



## ***Securing L.A.'s Water Supply***

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City of Los Angeles Department of Water and Power

May 2008

## Introduction

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In 2007, we reached a boiling point as several factors converged to create water shortages from all major sources, sparking the need to rethink existing and future water supplies to meet the demand of more than 4 million people in Los Angeles. Among the factors were the lowest snowpack on record in the Eastern Sierra, where Los Angeles historically receives the greatest share of its water supply, and the driest year on record in the City of Los Angeles. Further stressing our water supplies is a Federal Court ruling that limits exports from the Sacramento-San Joaquin Delta by as much as one-third to protect the delta smelt, which creates the possibility of future water allocations by the Metropolitan Water District of Southern California (MWD). In addition, the City of Los Angeles is committed to environmental mitigation and enhancements in the Owens Valley and Mono Lake Basin, representing nearly one-half of the historic water supplies from the Eastern Sierra watershed. Contamination in the San Fernando Valley groundwater supply has restricted our ability to fully utilize this local resource. And finally, uncertain climate change impacts threaten traditional water supply sources.

The convergence of these elements has far-reaching implications for the City of Los Angeles' water supply that requires long-range planning to sustain a reliable supply of water to meet current and future demand. This City of Los Angeles Water Supply Plan, "Securing L.A.'s Water Supply," provides a blueprint for ensuring a reliable water supply for Los Angeles residents and businesses and for future generations of Angelenos.

### The Strategy

"Securing L.A.'s Water Supply" is a blueprint for creating sustainable sources of water for the future of Los Angeles. It is an aggressive multi-pronged approach that includes: investments in state-of-the-art technology; a combination of rebates and incentives; the installation of smart sprinklers, efficient washers and urinals; and long-term measures such as expansion of water recycling and investment in cleaning up the local groundwater supply.

The premise of this Water Supply Plan is that the City will meet all new demand for water—about 100,000 acre-feet per year (AFY)—through a combination of water conservation and water recycling. In total, we will conserve or recycle 32.6 billion gallons of water—enough to fill one foot of water across the entire San Fernando Valley, and enough to supply water to 200,000 homes for one year. By the year 2019, half of all new demand will be filled by a six-fold increase in recycled water supplies and by 2030 the other half will be met through ramped-up conservation efforts.

To meet our goals and fulfill our obligations to the next generation of Angelenos, the Los Angeles Department of Water and Power (LADWP) has devised a multi-faceted approach to developing a locally sustainable water supply. This includes a set of key short-term and long-term strategies to secure our water future, such as:

### *Short-Term Conservation Strategies*

1. Enforcing prohibited uses of water
2. Expanding the prohibited uses of water
3. Extending outreach efforts
4. Encouraging regional conservation measures

### *Long-Term Strategies*

1. Increasing water conservation through reduction of outdoor water use and new technology
2. Maximizing water recycling
3. Enhancing stormwater capture
4. Accelerating clean-up of the groundwater basin
5. Expanding groundwater storage

The ability of Los Angeles to succeed and thrive in the middle of a semi-arid desert depends on our willingness to make the choices necessary to secure water resources for years to come – and this action plan moves us closer to achieving that goal.

# Overview of Los Angeles Water Supply

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## Water Demand

To provide context for the strategies outlined in this report, it is useful to first discuss the City of Los Angeles' past, current and future water demand. Demand, or the amount of water used by the City's residents and businesses, is measured in acre-feet. An acre-foot covers one acre of land, one foot deep. One acre-foot is equivalent to 325,821 gallons and is enough water to serve approximately two households per year.

