' Puente Hills Landfill (background), then to the lower area via the Upper San Gabriel Valley Municipal Water District's extension to the Central Basin Municipal Water District's Rio Hondo distribution system. Currently, over 900 acre-feet per year are used on nearly 600 acres of cemetery, consistently making Rose Hills one of the Sanitation Districts' ten largest reuse sites.

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FY 10-11 FACTS-AT-A-GLANCE

SANITATION DISTRICTS

Total Effluent Produced: 442.43 MGD (495,766 AFY), 0.2% decrease
Total Recycled Water Produced: 163.92 MGD (183,678 AFY), 64.8% of capacity, 37.0% of the total produced, 0.6% increase
Total Recycled Water Used: 76.25 MGD (85,448 AFY), 46.5% of recycled water produced, 12.1% decrease, 649 sites (26 new sites added, 2 sites disconnected)

Groundwater replenishment (4) -	40.52 MGD (45,401 AFY)	52.4% of total reuse	19.2% decrease
Landscape irrigation (602) -	13.66 MGD (15,306 AFY)	18.2% of total reuse	0.4% decrease
Agriculture (11) -	12.13 MGD (13,591 AFY)	16.1% of total reuse	8.1% decrease
Industrial (20) -	2.79 MGD (3,131 AFY)	3.7% of total reuse	1.1% decrease
Environmental (1) -	7.15 MGD (8,012 AFY)	9.5% of total reuse	4.1% increase

Total Reuse Since Inception: 2,497,638 AF (813.6 billion gallons)

Transmission lines: 1,360,790 linear feet (258 miles)

Acreage Served: 14,387 acres (direct non-potable use)

Jurisdictions Served: 31 (30 cities plus Los Angeles County Unincorporated Areas)

Recycled Water Purveyors: 30

Recycled Water Contracts: 24

Chemical Savings[1]: $128,000

Greenhouse Gas Reduction[2]: 192,260 tons of carbon dioxide

Capacity of Future Planned Reuse Projects: 77,220 AFY (68.91 MGD)

JOINT OUTFALL SYSTEM

Total Effluent Produced: 402.46 MGD (450,980 AFY), 0.6% decrease
Total Recycled Water Produced: 123.95 MGD (138,891 AFY), 30.8% of the total produced, 0.1% decrease
Total Recycled Water Used: 56.97 MGD (63,842 AFY), 46.0% of recycled water produced, 15.3% decrease

SANTA CLARITA

Total Recycled Water Produced: 19.96 MGD (22,365 AFY), 1.8% decrease
Total Recycled Water Used: 0.300 MGD (337 AFY), 1.5% of recycled water produced, 9.4% decrease

ANTELOPE VALLEY

Total Wastewater Treated: 23.10 MGD, 1.7% decrease
Total Recycled Water Produced: 20.01 MGD (22,422 AFY), 3.5% increase
Total Recycled Water Used: 18.98 MGD (21,270 AFY), 94.9% of recycled water produced, 1.1% decrease

---

1 Recycled water delivered to the various distribution systems is not dosed with either sulfur dioxide or sodium bisulfate for dechlorination or with defoamant.

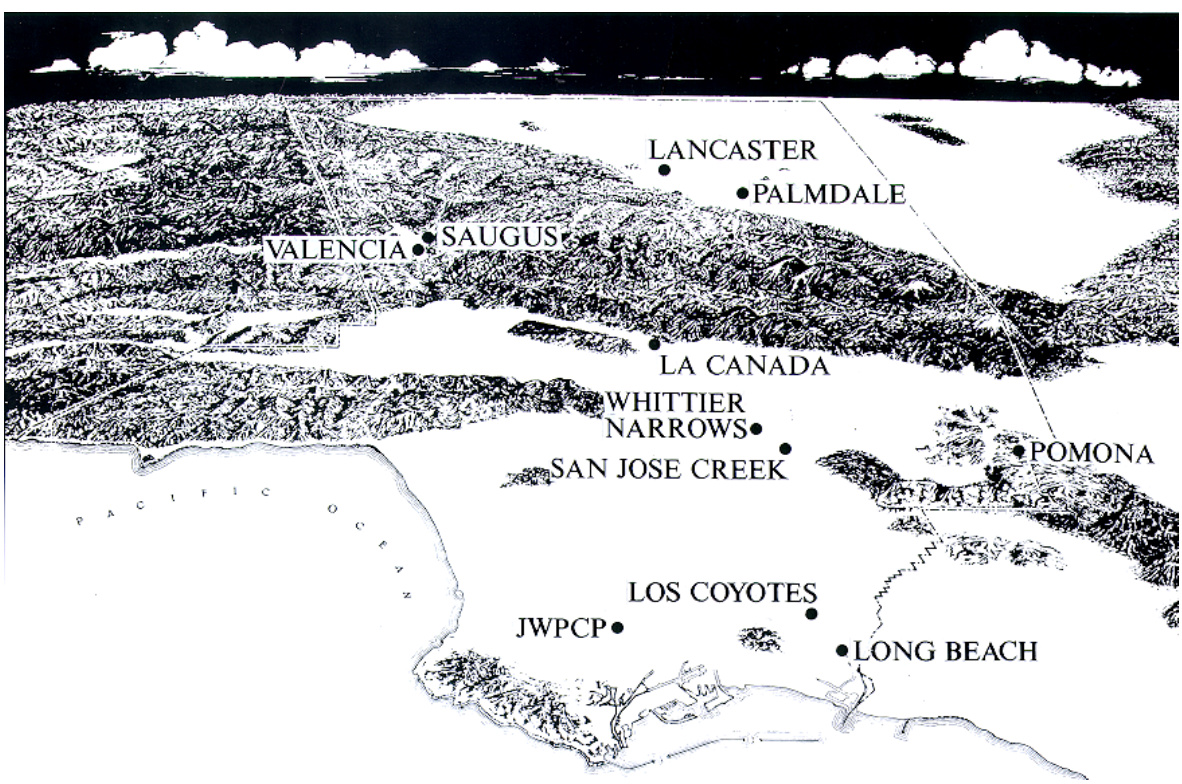
2 The use of locally produced recycled water eliminates the need to pump State Project water into the Los Angeles Basin at an energy cost of approximately 3,000 kWh/AF with the attendant CO_2 production.

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 quality recycled water to filtered, disinfected tertiary quality recycled water. During Fiscal Year 2010-11 (FY 10-11), Sanitation Districts' facilities produced an average of 442.43 million gallons per day (MGD), or 495,766 acre-feet per year (AFY) of effluent, which is a decrease of 0.2% from the preceding fiscal year, and a 17.4% 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 continued decreasing despite population growth in the Sanitation Districts' service area. The 14.5% decrease in effluent production since FY 04-05 is a result of a downturn in local economic activity combined with increasing water conservation efforts (low flow toilets, waterless urinals, water efficient washing machines, etc.) due to a three-year statewide drought (2006-09). Effluent production at Sanitation Districts' facilities is currently at levels last seen in the late 1970s.

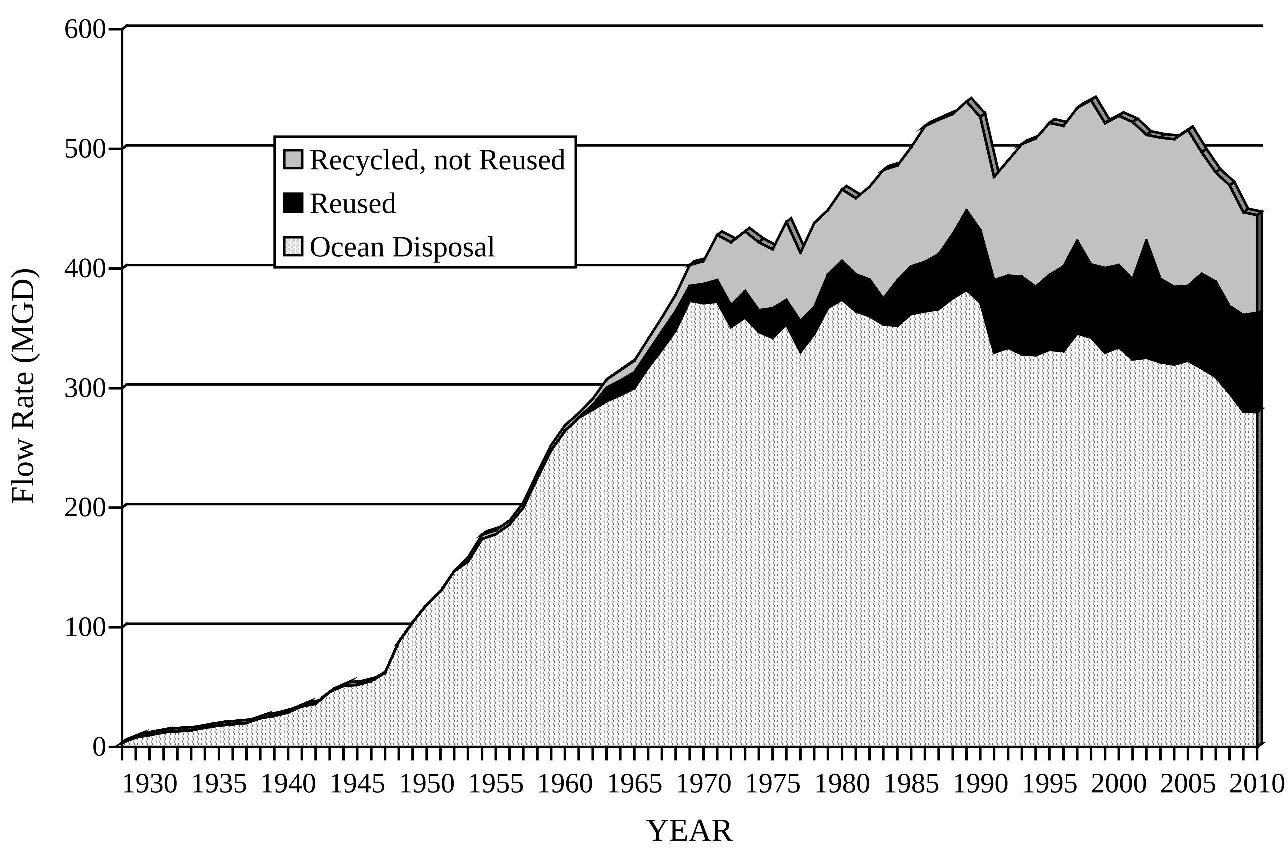
FIGURE 1
LOCATION OF SANITATION DISTRICTS' WASTEWATER TREATMENT FACILITIES



Capacity at the ten Sanitation Districts' WRPs is 252.8 MGD (283,285 AFY) as of the end of FY10-11. However, of the total effluent produced, only 163.92 MGD (183,678 AFY) consisted of recycled water available for reuse from these 10 facilities (64.8% of capacity). This amount is 37.0% of the total amount of effluent produced, and an increase of 0.6% over the preceding fiscal year. The remaining 278.51 MGD (312,089 AFY) was effluent discharged to the ocean from the Sanitation Districts' Joint Water Pollution Control Plant (JWPCP) in the City of Carson, a 0.7% decrease from the preceding fiscal year.

For the past half century, the Sanitation Districts have diverted high quality wastewater flows away from direct ocean disposal to the upstream WRPs in order to provide recycled water supplies for eventual reuse, as illustrated in Figure 2 (data through the end of calendar year 2010). 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 combined 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 actually 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
1928-2010



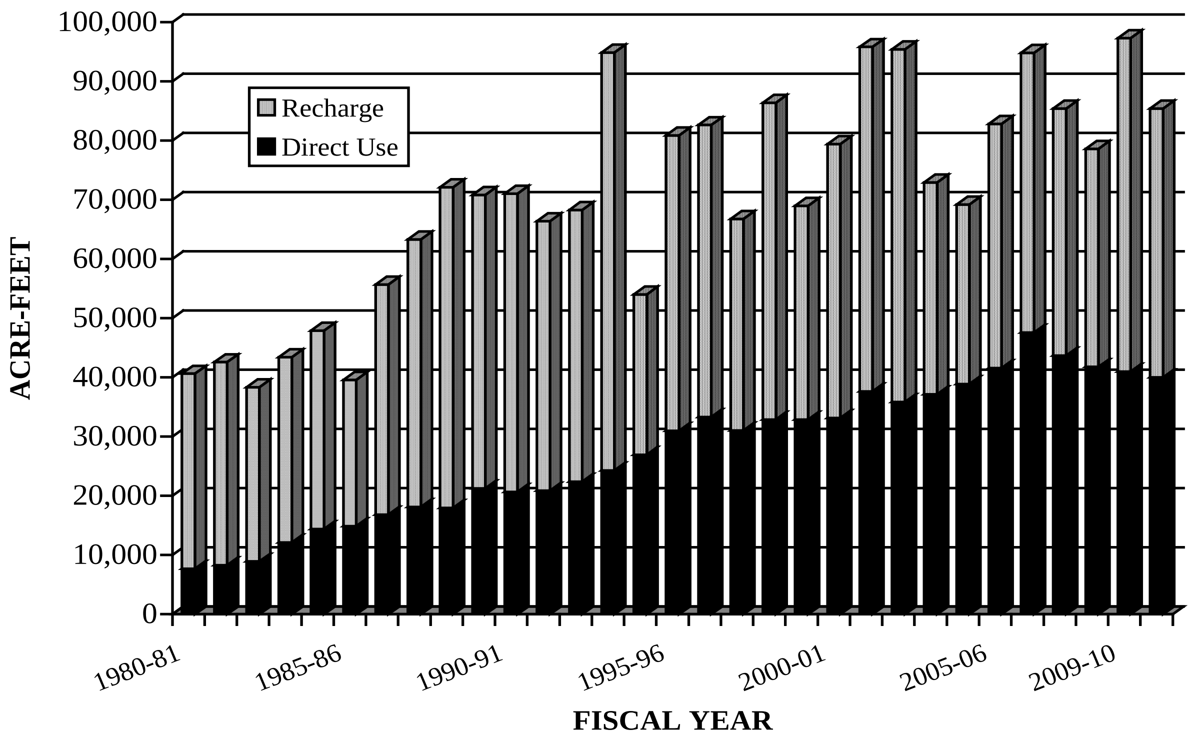
Of the total amount of recycled water produced, 76.256 MGD (85,448 AFY) was actively reused for a variety of applications including urban landscape irrigation, agricultural irrigation, industrial process water, recreational impoundments, wildlife habitat maintenance, and groundwater replenishment. The 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 46.5% of the recycled water produced, a 12.1% decrease from the preceding fiscal year, which had seen higher than normal reuse volumes. During FY 10-11, 23 new landscape irrigation and three non-irrigation reuse sites began receiving Sanitation Districts' recycled water.

TABLE 1
RECYCLED WATER PRODUCED AND REUSED AT WATER RECLAMATION PLANTS
FISCAL YEAR 2010-11

Water Reclamation Plant	Nominal Treatment Capacity (AFY)	Quantity Recycled (AFY)	Percent Change from FY 09-10 (+/-)	Quantity Reused (AFY)	Percent Change from FY 09-10 (+/-)	Percent of Recycled Water Used
La Cañada	225	106	-0.9	106	-0.9	100
Long Beach	28,015	21,052	+2.7	6,428	-1.9	30.5
Los Coyotes	42,020	23,388	-13.6	5,617	-4.1	24.0
Pomona	16,810	10,089	+7.4	7,620	-7.5	75.6
San Jose Creek	112,055	75,555	-1.7	35,740	-27.5	47.3
Whittier Narrows	16,810	8,701	+64.1	8,330	+57.1	95.7
Valencia	24,205	16,749	-3.9	337	-9.4	2.0
Saugus	7,285	5,616	+5.0	0	0	0
Lancaster	19,050	13,323	+2.0	13,277	+1.6	99.7
Palmdale	16,810	9,099	+6.5	7,993	-5.2	87.8
TOTAL	283,285	183,678	+0.05	85,448	-12.1	46.5

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, non-potable 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, non-potable reuse through FY 10-11.

FIGURE 3
DIRECT NON-POTABLE REUSE VS. GROUNDWATER RECHARGE
1980-81 TO 2010-11



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 649 reuse sites on approximately 14,387 acres, utilizing approximately 1,360,790 linear feet (about 258 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- 2011.

Cities with Sites Using Sanitation Districts' Recycled Water

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

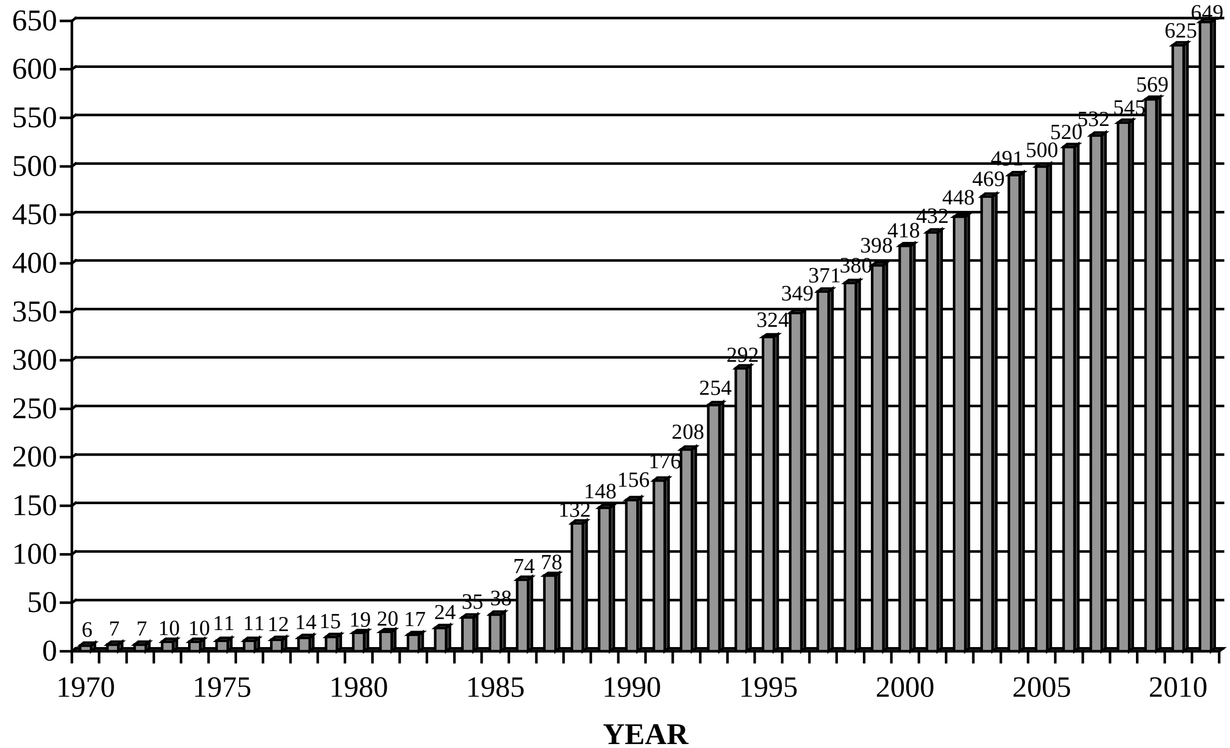
Note: Recycled water is also used in areas of Unincorporated Los Angeles County

Table 2
Recycled Water Used by Water Recycling Project
Fiscal Year 2010-11

Project Name	Pipeline Length (linear feet)	Recycled Water Used (AFY)	Percent Change from FY 09-10 (+/-)	No. of New Reuse Sites
La Cañada-Flintridge Country Club		106	-0.9	
Long Beach Water Department	176,630	4,056	-5.1	2
Alamitos Seawater Barrier		2,372	+4.1	
City of Bellflower	1,900	42	-19.2	
City of Cerritos	142,600	1,823	-2.6	
City of Lakewood	28,300	443	-0.2	
Central Basin MWD (Century)	292,500	3,309	-5.1	2
Pomona Water Department	37,000	1,347	-28.3	
Spadra Landfill		350	-9.1	
Walnut Valley Water District	166,320	1,168	-5.6	2
Water Replenishment District		43,029	-41.8	
City of Industry	44,350	957	-18.9	
Rowland Water District	97,680	75	+8.7	18
California Country Club		423	-10.2	
LA Sanchez Nursery		12	0	
Central Basin MWD (Rio Hondo)	138,900	227	+8.6	
Puente Hills/Rose Hills	8,900	2,109	-6.2	
USGVMWD Rio Hondo Extension	11,020	544	-12.4	
F.L. Norman's Nursery[1]		17	-29.2	
Whittier Narrows Recreation Area	18,900	1,432	+149.0	
Castaic Lake Water Agency	16,490	337	-9.4	1
Piute Pond		8,012	+4.1	
Nebeker Ranch	15,900	4,111	-1.9	
Apollo Community Regional Park	23,800	206	+5.1	
Eastern Agricultural Site	96,600	947	-3.2	
City of Lancaster	29,800	1	-90.0	1
Los Angeles World Airports Lease	13,200	7,993	-5.2	
TOTALS	1,360,790	85,448	-12.1	26

1. Site ceased operations in April 2011.

FIGURE 4
INCREASE IN NUMBER OF REUSE SITES
1970-2011



During FY 10-11, 34.156 MGD (38,274 AFY) was used for groundwater replenishment from the San Jose Creek and Whittier Narrows WRPs. Approximately 1,534,463 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 10-11. Another 4.244 MGD (4,755 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, because 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 requires 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 10-11, as the Alamitos Seawater Intrusion Barrier received 2.116 MGD (2,372 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. Due to operational limitations, the full capacity of the Leo Vander Lans advanced treatment plant that supplies the Alamitos Barrier is still not being realized.