## Historical Water Use

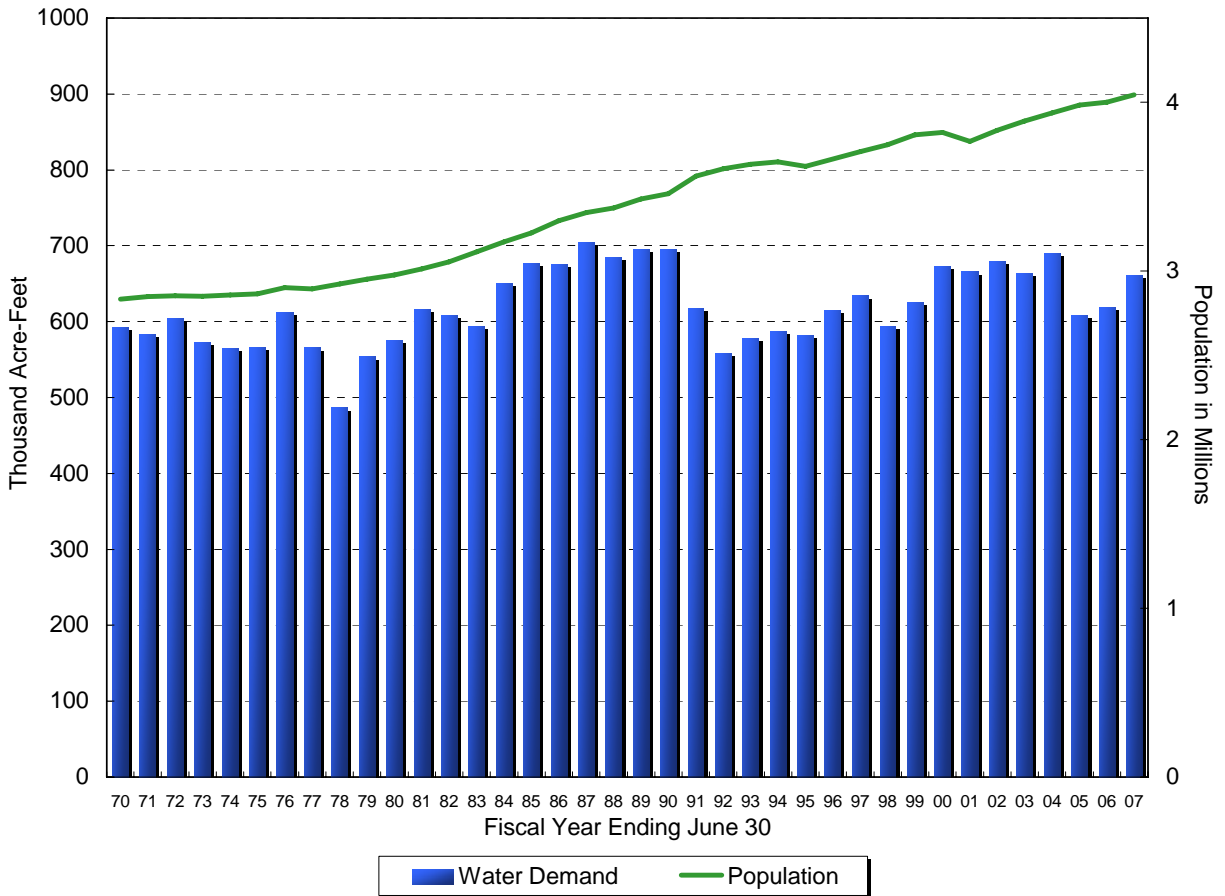
Water use in the City of Los Angeles peaked in 1986, at just over 700,000 acre-feet per year (AFY). What followed was five years of severe drought, widespread water shortages, and the implementation of mandatory conservation measures. Due to conservation, a boost in rainfall in 1992 and 1993, and tough economic times, water use dropped by more than 17 percent in the following years.

Since the early 1980s, the City has invested millions of dollars in conservation measures, particularly the installation of low-flow toilets and shower heads. Thanks to these efforts, L.A.'s water demand is about the same as it was 25 years ago, despite a population increase of 1 million people.

Historical water use data show that the largest customer group falls in the residential category. For fiscal year 2006-07, residential customers (multi-family and single-family) accounted for 68 percent of the water demand. The second largest group are commercial customers (17 percent); followed by governmental (7 percent), industrial (4 percent), and non-revenue generating uses (4 percent).

Figure 1

### LOS ANGELES WATER DEMAND AND POPULATION

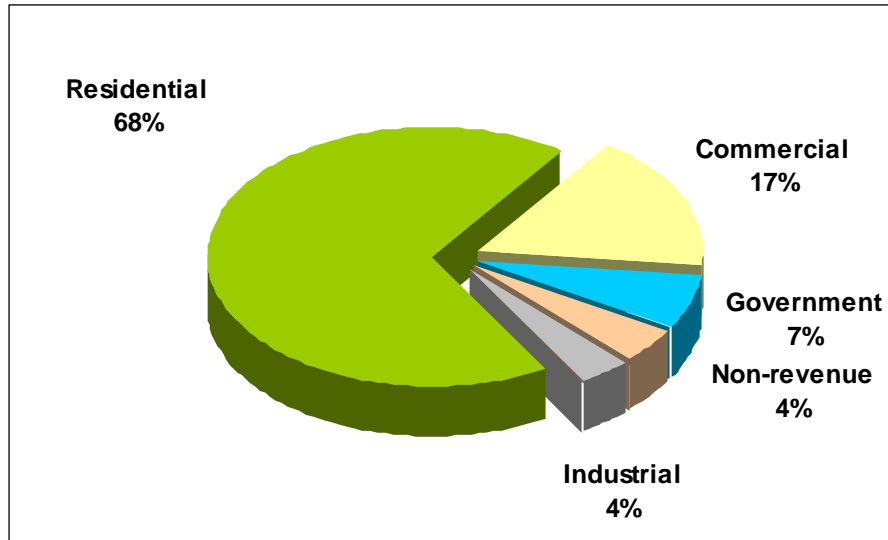


Approximately 30 percent of total water is used outdoors, equivalent to about 190,000 AFY. Within the various customer groups, single-family residential customers use about 40 percent of their water outdoors; governmental customers use more than 50 percent of their water outdoors; and commercial and industrial customers use 22 percent and 19 percent respectively. Multi-family residential customers use about 16 percent of their water outdoors.

Figure 2

## LOS ANGELES WATER USE

Breakdown by Customer Sector (FY 2006-07)



### Projected Demand

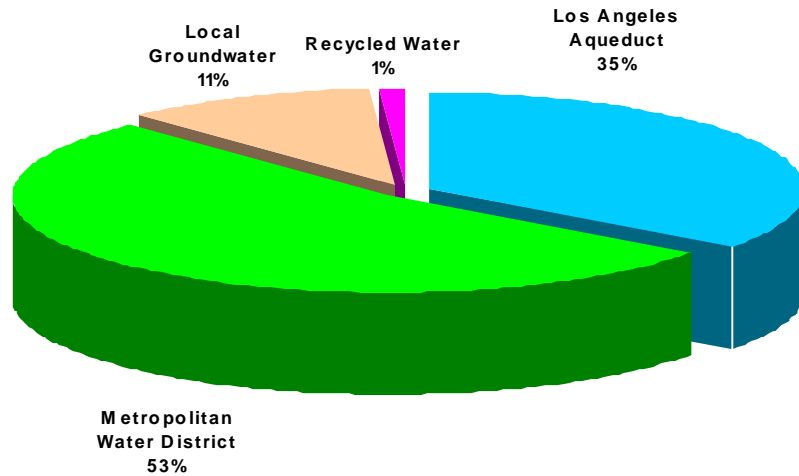
Projections of the City's growth show that Los Angeles' total water demand (including all customer sectors) will increase about 0.4 percent annually – from just under 670,000 AFY in 2006-07 to 776,000 AFY in 2030 (based on normal weather conditions and with projected conservation).

### **Current Sources**

The City of Los Angeles historically receives water from five major sources: the Eastern Sierra Nevada watershed (via the Los Angeles Aqueduct); the Colorado River (via the Colorado River Aqueduct) and the Sacramento-San Joaquin Delta (via the State Water Project / California Aqueduct), which are purchased from the Metropolitan Water District of Southern California (MWD); local groundwater; and recycled water for industrial and irrigation purposes. In addition, the City's successful conservation programs have reduced demand, preserved the water supply and offset the need for new resources. Figure 1 illustrates the City's water supply for an average year.