During FY 10-11, the total of 40.516 MGD (45,401 AFY) that went to groundwater replenishment was a 19.2% decrease from the preceding fiscal year. Of the total amount of water reused during FY 10-11, 52.4% went for groundwater replenishment, which is only the second time in the past seven years that this reuse application has made up more than half of total reuse. Concerns over the potential for a fish kill 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 had previously 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 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 diverted for recharge. The small amount of effluent being discharged to the lined portion of the San Gabriel River is sufficient 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 602 of the individual reuse sites used recycled water for some form of landscape irrigation, and approximately 13.659 MGD (15,306 AFY), or 18.2% of the total water reused, went toward this application. These sites include 104 parks, 101 schools, 195 commercial and office buildings (e.g., offices, warehouses, retail, car dealerships, hotels, restaurants, etc.), 107 roadway greenbelts, 27 public facilities (e.g., police station, post office, libraries, landfills, etc.), 23 golf courses, 21 nurseries, 17 residential developments, 11 churches, and 7 cemeteries.

- Agricultural usage at 11 reuse sites accounted for approximately 12.129 MGD (13,591 AFY), or 16.1% of the total reused.

- Twenty-one industrial applications of recycled water (which include carpet dyeing, oil field injection, power plant cooling towers, metal finishing, street sweeping, sewer flushing, and construction applications such as dust control and concrete mixing) totaled 2.794 MGD (3,131 AFY), or 3.7% of the total reused.

- Approximately, 7.150 MGD (8,012 AFY), or 9.5% of the total reused, went to environmental enhancement of a wildlife habitat (Piute Ponds) in the Mojave Desert.

TOP TEN – LARGEST DIRECT REUSE SITES OF 2010-11*

1. **Antelope Valley Farms** **7,887 AFY**
   Palmdale WRP *(agricultural irrigation of alfalfa)*
2. **Nebeker Ranch** **4,111 AFY**
   Lancaster WRP *(agricultural irrigation of alfalfa)*
3. **Alamitos Intrusion Barrier** **2, 372 AFY**
   Long Beach WRP *(seawater barrier injection)*
4. **THUMS** **1,160 AFY**
   Long Beach WRP *(oil zone repressurization)*
5. **Puente Hills Landfill** **1,005 AFY**
   San Jose Creek WRP *(irrigation & dust control)*
6. **Industry Hills Recreation Area** **957 AFY**
   San Jose Creek WRP *(landscape irrigation)*
7. **Eastern Agricultural Site** **947 AFY**
   Lancaster WRP *(agricultural irrigation of alfalfa)*
8. **Rose Hills Memorial Park** **910 AFY**
   San Jose Creek WRP *(landscape irrigation)*
9. **Whittier Narrows Recreation Area** **798 AFY**
   Whittier Narrows WRP *(landscape irrigation)*
10. **Bonelli County Regional Park** **740 AFY**
    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.

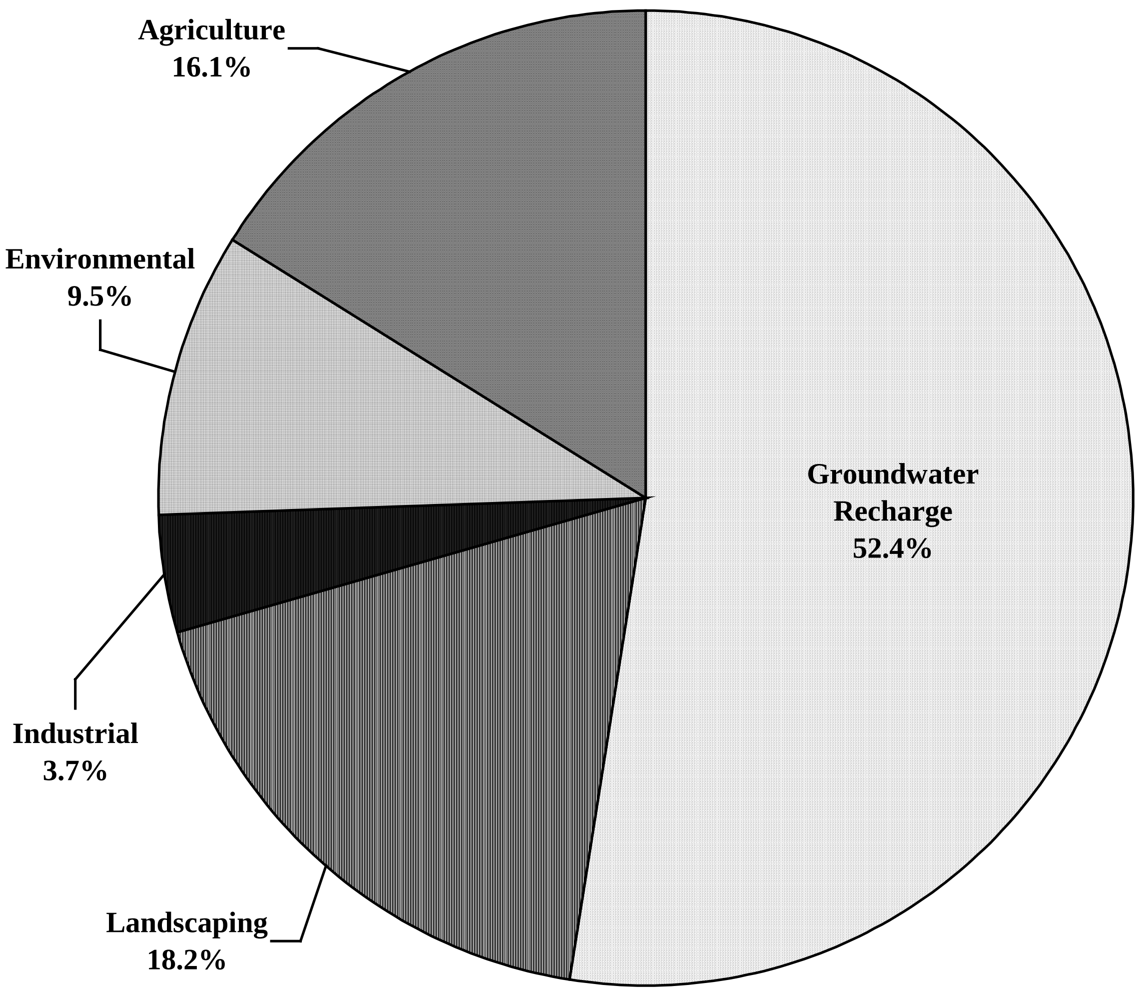
TABLE 3
CATEGORIES OF RECYCLED WATER USAGE
FISCAL YEAR 2010-11

Reuse Application	No. of Sites	Area Applied (acres)	Usage (MGD)
Parks	104	3,458.9	3.770
Golf Courses	23	2,665.8	3.999
Schools	101	1,203.7	1.548
Roadway Greenbelts	107	640.8	0.907
Public Facilities[1]	27	494.0	1.100
Commercial Buildings[2]	195	426.4	0.896
Nurseries	21	134.5	0.130
Cemeteries	7	701.4	1.037
Residential Developments	17	114.3	0.236
Churches	11	12.5	0.036
Industrial[3]	21	157.5	2.794
Agriculture[4]	10	3,977.0	12.129
Environmental Enhancement	1	400	7.150
SUBTOTAL	645	14,386.8	35.732
Groundwater Recharge	4	646	40.516
TOTAL	649	15,032.8	76.248

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 Alamitos 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 2010-11



1.3 ECONOMIC AND ENVIRONMENTAL IMPACTS

At the end of FY 10-11, the Sanitation Districts had 24 contracts (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 $128,000 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).

Table 4 compares selected potable water rates and recycled water rates (in effect as of the end of FY 10-11), 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 2010-11

Purveyor	Potable Water ($/AF)	Recycled Water ($/AF)	Discount (%)
Long Beach Water Department	1,062.43	531.43 – 744.00	30 – 50
City of Cerritos	614.20	326.70	47
City of Lakewood	945.25	444.31	53
Central Basin MWD	805.00 – 915.00	283.00 – 506.00	31 – 63
Pomona Water Department	962.68	521.67	46
Walnut Valley Water District	1,019.30	649.04	36
Rowland Water District	1,010.59	635.98	37
San Gabriel Valley Water Co.	899.95	220.00 – 771.62	14 – 76
Valencia Water Company	609.40	511.83	16

To put things into perspective, the 85,448 AF of water reused in FY 10-11 is equivalent to the water supply for a population of 427,240, between the cities of Virginia Beach, VA and Atlanta, GA, the 39th and 40th largest cities in the U.S.[3] 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.[4] Thus, approximately 256.3 million kWh of electricity were conserved in FY 10-11, which is equivalent to the annual output of a 29.3-megawatt power plant consuming nearly 140,000 barrels of oil. At $0.15/kWh (based on Southern California Edison residential billing rate), this equates to an annual savings of approximately $38.5 million in electricity. At $94.94/barrel,[5] this equates to an annual savings of approximately $13.2 million in oil.

The conservation of fossil fuels and energy also resulted in significant reductions in potential air pollutants. During FY 10-11, 147.4 tons of nitrogen oxide, 25.6 tons of carbon monoxide, 15.4 tons of sulfur oxides, 5.1 tons of particulates, and 1.3 tons of reactive organic gases were kept out of the atmosphere.[6] Perhaps more important, the use of local recycled water avoided the production of approximately 192,300 tons of carbon dioxide, a greenhouse gas that contributes to global warming.[7]

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

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3 2010 Census.
4 “Refining Estimates of Water-Related Energy Use in California,” California Energy Commission, December 2006.
5 June 30, 2011 spot price for “West Texas Intermediate crude oil”.
6 Estimates based upon emission factors from “Power Plant Fuel Use and Emissions,” South Coast Air Quality Management District, May 1986.
7 Estimate based upon data from “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 Paramount 16400 Colorado Avenue Paramount, CA 90723 (562) 220-2020	Central Basin Municipal Water District 6252 Telegraph Road Commerce, CA 90040-2512 (323) 201-5555
City of Cerritos Bloomfield at 183rd Street Cerritos, CA 90701 (562) 860-0311	City of Santa Fe Springs 11710 Telegraph Road Santa Fe Springs, CA 90670 (562) 868-0511	Park Water Company 9750 Washburn Road Downey, CA 90241 (562) 923-0711
City of Lakewood 5050 North Clark Avenue Lakewood, CA 90714 (562) 866-9771	City of Downey 9252 Stewart & Gray Road Downey, CA 90242 (562) 904-7202	Bellflower Municipal Water Systems 16913 Lakewood Blvd. Bellflower, CA 90706 (562) 531-1500
City of Bellflower 16600 Civic Center Drive Bellflower, CA 90706 (562) 804-1424	City of Whittier 13250 East Penn Street Whittier, CA 90602 (562) 945-8215	Bellflower-Somerset Mutual Water Co. 10016 Flower Street Bellflower, CA 90706 (562) 866-9980
City of Industry P.O. Box 3366 Industry, CA 91744 (626) 333-2211	City of South Gate 4244 Santa Ana Street South Gate, CA 90280 (323) 563-5795	Golden State Water Company 11469 Rosecrans Avenue Norwalk, CA 90650 (562) 907-9200
City of Pomona 505 South Garey Avenue Pomona, CA 91766 (909) 620-2253	City of Lynwood 11330 Bullis Road Lynwood, CA 90262 (562) 603-0220	San Gabriel Valley Water Company 11142 Garvey Avenue El Monte, CA 91733 (626) 448-6183
City of Cudahy 5220 Santa Ana Street Cudahy, CA 90201 (323) 773-5143	City of Norwalk 12700 Norwalk Boulevard Norwalk, CA 90650 (562) 929-2677	City of Huntington Park 6900 Bissell Street Huntington Park, CA 90255 (323) 584-6323
Walnut Valley Water District 271 South Brea Canyon Road Walnut, CA 91789 (909) 595-1268	Rowland Water District 3021 S. Fullerton Road Rowland Heights, CA 91748 (562) 697-1726	Upper San Gabriel Valley MWD 11310 East Valley Boulevard El Monte, CA 91731 (626) 423-2297
City of Pico Rivera 6615 Passons Boulevard Pico Rivera, CA 90660-1016 (562) 801-4462	Castaic Lake Water Agency 27234 Bouquet Canyon Road Santa Clarita, CA 91350 (661) 297-1600	Valencia Water Company 24631 Avenue Rockefeller Valencia, CA 91355 (661) 294-0828
City of Vernon 4305 Santa Fe Avenue Vernon, CA 90058 (323) 583-8811	City of Lancaster 615 West Avenue H Lancaster, CA 93534 661-945-6863	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 2010-11

Category	Units	Savings
Water Supply	acre-feet	85,448
Water Supply	No. of People	427,240
Energy	kilowatt-hours	256,344,000
Energy	megawatts	29.3
Energy	barrels of oil	138,914
Electricity	dollars	38,451,600
Petroleum	dollars	13,188,495
WRP chemicals	dollars	128,000
Nitrogen oxide	tons	147.4
Carbon monoxide	tons	25.6
Sulfur oxides	tons	15.4
Particulates	tons	5.1
Reactive organic gases	tons	1.3
Carbon dioxide	tons	192,258

1.4 SUMMARY

Of the 442.43 MGD of treated effluent produced by the Sanitation Districts, 163.92 MGD (37.0%) was treated to a suitable level for reuse, with 76.256 MGD (17.2%) actually being reused at 649 individual sites in 30 cities for numerous diverse applications (with slightly more than half of the reuse being for groundwater replenishment). Effluent production continued to decrease due to increased conservation and reduced commercial/industrial activity. The top 10 largest direct reuse sites (less than 2% of all sites, excluding recharge and environmental) used almost 25% of the recycled water delivered during the fiscal year. Twenty-six new reuse sites were added during FY 10-11; however, the amount of recycled water used decreased by 12.1% from the preceding fiscal year mostly due to a decrease in the amount of groundwater replenishment. The use of 85,448 AF of locally produced recycled water essentially resulted in the conservation of the water supply needs of nearly half a million 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 2,497,638 AF (813.6 billion gallons) of recycled water produced by Sanitation Districts' facilities have been beneficially used. This use of recycled water has avoided the release of approximately 5.62 million tons of carbon dioxide and 5,695 tons of other 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 10-11 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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 1 OF 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Water Replenishment District (WNWRP)	Aug 62	--	R	6.141	6,881
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	0.184	206
Water Replenishment District (SJCWRP)	Jun 71	--	R	28.015	33,933
Cal Poly, Pomona-Kellogg (Pomona)	Dec 73	500	AG,L,O,P,AF	0.469	526
Lanterman Hospital (Pomona)	Dec 73	100	AG	0	0
South Campus Drive Parkway (Pomona)	Dec 73	8	L	0.010	11
Route 57 and 10 Freeways (Pomona)	May 75	18	L	0.020	23
Bonelli Regional County Park (San Dimas)	Apr 77	789	L	0.660	740
California Country Club (Industry)	Jun 78	120	L,P	0.378	423
Ironwood 9 Golf Course (Cerritos)	Nov 78	25	L,P	0.083	93
Caruthers Park (Bellflower)	Nov 78	5	L	0.038	42
El Dorado Park West (Long Beach)	Aug 80	135	L	0.128	144
El Dorado Golf Course (Long Beach)	Aug 80	150	L	0.223	249
Suzanne Park (Walnut)	Oct 80	12	L	0.014	16
Route 71 and 10 Freeways (Pomona)	Apr 81	12	L	0.036	40
Piute Ponds (Lancaster)	May 81	400	E	7.150	8,012
Recreation Park (Long Beach)	Oct 82	26	L	0.042	47
Recreation Golf Course (Long Beach)	Oct 82	149	L	0.197	221
Norman's Nursery (El Monte)	Mar 83	20.2	O	0.016	17
Whaley Park (Long Beach)	Jun 83	9	L	0.017	19
Industry Hills Recreation Area (Industry)	Aug 83	600	L,P	0.854	957
El Dorado Park East (Long Beach)	Jan 84	300	L	0.326	365
Nature Center (Long Beach)	Jan 84	60	L	0.058	64
605 Freeway at Wardlow (Long Beach)	Feb 84	50	L	0.028	32
Heartwell Park (Long Beach)	Feb 84	120	L	0.131	147
Skylinks Golf Course (Long Beach)	Apr 84	155	L,P	0.228	255
Douglas Park (Long Beach)	Apr 84	3	L	0.003	4
405 Freeway at Atherton (Long Beach)	May 84	5	L	0.00001	0.01
DeMille Junior High School (Long Beach)	Jun 84	5	AF,L	0.0004	0.4
Heartwell Golf Park (Long Beach)	Jun 84	30	L	0.060	68
Spadra Landfill landscape (Pomona)	Jul 84	53	L	0.240	269
Spadra Landfill dust control (Pomona)	Jul 84	--	I	0.010	11
Veterans Memorial Stadium (Long Beach)	Jan 85	6	AF	0.021	24
Harrington Farms Pistachio Orchard (Palmdale)	Apr 85	23	AG	0.082	92
Recreation Park Bowling Green (Long Beach)	Aug 85	3	L	0.004	5
California State University, Long Beach	Dec 85	52	AF,L	0.112	125
Long Beach City College (Long Beach)	Feb 86	15	AF,L	0.022	25
Recreation 9-Hole Golf Course (Long Beach)	Mar 86	37	L	0.059	66
Blair Field (Long Beach)	Apr 86	5	AF	0.010	12
Woodlands Park (Long Beach)	Apr 86	7	L	0.011	12
Colorado Lagoon Park (Long Beach)	Apr 86	4	L	0.003	4
Marina Vista Park (Long Beach)	Apr 86	30	L	0.027	30
Suzanne Middle School (Walnut)	May 86	4	AF,L	0.012	13
Walnut High School (Walnut)	May 86	15	AF,L	0.019	21
Vejar School (Walnut)	May 86	3	AF,L	0.010	11
Morris School (Walnut)	May 86	9	AF,L	0.009	10
Snow Creek Park (Walnut)	May 86	7	L	0.011	12
Snow Creek Landscape Maintenance Dist. (Walnut)	May 86	13.5	L	0.036	41
Lemon Creek Park (Walnut)	May 86	5	L	0.005	6
Friendship Park (West Covina)	May 86	6	L	0.007	8
Hollingworth School (West Covina)	May 86	3	AF,L	0.007	8
Lanesboro Park (West Covina)	May 86	2	L	0.007	7
Rincon Middle School (West Covina)	May 86	3	AF,L	0.008	9

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 Fiscal Year 10-11 Recycled Water Usage
(Page 2 of 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
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	0.020	23
Killian Elementary School (Rowland Heights)	May 86	3	AF,L	0.005	6
Walnut Elementary School (Walnut)	May 86	4	AF,L	0.001	1
WUSD Administrative Service Center (Walnut)	May 86	4	L	0.002	3
Walnut Ranch Park (Walnut)	Jun 86	26	L	0.019	22
Amar Road greenbelt (Walnut)	Jun 86	16	L	0.015	17
Diamond Bar Golf Course (Diamond Bar)	Jul 86	174	L,P	0.165	185
Walnut Ridge Landscape Maintenance Dist. (Walnut)	Mar 87	25.5	L	0.030	34
Morningside Park (Walnut)	Mar 87	4	L	0.004	4
Gateway Corporate Center (Diamond Bar)	Jun 87	45	L	0.045	51
Library/Civic Center (Cerritos)	Dec 87	4	L	0.014	16
Olympic Natatorium (Cerritos)	Dec 87	6	L	0.016	18
Whitney Learning Center (Cerritos)	Dec 87	10	AF,L	0.019	21
Gonsalves Elementary School (Cerritos)	Dec 87	5	AF,L	0.014	16
Wittman Elementary School (Cerritos)	Dec 87	5	AF,L	0.009	10
Gahr High School (Cerritos)	Dec 87	28	AF,L	0.053	60
Area Development Project No. 2 (Cerritos)	Jan 88	11.5	L,P	0.055	61
Medians/Parkways (Cerritos)	Jan 88	42.8	L	0.145	162
605 Freeway (Cerritos)	Jan 88	58.6	L	0.131	147
91 Freeway (Cerritos)	Jan 88	70	L	0.036	41
Frontier Park (Cerritos)	Jan 88	2.5	L	0.008	9
Carmenita Junior High School (Cerritos)	Jan 88	5	AF,L	0.017	19
Cerritos Elementary School (Cerritos)	Jan 88	6	AF,L	0.017	20
Stowers Elementary School (Cerritos)	Jan 88	6	AF,L	0.022	25
Kennedy Elementary School (Cerritos)	Jan 88	7	AF,L	0.021	24
City Park East (Cerritos)	Jan 88	18	L	0.040	45
Satellite Park (Cerritos)	Jan 88	2	L	0.005	5
Leal Elementary School (Cerritos)	Jan 88	6	AF,L	0.010	11
Cerritos High School (Cerritos)	Jan 88	20	AF,L	0.039	44
Elliott Elementary School (Cerritos)	Jan 88	7	AF,L	0.013	14
Carmenita Park (Cerritos)	Jan 88	4.5	L	0.012	14
Juarez Elementary School (Cerritos)	Jan 88	7	AF,L	0.019	21
ABC Adult School & Office (Cerritos)	Jan 88	3	L	0.014	15
Tracy Education Center (Cerritos)	Jan 88	6	AF,L	0.003	3
Liberty Park (Cerritos)	Jan 88	20	L	0.069	77
Gridley Park (Cerritos)	Jan 88	9	L	0.019	21
Jacob Park (Cerritos)	Jan 88	4.5	L	0.012	13
Heritage Park (Cerritos)	Feb 88	12	L	0.034	38
Bragg Elementary School (Cerritos)	Feb 88	7	AF,L	0.023	26
Haskell Junior High School (Cerritos)	Feb 88	18	AF,L	0.039	44
Pat Nixon Elementary School(Cerritos)	Feb 88	5	AF,L	0.009	10
Cabrillo Lane Elementary School (Cerritos)	Feb 88	9	AF,L	0	0
Sunshine Park (Cerritos)	Feb 88	3.5	L	0.008	9
Friendship Park (Cerritos)	Feb 88	4	L	0.008	9
Bettencourt Park (Cerritos)	Feb 88	2	L	0.005	5
Brookhaven Park (Cerritos)	Feb 88	2	L	0.006	7
Saddleback Park (Cerritos)	Feb 88	2	L	0.005	5
Westgate Park (Cerritos)	Feb 88	4	L	0.007	8
Rainbow Park (Cerritos)	Mar 88	2.5	L	0.007	8
Bellflower Christian School (Cerritos)	Mar 88	31.4	AF,L	0.034	38
Cerritos Community College (Cerritos)	Mar 88	55	AF,L	0.074	83
Cerritos Regional County Park (Cerritos)	Apr 88	59	L	0.109	122