Figure 3

**Los Angeles Water Supply Sources – Average Year**



**Impacts on Historical Water Sources**

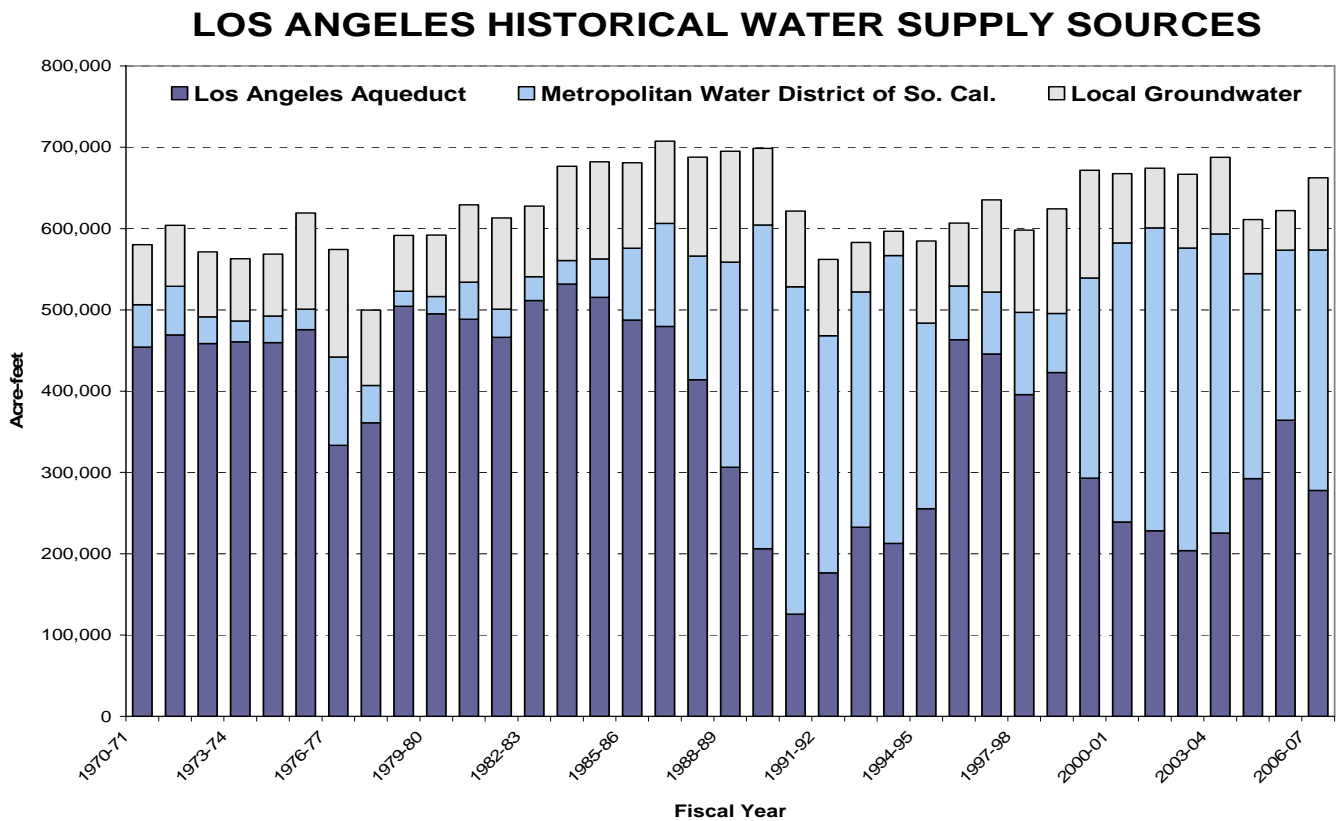
Although these water resources have served the City well for decades, several factors have converged that threaten the long-term availability of these supplies. Climate conditions such as consecutive years of below-normal snowfall and drought can greatly impact the availability of these water sources. That, along with environmental commitments, has severely impacted historical water supply sources.

**Eastern Sierra Watershed**

Over the last two decades, the City’s water deliveries from the Los Angeles Aqueduct (LAA) have dropped dramatically due to reallocation of water for environmental mitigation and enhancement in the Eastern Sierra. From 1995 through 2000, the City received 63 percent of its water from the Eastern Sierra through the LAA. From 2001 through 2004, however, only 34 percent of the City’s water came through the LAA.

Each year, the snowpack in the Eastern Sierra varies, and dictates the quantity of water delivered by the LAA. To illustrate, Figure 2 shows the historic water supplies from the LAA, MWD, and local groundwater. Note the significant annual variations in LAA deliveries that are inversely proportional to MWD water purchases, highlighting the City’s strong reliance on MWD, especially during dry years.

Figure 4



Reductions in LAA deliveries are largely due to the reallocation of water for environmental mitigation and enhancement. Among these environmental requirements are: the State Water Resources Control Board Mono Lake decision, which permanently limited LADWP’s ability to export water from the Mono Basin; implementation of the Owens Lake Dust Mitigation Project; rewatering of the Lower Owens River, and a number of other environmental restoration projects in the Owens Valley that require water.

The City of Los Angeles is committed to making these environmental enhancements, which are among the most far-reaching environmental restoration projects in U.S. history. They include restoration of the Lower Owens River, restoration of the streams feeding Mono Lake and rewatering of Mono Lake, and reducing the massive dust storms on the Owens Dry Lake bed. Due to these commitments and climate change impacts, LADWP projects that average deliveries from the LAA will be approximately one-third of the city’s water needs.

However, it is important to note that the City of Los Angeles maintains a favorable position when compared to other municipalities with respect to water resources and our



water supply. Though more must be done to secure our water future and reduce our dependence on imported water, the Los Angeles Aqueduct and our Eastern Sierra watershed remain an important source of high-quality water unique to Los Angeles that is vital to meeting the needs of our customers.

### **MWD Purchased Water (Sacramento-San Joaquin Delta and Colorado River)**

MWD is a consortium of 26 cities and water districts that provides wholesale water supplies to Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties. MWD currently delivers an average of 2.3 million acre-feet of water per year to a 5,200 square-mile service area. MWD's sources of imported supplies are from the Colorado River, the State Water Project (through the Sacramento/San Joaquin River Delta), local surface and groundwater storage, and storage/transfer agreements with Central and Sacramento Valley agencies and Colorado River agencies. Los Angeles typically purchases MWD water to make up the difference between the demand and other City water supplies. Over the last two decades, while these resources have proven a key component of our water supply, they are also subject to uncertainty due to climate variability and environmental issues.

The current environmental crisis in the Delta has led to a Federal Court decision that will result in MWD receiving up to 30 percent less of their anticipated State Water Project deliveries. Although water allocations have been deferred for now, the MWD Board has approved significant increases in wholesale water rates to address the increased costs of importing water and purchasing water from others

Despite concerns about ongoing water shortages and higher costs, MWD has upheld its pledge to plan for emergencies and natural disasters throughout this region. The agency has approximately 1.7 million acre-feet in surface and groundwater storage accounts - including Diamond Valley Lake near Hemet - and 600,000 acre-feet of storage reserved for emergencies. In total, this reserve of water supplies buffers the severity of a potential shortage, allows for a less severe water shortage allocation if required, and keeps the region prepared for a major earthquake or other events.

### **Local Groundwater**

Los Angeles relies upon local groundwater for an average of 11 percent of its total water supply, and historically more during emergencies and drought years. The City's water rights pertain to groundwater basins in the San Fernando Valley as well as the Central and West Coast Basins. However, groundwater contamination in the San Fernando Valley, where the majority of the City's groundwater supply is produced, has severely limited water available for pumping.

## **Securing L.A.'s Water Supply Today**

### ***Actions in Response to Current Water Supply Conditions***

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On June 6, 2007, Mayor Villaraigosa called on all City of Los Angeles residents to curtail water use. The Mayor further ramped up this call on November 13, 2007, by deploying the LADWP Drought Busters to heighten awareness and educate Angelenos about prohibitions on water waste – and L.A. residents responded. Water use in February and March 2008 was over 10 percent less than the same period the previous year and single-family residential use is down approximately 5% over the past 9 months.

In addition to voluntary conservation efforts, the City has prohibited a number of water uses in an attempt to eliminate waste and increase awareness of the need to conserve water. Prohibited uses of water are part of the City's Emergency Water Conservation Plan Ordinance (found in the Los Angeles municipal Code Chapter XII, Article 1 – also Section 10632 (d) of the California Water Code), which was approved in 1991. While in effect at all times, these restrictions have not been highlighted or enforced since the early 1990s.

Under the City's Emergency Water Conservation Plan Ordinance, LADWP customers cannot:

- Use water on hard surfaces such as sidewalks, walkways, driveways, or parking areas (this was amended by Ordinance in 1991 to allow hose flushing for public health);
- Water lawns between 10 a.m. and 5 p.m., April 1 to September 30, and between 11 a.m. and 3 p.m., October 1 to March 31;
- Allow excess water from sprinklers to flood gutters;
- Use water to clean, fill, or maintain decorative fountains unless the water is part of a recycling system;
- Serve water to customers in eating establishments, unless requested; and
- Allow leaks to go unattended.

# Securing L.A.'s Water Supply Tomorrow

## *Strategies to Secure a Sustainable Water Supply*

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The City of Los Angeles was founded in a semi-arid region, prone to drought with little native water resources to accommodate a rapidly growing population. Although growth has slowed dramatically since the mid- and late-20<sup>th</sup> century, the City's population is expected to continue expanding while the availability of our traditional water supplies has been constrained. The water supply issues facing the City of Los Angeles today have far-reaching implications for the future, requiring a sea change from how Los Angeles has historically met its water demand. Simply put, we must do more to reduce our demand on imported water.

The City has long relied on imported water from sources located hundreds of miles away—the Owens Valley and Mono Basin, the Sacramento-San Joaquin Delta, and Colorado River. But environmental commitments in these regions, sustained drought on the Colorado River and the onset of climate change mean we can no longer exclusively count on these distant resources.

We must look closer to home, and set a new course for meeting our water demands.

This new direction points to changing our behavior and attitudes about water consumption and taking immediate action to develop alternative water supplies. That's why the City is making a promise to every resident of Los Angeles to meet all new demand through a combination of conservation and recycling. This will be done through key short-term and long-term strategies to secure our water future, including:

### *Short-Term Conservation Strategies*

1. Enforcing prohibited uses of water
2. Expanding the prohibited uses of water
3. Extending outreach efforts
4. Encouraging regional conservation measures

### *Long-Term Conservation and Recycling Measures*

1. Increasing water conservation through reduction of outdoor water use and technology
2. Maximizing water recycling
3. Enhancing stormwater capture

4. Accelerating clean-up of the groundwater basin
5. Expanding groundwater storage

These long-term strategies are in alignment with the Water/Wastewater Integrated Resources Plan (IRP) approved by the City Council and Mayor in November 2007. The IRP was a stakeholder driven process led by the Department of Public Works Bureau of Sanitation and LADWP.

As L.A.'s population grows and water demand continues to rise, it is time for this City to create a sustainable water supply for the future. The strategies outlined here represent a new approach to achieving this goal. Ultimately, they will enable us to ramp up our recycled water supply six-fold by 2019 and implement innovative conservation measures that produce both short-term and long-term benefits.