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 3 OF 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Artesia Cemetery District (Cerritos)	Apr 88	10.9	L	0.022	24
Rosewood Park (Cerritos)	Apr 88	2.7	L	0.008	9
20659 E. Valley Blvd. (Walnut)	May 88	7	O	0.0001	0.01
Nebeker Ranch (Lancaster)	Jun 88	600	AG	3.668	4,111
Lakewood 1st Presbyterian Church (Long Beach)	Sep 88	1	L	0.001	1
Westhoff Elementary School (Walnut)	Sep 88	8	AF,L	0.006	6
Tree Farm (Palmdale)	Feb 89	46	O	0.012	13
Virginia Country Club (Long Beach)	Mar 89	135	L,P	0.077	86
Lakewood Golf Course (Long Beach)	Mar 89	128	L,P	0.272	305
Scherer Park (Long Beach)	Mar 89	24	L	0.031	35
Sports Complex (Cerritos)	Mar 89	25	AF,L	0.045	51
Sunnyside Memorial Park (Long Beach)	Apr 89	35	L	0.071	79
All Soul's Cemetery (Long Beach)	Apr 89	40	L	0.104	116
Cherry Avenue Park (Long Beach)	May 89	10	L	0.011	13
River (Rynerson) Park (Lakewood)	Aug 89	40	L	0.064	72
Monte Verde Park (Lakewood)	Aug 89	4	L	0.051	58
Mae Boyer Park (Lakewood)	Aug 89	8	L	0.032	35
Jose Del Valle Park(Lakewood)	Aug 89	12	L	0.026	29
Jose San Martin Park (Lakewood)	Aug 89	9.3	L	0.021	23
City Water Yard (Lakewood)	Aug 89	1	L	0.010	11
Woodruff Avenue greenbelt (Lakewood)	Aug 89	4.1	L	0.011	12
South Street greenbelt (Lakewood)	Aug 89	3.3	L	0.009	10
Mayfair Park (Lakewood)	Dec 89	18	L	0.039	44
Shoemaker On/Off Ramp - 91 Freeway (Cerritos)	Dec 89	4.6	L	0.013	14
Temple Avenue greenbelt (Walnut)	Jan 90	1	L	0.001	1
Transpacific Development Co. (Cerritos)	Feb 90	6.9	L	0.010	11
Automated Data Processing (Cerritos)	Feb 90	0.7	L	0.004	4
Sheraton Hotel (Cerritos)	Mar 90	0.6	L	0.003	4
Walnut Tech Business Center (Walnut)	Apr 90	1	L	0.002	2
Cerritos Pontiac/GMC Truck (Cerritos)	May 90	0.5	L	0.001	1
Moothart Chrysler (Cerritos)	May 90	0.4	L	0.005	6
St. Joseph Parish School (Lakewood)	Aug 90	3.5	AF,L	0.010	11
Foster Elementary School (Lakewood)	Sep 90	6	AF,L	0.016	18
Windjammer Off Ramp - 91 Freeway	Sep 90	0.8	L	0.002	2
Browning Oldsmobile (Cerritos)	Sep 90	0.1	L	0.001	1
Civic Center Way and City Hall	Nov 90	2.8	L	0.014	16
Los Coyotes Diagonal(Long Beach)	Mar 91	1	L	0.001	1
City Water Truck (Cerritos)	May 91	--	L	0.0003	0.4
Private Haulers (Cerritos)	May 91	--	I	0	0
Parkside Condominiums (Cerritos)	May 91	1.8	L	0.006	6
Mayfair High School (Lakewood)	May 91	36.5	AF,L	0.041	46
Wilson High School	Jun 91	5	AF,L	0.022	24
Concordia Church (Cerritos)	Jun 91	4	L	0.005	6
Church of the Nazarene (Cerritos)	Aug 91	1	L	0.003	4
B&B Stables (Cerritos)	Aug 91	18	I	0.005	5
Lemon Avenue greenbelt (Walnut)	Sep 91	4.3	L	0.006	7
Lindstrom Elementary School (Lakewood)	Sep 91	12	AF,L	0.014	15
Lakewood High School (Lakewood)	Sep 91	25	AF,L	0.024	27
Shadow Park Homeowner's Association (Cerritos)	Nov 91	6	L	0.014	16
South Coast AQMD Headquarters (Diamond Bar)	Nov 91	2	L	0.005	5
Long Beach Water Department office	Jan 92	2	L	0.002	2
Reservoir Park (Signal Hill)	Feb 92	2	L	0.009	10
Burroughs Elementary School (Signal Hill)	Feb 92	4	AF,L	0.003	3
Andy's Nursery (Bellflower)	Feb 92	9	O	0	0

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 4 OF 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Lake Center Park (Santa Fe Springs)	Mar 92	8	L	0.018	20
Lake Center School (Santa Fe Springs)	Mar 92	8	AF,L	0.016	18
Clarkman Walkway (Santa Fe Springs)	Mar 92	0.1	L	0.0003	0.3
Hughes Middle School (Long Beach)	Apr 92	3	AF,L	0.013	15
405 Freeway at Walnut (Long Beach)	Apr 92	9	L	0.008	9
Area Development Project No. 6 (Cerritos)	Apr 92	9	L	0.056	63
Towne Center Walkway (Santa Fe Springs)	Apr 92	0.1	L	0.0003	0.3
Lakeview Child Care (Santa Fe Springs)	May 92	0.2	L	0.001	2
Orr & Day Road medians (Santa Fe Springs)	May 92	0.1	L	0.00002	0.03
Somerset Park (Long Beach)	May 92	3	L	0.001	1
Longfellow Elementary School (Long Beach)	May 92	1	AF,L	0	0
Granada Park Homeowners Association (Cerritos)	May 92	3.8	L	0.013	15
Walnut Valley Water Dist. reservoir (Diamond Bar)	May 92	1	L	0.005	6
Florence Avenue medians (Santa Fe Springs)	Jun 92	3	L	0.005	6
Gauldin Elementary School (Downey)	Jun 92	8.4	AF,L	0.005	5
Rio San Gabriel School (Downey	Jun 92	14.8	AF,L	0.014	16
Bellflower High School (Bellflower)	Jul 92	28.4	AF,L	0.063	70
Ernie Pyle Elementary School (Bellflower)	Aug 92	4.9	AF,L	0.012	13
Telegraph Road medians (Santa Fe Springs)	Aug 92	0.5	L	0.003	3
Lakeview Park (Santa Fe Springs)	Aug 92	6.7	L	0.011	12
Clark Estate (Santa Fe Springs)	Aug 92	4.3	L	0.005	5
Towne Center Green (Santa Fe Springs)	Aug 92	2.3	L	0.006	7
Pioneer Road medians (Santa Fe Springs)	Sep 92	0.4	L	0.030	34
Police Station (Santa Fe Springs)	Sep 92	0.2	L	0.001	1
Aquatic Center (Santa Fe Springs)	Sep 92	0.5	L	0.004	4
Lewis School (Downey)	Nov 92	4.6	AF,L	0.005	6
Wilderness Park (Downey)	Nov 92	24	L	0.092	103
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	0.001	1
Rio San Gabriel Park (Downey)	Jan 93	6.4	L	0.032	36
East Middle School (Downey)	Jan 93	26	AF,L	0.017	19
Zinn Park (Bellflower)	Jan 93	1.7	L	0.003	4
Cerritos Post Office (Cerritos)	Feb 93	0.7	L	0.005	6
605/105 Interchange (Bellflower)	Feb 93	22	L	0.0001	0.1
Hollywood Sports Center (Bellflower)	Feb 93	22.5	L	0.002	2
Santa Fe Springs High School (Santa Fe Springs)	Feb 93	14.5	AF,L	0.023	25
605/5 Freeway at Florence (Santa Fe Springs)	Feb 93	17	L	0.0002	0.2
Center for the Performing Arts (Cerritos)	Mar 93	1	L	0.004	4
Old Downey Cemetery (Downey)	Apr 93	7.5	L	0.026	30
Thompson Park (Bellflower)	Apr 93	15	L	0.014	16
105 Freeway at Bellflower (Downey)	May 93	17.9	L	0.009	10
Palms Park (Lakewood)	May 93	20	L	0.003	3
Crawford Park (Downey)	Jul 93	2.1	L	0.006	7
Humedo Nursery (Downey)	Aug 93	11	O	0.005	6
105 Freeway at Lakewood (Downey)	Sep 93	25	L	0.003	4
Shaw Industries Carpet Mill (Santa Fe Springs)	Sep 93	--	I	0.076	85
Palms Elementary School (Lakewood)	Sep 93	3.5	AF,L	0.012	13
Artesia High School (Lakewood)	Sep 93	20.9	AF,L	0.033	37
West Middle School (Downey)	Oct 93	19.5	AF,L	0.015	17
Circle Park (South Gate)	Oct 93	4	L	0.013	15
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	4
General Electric, 19705 E. Business Pkwy. (Walnut)	Nov 93	1.6	L	0.006	7

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 5 OF 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Hollydale Park (South Gate)	Nov 93	46	L	0.112	126
Delta Dental (Cerritos)	Nov 93	1.8	L	0.002	2
Cal Poly LandLab (Pomona)	Nov 93	2.5	AG,L	0.013	15
Rodeo Ridge Estates (Walnut)	Dec 93	6.3	L	0.005	6
Robertson's Ready-Mix (Santa Fe Springs)	Dec 93	--	I	0.005	5
710/105 Interchange (Paramount)	Dec 93	18.5	L	0	0
Downey/Contreras greenbelt (Paramount)	Dec 93	0.1	L	0.0003	0.3
Compton Golf Course (Paramount)	Dec 93	13	L	0.021	24
Alondra Junior High School (Paramount)	Dec 93	14	AF,L	0.012	14
Mokler Elementary School (Paramount)	Dec 93	10	AF,L	0.009	11
Los Cerritos Elementary School (Paramount)	Dec 93	8	AF,L	0.011	12
Wirtz Elementary School (Paramount)	Dec 93	9	AF,L	0.011	12
Keppel Elementary School (Paramount)	Dec 93	4	AF,L	0.002	3
Billy Lee Nursery (Paramount)	Dec 93	2.5	O	0.008	9
Golden Springs Drive medians (Diamond Bar)	Jan 94	1.3	L	0.005	6
105 Freeway at Wright (Lynwood)	Jan 94	19.6	L	0.001	2
710 Freeway at M.L. King (Lynwood)	Jan 94	15.5	L	0	0
710 Freeway at Rosecrans (Compton)	Jan 94	24.2	L	0.007	8
Independence Park (Downey)	Feb 94	10.4	L	0.011	13
Paramount Park (Paramount)	Feb 94	9	L	0.022	24
Paramount High School (Paramount)	Feb 94	19	AF,L	0.021	23
Southern California Edison nursery (Cerritos)	Mar 94	3.5	O	0.004	5
Walnut Hills Village Shopping Center (Walnut)	Mar 94	2.4	L	0.004	5
Rosecrans/Paramount medians (Paramount)	Mar 94	0.2	L	0.002	2
Somerset medians (Paramount)	Apr 94	0.9	L	0.005	6
Rio Hondo Golf Course (Downey)	Apr 94	92.4	L	0.193	216
Zimmerman Park (Norwalk)	Apr 94	9.5	L	0.015	17
Vista Verde Park (Norwalk)	Apr 94	6.5	L	0.012	14
Gerdes Park (Norwalk)	Apr 94	8.6	L	0.015	17
Clearwater Junior High School (Paramount)	Apr 94	4	AF,L	0.031	35
Vestar Development (Cerritos)	Jun 94	9.6	L	0.035	39
Steam Engine Park (Paramount)	Jun 94	0.6	L	0.001	1
5 Freeway at Shoemaker/Firestone (Norwalk)	Jul 94	0.8	L	0.003	4
Spane Park (Paramount)	Jul 94	5	L	0.008	9
Orange/Cortland Parkway (Paramount)	Jul 94	1.3	L	0.002	3
Carpenter School (Downey)	Aug 94	7.4	AF,L	0.007	7
Brookside Equestrian Center (Walnut)	Aug 94	13.6	L	0.003	3
Field, S/W corner Norwalk/Telegraph (S.F. Springs)	Aug 94	5.2	L	0.010	11
Washington Elementary School (Whittier)	Sep 94	5	AF,L	0.007	3
605 Freeway at Beverly (Whittier)	Sep 94	30	L	0.044	50
John Anson Ford Park (Bell Gardens)	Sep 94	45	L	0.054	60
Ramona Park (Norwalk)	Oct 94	4.8	L	0.004	4
Alondra median (Paramount)	Oct 94	0.6	L	0.007	8
Imperial/Wright Road medians (Lynwood)	Oct 94	0.2	L	0.001	1
Walnut Valley Water District Office (Walnut)	Oct 94	0.2	L	0.002	2
Cattelus Development (Walnut)	Oct 94	18.9	L	0.016	18
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
Sorenson Elementary School (Whittier)	Oct 94	4	AF,L	0.006	7
Palm Park West (Whittier)	Nov 94	5	L	0.008	8
Metrolink Station (Industry)	Nov 94	0.6	L	0.002	3
Little Lake Park (Santa Fe Springs)	Dec 94	18	L	0.033	36
Sundance Condominiums (Cerritos)	Jan 95	9	L	0.028	32
Del Paso High School (Walnut)	Jan 95	3	AF,L	0.003	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 7
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
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Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Dow Corning, 20832 Currier Road (Walnut)	Jan 95	0.1	L	0.0001	0.1
John Anson Ford Park (Bell Gardens)	Sep 94	45	L	0.054	60
Circuit City Headquarters, Currier/Lemon (Walnut)	Apr 95	1.1	L	0.005	6
Sysco Food Service, 20701 Currier Road (Walnut)	Apr 95	2.3	L	0.012	13
Tung Hsin Trading, 20420 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.003	4
Amergence Tech. Inc., 20480 E. Bus. Pkwy (Walnut)	Apr 95	0.9	L	0.003	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	4
Dura Freight Lines , 20275 Bus. Parkway (Walnut)	Apr 95	1.3	L	0.003	3
Coaster Co. of America, 20300 Bus. Parkway (Walnut)	Apr 95	0.7	L	0.003	3
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	0.001	2
Dura Freight Lines, 20445 E. Business Pkwy (Walnut)	Apr 95	0.7	L	0.001	2
Orange Grove School (Whittier)	Apr 95	6.6	AF,L	0.004	5
South Middle School (Downey)	May 95	15.8	AF,L	0.007	8
Nuffer Elementary School (Norwalk)	Jun 95	10.4	AF,L	0.007	8
Lampton Middle School (Norwalk)	Jun 95	9.5	AF,L	0.009	10
THUMS (Long Beach)	Jun 95	8	I	1.035	1,160
820 Fairway Drive medians (Industry)	Jun 95	0.1	L	0.002	2
Spencer N Enterprises, Inc., 435 S. Lemon (Walnut)	Jun 95	0.5	L	0.001	1
General Electric, 19805 E Business Pkwy (Walnut)	Jun 95	1.1	L	0.005	6
Menlo Logistics, 20002 E. Business Pkwy (Walnut)	Jun 95	4	L	0.006	7
General Electric, 20005 E. Business Parkway (Walnut)	Jun 95	6.7	L	0.010	11
Hargitt Middle School (Norwalk)	Jul 95	9.5	AF,L	0.025	28
Norwalk Adult School (Norwalk)	Jul 95	17.2	AF,L	0.026	29
John Glenn High School (Norwalk)	Jul 95	38.8	AF,L	0.039	44
Ramona Elementary School (Norwalk)	Jul 95	6.8	AF,L	0.004	4
New River Elementary School (Norwalk)	Jul 95	10.3	AF,L	0.008	9
Morrison Elementary School (Norwalk)	Sep 95	7.7	AF,L	0.003	4
Katherine Edwards Middle School (Whittier)	Sep 95	19	AF,L	0.022	24
Longfellow Elementary School (Whittier)	Sep 95	4.5	AF,L	0.004	5
Walter Dexter Middle School (Whittier)	Sep 95	15.5	AF,L	0.007	8
D.D. Johnston Elementary School (Norwalk)	Sep 95	8.9	AF,L	0.006	7
Corvallis Middle School (Norwalk)	Sep 95	16.9	AF,L	0.030	34
Norwalk High School (Norwalk)	Sep 95	35.1	AF,L	0.033	37
Heritage Park (Santa Fe Springs)	Oct 95	9.2	L	0.009	10
Belloso Farm Nursery (Paramount)	Oct 95	2.5	O	0.002	2
Robertson's Ready-Mix (Paramount)	Nov 95	--	I	0.007	8
Cerritos Nursery (Cerritos)	Dec 95	3	O	0.006	7
Spadra Gas-to-Energy Plant	Dec 95	--	I	0.049	55
Founders Memorial Park (Whittier) (13)	Jan 96	4	L	0.008	9
Los Nietos Park (Santa Fe Springs)	Jan 96	11.2	L	0.014	15
Bell Gardens Soccer Field (Bell Gardens)	Feb 96	2.6	AF	0.004	5
Jersey Ave. School/city athl. fields (S.F. Springs)	Mar 96	8	AF	0.004	5
Salt Lake Municipal Park (Huntington Park) (14)	Apr 96	20.9	L	0.040	45
Sorenson Park (Whittier) (15)	May 96	10.7	L	0.016	18
Sorenson Library (Whittier) (16)	May 96	0.4	L	0	0
Encore Maintenance-Warmington Homes (Cerritos)	May 96	1.1	L	0.002	3
Bellflower Blvd. medians (Bellflower)	Jul 96	0.3	L	0.002	3
Alta Produce (Paramount)	Aug 96	4	AG	0.003	2
Artesia Off Ramp - 91 Freeway (Cerritos)	Aug 96	3.3	L	0.005	6
Ping Ting Hsu, 20701 Currier Road (Walnut)	Aug 96	0.1	L	0.001	1
Belloso Farm Nursery (South Gate)	Sep 96	2.5	O	0.001	1
Temple Park (Downey)	Oct 96	1	L	0.001	1

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 7 OF 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Woodruff Avenue medians (Bellflower)	Oct 96	0.8	L	0.005	5
Lawrence Allen & Assoc., 20822 Currier Rd. (Walnut)	Oct 96	0.1	L	0.0001	0.1
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	0.007	7
Ham Park (Lynwood)	Dec 96	10	L	0	0
Jauregui Nursery (Paramount)	Dec 96	2	O	0.005	6
Heritage Corporate Center (Santa Fe Springs)	Jan 97	29.9	L	0.027	30
Belloso Farm Nursery (Bellflower)	Jan 97	8	O	0	0
Foster Road medians (Norwalk)	Jan 97	0.3	L	0.002	2
Rowland Heights Christian Church (Rowland Heights)	Feb 97	0.5	L	0.001	1
Rosecrans Avenue medians (Paramount)	Mar 97	0.2	L	0.008	9
Texaco/Somerset medians (Paramount)	Mar 97	0.2	L	0.001	1
McLane Mowers (Paramount)	Mar 97	0.6	L	0	0
ABC Nursery (Paramount)	Mar 97	16	O	0	0
L.A. Co. Vector Control Bldg. (S.F. Springs)	Mar 97	3.8	L	0.003	4
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	0.029	33
McNab Avenue medians (Bellflower)	Jul 97	0.1	L	0.0004	0.5
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	0.0002	0.2
Puente Hills Landfill irrigation (Industry)	Nov 97	320	L	0.764	856
Puente Hills Landfill dust control (Industry)	Nov 97	130	I	0.133	149
Puente Hills Gas-to-Energy Facility (Industry)	Nov 97	--	I	0.607	680
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	0.005	5
Rose Hills Memorial Park – upper area (Whittier)	Jun 98	298	L	0.373	418
El Dorado Lakes Condominiums (Long Beach)	Aug 98	11	L	0.025	28
Bloomfield Associates, 17871 Park Plaza Dr. (Cerritos)	Sep 98	0.5	L	0.001	1
Maruichi American building (Santa Fe Springs)	Oct 98	0.4	L	0.001	1
Diamond Crest Homeowners Assn. (Diamond Bar)	Oct 98	14	L	0.018	20
Norm Ashley Park (Walnut)	Nov 98	0.2	L	0.0005	1
Play Hut, 368 Cheryl Lane (Walnut)	Nov 98	0.8	L	0.003	3
Waterfall Estates (Rowland Heights)	Dec 98	1.2	L	0.004	5
WalMart (Long Beach)	Dec 98	3	L	0.014	16
Norwalk Golf Course (Norwalk)	Jan 99	8	L	0.022	25
Vestar Development (Long Beach)	Feb 99	8	L	0.035	39
Soco-Lynch Corp. building (Santa Fe Springs)	Feb 99	1	L	0.002	3
183rd Street On Ramp - 91 Freeway (Cerritos)	Feb 99	0.6	L	0.001	1
MC&C building (Santa Fe Springs)	Mar 99	0.7	L	0.007	7
Lakewood Blvd. medians (Paramount)	Mar 99	0.2	L	0.002	2
Progress Park (Paramount)	Mar 99	6.2	L	0.012	14
Garfield Avenue medians (Paramount)	Apr 99	0.1	L	0.001	1
Calvary Chapel (Diamond Bar)	Apr 99	1	L	0.014	16
B&B Pallet Co. (South Gate)	May 99	--	I	0	0
Hi-Tek Warehouse, 20851 Currier Road (Walnut)	Jun 99	0.2	L	0.001	1
Garcia's Nursery (Bellflower)	Jun 99	6	O	0	0
Campus Group Inc, 319 Cheryl Road (Walnut)	Jul 99	0.1	L	0	0
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	0.010	11
Orange Avenue medians (Paramount)	Aug 99	0.1	L	0.003	3
Metropolitan State Hospital (Norwalk)	Sep 99	80	L	0	0