## **Short-Term Conservation Strategies**

### **Strategy 1: Enforcing “prohibited uses” of water**

For the first time since the early 1990s, the LADWP will begin levying fines and sanctions against water abusers.

The prohibited uses of water are intended to eliminate waste and increase awareness of the need to conserve water. While in effect at all times, the prohibited uses have not been actively enforced since the early 1990s. In November 2007, LADWP resurrected its Drought Buster Program to heighten awareness and educate customers about the prohibited uses.

Under enforcement, failure to comply would be subject to penalties, which can range from a written warning for a first violation to monetary fines and water service shutoff for continued non-compliance.

### **Strategy 2: Expanding the Prohibited Uses of Water**

The LADWP will update and strengthen the existing Emergency Water Conservation Ordinance by expanding the prohibited uses. Possible new prohibited uses include:

- Further restrictions on watering landscape (i.e. prohibiting watering on certain days of the week or for a limited period of time)
- Prohibit landscape watering during rain.
- Prohibit washing/rinsing vehicles with a hose when the hose does not have a functioning self-closing nozzle attached or allowing the hose to run continuously.

### **Strategy 3: Extending Outreach Efforts**

LADWP has committed to \$2.3 million for an aggressive conservation outreach and education campaign. Some activities include:

- Step up communication with ratepayers to include bus placards, LADWP vehicle placards, newspapers, radio, and television, among other types of media
- Outreach to Homeowner Associations and Neighborhood Councils to promote water conservation
- Train LADWP field staff as well as field staff from Public Works, Recreation and Parks, and other appropriate City departments in identifying and reporting prohibited uses of water
- Ramp up marketing of water conservation incentive and rebate programs

### **Strategy 4: Encouraging Regional Conservation Measures**

Work with the Metropolitan Water District (MWD) to encourage all water agencies in the region to adopt water conservation ordinances which include prohibited uses and enforcement.

## **Long-Term Strategies**

### **Strategy 1: Increasing Water Conservation through Reduction of Outdoor Water Use and Technology**

LADWP's successful water conservation efforts in the 1990s were due to a combination of changed behavior and the widespread installation of water-saving hardware.

Replacing water-guzzling hardware ensures the City can count on saving a predictable amount of water each year. LADWP's residential ultra low flush toilet (ULFT) replacement program enjoyed 16 productive years, resulting in an estimated conversion of 90 percent of toilets in LADWP's service area. Together, the Toilet Rebate Program and the Toilet Exchange Program replaced nearly 1.3 million water-wasting toilets with ULFTs, making the City's conservation effort one of the most successful in the nation.

***The low-flush toilets alone continue to save Los Angeles more than 14 billion gallons of water each year—enough to fill the Rose Bowl about 56 times.***

The residential toilet replacement programs were ended in December 2006 due to market saturation and the demonstrated effectiveness of the City's "retrofit on resale" ordinance, requiring ultra-low-flush toilets and low-flow showerheads in all residential properties prior to resale. With limited remaining indoor conservation opportunities, LADWP is focusing more resources on technology to reduce outdoor water use. Watering lawns and other outdoor water uses make up about 30 percent of all water used by all customers and 40 percent by single-family residential customers. From a long-term perspective, significant opportunities exist in cutting back on water that is

wasted outdoors, including the installation of smart sprinkler systems and drought-tolerant landscaping.

Additional conservation programs will be aggressively pursued, such as programs to encourage planting with California native drought tolerant plants and expansion of gray water reuse systems. Stormwater capture and reuse can result in water savings with inclusion of rain barrels or cisterns through 2030.

Following are new and continuing water conservation programs as well as goals and benchmarks designed to measure their progress through 2030.

### **Residential Smart Sprinkler Systems**

Smart sprinkler systems improve water efficiency on any landscape. They are already used in parks and golf courses around the City, and it is now time to extend this innovative technology to residences and homes throughout L.A.'s neighborhoods.

**Goal:** Install 5,250 smart sprinkler controllers per year, with a total of 63,500 by 2020.

**Water Savings:** 4,962 AFY by 2030

**Action Plan:** LADWP will begin to provide smart controllers and installation services free of charge to qualifying residential customers. Program plans include the installation of 2,500 controllers in the first year of program, moving to 5,250 controllers per year on a sustained basis. The program is scheduled to launch in early 2009.

**Background:** Weather-based Smart Irrigation Controllers (“smart sprinklers”) represent new technology that adjusts irrigation schedules based on local weather conditions. They are the cornerstone of future residential conservation efforts to curb outdoor water use; they will save water, reduce runoff and cut green waste in the future.

Modeled on the successful toilet replacement program, the residential smart sprinkler initiative will employ local non-profit organizations – under LADWP management – to install these systems, educate customers on how to use the sprinklers and perform irrigation system assessments. They will also provide other services, such as property leak detection (via water meter check); installation of indoor water conservation devices (showerheads and aerators); and promotion of other LADWP conservation programs I such as the Clothes Washer Rebate and Energy Efficiency Programs.

### **Benchmarks:**

Fiscal Year	Number of controllers per year	Cumulative Water Savings (AFY)
2008-09	2,500	112
2009-10	3,500	269
2010-11	5,000	493
2011-12	5,250	728
2012-15	5,250	1,434

2015-20	5,250	2,610
2020-25	5,250	3,786
2025-30	5,250	4,962

## **Conservation Rebates and Incentives**

**Goal:** Increase participation in Water Conservation Rebate and Incentive Programs

**Water Savings:** 48,457 AFY by 2030

**Action Plan:** LADWP is continuing to expand rebates and incentives for homeowners and business owners to encourage them to purchase water-saving technology.

**High Efficiency Clothes Washer Program.** LADWP increased the rebate offered for residential high efficiency clothes washers from \$150 to \$250. LADWP will further expand the program through “Point of Purchase” rebates, offering customers an instant rebate when they buy the appliance from a Los Angeles retailer. Since the program was launched in 1998, more than 60,000 water-saving clothes washers have been installed in Los Angeles residents’ homes through the program.

**Commercial Rebate Program:** Water conservation rebates and incentives were increased significantly in 2007 to offset the costs of replacing water-wasting toilets and urinals with high efficiency models, among other measures. The current rebates offset most or all of the total replacement cost (including installation). LADWP will increase program promotion to raise awareness of these significant financial incentives, resulting in increased program participation.

Since this program’s inception, more than 32,800 toilets have been replaced by commercial, industrial and institutional customers, and LADWP is working to implement a grant-funded Cooling Tower program for commercial customers.

Several examples of increased incentive amounts include:

- High efficiency toilet (from \$205 to \$300)
- High efficiency urinal (from \$200 to \$400)
- Cooling tower pH control (from \$1,900 to \$3,000)
- Smart irrigation controller (from \$630 to \$1,000 per acre controlled)
- Technical Assistance Program (TAP) incentives (from \$1.25/ per thousand gallons saved/\$50,000 cap to \$1.50 per thousand gallons saved/\$100,000 cap)

**High Efficiency Urinal Programs:** In June 2007, the Los Angeles Department of Building and Safety gave approval for the installation of certain models of water-free urinals. Offering perhaps the greatest potential for quick implementation is the replacement of standard urinals with high efficiency urinals (0.5 gallon per flush (gpf) or less, including no-flush). Recent changes in the Los Angeles Building Code now

provide for the installation of completely water-free urinals. The following actions are designed to boost installation of these urinals:

- Rebates have been increased up to \$400 for the retrofit of existing urinals with waterless urinals.
- LADWP has gained commitment from several high visibility customers who will be retrofitting with waterless urinals; promotion of these installations will help raise awareness in the business community.
- Retrofit of the existing urinals in LADWP’s downtown headquarters, known as the John Ferraro Office Building.
- LADWP is marketing these rebate programs to increase participation.

**Additional Water Saving Efficiency Measures and Programs:** As part of our ongoing effort to encourage customers to adopt passive water conservation measures -- measures that can help customers conserve water on a daily basis without thinking about it-- in their homes and businesses, LADWP will continue to distribute water-saving bathroom and kitchen faucet aerators and shower heads free-of-charge. LADWP also plans to add rebates for products such as high-efficiency dishwashers and synthetic turf for residential customers to help increase their daily conservation efforts.

LADWP is closely monitoring technological advancements in water conservation, such as the recent improvements in the irrigation industry. LADWP will add these new technologies to its menu of conservation information, services and rebates as more water-saving products become available.

**Benchmarks:**

- Commercial, Industrial, and Institutional Programs
  - Rebates – Estimated Water Savings: 38,870 AFY by 2030
    - Includes the following programs:
      - High Efficiency Toilets (includes dual flush)
      - High Efficiency Urinals (includes waterless)
      - High Efficiency Coin/Card Operated Clothes Washer
      - Smart Irrigation Controllers
      - Sprinklerhead Rotating Nozzle Retrofit
      - Water Brooms,
      - Pre-rinse Sprayhead
      - Cooling Tower pH and Conductivity Controllers
      - Steam Sterilizer Retrofit
      - Connectionless Food Steamer
      - X-Ray processor Recirculation System
      - Dry Vacuum Pump

Fiscal Year	Cumulative Water Savings (AFY)
2007-08	845
2008-09	1,820
2009-10	2,795
2010-15	9,620
2015-20	19,370
2020-25	29,120