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TABLE 7
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 8 OF 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Moffit School (Norwalk)	Sep 99	1.6	AF,L	0.005	5
L.A. Fitness Inter., 20801 Golden Springs (Industry)	Sep 99	1.2	L	0.001	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	0.001	1
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	0.0003	0.3
Nu-Health Products, 20875-85-95 Currier (Walnut)	Oct 99	0.1	L	0	0
Rio Hondo Channel (Downey)	Nov 99	0.8	L	0.001	1
Simms Park (Bellflower)	Dec 99	12.5	L	0.014	15
Lemon Avenue medians (Industry)	Dec 99	0.1	L	0.0003	0.4
Prudential Insurance Co., 21558 Ferraro. (Walnut)	Jan 00	3.5	L	0.008	9
Foster Road Greenbelt (Norwalk)	Mar 00	3.3	L	0.003	3
McDonald’s Restaurant (Diamond Bar)	Mar 00	0.1	L	0.001	1
San Luis Street @ flood channel (Paramount)	Apr 00	3	L	0.005	1
J&L Footwear, 250 Benton Court (Industry)	Jul 00	0.6	L	0.001	1
Jefferson School (Paramount)	Jul 00	0.5	AF,L	0.003	3
Columbus High School (Downey)	Aug 00	25	AF,L	0.015	17
Triangle Park (South Gate)	Nov 00	0.4	L	0.002	2
Markwins Inter. Corp., 22067 Ferraro (Industry)	Nov 00	1.9	L	0.004	4
Lee Wang LLC, 21901 Ferraro Parkway (Industry)	Nov 00	2	L	0.005	6
Sun Yin USA, 280 Maclin Court (Industry)	Nov 00	0.8	L	0.001	2
SL Investment Group LLC, 218 Maclin Ct. (Industry)	Nov 00	1.5	L	0.002	2
Morrow Meadows, 231 Benton Court (Industry)	Apr 01	0.9	L	0.002	2
Golden Springs Business Park (Santa Fe Springs)	Apr 01	31.4	L	0.113	126
The Cross Schools of Education (Walnut)	May 01	0.6	AF,L	0.001	1
Bellflower Storage (Bellflower)	Jun 01	3	L	0.002	2
Railroad Beautification (Paramount)	Jul 01	0.5	L	0	0
Rio Hondo Channel (Bell Gardens)	Jul 01	0.3	L	0.003	3
Bank of the West (Rowland Heights)	Sep 01	0.1	L	0.0004	0.4
Gym/Teen Center (Walnut)	Sep 01	0.6	L	0.001	2
CDM building (Santa Fe Springs)	Oct 01	0.1	L	0.002	2
Laskey-Weil building, 13101 Moore Street (Cerritos)	Oct 01	0.4	L	0.002	2
Willow Street medians (Long Beach)	Dec 01	2.4	L	0.003	3
Yellow Box Corp., 19835 Walnut Drive (Walnut)	Dec 01	0.3	L	0.002	2
Harvard Estates (Rowland Heights)	Dec 01	2	L	0.002	3
L.A. Co. Recorder’s Office (Norwalk)	Jan 02	2.7	L	0.014	15
Tays Cool Fuel (Paramount)	Feb 02	0.2	L	0.003	3
Walnut Nazarene Church (Walnut)	Feb 02	0.8	L	0.0003	0.3
Antelope Valley Farms (Palmdale)	Mar 02	2,100	AG	7.038	7,887
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	3
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	2
Lemon Avenue Investments (Walnut)	Jun 02	0.6	L	0.002	3
Magnolia at Snow Creek (Walnut)	Jul 02	5.4	L	0.018	21
Lakewood-Adoree medians to 105 Fwy. (Downey)	Jul 02	3.4	L	0.031	35
River Ridge Golf Course (Pico Rivera)	Jul 02	21.3	L	0.021	24
Long Beach Water Dept. Impoundment (Long Beach)	Jul 02	--	I	0.001	1
Everbright Management, 1163 Fairway (Industry)	Sep 02	0.6	L	0.003	4
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	0.0004	0.4
V-Tec Automotive, 19677 Valley Blvd. (Walnut)	Sep 02	0.1	L	0.0001	0.2
Grand and Valley landscaping (Walnut)	Sep 02	0.1	L	0.005	6

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TABLE 7
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
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Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Extra Space Storage (Walnut)	Oct 02	0.8	L	0.001	1
Latter Days Saints Church (Walnut)	Oct 02	0.9	L	0.003	3
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	0.002	2
Simon Trucking (Santa Fe Springs)	Nov 02	0.9	L	0.001	1
Foster/Coldbrook medians (Bellflower)	Nov 02	0.1	L	0.0003	0.4
L.A. County Library (Norwalk)	Nov 02	0.9	L	0.005	6
Metro State/Wheelabrator (Norwalk)	Jan 03	B	I	0.248	278
Alamitos Seawater Intrusion Barrier (Long Beach)	Feb 03	--	R	2.116	2,372
Boeing (Long Beach)	Mar 03	52	L	0.013	14
Brea Canyon Rd./Old Ranch Road medians (Industry)	May 03	0.1	L	0.0002	0.2
CLT Computers, Inc., 20153 Paseo del Prado (Walnut)	May 03	0.6	L	0.002	2
Rio Hondo College (Whittier)	Jun 03	85	AF,L	0.023	26
Mill Elementary School (Whittier)	Jun 03	15	AF,L	0.008	9
Del Amo Blvd. Greenbelt (Lakewood)	Jul 03	0.3	L	0.002	3
Imperial Equestrian (South Gate)	Jul 03	1.5	L	0.004	4
Norwalk Walkway/Parking (Santa Fe Springs)	Jul 03	1	L	0.003	4
Tournament Players Club (Santa Clarita)	Aug 03	120	L	0.277	311
The Old Road medians, 26840-27236 (Santa Clarita)	Aug 03	5.8	L	0.020	22
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	0.003	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	0.001	1
San Malone Enterprises, 19865 Harrison (Industry)	Aug 03	0.3	L	0.002	3
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	0.004	5
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
Steve Horn Way/Bellflower medians (Downey)	Nov 03	0.3	L	0.015	17
Walnut City Hall (Walnut)	Dec 03	0.6	L	0.001	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	0.006	7
Young Hoon Cho, 1709 Nogales St. (Rowland Heights)	Mar 04	0.1	L	0.0003	0.4
Shell Station, 21103 Golden Springs Dr. (Diamond Bar)	Mar 04	0.1	L	0.0003	0.4
Ferraro/Grand East ramp (Industry)	Apr 04	3.8	L	0.005	6
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	0.001	1
APL Logistics, 408 Brea Canyon Rd. (Walnut)	Jun 04	2.1	L	0.006	7
Alamitos Hill Reservoir landscaping (Long Beach)	Jul 04	8.6	L	0.002	2
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
Pro Growers Nursery (Norwalk)	Sep 04	11.3	O	0.040	45
Kaiser Administration building (Downey)	Oct 04	2.5	L	0.005	6
Downey Studios (Downey)	Oct 04	1	L	0.004	5
Community Day School (Walnut)	Nov 04	0.1	AF,L	0.0004	0.5
Majestic Mgmt., Bldg. 25 on Mayo Dr. (Walnut)	Jan 05	0.1	L	0.0003	0.3
Gateway Pointe (Whittier)	Jan 05	8	L	0.016	18
Puente Hills Materials Recovery Facility (Industry)	Feb 05	2.4	L	0.005	5
Sy Develop. condos, 20118-20138 Colima, (Walnut)	Jun 05	0.1	L	0.00001	0.01

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Dills Park (Paramount)	Jul 05	12.5	L	0.030	34
N/E corner Cheryl Lane/Baker Parkway (Industry)	Aug 05	3.3	L	0.014	16
Jakk's Pacific, Inc. 21733-21749 Baker (Industry)	Aug 05	1.2	L	0.004	4
20813 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
20265 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
19849 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
Kohl's Center (Walnut)	Sep 05	2	L	0.009	10
Hollydale Elementary (South Gate)	Sep 05	3	AF,L	0.001	1
Malburg Generation Station (Vernon)	Oct 05	B	I	0.597	668
Phoenix Private Schools (Rowland Heights)	Dec 05	0.1	AF,L	0.0002	0.2
The Home Depot, 21535-21651 Baker (Industry)	Jan 06	2.8	L	0.009	10
Industry East Land LLC, 21415 Baker (Industry)	Jan 06	2.3	L	0.006	7
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	0.004	5
LA Sanchez Nursery (Industry)	Apr 06	5	O	0.010	12
Sculpture Garden (Santa Fe Springs)	May 06	0.6	L	0	0
Fairway median@ Brea Canyon (Walnut)	Jun 06	0.3	L	0.001	1
Grand Avenue Crossing (Industry)	Jul 06	18.5	L	0.019	21
22002 Valley Blvd. (Industry)	Jul 06	1.6	L	0.003	4
Foster Road medians (Santa Fe Springs)	Jul 06	1	L	0.009	11
Rose Hills Memorial Park – lower area (Whittier)	Aug 06	275	L	0.438	491
Christian Chapel of Walnut Valley (Walnut)	Aug 06	2.2	L	0.006	6
Target Store T-2179, 747 Grand Ave. (Walnut)	Sep 06	3.9	L	0.006	6
Whittier Narrows Recreation Area (South El Monte)	Sep 06	568	L	0.712	798
Leg Avenue, 19601 E. Walnut Dr. (Walnut)	Oct 06	0.5	L	0.003	3
LandRover (Cerritos)	Dec. 06	0.3	L	0.003	3
Harold M. Pitman Co., 21908-21958 Baker (Industry)	Jan 07	0.8	L	0.002	2
Eastern Agricultural Site (Lancaster)	Feb 07	696	AG	0.845	947
Williams-Sonoma, 21508-21662 Baker (Industry)	Apr 07	4.8	L	0.012	14
FedEx Ground, 200 Old Ranch Road (Walnut)	May 07	28	L	0.012	13
Currier Road Devel. Inc., 20819 Currier Rd. (Walnut)	May 07	0.3	L	0.001	1
Bluff Park (Long Beach)	Jul 07	25.8	L	0.016	17
Stearns Park (Long Beach)	Jul 07	21	L	0.021	24
Bixby Park (Long Beach)	Jul 07	12.5	L	0.013	14
South El Monte High School (South El Monte)	Aug 07	16.1	AF, L	0.062	69
Williams-Sonoma, 21700 Baker (Industry)	Aug 07	2	L	0.006	6
Douglas Park development (Long Beach)	Nov 07	2.1	L	0.062	70
21350 Valley Blvd. (Industry)	Feb 08	0.4	L	0.001	1
Grand Avenue Venture, 21508 Ferraro Pkwy (Walnut)	Apr 08	3.5	L	0.003	4
Space Learning Center (Downey)	Apr 08	10.5	L	0.024	27
Surgical Center, Carmenita & 166th (Cerritos)	May 08	0.1	L	0.0003	0.4
UPS Parking Structure, 13150 Moore (Cerritos)	May 08	0.5	L	0.001	1
Grand Avenue/Baker Parkway medians (Industry)	May 08	6.7	L	0.013	14
Majestic Management, 21530-21590 Baker (Industry)	May 08	2	L	0.008	9
Cornerstone Commerce Center (Downey)	Jun 08	0.8	L	0.006	7
Gomez Upholstery, 19935 Valley Blvd. (Walnut)	Jul 08	2	L	0	0
Susann Sutseng Lee, 1335-1337 Otterbein (Rowland)	Jul 08	0.1	L	0.0004	0.4
Golden Springs Plaza (20657 Golden Sprgs (Dia. Bar)	Aug 08	0.4	L	0.002	2
Chili's Restaurant, Golden Springs Dr. (Diamond Bar)	Sep 08	0.01	L	0.001	1
Majestic Management, 21808 Garcia Ln. (Industry)	Sep 08	0.5	L	0.001	2
Majestic Management, 21858 Garcia Ln. (Industry)	Sep 08	0.4	L	0.001	2
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	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.

TABLE 7
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 11 OF 12)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
CFT Development, Golden Springs Dr. (Diamond Bar)	Oct 08	0.01	L	0.001	1
Mora Drive medians (Santa Fe Springs)	Oct 08		L	0.004	5
Jenny Hsieh, 20125 Valley Blvd. (Walnut)	Nov 08	0.03	L	0.00003	0.03
UPS Main Building, 13233 Moore (Cerritos)	Nov 08	4.4	L	0.012	13
Fountain Walk Senior, 18310 Carmenita (Cerritos)	Nov 08	0.1	L	0.0004	0.4
Public Works Dept. sewer flushing (Lancaster)	Jan 09	--	I	0.001	1
Public Works Dept. street sweeping (Lancaster)	Feb 09	--	I	0.0004	0.4
ASCIP Building, 16550 Bloomfield (Cerritos)	Feb 09	0.1	L	0.0004	1
Tincher Elementary School (Long Beach)	Feb 09	1.5	AF, L	0.004	5
Firestone Blvd. medians (Downey)	Feb 09	0.1	L	0.0004	0.4
Citibank, 8764 Firestone Blvd. (Downey)	Feb 09	0.1	L	0.001	1
Brea Canyon Rd./Currier Road median (Walnut)	Feb 09	2	L	0.005	5
Cardinal Capital Partners, Currier/Lemon (Walnut)	Mar 09	2.5	L	0	0
Family Property Holdings, 20888 Amar Rd. (Walnut)	May 09	0.04	L	0.0004	0.5
KW Global Inc., 293 Brea Canyon Drive (Walnut)	May 09	0.3	L	0.001	2
Steve Horn Pkwy. medians @ Kaiser (Downey)	May 09	1.4	L	0.023	26
Walgreens/Big Lots, 9018 Firestone (Downey)	May 09	0.4	L	0.003	4
Lancaster University Center (Lancaster)	May 09	2	L	0	0
12800 Center Court (Cerritos)	Jul 09	0.4	L	0.002	2
Pacific Alloy Casting (South Gate)	Jul 09	--	I	0.016	18
Sunshine Park (L.A. County)	Jul 09 (May 86)	4	L	0.002	3
Rowland Elementary School (Rowland Heights)	Jul 09 (May 86)	3	AF,L	0.002	2
Farjardo School (Rowland Heights)	Jul 09 (May 86)	4	AF,L	0.0005	1
Farjardo Park (Rowland Heights)	Jul 09 (May 86)	4	L	0.001	2
Nogales High School (L.A. County)	Jul 09 (Jun 86)	11	AF,L	0.005	6
Queen of Heaven Cemetery (Rowland Hts.)	Jul 09 (Jun 86)	35	L	0.003	3
Schabarum Regional County Park (L.A. County)	Jul 09 (Sep 86)	233	L	0.020	22
Pepperbrook Park (Hacienda Heights)	Jul 09	4.4	L	0.002	2
Countrywood Park (Hacienda Heights)	Jul 09	5.4	L	0.002	2
Rowland Heights Golf Center (Rowland Heights)	Jul 09	8	L	0.002	3
Medians at 755 Nogales (Industry)	Jul 09	0.1	L	0.0001	0.1
Medians at 4115-1/2 Nogales (West Covina)	Jul 09	0.1	L	0.001	2
Medians at 2654-1/2 Valley (West Covina)	Jul 09	0.2	L	0.00003	0.03
Bu Sha Temple, 4111 Nogales (West Covina)	Jul 09	0.5	L	0.0001	0.1
Megan Racing, 788 Phillips (Industry)	Jul 09	0.1	L	0.0004	0.4
JJ Plaza, 18253 Colima (Rowland Heights)	Jul 09	0.1	L	0.0001	0.1
New World RTCI-LP, 18958 Daisetta (Rowland Hts.)	Jul 09	0.1	L	0.00001	0.02
Battery Technology, 16651 Johnson (Industry)	Jul 09	0.1	L	0.0001	0.1
FTH Group Inc., 16685 Johnson (Industry)	Jul 09	0.1	L	0.0001	0.1
Ancillary Provider 16664 Johnson (Industry)	Jul 09	0.1	L	0.0001	0.1
Ancillary Provider 16666 Johnson (Industry)	Jul 09	0.2	L	0.0002	0.3
Pan American, 16610 Gale Ave. (Industry)	Jul 09	0.2	L	0.0002	0.2
Blue Pacific, 1354 Marion Ct. (Industry)	Jul 09	0.2	L	0.0003	0.3
Romano's Macaroni Grill, 17603 Colima (Rowland)	Jul 09	0.1	L	0.001	1
Acosta Growers, 16412 Wedgeworth Dr. (Industry)	Jul 09	5	O	0.001	1
Wedgeworth Elementary School (Hacienda Heights)	Aug 09	2.5	AF,L	0.001	1
Wilson High School (Hacienda Heights)	Aug 09	18.3	AF,L	0.006	7
Light of America, Inc. (20722 Currier Rd.) (Walnut)	Sep 09	0.1	L	0.0003	0.3
Ybarra Elementary School (Rowland Heights)	Sep 09	5.6	AF,L	0.008	9
Bixby Elementary School (Hacienda Heights)	Sep 09	6.1	AF,L	0.002	2
Jade Fashion, 1350 Bixby (Industry)	Sep 09	0.1	L	0.0002	0.3
Gutierrez Nursery, 16411 Wedgeworth (Industry)	Sep 09	4	O	0.001	1
Robertson's Ready-Mix	Oct 09	--	I	0.006	7
MTA Bike Trail (Bellflower)	Nov 09	0.1	L	0.001	1

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
(PAGE 12 OF 12)

Whittier Narrows Golf Course (South El Monte)	Dec 09	260	L	0.504	565
Frank Raper, 1215 Bixby (Industry)	Dec 09	0.1	L	0.0001	0.2
Laido International, 16710-12 Johnson (Industry)	Dec 09	0.1	L	0.0002	0.2
Bolt Products, 16725 Johnson Dr. (Industry)	Dec 09	0.1	L	0.0001	0.1
Ily Enterprise, 783 Phillips (Industry)	Jan 10	0.1	L	0.0003	0.3
Superior Profiles, 1325 Bixby (Industry)	Jan 10	0.2	L	0.0002	0.2
60 Fwy., Countrywood & Fullerton (Industry)	Jan 10	5	L	0.003	3
Camacho Strawberries (Industry)	Jan 10	3	O	0.0001	0.1
Advanced Media, 881 Azusa (Industry)	Jan 10	0.1	L	0.001	1
East Group Prop., 855 Anaheim-Puente (Industry)	Mar 10	0.6	L	0.0003	0.4
So.Cal. Air Condition, 16950 Chestnut (Industry)	Mar 10	2	L	0.0003	0.3
USACD, 17101 Chestnut (Industry)	Mar 10	0.3	L	0.0003	0.3
Azusa Blvd Medians (Industry)	Mar 10	0.2	L	0.0001	0.1
Acosta Growers, 17101 Chestnut (Industry)	Mar 10	2.4	O	0.0002	0.2
Paramount Blvd. Medians (Paramount)	Mar 10		L	0.004	4
L.A. Co. ISD bldg., 16610 Chestnut (Industry)	Apr 10	0.5	L	0.0003	0.3
Azusa Property Co., 885 Azusa (Industry)	Apr 10	0.2	L	0.0002	0.2
Golden West Footwear, 16750 Chestnut (Industry)	Apr 10	0.3	L	0.0002	0.2
Teledyne Instruments, 16830 Chestnut (Industry)	Apr 10	0.4	L	0.0004	0.4
Medians, 18927 Daisetta (Rowland Heights)	Apr 10	0.2	L	0.0001	0.1
Colima Medians (L.A. County)	Apr 10	0.1	L	0.0002	0.2
Medians, 1442 Fullerton (Industry)	Apr 10	0.3	L	0.00004	0.05
Teledyne Picco, 16800 Chestnut (Industry)	May 10	0.4	L	0.0003	0.3
Hou Yi Mao Nursery, 18002 Colima (Rowland Hts.)	May 10	1.3	O	0.0002	0.3
East Group Prop., 16700 Chestnut (Industry)	Jun 10	0.6	L	0.001	1
Pro Motion Distribution, 883 Azusa (Industry)	Jun 10	0.1	L	0.0001	0.1
New Age Kaleidoscope, 7 Colima (Industry)	Jun 10	0.6	L	0.001	1
Min Maw Intl. Inc., 18350 San Jose (Industry)	Jun 10	0.7	L	0.001	1
Hot Topic, 18350 San Jose Ave. (Industry)	Jul 10	0.6	L	0.001	1
FedEx, 18305 San Jose Ave. (Industry)	Jul 10	0.6	L	0.001	1
Long Beach DPW sewer flushing (Long Beach)	Aug 10	--	I	0.001	1
Long Beach DPW street sweeping (Long Beach)	Aug 10	--	I	0.0003	0.3
Los Amigos Golf Course (L.A. County)	Aug 10	110	L	0.004	4
Public Works Dept. dust control (Lancaster)	Sep 10	--	I	0.00001	0.01
Donald Miller, 19803 Valley (Walnut)	Sep 10	0.1	L	0.0001	0.3
Hudd Distribution, 18215 Rowland St. (Industry)	Sep 10	0.6	L	0.0003	0.4
New Age Kaleidoscope, 5 Stoner Creek (Industry)	Oct 10	1.4	L	0.0003	0.4
Perrin Manufacturing, 1020 Bixby (Industry)	Oct 10	0.1	L	0.0001	0.2
Centro Watt Operating, 17518A Colima (Industry)	Oct 10	0.4	L	0.00003	0.03
Centro Watt Operating, 17414 Colima (Industry)	Oct 10	0.5	L	0.0001	0.1
717 Nogales LLC, 717 Nogales (Industry)	Oct 10	0.5	L	0.0001	0.1
The Old Road/Magic Mtn. Pkwy medians (Snt. Clarita)	Nov 10	2.8	L	0.003	4
Walgreens, 18308 Colima (Industry)	Dec 10	0.1	L	0.0001	0.1
RWD Office, 3021 S. Fullerton (Industry)	Dec 10	0.3	L	0.0001	0.1
Bell Memorial Church, 1747 Nogales (Rowland Hts.)	Dec 10	0.3	L	0.0002	0.3
Atlantic Ave. medians (South Gate)	Mar 11	16.3	L	0.107	120
Pathfinder Park (Rowland Heights) (Industry)	May 11	29	L	0.00001	0.01
USGVMWD site, 401 Nogales St. (Industry)	May 11	0.5	L	0.0000003	0.0003
East Group Prop., 18551 Arenth Ave. (Industry)	May 11	0.7	L	0.000003	0.003
717 Nogales LLC, 18961 Arenth Ave. (Industry)	May 11	0.5	L	0.000003	0.003
Kimco Realty, 17100 Colima Rd. (Industry)	May 11	3	L	0.000003	0.003
Acme Trading Group, 18501 Arenth (Industry)	May 11	0.9	L	0.00001	0.01
Third Party Enterprises, 18501 Arenth (Industry)	May 11	0.6	L	0.000001	0.001
Floria International 18701 Arenth (Industry)	May 11	0.4	L	0.000003	0.003

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

The treatment plants operated by the Sanitation Districts 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 comprise the Joint Outfall System (JOS) and together produced 402.46 MGD (450,980 AFY) of effluent in FY 10-11, a decrease of 0.6% from the preceding fiscal year. This decrease was due to the on-going effects of water conservation in response to the 2006-2009 drought and to the lingering effects of the recent 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, 123.95 MGD (138,891 AFY), or 30.8 %, was recycled water available for reuse, a slight decrease of 0.1% in total flow from the preceding fiscal year. During FY 10-11, 56.97 MGD (63,842 AFY) was actively reused, a 15.3% decrease from the preceding fiscal year, due mainly to above average rainfall during that year that reduced the use of recycled water for groundwater replenishment. This quantity was 46.0% of the recycled water available and 14.2% of the total effluent produced in the JOS (both percentages decreasing somewhat from the preceding year).

2.1 La Cañada WRP

LA CAÑADA WRP FACTS	
Plant capacity:	0.2 MGD
Water produced and reused:	0.095 MGD 106 AFY 0.9% FY decrease
FY10-11 O&M:	$2,805/AF
No. of reuse sites:	1 105 acres

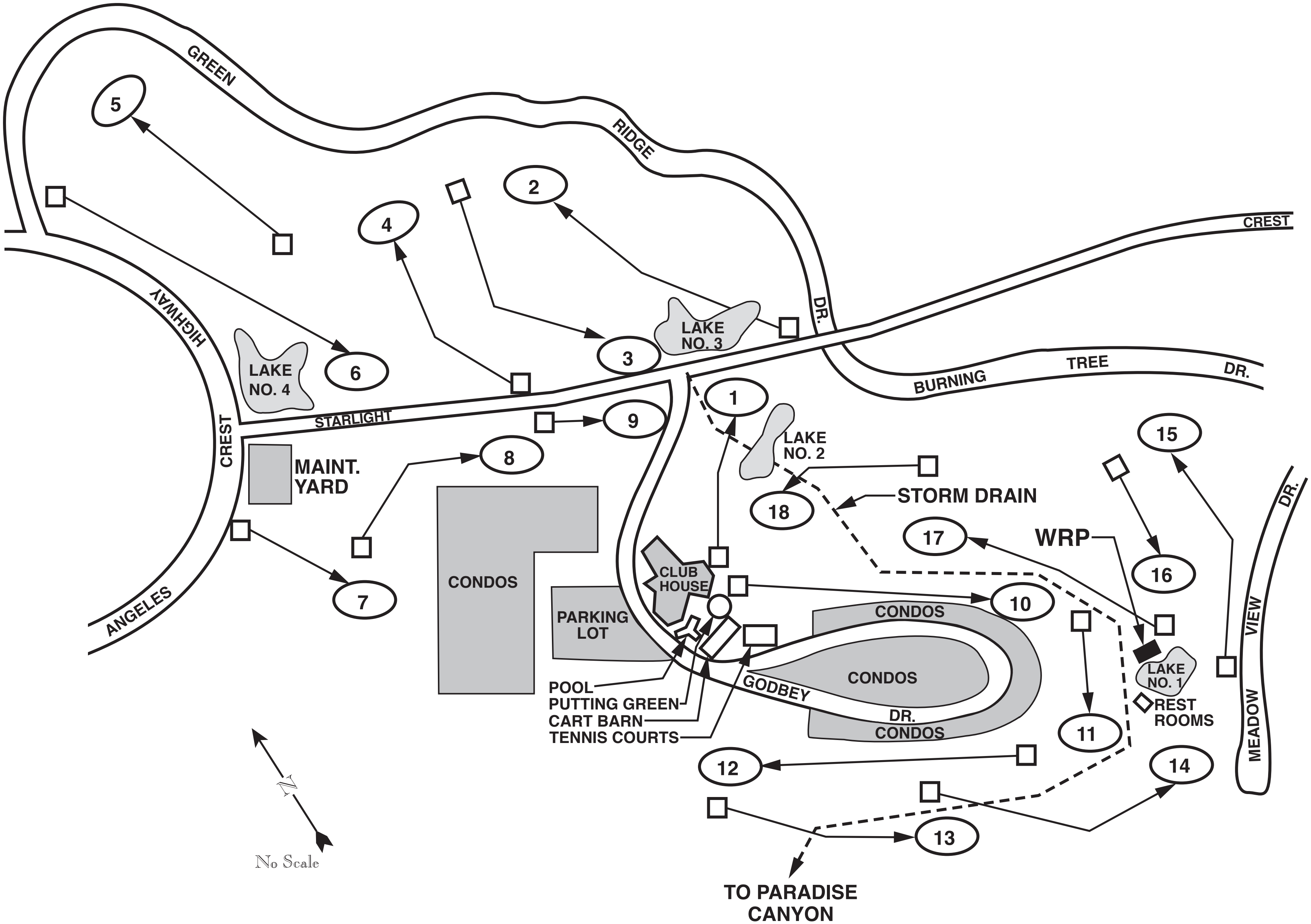
This treatment facility, completed in 1962 and expanded in 1971, is the smallest one operated by the Sanitation Districts and is located on the site of the La Cañada-Flintridge Country Club (Figure 6), at 533 Meadowview Drive, La Cañada, CA 91011. In February 1996, an outfall trunk sewer (for waste activated 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 10-11 (0.02% of the effluent produced in the JOS). This flow rate represents a 0.9% decrease in average daily flows over the preceding fiscal year. The operation and maintenance (O&M) cost in FY 10-11 to produce this water was approximately $2,805/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 18.79 MGD (21,052 AFY) of coagulated, filtered, disinfected tertiary recycled water in FY 10-11 (4.7% of the effluent

FIGURE 6
LA CANADA-FLINTRIDGE COUNTRY CLUB



LONG BEACH WRP FACTS	
Plant capacity:	25 MGD
Water produced:	18.79 MGD 21,052 AFY 2.7% FY increase
FY10-11 O&M:	$254/AF
Water reused:	5.736 MGD 6,428 AFY 1.9% FY decrease 30.5% of production
Delivery systems:	2 176,630 ft. of pipe
No. of reuse sites:	58 1,928.3 acres

produced in the JOS), which was a 2.7% increase over the preceding fiscal year, at an O&M cost of approximately $254/AF. The increase in recycled water production was the result of completed upgrades to the secondary treatment process facilities.

Recycled water quality for FY 10-11 is presented in Table B-1 of Appendix B. An average of 5.736 MGD (6,428 AFY), or 30.5% of the recycled water produced at this plant was delivered for reuse during FY 10-11. This represents a 1.9% decrease from the preceding fiscal year. Use of recycled water from this facility during this fiscal year was permitted under LARWQCB Order Nos. 87-47 and 97-072 (for direct, non-potable reuse), R4-2009-0049 (for non-irrigation uses), and R4-2005-0061 (for seawater intrusion 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, mainly for landscape irrigation (Figure 7). (Note: All recycled water produced at this plant goes to LBWD in exchange for the land on which the Sanitation Districts built the Long Beach WRP.) 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. 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 10-11.

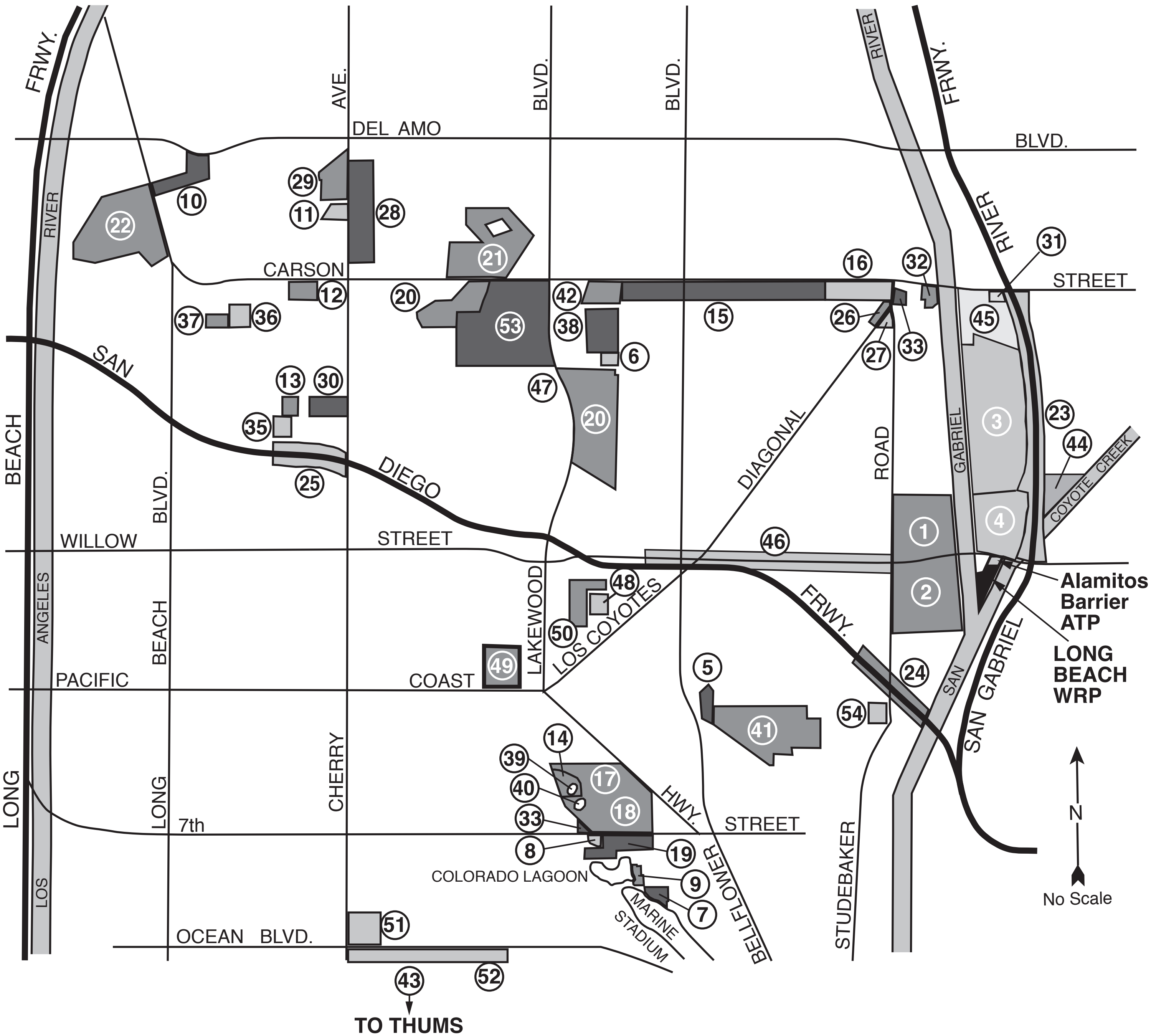
During FY 10-11, LBWD served 3.620 MGD (4,056 AFY), or 19.2% of the recycled water produced at this plant, through approximately 176,630 feet of pipeline (6- to 24-inches in diameter) to 57 direct, non-potable reuse sites encompassing 1,928 acres (additional recycled water was delivered by LBWD to the Alamitos Seawater Intrusion Barrier project, see Section 2.2.2, below). This was a 5.1% decrease from the preceding fiscal year. In August 2010, truck hauling of recycled water from LBWD's recycled water distribution system began for street sweeping and sewer flushing as allowed under the non-irrigation use permit.

LBWD sells the recycled water at a rate of $744.00/AF for peak demand (nighttime) usage or $531.43/AF for off-peak demand (daytime) usage, or between 50-70% of the potable water rate of $1,062.43/AF.

2.2.2 *ALAMITOS SEAWATER INTRUSION BARRIER*

Due to over-drafting of the Central Basin aquifer, which underlies and supplies water to the Metropolitan Los Angeles area, the groundwater level in that basin dropped below sea level by the 1950's. This condition allowed salt water to move inland into the aquifer at various points along the coastline leading to contamination of the groundwater supplies. In response, the Los Angeles County Department of Public Works (LACDPW) 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, straddling the San Gabriel River and the Los Angeles/Orange County line and creating a pressure ridge in five aquifers across the Alamitos Gap. Historically, between 4,000 and 7,000 AFY of non-interruptible imported water

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
LONG BEACH WATER DEPARTMENT
(PAGE 1 OF 2)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
El Dorado Park West	Aug 80	135	L	0.128	144
El Dorado Golf Course	Aug 80	150	L	0.223	249
Recreation Park	Oct 82	26	L	0.042	47
Recreation Golf Course	Oct 82	149	L	0.197	221
Whaley Park	Jun 83	9	L	0.017	19
El Dorado Park East	Jan 84	300	L	0.326	365
Nature Center	Jan 84	60	L	0.058	64
605 Freeway at Wardlow	Feb 84	50	L	0.028	32
Heartwell Park	Feb 84	120	L	0.131	147
Skylinks Golf Course	Apr 84	155	L,P	0.228	255
Douglas Park	Apr 84	3	L	0.003	4
405 Freeway at Atherton	May 84	5	L	0.00001	0.01
DeMille Junior High School	Jun 84	5	AF,L	0.0004	0.4
Heartwell Golf Park	Jun 84	30	L	0.060	68
Veterans Memorial Stadium	Jan 85	6	AF	0.021	24
Recreation Park Bowling Green	Aug 85	3	L	0.004	5
California State University, Long Beach	Dec 85	52	AF,L	0.112	125
Long Beach City College	Feb 86	15	AF,L	0.022	25
Recreation 9-Hole Golf Course	Mar 86	37	L	0.059	66
Blair Field	Apr 86	5	AF	0.010	12
Woodlands Park	Apr 86	7	L	0.011	12
Colorado Lagoon Park	Apr 86	4	L	0.003	4
Marina Vista Park	Apr 86	30	L	0.027	30
Lakewood 1st Presbyterian Church	Sep 88	1	L	0.001	1
Virginia Country Club	Mar 89	135	L,P	0.077	86
Lakewood Golf Course	Mar 89	128	L,P	0.272	305
Scherer Park	Mar 89	24	L	0.031	35
Sunnyside Memorial Park	Apr 89	35	L	0.071	79
All Soul's Cemetery	Apr 89	40	L	0.104	116
Cherry Avenue Park	May 89	10	L	0.011	13
Los Coyotes Diagonal	Mar 91	1	L	0.001	1
Wilson High School	Jun 91	5	AF,L	0.022	24
Long Beach Water Department office	Jan 92	2	L	0.002	2
Reservoir Park (Signal Hill)	Feb 92	2	L	0.009	10
Burroughs Elementary School (Signal Hill)	Feb 92	4	AF,L	0.003	3
Hughes Middle School	Apr 92	3	AF,L	0.013	15
405 Freeway at Walnut	Apr 92	9	L	0.008	9
Somerset Park	May 92	3	L	0.001	1
Longfellow Elementary School	May 92	1	AF,L	0	0
THUMS	Jun 95	8	I	1.035	1,160
Joe Rodgers Park	Nov 96	4.5	L	0.007	7
Jauregui Nursery	Jul 97	5	O	0.029	33
El Dorado Lakes Condominiums	Aug 98	11	L	0.025	28
WalMart	Dec 98	3	L	0.014	16
Vestar Development	Feb 99	8	L	0.035	39
Willow Street medians	Dec 01	2.4	L	0.003	3
Long Beach Water Department Impoundment	Jul 02	--	I	0.001	1
Alamitos Seawater Intrusion Barrier (WRD)	Feb 03	--	R	2.116	2,372
Boeing	Mar 03	52	L	0.013	14
Tucker Elementary School	May 04	3	AF, L	0.005	6
Alamitos Hill Reservoir landscaping	Jul 04	8.6	L	0.002	2
Bluff Park	Jul 07	25.8	L	0.016	17
Stearns Park	Jul 07	21	L	0.021	24

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 Fiscal Year 10-11 Recycled Water Usage
Long Beach Water Department
(Page 2 of 2)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Bixby Park	Jul 07	12.5	L	0.013	14
Douglas Park residential/commercial development	Nov 07	2.1	L	0.062	70
Tincher Elementary School	Feb 09	1.5	AF, L	0.004	5
Long Beach Public Works sewer flushing	Aug 10	--	I	0.001	1
Long Beach Public Works street sweeping	Aug 10	--	I	0.0003	0.3
TOTALS		**1,928.3**		**5.736**	**6,428**

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.

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.

Originally conceived of in the late 1980's, the Leo J. Vander Lans Advanced Water Treatment Facility (LVLAWTF) treats tertiary effluent from the Long Beach WRP with microfiltration 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 early 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 LVLAWTF was funded in part by MWD's Local Resource Program and the federal government.

During FY 10-11, the LVLAWTF produced 2.116 MGD (2,372 AFY) of advanced treated recycled water that was injected into the Alamitos Barrier, or 11.3% of the effluent produced at the Long Beach WRP. This was a 4.1% increase in the amount of recycled water used for this application from the preceding fiscal year, although still below the production capacity of the LVLAWTF.

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 20.87 MGD (23,388 AFY) of coagulated, filtered, disinfected tertiary recycled water during FY10-11 (5.2% of the effluent produced in the JOS), which was a decrease of 13.6% from the preceding fiscal year, at an O&M cost of approximately $319/AF. Effluent water quality for FY 10-11 is presented in Table B-2 of Appendix B.

Through three contracts, an average of 5.012 MGD (5,617 AFY), or 24.0% of the recycled water produced at this plant was delivered during FY 10-11 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 4.1% 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.

LOS COYOTES WRP FACTS

Plant capacity:	37.5 MGD
Water produced:	20.87 MGD 23,388 AFY 13.6% FY decrease
FY10-11 O&M:	$319/AF
Water reused:	5.012 MGD 5,617 AFY 4.1% FY decrease 24.0% of production
Delivery systems:	4 465,300 ft. of pipe
No. of reuse sites:	275 2,471.5 acres

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 10-11, an average of 0.038 MGD (42 AFY), or about 0.2% of the recycled water produced at this plant, was used at this site for landscape irrigation. This was a 19.2% decrease from the preceding fiscal year.

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, including 142,600 feet of pipeline (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 10-11.

No new users of recycled water were added to the City of Cerritos distribution system during FY 10-11. During FY 10-11, the City of Cerritos used 1.627 MGD (1,823 AFY), or 7.8% of the recycled water produced at the Los Coyotes WRP, for landscape irrigation and impoundments on 755.4 acres at 83 individual sites. This was a decrease of 2.6% 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. In FY 10-11, 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 of pipelines that initially served eight sites. 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 10-11, 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.

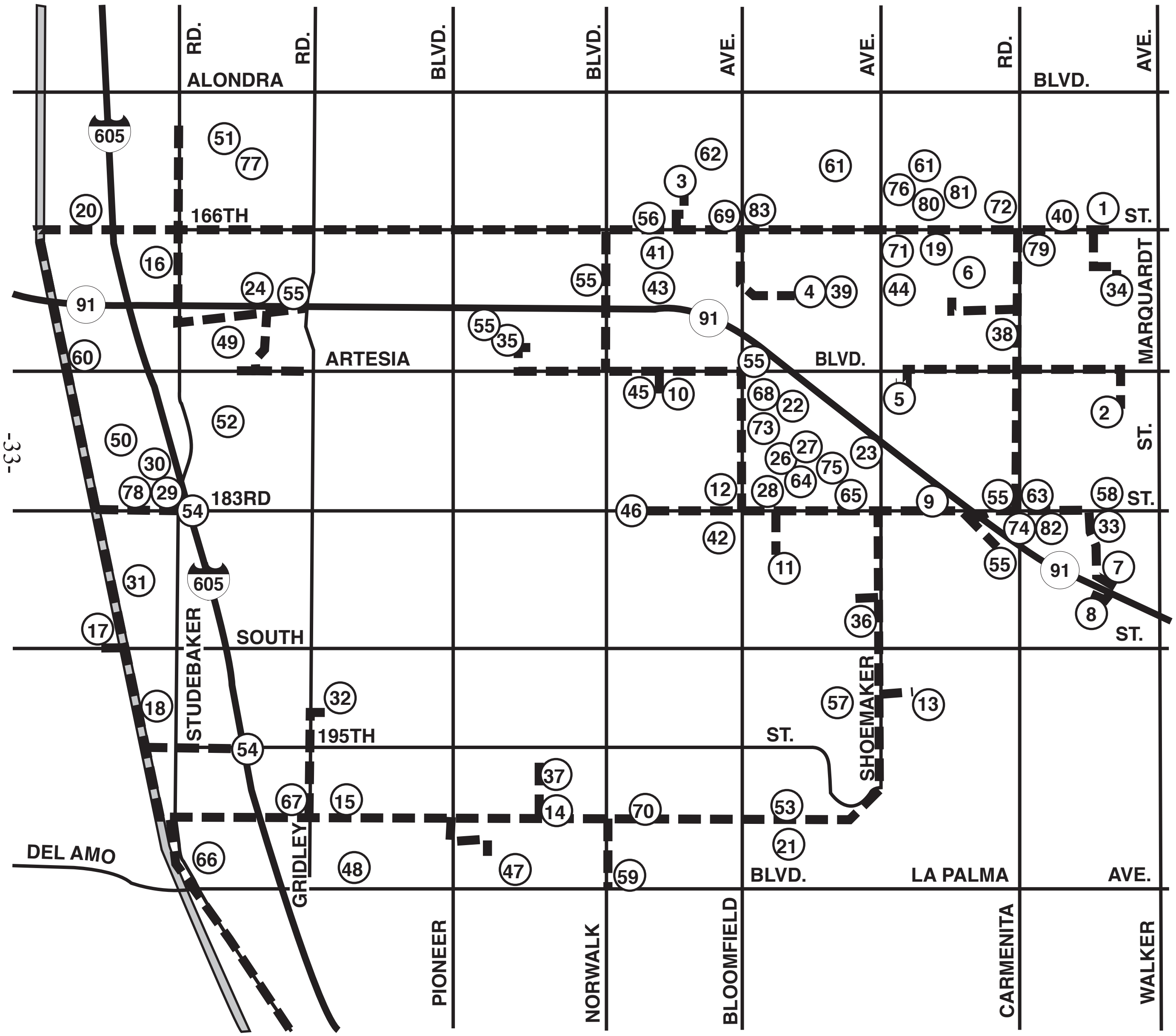
During FY 10-11, the City of Lakewood used 0.395 MGD (443 AFY), or 1.9% of recycled water produced at the Los Coyotes WRP, for irrigation of landscaping, athletic fields, and vegetables on approximately 191 acres at 17 individual sites. This was a slight decrease of 0.2% from the preceding fiscal year. No new reuse sites were added to City's recycled water distribution system in FY 10-11.

The City of Lakewood was charged $435.60/AF by the City of Cerritos during FY 10-11. The City of Lakewood, in turn, retailed the recycled water to its customers for $444.31/AF, or 47% of its potable rate of $945.25/AF. However, it is the City's policy to reimburse 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, and now has 189,800 feet of pipeline. The backbone of the distribution system is a 30-inch pipeline paralleling the San Gabriel River.

FIGURE 8
CITY OF CERRITOS RECLAIMED WATER DISTRIBUTION SYSTEM



1. Carmentia Park
2. Friendship Park
3. Satellite Park
4. Frontier Park
5. Saddleback Park
6. City Park West
7. Rainbow Park
8. Bettencourt Park
9. Brookhaven Park
10. Rosewood Park
11. Heritage Park
12. Library/Civic Center
13. Sunshine Park
14. Jacob Park
15. Gridley Park
16. Reservoir Hill Park
17. Westgate Park
18. Liberty Park
19. Olympic Natatorium
20. Ironwood 9 Golf Course
21. Sports Complex
22. ADP No. 2
23. Shoemaker on/off ramp
24. Windjammer off-ramp
25. Medians/Parkways
26. Transpacific Devel. Co.
27. Sheraton Hotel
28. Automated Data Proc.
29. Cerritos Pontiac/GMC
30. Moothart Chrysler
31. Browning Olsmobile
32. Bragg Elementary
33. Cerritos Elementary
34. Gonsalves Elementary
35. Juarez Elementary
36. Leal Elementary
37. Pat Nixon Elementary
38. Stowers Elementary
39. Whittman Elementary
40. Carmenita Junior High
41. ABC Adult School/Office
42. Cerritos High School
43. Tracy Education Center
44. Whitney Learning Center
45. Kennedy Elementary
46. Elliott Elementary
47. Cabrillo Lane Elementary
48. Haskell Junior High
49. Gahr High School
50. Bellflower Christian School
51. Cerritos Community College
52. Artesia Cemetery Dist.
53. Cerritos Reg. Co. Park
54. CalTrans 605 Freeway
55. CalTrans 91 Freeway
56. Parkside Condominiums
57. Shadow Park HOA
58. Concordia Church
59. Church of Nazarene
60. B&B Stables
61. ADP No. 6
62. Granada Park HOA
63. Cerritos Post Office
64. Performing Arts Center
65. Delta Dental
66. Orange County Nursery
67. SCE Nursery
68. Vestar Development
69. Sundance Condos
70. Cerritos Nursery
71. Warmington Homes
72. Midway International
73. Bloomfield Associates
74. 183rd St. on-ramp
75. AT&T Headquarters
76. Laskey-Weil
77. Chancellor Village
78. Land Rover
79. Surgical Center
80. UPS parking structure
81. UPS main building
82. Fountain Walk Senior Housing
83. ASCIP Building

N

No Scale

(1) REUSE SITES

TRANSMISSION LINE

Table 9
Summary of Fiscal Year 10-11 Recycled Water Usage
City of Cerritos
(Page 1 of 2)

Reuse Site	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Ironwood 9 Golf Course	Nov 78	25	L,P	0.083	93
Library/Civic Center	Dec 87	4	L	0.014	16
Olympic Natatorium	Dec 87	6	L	0.016	18
Whitney Learning Center	Dec 87	10	AF,L	0.019	21
Gonsalves Elementary School	Dec 87	5	AF,L	0.014	16
Wittman Elementary School	Dec 87	5	AF,L	0.009	10
Gahr High School	Dec 87	28	AF,L	0.053	60
Area Development Project No. 2	Jan 88	11.5	L,P	0.055	61
Medians/Parkways	Jan 88	42.8	L	0.145	162
605 Freeway	Jan 88	58.6	L	0.131	147
91 Freeway	Jan 88	70	L	0.036	41
Frontier Park	Jan 88	2.5	L	0.008	9
Carmenita Junior High School	Jan 88	5	AF,L	0.017	19
Cerritos Elementary School	Jan 88	6	AF,L	0.017	20
Stowers Elementary School	Jan 88	6	AF,L	0.022	25
Kennedy Elementary School	Jan 88	7	AF,L	0.021	24
City Park East	Jan 88	18	L	0.040	45
Satellite Park	Jan 88	2	L	0.005	5
Leal Elementary School	Jan 88	6	AF,L	0.010	11
Cerritos High School	Jan 88	20	AF,L	0.039	44
Elliott Elementary School	Jan 88	7	AF,L	0.013	14
Carmenita Park	Jan 88	4.5	L	0.012	14
Juarez Elementary School	Jan 88	7	AF,L	0.019	21
ABC Adult School & Office	Jan 88	3	L	0.014	15
Tracy Education Center	Jan 88	6	AF,L	0.003	3
Liberty Park	Jan 88	20	L	0.069	77
Gridley Park	Jan 88	9	L	0.019	21
Jacob Park	Jan 88	4.5	L	0.012	13
Heritage Park	Feb 88	12	L	0.034	38
Bragg Elementary School	Feb 88	7	AF,L	0.023	26
Haskell Junior High School	Feb 88	18	AF,L	0.039	44
Pat Nixon Elementary School	Feb 88	5	AF,L	0.009	10
Cabrillo Lane Elementary School	Feb 88	9	AF,L	0	0
Sunshine Park	Feb 88	3.5	L	0.008	9
Friendship Park	Feb 88	4	L	0.008	9
Bettencourt Park	Feb 88	2	L	0.005	5
Brookhaven Park	Feb 88	2	L	0.006	7
Saddleback Park	Feb 88	2	L	0.005	5
Westgate Park	Feb 88	4	L	0.007	8
Rainbow Park	Mar 88	2.5	L	0.007	8
Bellflower Christian School	Mar 88	31.4	AF,L	0.034	38
Cerritos Community College	Mar 88	55	AF,L	0.074	83
Cerritos Regional County Park	Apr 88	59	L	0.109	122
Artesia Cemetery District	Apr 88	10.9	L	0.022	24
Rosewood Park	Apr 88	2.7	L	0.008	9
Sports Complex	Mar 89	25	AF,L	0.045	51
Shoemaker On/Off Ramp - 91 Freeway	Dec 89	4.6	L	0.013	14
Transpacific Development Co.	Feb 90	6.9	L	0.010	11
Automated Data Processing	Feb 90	0.7	L	0.004	4
Sheraton Hotel	Mar 90	0.6	L	0.003	4
Cerritos Pontiac/GMC Truck	May 90	0.5	L	0.001	1
Moothart Chrysler	May 90	0.4	L	0.005	6
Windjammer Off Ramp - 91 Freeway	Sep 90	0.8	L	0.002	2

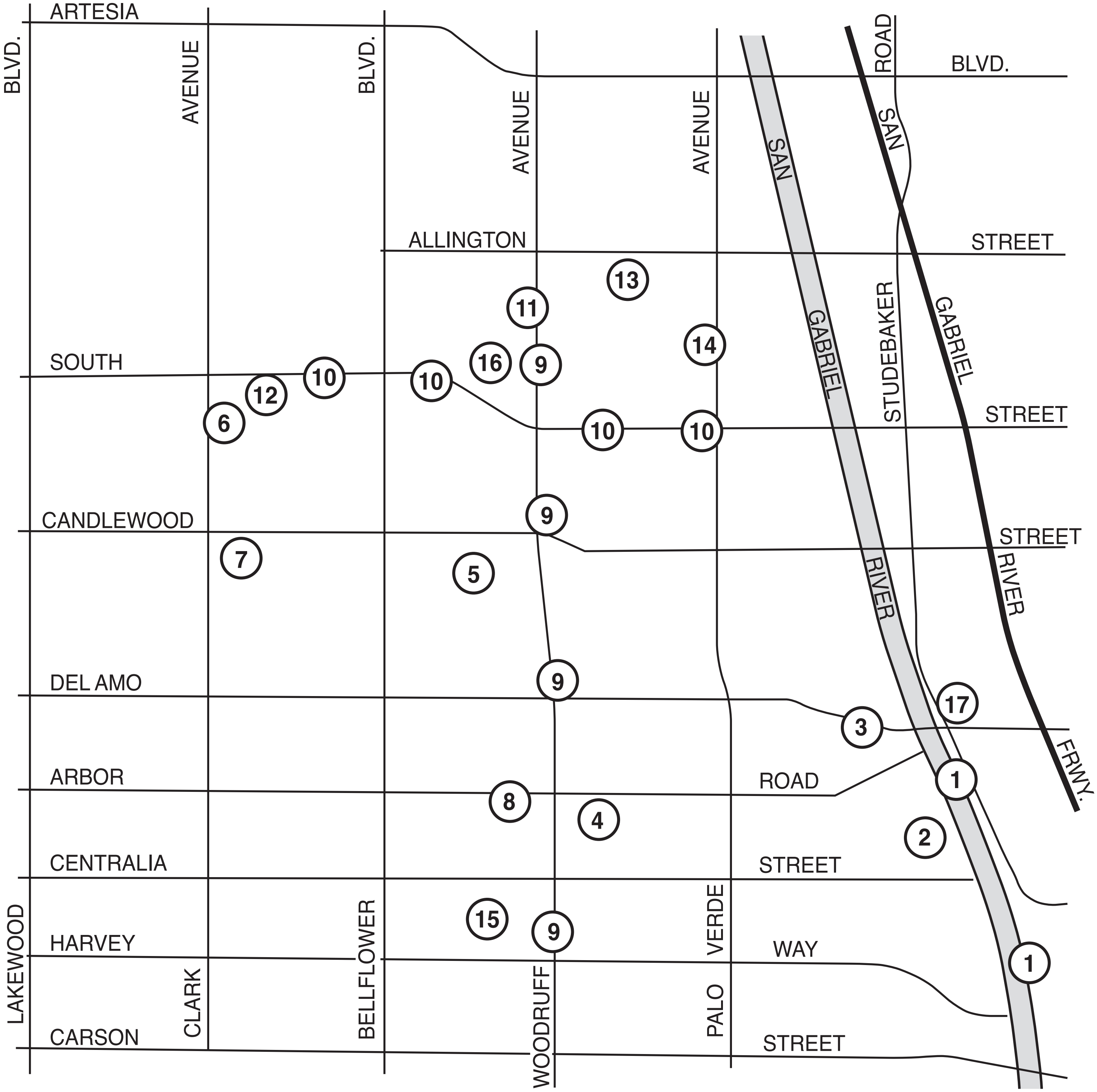
NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

TABLE 9
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
CITY OF CERRITOS
(PAGE 2 OF 2)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Browning Oldsmobile	Sep 90	0.1	L	0.001	1
City Water Truck	May 91	--	L	0.0003	0.4
Private Haulers	May 91	--	I	0	0
Parkside Condominiums	May 91	1.8	L	0.006	6
Concordia Church	Jun 91	4	L	0.005	6
Church of the Nazarene	Aug 91	1	L	0.003	4
B&B Stables	Aug 91	18	I	0.005	5
Shadow Park Homeowner’s Association	Nov 91	6	L	0.014	16
Area Development Project No. 6	Apr 92	9	L	0.056	63
Granada Park Homeowners Association	May 92	3.8	L	0.013	15
Cerritos Post Office	Feb 93	0.7	L	0.005	6
Center for the Performing Arts	Mar 93	1	L	0.004	4
Delta Dental	Nov 93	1.8	L	0.002	2
Southern California Edison nursery	Mar 94	3.5	O	0.004	5
Vestar Development	Jun 94	9.6	L	0.035	39
Sundance Condominiums	Jan 95	9	L	0.028	32
Cerritos Nursery	Dec 95	3	O	0.006	7
Encore Maintenance-Warmington Homes	May 96	1.1	L	0.002	3
Artesia Off Ramp - 91 Freeway	Aug 96	3.3	L	0.005	6
Midway International	Feb 98	0.3	L	0.001	1
Bloomfield Associates, 17871 Park Plaza Drive	Sep 98	0.5	L	0.001	1
183rd Street On Ramp - 91 Freeway	Feb 99	0.6	L	0.001	1
AT&T building, 12900 Park Plaza Drive	Aug 99	0.9	L	0.010	11
Laskey-Weil building, 13101 Moore Street	Oct 01	0.4	L	0.002	2
Chancellor Village Senior Housing	Nov 02	0.9	L	0.002	2
LandRover	Dec. 06	0.3	L	0.003	3
Surgical Center, Carmenita & 166th	May 08	0.1	L	0.0003	0.4
UPS Parking Structure, 13150 Moore	May 08	0.5	L	0.001	1
UPS Main Building, 13233 Moore	Nov 08	4.4	L	0.012	13
Fountain Walk Senior Housing, 18310 Carmenita	Nov 08	0.1	L	0.0004	0.4
ASCIP Building, 16550 Bloomfield	Feb 09	0.1	L	0.0004	1
12800 Center Court	Jul 09	0.4	L	0.002	2
TOTALS		**755.4**		**1.627**	**1,823**

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
CITY OF LAKEWOOD

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
River (Rynerson) Park	Aug 89	40	L	0.064	72
Monte Verde Park	Aug 89	4	L	0.051	58
Mae Boyer Park	Aug 89	8	L	0.032	35
Jose Del Valle Park	Aug 89	12	L	0.026	29
Jose San Martin Park	Aug 89	9.3	L	0.021	23
City Water Yard	Aug 89	1	L	0.010	11
Woodruff Avenue greenbelt	Aug 89	4.1	L	0.011	12
South Street greenbelt	Aug 89	3.3	L	0.009	10
Mayfair Park	Dec 89	18	L	0.039	44
St. Joseph Parish School	Aug 90	3.5	AF,L	0.010	11
Foster Elementary School	Sep 90	6	AF,L	0.016	18
Civic Center Way and City Hall	Nov 90	2.8	L	0.014	16
Mayfair High School	May 91	36.5	AF,L	0.041	46
Lindstrom Elementary School	Sep 91	12	AF,L	0.014	15
Lakewood High School	Sep 91	25	AF,L	0.024	27
My Hoa Farm	May 93	5	AG	0.011	13
Del Amo Blvd. greenbelt	Jul 03	0.3	L	0.002	3
TOTALS		**190.8**		**0.395**	**443**

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.

Construction of the initial system was completed in 1992, with the delivery of recycled water for applications such as landscape irrigation of parks, schools, and freeway slopes, nursery stock irrigation, and various industrial applications. To ensure reliable and efficient delivery of recycled water to the City of Vernon's Malburg Electrical 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 2.5.6 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. Most of the recycled water delivered through the Century distribution 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. Therefore, 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 10-11.

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 few years, three of the retail purveyors, the cities of Downey, Santa Fe Springs and Lynwood, constructed an additional 20,800 feet of pipelines connecting to the CBMWD distribution system. During FY 10-11, two new sites were added to the Century recycled water distribution system. In August 2010, Los Amigos Golf Course was connected. In March 2011, the medians along Atlantic Blvd in South Gate were connected.

During FY 10-11, CBMWD delivered 2.953 MGD (3,309 AFY) of recycled water), or 14.1% of recycled water produced at the Los Coyotes WRP, through 11 retail water purveyors to 172 individual sites for landscape and athletic field irrigation on approximately 1,504 acres and for industrial process water. This was a decrease of 5.1% from the preceding fiscal year.

In FY 10-11, CBMWD sold the recycled water on a wholesale basis to its retail water purveyor customers on a monthly use, tiered rate schedule of $506 for the first 50 AF, and $460 for anything above 50 AF. This price is between 57% and 62% of the rate of $805/AF it charges for Tier 1 non-interruptible potable water supplied by MWD, and between 50% and 55% of the rate of $915/AF it charges for Tier 2 supplies. Recycled water delivered outside of CBMWD's service area was subject to a $20/AF surcharge for each of the two tiers. Recycled water deliveries to the Malburg power plant in Vernon received an industrial use rate of $357 for the first 25 AF, $332 for the next 25 AF, $308 for the next 50 AF, and $283 for anything above 100 AF. Once they receive recycled water from CBMWD, the retail purveyors then set their own rates for the recycled water delivered to individual customers.

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 1991, allowing the plant to treat up to 15 MGD. In FY 10-11, the plant

FIGURE 10
CENTRAL BASIN MUNICIPAL WATER DISTRICT
RECLAIMED WATER DISTRIBUTION SYSTEM

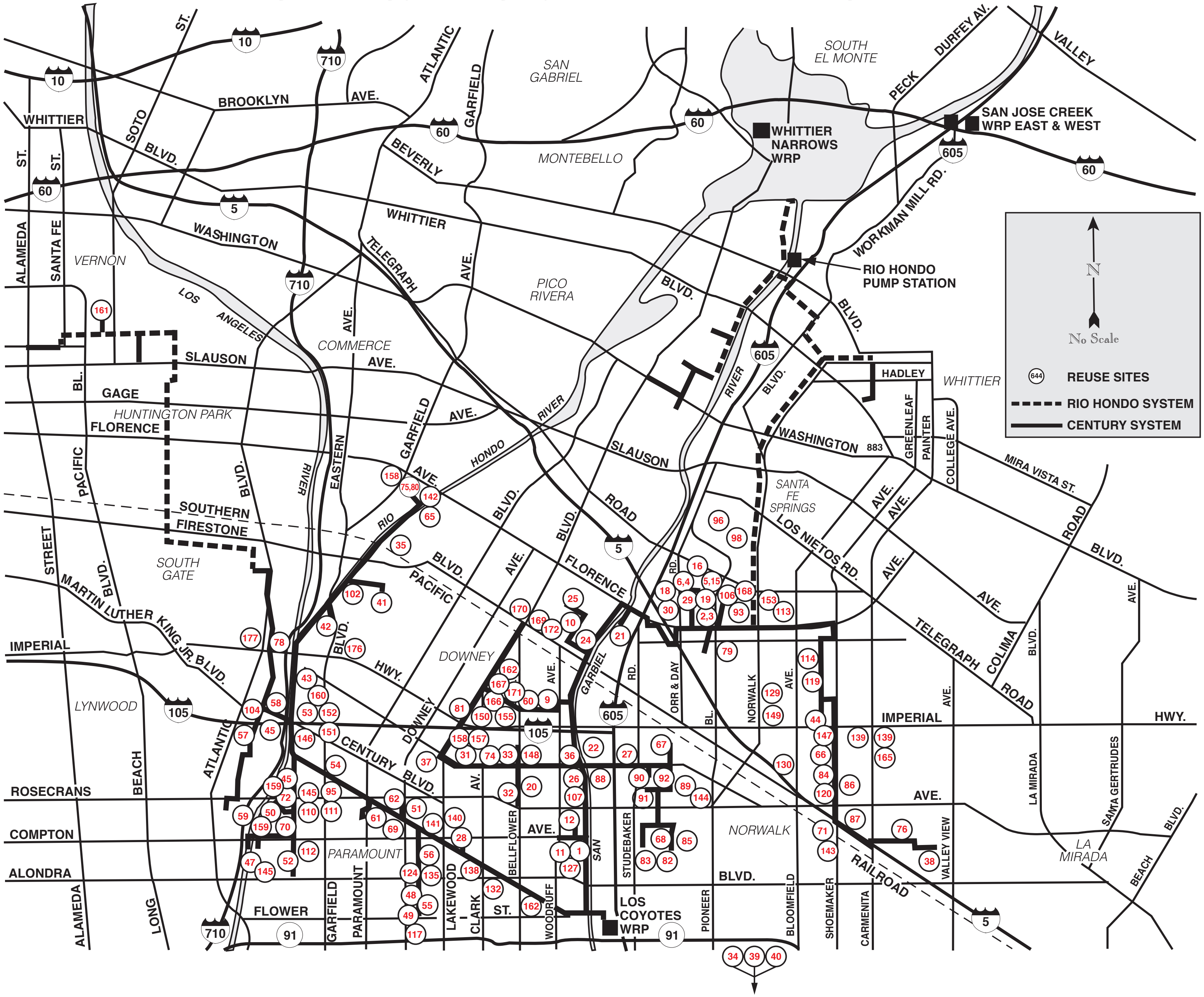


Table 11
Summary of Fiscal Year 10-11 Recycled Water Usage
Century Distribution System
(Page 1 of 4)

Reuse Site (City) (Map No.)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Andy's Nursery (Bellflower) (1)	Feb 92	9	O	0	0
Lake Center Park (Santa Fe Springs) (2)	Mar 92	8	L	0.018	20
Lake Center School (Santa Fe Springs) (3)	Mar 92	8	AF,L	0.016	18
Clarkman Walkway (Santa Fe Springs) (4)	Mar 92	0.1	L	0.0003	0.3
Towne Center Walkway (Santa Fe Springs) (5)	Apr 92	0.1	L	0.0003	0.3
Lakeview Child Care (Santa Fe Springs) (6)	May 92	0.2	L	0.001	2
Orr & Day Road medians (Santa Fe Springs) (7)	May 92	0.1	L	0.00002	0.03
Florence Avenue medians (Santa Fe Springs) (8)	Jun 92	3	L	0.005	6
Gauldin Elementary School (Downey) (9)	Jun 92	8.4	AF,L	0.005	5
Rio San Gabriel School (Downey) (10)	Jun 92	14.8	AF,L	0.014	16
Bellflower High School (Bellflower) (11)	Jul 92	28.4	AF,L	0.063	70
Ernie Pyle Elementary School (Bellflower) (12)	Aug 92	4.9	AF,L	0.012	13
Telegraph Road medians (Santa Fe Springs) (13)	Aug 92	0.5	L	0.003	3
Lakeview Park (Santa Fe Springs) (14)	Aug 92	6.7	L	0.011	12
Clark Estate (Santa Fe Springs) (15)	Aug 92	4.3	L	0.005	5
Towne Center Green (Santa Fe Springs) (16)	Aug 92	2.3	L	0.006	7
Pioneer Road medians (Santa Fe Springs) (17)	Sep 92	0.4	L	0.030	34
Police Station (Santa Fe Springs) (18)	Sep 92	0.2	L	0.001	1
Aquatic Center (Santa Fe Springs) (19)	Sep 92	0.5	L	0.004	4
Lewis School (Downey) (20)	Nov 92	4.6	AF,L	0.005	6
Wilderness Park (Downey) (21)	Nov 92	24	L	0.092	103
605 Freeway at Foster (Bellflower) (22)	Jan 93	14	L	0	0
Promenade Walkway (Santa Fe Springs) (23)	Jan 93	0.3	L	0.001	1
Rio San Gabriel Park (Downey) (24)	Jan 93	6.4	L	0.032	36
East Middle School (Downey) (25)	Jan 93	26	AF,L	0.017	19
Zinn Park (Bellflower) (26)	Jan 93	1.7	L	0.003	4
605/105 Interchange (Bellflower) (27)	Feb 93	22	L	0.0001	0.1
Hollywood Sports Center (Bellflower) (28)	Feb 93	22.5	L	0.002	2
Santa Fe Springs High School (Santa Fe Springs) (29)	Feb 93	14.5	AF,L	0.023	25
605/5 Freeway at Florence (Santa Fe Springs) (30)	Feb 93	17	L	0.0002	0.2
Old Downey Cemetery (Downey) (31)	Apr 93	7.5	L	0.026	30
Thompson Park (Bellflower) (32)	Apr 93	15	L	0.014	16
105 Freeway at Bellflower (Downey) (33)	May 93	17.9	L	0.009	10
Palms Park (Lakewood) (34)	May 93	20	L	0.003	3
Crawford Park (Downey) (35)	Jul 93	2.1	L	0.006	7
Humedo Nursery (Downey) (36)	Aug 93	11	O	0.005	6
105 Freeway at Lakewood (Downey) (37)	Sep 93	25	L	0.003	4
Shaw Industries Carpet Mill (Santa Fe Springs) (38)	Sep 93	--	I	0.076	85
Palms Elementary School (Lakewood) (39)	Sep 93	3.5	AF,L	0.012	13
Artesia High School (Lakewood) (40)	Sep 93	20.9	AF,L	0.033	37
West Middle School (Downey) (41)	Oct 93	19.5	AF,L	0.015	17
Circle Park (South Gate) (42)	Oct 93	4	L	0.013	15
Hollydale Park (South Gate) (43)	Nov 93	46	L	0.112	126
Robertson's Ready-Mix (Santa Fe Springs) (44)	Dec 93	--	I	0.005	5
710/105 Interchange (Paramount) (45)	Dec 93	18.5	L	0	0
Downey/Contreras greenbelt (Paramount) (46)	Dec 93	0.1	L	0.0003	0.3
Compton Golf Course (Paramount) (47)	Dec 93	13	L	0.021	24
Alondra Junior High School (Paramount) (48)	Dec 93	14	AF,L	0.012	14
Mokler Elementary School (Paramount) (49)	Dec 93	10	AF,L	0.009	11
Los Cerritos Elementary School (Paramount) (50)	Dec 93	8	AF,L	0.011	12
Wirtz Elementary School (Paramount) (51)	Dec 93	9	AF,L	0.011	12
Keppel Elementary School (Paramount) (52)	Dec 93	4	AF,L	0.002	3
Billy Lee Nursery (Paramount) (56)	Dec 93	2.5	O	0.008	9

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 Fiscal Year 10-11 Recycled Water Usage
Century Distribution System
(Page 2 of 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
105 Freeway at Wright (Lynwood) (57)	Jan 94	19.6	L	0.001	2
710 Freeway at M.L. King (Lynwood) (58)	Jan 94	15.5	L	0	0
710 Freeway at Rosecrans (Compton) (59)	Jan 94	24.2	L	0.007	8
Independence Park (Downey) (60)	Feb 94	10.4	L	0.011	13
Paramount Park (Paramount) (61)	Feb 94	9	L	0.022	24
Paramount High School (Paramount) (62)	Feb 94	19	AF,L	0.021	23
Rosecrans/Paramount medians (Paramount) (63)	Mar 94	0.2	L	0.002	2
Somerset medians (Paramount) (64)	Apr 94	0.9	L	0.005	6
Rio Hondo Golf Course (Downey) (65)	Apr 94	92.4	L	0.193	216
Zimmerman Park (Norwalk) (66)	Apr 94	9.5	L	0.015	17
Vista Verde Park (Norwalk) (67)	Apr 94	6.5	L	0.012	14
Gerdes Park (Norwalk) (68)	Apr 94	8.6	L	0.015	17
Clearwater Junior High School (Paramount) (69)	Apr 94	4	AF,L	0.031	35
Steam Engine Park (Paramount) (70)	Jun 94	0.6	L	0.001	1
5 Freeway at Shoemaker/Firestone (Norwalk) (71)	Jul 94	0.8	L	0.003	4
Spane Park (Paramount) (72)	Jul 94	5	L	0.008	9
Orange/Cortland Parkway (Paramount) (73)	Jul 94	1.3	L	0.002	3
Carpenter School (Downey) (74)	Aug 94	7.4	AF,L	0.007	7
John Anson Ford Park (Bell Gardens) (75)	Sep 94	45	L	0.054	60
Ramona Park (Norwalk) (76)	Oct 94	4.8	L	0.004	4
Alondra median (Paramount) (77)	Oct 94	0.6	L	0.007	8
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	0.033	36
John Anson Ford Golf Course (Bell Gardens) (80)	Feb 95	13.6	L	--	--
South Middle School (Downey) (81)	May 95	15.8	AF,L	0.007	8
Nuffer Elementary School (Norwalk) (82)	Jun 95	10.4	AF,L	0.007	8
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	0.025	28
Norwalk Adult School (Norwalk) (85)	Jul 95	17.2	AF,L	0.026	29
John Glenn High School (Norwalk) (86)	Jul 95	38.8	AF,L	0.039	44
Ramona Elementary School (Norwalk) (87)	Jul 95	6.8	AF,L	0.004	4
New River Elementary School (Norwalk) (88)	Jul 95	10.3	AF,L	0.008	9
Morrison Elementary School (Norwalk) (89)	Sep 95	7.7	AF,L	0.003	4
D.D. Johnston Elementary School (Norwalk) (90)	Sep 95	8.9	AF,L	0.006	7
Corvallis Middle School (Norwalk) (91)	Sep 95	16.9	AF,L	0.030	34
Norwalk High School (Norwalk) (92)	Sep 95	35.1	AF,L	0.033	37
Heritage Park (Santa Fe Springs) (93)	Oct 95	9.2	L	0.009	10
Belloso Farm Nursery (Paramount) (94)	Oct 95	2.5	O	0.002	2
Robertson's Ready-Mix (Paramount) (95)	Nov 95	--	I	0.007	8
Los Nietos Park (Santa Fe Springs) (96)	Jan 96	11.2	L	0.014	15
Bell Gardens Soccer Field (Bell Gardens) (97)	Feb 96	2.6	AF	0.004	5
Jersey Ave. School/city athl. fields (S.F. Springs) (98)	Mar 96	8	AF	0.004	5
Bellflower Blvd. medians (Bellflower) (99)	Jul 96	0.3	L	0.002	3
Alta Produce (Paramount) (100)	Aug 96	4	AG	0.003	2
Belloso Farm Nursery (South Gate) (101)	Sep 96	2.5	O	0.001	1
Temple Park (Downey) (102)	Oct 96	1	L	0.001	1
Woodruff Avenue medians (Bellflower) (103)	Oct 96	0.8	L	0.005	5
Ham Park (Lynwood) (104)	Dec 96	10	L	0	0
Jauregui Nursery (Paramount) (105)	Dec 96	2	O	0.005	6
Heritage Corporate Center (Santa Fe Springs) (106)	Jan 97	29.9	L	0.027	30
Belloso Farm Nursery (Bellflower) (107)	Jan 97	8	O	0	0
Foster Road medians (Norwalk) (108)	Jan 97	0.3	L	0.002	2
Rosecrans Avenue medians (Paramount) (109)	Mar 97	0.2	L	0.008	9

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
CENTURY DISTRIBUTION SYSTEM
(PAGE 3 OF 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Texaco/Somerset medians (Paramount) (110)	Mar 97	0.2	L	0.001	1
McLane Mowers (Paramount) (111)	Mar 97	0.6	L	0	0
ABC Nursery (Paramount) (112)	Mar 97	16	O	0	0
L.A. Co. Vector Control Bldg. (S.F. Springs) (113)	Mar 97	3.8	L	0.003	4
Greenstone Warehouse (Santa Fe Springs) (114)	Apr 97	0.4	L	0.002	2
McNab Avenue medians (Bellflower) (115)	Jul 97	0.1	L	0.0004	0.5
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	0.0002	0.2
Maruichi American building (Santa Fe Springs) (119)	Oct 98	0.4	L	0.001	1
Norwalk Golf Course (Norwalk) (120)	Jan 99	8	L	0.022	25
Soco-Lynch Corp. building (Santa Fe Springs) (121)	Feb 99	1	L	0.002	3
MC&C building (Santa Fe Springs) (122)	Mar 99	0.7	L	0.007	7
Lakewood Blvd. medians (Paramount) (123)	Mar 99	0.2	L	0.002	2
Progress Park (Paramount) (124)	Mar 99	6.2	L	0.012	14
Garfield Avenue medians (Paramount) (125)	Apr 99	0.1	L	0.001	1
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	0.003	3
Metropolitan State Hospital (Norwalk) (129)	Sep 99	80	L	0	0
Moffit School (Norwalk) (130)	Sep 99	1.6	AF,L	0.005	5
Rio Hondo Channel (Downey) (131)	Nov 99	0.8	L	0.001	1
Simms Park (Bellflower) (132)	Dec 99	12.5	L	0.014	15
Foster Road Greenbelt (Norwalk) (133)	Mar 00	3.3	L	0.003	3
San Luis Street @ flood channel (Paramount) (134)	Apr 00	3	L	0.005	1
Jefferson School (Paramount) (135)	Jul 00	0.5	AF,L	0.003	3
Columbus High School (Downey) (136)	Aug 00	25	AF,L	0.015	17
Triangle Park (South Gate) (137)	Nov 00	0.4	L	0.002	2
Golden Springs Business Park (Santa Fe Springs) (139)	Apr 01	31.4	L	0.113	126
Bellflower Storage (Bellflower) (140)	Jun 01	3	L	0.002	2
Railroad Beautification (Paramount) (141)	Jul 01	0.5	L	0	0
Rio Hondo Channel (Bell Gardens) (142)	Jul 01	0.3	L	0.003	3
CDM building (Santa Fe Springs) (143)	Oct 01	0.1	L	0.002	2
L.A. Co. Recorder’s Office (Norwalk) (144)	Jan 02	2.7	L	0.014	15
Tays Cool Fuel (Paramount) (145)	Feb 02	0.2	L	0.003	3
L.A. River landscaping (South Gate) (146)	Mar 02	2.5	L	0.001	1
Lakewood-Adoree medians (Downey) (150)	Jul 02	3.4	L	0.031	35
Simon Trucking (Santa Fe Springs) (147)	Nov 02	0.9	L	0.001	1
Foster/Coldbrook medians (Bellflower) (148)	Nov 02	0.1	L	0.0003	0.4
L.A. County Library (Norwalk) (149)	Nov 02	0.9	L	0.005	6
Metro State/Wheelabrator (Norwalk) (129)	Jan 03	B	I	0.248	278
Imperial Equestrian (South Gate) (152)	Jul 03	1.5	L	0.004	4
Norwalk Walkway/Parking (Santa Fe Springs) (153)	Jul 03	1	L	0.003	4
Steve Horn Way/Bellflower medians (Downey) (155)	Nov 03	0.3	L	0.015	17
Pro Growers Nursery (Norwalk) (156)	Sep 04	11.3	O	0.040	45
Kaiser Administration building (Downey) (157)	Oct 04	2.5	L	0.005	6
Downey Studios (Downey) (158)	Oct 04	1	L	0.004	5
Dills Park (Paramount) (159)	Jul 05	12.5	L	0.030	34
Hollydale Elementary (South Gate) (160)	Sep 05	3	AF,L	0.001	1
Malburg Generation Station (Vernon) (161)	Oct 05	B	I	0.597	668
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	0

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 FISCAL YEAR 10-11 RECYCLED WATER USAGE
CENTURY DISTRIBUTION SYSTEM
(PAGE 4 OF 4)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Foster Road medians (Santa Fe Springs) (165)	Jul 06	1	L	0.009	11
Space Learning Center (Downey) (166)	Apr 08	10.5	L	0.024	27
Cornerstone Commerce Center (Downey) (167)	Jun 08	0.8	L	0.006	7
Mora Drive medians (Santa Fe Springs) (168)	Oct 08		L	0.004	5
Firestone Blvd. medians (Downey) (169)	Feb 09	0.1	L	0.0004	0.4
Citibank, 8764 Firestone Blvd. (Downey) (170)	Feb 09	0.1	L	0.001	1
Steve Horn Pkwy. medians @ Kaiser (Downey) (171)	May 09	1.4	L	0.023	26
Walgreens/Big Lots, 9018 Firestone (Downey) (172)	May 09	0.4	L	0.003	4
Pacific Alloy Casting (South Gate) (173)	Jul 09	--	I	0.016	18
MTA Bike Trail (Bellflower) (174)	Nov 09	0.1	L	0.001	1
Paramount Blvd. Medians (Paramount) (175)	Mar 10		L	0.004	4
Los Amigos Golf Course (L.A. County) (176)	Aug 10	110	L	0.004	4
Atlantic Ave. medians (South Gate) (177)	Mar 11	16.3	L	0.107	120
TOTALS		**1,520.3**		**2.953**	**3,309**

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.

POMONA WRP FACTS	
Plant capacity:	15 MGD
Water produced:	9.00 MGD 10,089 AFY 7.4% FY increase
FY10-11 O&M:	$299/AF
Water reused: (excluding recharge)	2.557 MGD 2,865 AFY 18.2% FY decrease 28.4% of production
Delivery systems:	2 190,100 ft. of pipe
No. of reuse sites:	192 2,192.5 acres

produced 9.00 MGD (10,089 AFY) of coagulated, filtered, disinfected tertiary recycled water (2.2% of the effluent produced in the JOS), which was a 7.4% increase over the preceding fiscal year, at a FY 10-11 O&M cost of approximately $299/AF. Recycled water quality for FY 10-11 is presented in Table B-3 of Appendix B.

Two agencies, the Pomona Water Department (PWD) and the Walnut Valley Water District (WVWD), along with the Sanitation Districts' Spadra Landfill, together used 2.557 MGD (2,865 AFY) or 28.4% of the plant's total production. This was an 18.2% decrease from the preceding fiscal year. A third purveyor, Rowland Water District (RWD), took over operation of that portion of the WVWD recycled water distribution system that ran through its service area and has connected to the City of Industry system which gets its recycled water from the San Jose Creek WRP (Section 2.5.3).

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, non-potable 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 PWD 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 occasional satellite farming operation at Lanterman State Hospital, and landscape irrigation along South Campus Drive Parkway were connected to a recycled water distribution system.

The distribution system consists of a 490 HP, 9,000 gpm pump station that feeds two, 21-inch pipelines. 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. Lanterman Hospital had been served by a 21-inch unreinforced concrete gravity line from the Pomona WRP that currently serves the former Landfill site and the WVWD pump station (discussed in Sections 2.4.2 and 2.4.3, below).

During FY 10-11, the PWD delivered 1.251 MGD (1,347 AFY), or 13.4% of the recycled water from the Pomona WRP though 37,000 feet of pipeline, to seven retail customers on 1,427 acres as shown in Figure 11. This was a 28.3% decrease from the preceding fiscal year. Table 12 lists the users of the PWD system as of the end of FY 10-11. No new users were added during this fiscal year.

TABLE 12
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
POMONA WATER DEPARTMENT & SANITATION DISTRICTS' SPADRA SITE

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Cal Poly, Pomona-Kellogg	Dec 73	500	AG,L,O,P,AF	0.469	526
Lanterman Hospital	Dec 73	100	AG	0	0
South Campus Drive Parkway	Dec 73	8	L	0.010	11
Route 57 and 10 Freeways	May 75	18	L	0.020	23
Bonelli Regional County Park	Apr 77	789	L	0.660	740
Route 71 and 10 Freeways	Apr 81	12	L	0.036	40
Spadra Landfill landscape	Jul 84	53	L	0.240	269
Spadra Landfill dust control	Jul 84	--	I	0.010	11
Cal Poly LandLab	Nov 93	2.5	AG,L	0.013	15
Spadra Gas-to-Energy Plant	Dec 95	--	I	0.049	55
Robertson's Ready-Mix	Oct 09	--	I	0.006	7
TOTALS		**1,482.5**		**1.514**	**1,697**

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.

During FY 10-11, the PWD sold the recycled water to its customers from its pressure system at a rate of $521.67/AF. This is 54% of its potable water rate of $962.68/AF.

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 operate. 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 are also listed in Table 12 along with the users of the Pomona Water Department system.

During FY 10-11, 0.312 MGD (350 AFY), or 3.5% 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 9.1% 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 feet of pipeline, and a 2 million gallon reservoir. A second, 2 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 non-potable 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. In January 2003, the RWD assumed operation of the 29,280 feet of the WVWD recycled water system pipeline serving seven reuse sites in RWD's service area which was connected to the City of Industry main recycled transmission line in July 2009 (see Section 2.5.3 below). Figure 12 and Table 13 present the users of the WVWD system as of the end of FY 10-11. A narrative description of the layout of the WVWD recycled water distribution system is contained in Appendix G.

In FY 10-11, two new sites were added to the WVWD distribution system. In September 2010, the landscaping at the Donald Miller building (19803 Valley Blvd.) was connected. In December 2010, the landscaping around Bell Memorial Church (1747 Nogales St.) was connected.

During FY 10-11, WVWD delivered 1.043 MGD (1,168 AFY), or 11.6% of the recycled water produced at the Pomona WRP, a decrease of 5.6% from the preceding fiscal year. WVWD received the recycled water directly from the Sanitation Districts and retailed it to its 183 customers (which irrigate approximately 708.5 acres) at 64% of its potable water rate of $1,019.30/AF, or $649.04/AF.

2.5 San Jose Creek WRP

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 in 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 10-11, Stages I & II (east side) produced 46.00 MGD (51,547 AFY) and Stage III (west side) produced 21.42 MGD (24,008 AFY), at O&M costs of $248/AF and $221/AF, respectively. The entire facility,

FIGURE 13
SAN JOSE CREEK WRP REUSE SITES

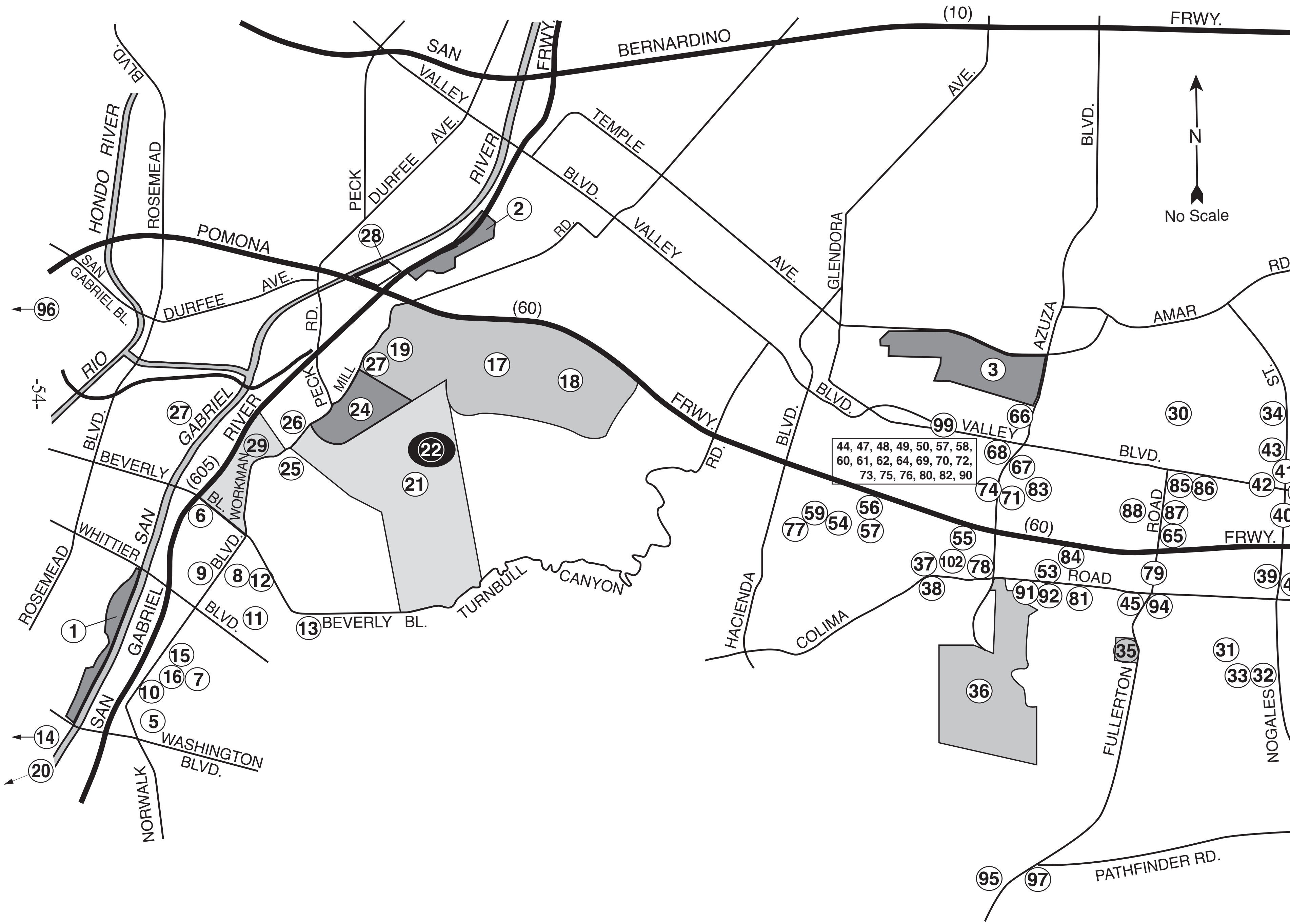


TABLE 14
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
SAN JOSE CREEK WRP
(PAGE 1 OF 2)

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage (MGD)	Usage (AFY)
Water Replenishment District (1)	Jun 71	--	R	28.015	33,393
California Country Club (Industry) (2)	Jun 78	120	L,P	0.378	423
Industry Hills Recreation Area (Industry) (3)	Aug 83	600	L,P	0.854	957
Field, S/W corner Norwalk/Telegraph (S.F. Spgs.) (4)	Aug 94	5.2	L	0.010	11
Washington Elementary School (Whittier) (5)	Sep 94	5	AF,L	0.007	3
605 Freeway at Beverly (Whittier) (6)	Sep 94	30	L	0.044	50
Sorenson Elementary School (Whittier) (7)	Oct 94	4	AF,L	0.006	7
Palm Park West (Whittier) (8)	Nov 94	5	L	0.008	8
Orange Grove School (Whittier) (9)	Apr 95	6.6	AF,L	0.004	5
Katherine Edwards Middle School (Whittier) (10)	Sep 95	19	AF,L	0.022	24
Longfellow Elementary School (Whittier) (11)	Sep 95	4.5	AF,L	0.004	5
Walter Dexter Middle School (Whittier) (12)	Sep 95	15.5	AF,L	0.007	8
Founders Memorial Park (Whittier) (13)	Jan 96	4	L	0.008	9
Salt Lake Municipal Park (Huntington Park) (14)	Apr 96	20.9	L	0.040	45
Sorenson Park (Whittier) (15)	May 96	10.7	L	0.016	18
Sorenson Library (Whittier) (16)	May 96	0.4	L	0	0
Puente Hills Landfill irrigation (Industry) (17)	Nov 97	320	L	0.764	856
Puente Hills Landfill dust control (Industry) (18)	Nov 97	130	I	0.133	149
Puente Hills Gas-to-Energy Facility (Industry) (19)	Nov 97	--	I	0.607	680
Lugo Park (Cudahy) (20)	Apr 98	7	L	0.005	5
Rose Hills Memorial Park – upper area (Whittier) (21)	Jun 98	298	L	0.373	418
River Ridge Golf Course (Pico Rivera) (23)	Jul 02	21.3	L	0.021	24
Rio Hondo College (Whittier) (24)	Jun 03	85	AF,L	0.023	26
Mill Elementary School (Whittier) (25)	Jun 03	15	AF,L	0.008	9
Gateway Pointe (Whittier) (26)	Jan 05	8	L	0.016	18
Puente Hill Materials Recovery Facility (Industry) (27)	Feb 05	2.4	L	0.005	5
LA Sanchez Nursery (Industry) (28)	Apr 06	5	O	0.010	12
Rose Hills Memorial Park – lower area (Whittier) (29)	Aug 06	275	L	0.438	491
Sunshine Park (L.A. County) (30)	Jul 09 (May 86)	4	L	0.002	3
Rowland Elementary School (Rowland Hts.) (31)	Jul 09 (May 86)	3	AF,L	0.002	2
Farjardo School (Rowland Heights) (32)	Jul 09 (May 86)	4	AF,L	0.0005	1
Farjardo Park (Rowland Heights) (33)	Jul 09 (May 86)	4	L	0.001	2
Nogales High School (L.A. Co.) (34)	Jul 09 (Jun 86)	11	AF,L	0.005	6
Queen of Heaven Cemetery (Rowland Hts.) (35)	Jul 09 (Jun 86)	35	L	0.003	3
Schabarum Regional County Park (L.A. Co.) (36)	Jul 09 (Sep 86)	233	L	0.020	22
Pepperbrook Park (Hacienda Heights) (37)	Jul 09	4.4	L	0.002	2
Countrywood Park (Hacienda Heights) (38)	Jul 09	5.4	L	0.002	2
Rowland Heights Golf Center (Rowland Heights) (39)	Jul 09	8	L	0.002	3
Medians at 755 Nogales (Industry) (40)	Jul 09	0.1	L	0.0001	0.1
Medians at 4115-1/2 Nogales (West Covina) (41)	Jul 09	0.1	L	0.001	2
Medians at 2654-1/2 Valley (West Covina) (42)	Jul 09	0.2	L	0.00003	0.03
Bu Sha Temple, 4111 Nogales (West Covina) (43)	Jul 09	0.5	L	0.0001	0.1
Megan Racing, 788 Phillips (Industry) (44)	Jul 09	0.1	L	0.0004	0.4
JJ Plaza, 18253 Colima (Rowland Heights) (45)	Jul 09	0.1	L	0.0001	0.1
New World RTCI-LP, 18958 Daisetta (Row. Hts.) (46)	Jul 09	0.1	L	0.00001	0.02
Battery Technology, 16651 Johnson (Industry) (47)	Jul 09	0.1	L	0.0001	0.1
FTH Group Inc., 16685 Johnson (Industry) (48)	Jul 09	0.1	L	0.0001	0.1
Ancillary Provider 16664 Johnson (Industry) (49)	Jul 09	0.1	L	0.0001	0.1
Ancillary Provider 16666 Johnson (Industry) (50)	Jul 09	0.2	L	0.0002	0.3
Pan American, 16610 Gale Ave. (Industry) (51)	Jul 09	0.2	L	0.0002	0.2
Blue Pacific, 1354 Marion Ct. (Industry) (52)	Jul 09	0.2	L	0.0003	0.3
Romano's Macaroni Grill, 17603 Colima (R. Hts.) (53)	Jul 09	0.1	L	0.001	1
Acosta Growers, 16412 Wedgeworth Dr. (Industry) (54)	Jul 09	5	O	0.001	1

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 14
SUMMARY OF FISCAL YEAR 10-11 RECYCLED WATER USAGE
SAN JOSE CREEK WRP
(PAGE 2 OF 2)

Wedgeworth Elementary School (Hacienda Hts.) (55)	Aug 09	2.5	AF,L	0.001	1
Wilson High School (Hacienda Heights) (56)	Aug 09	18.3	AF,L	0.006	7
Bixby Elementary School (Hacienda Heights) (57)	Sep 09	6.1	AF,L	0.002	2
Jade Fashion, 1350 Bixby (Industry) (58)	Sep 09	0.1	L	0.0002	0.3
Gutierrez Nursery, 16411 Wedgeworth (Industry) (59)	Sep 09	4	O	0.001	1
Frank Raper, 1215 Bixby (Industry) (60)	Dec 09	0.1	L	0.0001	0.2
Laido International, 16710-12 Johnson (Industry) (61)	Dec 09	0.1	L	0.0002	0.2
Bolt Products, 16725 Johnson Dr. (Industry) (62)	Dec 09	0.1	L	0.0001	0.1
Ily Enterprise, 783 Phillips (Industry) (63)	Jan 10	0.1	L	0.0003	0.3
Superior Profiles, 1325 Bixby (Industry) (64)	Jan 10	0.2	L	0.0002	0.2
60 Fwy., Countrywood & Fullerton (Industry) (65)	Jan 10	5	L	0.003	3
Camacho Strawberries (Industry) (66)	Jan 10	3	O	0.0001	0.1
Advanced Media, 881 Azusa (Industry) (67)	Jan 10	0.1	L	0.001	1
East Group Prop., 855 Anaheim-Puente (Industry) (68)	Mar 10	0.6	L	0.0003	0.4
So.Cal. Air Condition, 16950 Chestnut (Industry) (69)	Mar 10	2	L	0.0003	0.3
USACD, 17101 Chestnut (Industry) (70)	Mar 10	0.3	L	0.0003	0.3
Azusa Blvd Medians (Industry) (71)	Mar 10	0.2	L	0.0001	0.1
Acosta Growers, 17101 Chestnut (Industry) (72)	Mar 10	2.4	O	0.0002	0.2
L.A. Co. ISD bldg., 16610 Chestnut (Industry) (73)	Apr 10	0.5	L	0.0003	0.3
Azusa Property Co., 885 Azusa (Industry) (74)	Apr 10	0.2	L	0.0002	0.2
Golden West Footwear, 16750 Chestnut (Industry) (75)	Apr 10	0.3	L	0.0002	0.2
Teledyne Instruments, 16830 Chestnut (Industry) (76)	Apr 10	0.4	L	0.0004	0.4
Medians, 18927 Daisetta (Rowland Heights) (77)	Apr 10	0.2	L	0.0001	0.1
Colima Medians (L.A. County) (78)	Apr 10	0.1	L	0.0002	0.2
Medians, 1442 Fullerton (Industry) (79)	Apr 10	0.3	L	0.00004	0.05
Teledyne Picco, 16800 Chestnut (Industry) (80)	May 10	0.4	L	0.0003	0.3
Hou Yi Mao Nursery, 18002 Colima (Row. Hts.) (81)	May 10	1.3	O	0.0002	0.3
East Group Prop., 16700 Chestnut (Industry) (82)	Jun 10	0.6	L	0.001	1
Pro Motion Distribution, 883 Azusa (Industry) (83)	Jun 10	0.1	L	0.0001	0.1
New Age Kaleidoscope, 7 Colima (Industry) (84)	Jun 10	0.6	L	0.001	1
Min Maw Intl. Inc., 18350 San Jose (Industry) (85)	Jun 10	0.7	L	0.001	1
Hot Topic, 18350 San Jose Ave. (Industry) (86)	Jul 10	0.6	L	0.001	1
FedEx, 18305 San Jose Ave. (Industry) (87)	Jul 10	0.6	L	0.001	1
Hudd Distribution, 18215 Rowland St. (Industry) (88)	Sep 10	0.6	L	0.0003	0.4
New Age Kaleidoscope, 5 Stoner Creek (Industry) (89)	Oct 10	1.4	L	0.0003	0.4
Perrin Manufacturing, 1020 Bixby (Industry) (90)	Oct 10	0.1	L	0.0001	0.2
Centro Watt Operating, 17518A Colima (Industry) (91)	Oct 10	0.4	L	0.00003	0.03
Centro Watt Operating, 17414 Colima (Industry) (92)	Oct 10	0.5	L	0.0001	0.1
717 Nogales LLC, 717 Nogales (Industry) (93)	Oct 10	0.5	L	0.0001	0.1
Walgreens, 18308 Colima (Industry) (94)	Dec 10	0.1	L	0.0001	0.1
RWD Office, 3021 S. Fullerton (Industry) (95)	Dec 10	0.3	L	0.0001	0.1
Pathfinder Park (Rowland Heights) (Industry) (97)	May 11	29	L	0.00001	0.01
USGVMWD site, 401 Nogales St. (Industry) (98)	May 11	0.5	L	0.0000003	0.0003
East Group Prop., 18551 Arenth Ave. (Industry) (100)	May 11	0.7	L	0.000003	0.003
717 Nogales LLC, 18961 Arenth Ave. (Industry) (101)	May 11	0.5	L	0.000003	0.003
Kimco Realty, 17100 Colima Rd. (Industry) (102)	May 11	3	L	0.000003	0.003
Acme Trading Group, 18501 Arenth (Industry) (103)	May 11	0.9	L	0.00001	0.01
Third Party Enterprises, 18501 Arenth (Industry) (104)	May 11	0.6	L	0.000001	0.001
Floria International 18701 Arenth (Industry) (105)	May 11	0.4	L	0.000003	0.003
TOTALS		**2,881.3**		**31.895**	**35,740**

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.

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 has been increased from bimonthly to weekly during 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 includes a 7,100 gpm pump station at the San Jose Creek WRP, 36,960 feet of 36-inch pipe following the San Jose Creek Channel, and a 2 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 10-11, 0.854 MGD (957 AFY), or 1.3% of recycled water produced at this plant, was delivered through a total of 44,350 feet of pipeline and used at this site, an 18.9% decrease from the preceding fiscal year. While no new sites were directly connected to the Industry distribution system, RWD did, however, continue connecting sites to its own extension off the Industry system throughout the fiscal year. This system is discussed in the following section.

2.5.3 Rowland Water District

In July 2009, RWD began recycled water deliveries through a new distribution system that branched off the City of Industry pipeline. In FY 10-11, RWD connected 18 new reuse sites to its distribution system: In July 2010, the landscaping around Hot Topic (18350 San Jose Ave.) and FedEx (18305 San Jose Ave.) was connected. In September 2010, the landscaping around Hudd Distribution (18215 Rowland St.) was connected. In October 2010, the landscaping around New Age Kaleidoscope (5 Stoner Creek Rd.), Perrin Manufacturing (1020 Bixby), Centro Watt Operating (17518A and 17414 Colima Rd.), and 717 Nogales LLC (717 Nogales) was connected. In December 2010, the landscaping around the Walgreens (18308 Colima Rd.) and the Rowland Water District Office (3021 S. Fullerton) was connected. In May, Pathfinder Park and the landscaping around the Upper San Gabriel Valley Municipal Water District (USGVMWD) site at 401 Nogales St., East Group Properties (18551 Arenth Ave.), 717 Nogales LLC (18961 Arenth Ave.), Kimco Realty (17100 Colima Rd.), Acme Trading Group (18501 Arenth Ave.), Third Party Enterprises (18501 Arenth Ave.), and Floria International Inc. (18701 Arenth Ave.) were connected.

During FY 10-11, RWD delivered 0.067 MGD (75 AFY), or 0.1% of the recycled water produced at the San Jose Creek WRP to 74 sites listed in Table 14 and shown in Figure 13. This was an 8.7% increase over the preceding fiscal year. RWD purchased the recycled water from the City of Industry, retailing it at 63% of its potable rate of $1,010.59/AF (for “Zone I” elevation), or $635.98/AF.

2.5.4 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 10-

11, 0.378 MGD (423 AFY), or 0.6% of recycled water produced at this plant, was delivered to this site, a decrease of 10.2% from the preceding fiscal year.

2.5.5 San Gabriel Valley Water Company - LA Sanchez 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, Chuy's, J&E's and Ortiz's nurseries. During FY 10-11, 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. This was essentially the same amount that was delivered during the preceding fiscal year. 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. SGVWC resold the recycled water to the nursery for $473.28/AF, a 47% discount from its corresponding potable water rate of $899.95/AF.

2.5.6 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 distribution system originating from the Los Coyotes WRP will allow for a looped system (once the western connection is completed, see Section 5.4.4) served by both 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 10-11, CBMWD delivered 0.203 MGD (227 AFY), or 0.3% of the recycled water produced at this plant, through 95,000 feet of pipeline 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 approximately 159 acres at the 15 sites. This represents a 8.6% increase over 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 10-11.

In FY 10-11, CBMWD wholesaled the recycled water to its customers, the retail water purveyors, on a monthly use, tiered rate schedule ($506 for the first 50 AF, and $460 for anything above 50 AF). This is between 57% and 62% of the rate of $805/AF it charges for Tier 1 non-interruptible potable water supplied by MWD, and between 50% and 55% of the rate of $915/AF it charges for Tier 2 supplies. Recycled water delivered outside of CBMWD's service area was subject to a $20/AF surcharge on each of the two tiers. Recycled water deliveries to the Malburg power plant in Vernon received an industrial use rate ($357 for the first 25 AF, $332 for the next 25 AF, $308 for the next 50 AF, and $283 for anything above 100 AF). The retail purveyors then set their own rates for the recycled water.

2.5.7 PUENTE HILLS/ROSE HILLS

A distribution system was constructed to deliver recycled water from the San Jose Creek WRP to the Sanitation Districts' nearby Puente Hills Landfill, Materials Recovery Facility (MRF), Puente Hills Energy Recovery from Landfill Gas (PERG) Facility, and to 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 10-11, the Puente Hills/Rose Hills distribution system delivered 1.882 MGD (2,109 AFY), or 2.8% of the recycled water produced at this plant, through 8,900 feet of pipeline to five users on approximately 855 acres, a decrease of 6.2% 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, and for landscape irrigation and impoundments at Rose Hills Memorial Park. The irrigation of strawberries by J&M Farming, which had leased cemetery property from Rose Hills, ended in July 2010.

2.5.8 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 275 acres of the lower, older portion of Rose Hills Memorial Park began (acreage was erroneously reported as 858 previously). 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 10-11, the USGVMWD distribution system delivered 0.486 MGD (544 AFY), or 0.7% of the recycled water produced at this plant, through 11,020 feet of pipeline to four users on 383 acres, a decrease of 12.4% from 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 $771.62/AF, or 86% of its corresponding potable water rate of $899.95/AF. Since Rose Hills Memorial Park is not a part of SGVWC's service area, it received recycled water at a contract rate of $220/AF.

2.6 WHITTIER NARROWS WRP

WHITTIER NARROWS WRP FACTS

Plant capacity:	15 MGD
Water produced:	7.76 MGD 8,701 AFY 64.1% FY increase
FY10-11 O&M:	$398/AF
Water reused:	7.434 MGD 8,330 AFY 57.1% FY increase 95.7% of production
Delivery systems:	1 18,900 ft. of pipe
No. of reuse sites:	3 604.3 acres

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 7.76 MGD (8,701 AFY) of coagulated, filtered, disinfected tertiary recycled water produced during FY 10-11 (1.9% of the effluent produced in the JOS), at an O&M cost of $398/AF, 7.434 MGD (8,330 AFY) was actively reused. The amount produced was a 64.1% increase in recycled water production over the preceding fiscal year, while the amount reused was a 57.1% increase, both as a result of completion of the plant's conversion to the NDN secondary treatment process. (Note: The entire treatment plant had been completely shut down for this conversion between August 17 and November 2 of the preceding year).

Recycled water quality for FY 10-11 is presented in Table B-6 of Appendix B. Recycled water from this plant is used at two direct, non-potable 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, non-potable applications, and Nos. 91-100 and R4-2009-0048 for groundwater replenishment (see Section 2.5.1 for a discussion on the amended groundwater recharge permit).

2.6.1 WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

The majority (82.6%) of recycled water actively used from this plant went to recharge the Central Basin aquifer. In FY 10-11, 6.141 MGD (6,881 AFY) was used to replenish the groundwater supply, a 49.1% increase over the preceding fiscal year. In FY 10-11, 3.617 MGD (4,053 AFY) was delivered to the Rio Hondo Spreading Grounds via the plant's main discharge point to the Rio Hondo (56.0%), with another 2.174 MGD (2,436 AFY), or 33.6%, 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 0.674 MGD (755 AFY), or 10.4%, of the recycled during the fiscal year.

Of the total amount of recycled water delivered from the Whittier Narrows WRP, 4.280 MGD (4,797 AFY), or 63.1%, went to the Rio Hondo Spreading Grounds and 2.181 MGD (2,444 AFY), or 32.2%, went to the San Gabriel Coastal Spreading Grounds. Another 0.321 MGD (359 AFY), or 4.7% of the recycled water delivered, was bypassed around the spreading grounds and lost to the ocean during November 2010 through March 2011 as a result of heavy rainfall runoff. Any discrepancy between the total amount discharged and the totals

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 60th 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 90th Street East to Avenue G, then east again to its terminus halfway between 90th and 100th Streets. The second line runs south on 60th Street East then east on East Avenue F to 90th Street East where it reconnects with the first line.