2025-30            38,870

- Synthetic Turf – Estimated Water Savings: 708 AFY by 2030

<u>Fiscal Year</u>	<u>Number of acres per year</u>	<u>Cumulative Water Savings (AFY)</u>
2009-10	3	17
2010-15	6	52
2015-20	6	363
2020-25	6	536
2025-30	6	708

- Aerators – Estimated Water Savings: 257 AFY by 2030

<u>Fiscal Year</u>	<u>Number of aerators per year</u>	<u>Cumulative Water Savings (AFY)</u>
2007-08	500	2
2008-10	2,500	26
2010-15	2,500	83
2015-20	2,500	141
2020-25	2,500	199
2025-30	2,500	257

- Residential Programs

- High Efficiency Washers – Estimated Water Savings: 5,404 AFY by 2030

<u>Fiscal Year</u>	<u>Number of washers per year</u>	<u>Cumulative Water Savings (AFY)</u>
2007-08	6,800	229
2008-10	7,000	699
2010-15	7,000	1,875
2015-20	7,000	3,051
2020-25	7,000	4,227
2025-30	7,000	5,404

- Showerheads – Estimated Water Savings: 2,314 AFY by 2030

<u>Fiscal Year</u>	<u>Number of showerheads per year</u>	<u>Cumulative Water Savings (AFY)</u>
2007-08	1,500	25
2008-09	4,000	91
2009-10	5,000	173
2010-15	6,500	708
2015-20	6,500	1,243
2020-25	6,500	1,778
2025-30	6,500	2,314

- Aerators – Estimated Water Savings: 787 AFY by 2030

<u>Fiscal Year</u>	<u>Number of aerators per year</u>	<u>Cumulative Water Savings (AFY)</u>
2007-08	3,000	8
2008-09	8,000	31

2009-10	10,000	59
2010-15	13,000	241
2015-20	13,000	423
2020-25	13,000	605
2025-30	13,000	787

- o High Efficiency Dishwashers – Estimated Water Savings: 52 AFY by 2030

Fiscal Year	Number of dishwashers per year	Cumulative Water Savings (AFY)
2009-10	250	1
2010-11	500	2
2011-15	1,000	13
2015-20	1,000	26
2020-25	1,000	39
2025-30	1,000	52

- o Synthetic Turf – Estimated Water Savings: 66 AFY by 2030

Fiscal Year	Number of square feet per year	Cumulative Water Savings (AFY)
2009-10	10,000	1
2010-11	15,000	3
2011-15	25,000	17
2015-20	25,000	33
2020-25	25,000	50
2025-30	25,000	66

### **Targeting City Parks and Large Landscapes**

**Goal:** Retrofit three City parks per year over five years with smart irrigation controllers and upgraded distribution systems; and install smart irrigation controllers at City parks under a grant-funded program.

**Water Savings:** 70 AFY by 2011

**Action Plan:** LADWP has already begun targeting public parks for water use efficiency measures through the City Park Irrigation Efficiency Program. Kicking off this initiative, City officials identified three City parks with inefficient irrigation systems, leaks, and runoff problems. The City began work to repair and replace distribution systems and install smart sprinkler systems. The first parks include Victory Memorial Grove and Lilac Terrace in Elysian Park, Arroyo Seco Park, and Mt. Carmel Recreation Center. Work is expected to be completed at these parks in 2008.

**Benchmark:** LADWP to work with Los Angeles City Recreation and Parks Department to retrofit 3 parks per year.

### **Proposition 50, Chapter 7, Los Angeles City Park Irrigation Efficiency Program**

Funding Total: \$1,140,970

Funding Source: State Department of Water Resources (DRP): \$362,000  
 Funding Source: MWD, LADWP and DRP (in-kind services): \$778,970  
 Description: Weather-based irrigation controllers will be installed in all designated parks. Four parks will have new irrigation systems installed and 11 parks will have sprinkler head replacements for the rotors.

CD-3	Reseda North	New System
CD-4	Pan Pacific Park (South)	Head Replacement
CD-5	Bad News Bears (Westwood Park)	Head and Backflow Replacement
CD-5	Palms Rec Center	New System
CD-6	Rhodes Greenbelt	Head Replacement
CD-6	Slavin Park	Head Replacement
CD-7	Carey Ranch	Head Replacement
CD-8	Exposition Park Rose Garden	Head Replacement
CD-11	Palisades Park (upper)	New System
CD-12	Chatsworth Park South	New System
CD-12	Dearborn Park	Head Replacement
CD-12	Wilbur Tampa Park	Head Replacement
CD-13	Elysian Valley Rec Center	Head Replacement
CD-14	Evergreen Park	Head Replacement
CD-14	Yosemite Park	Head Replacement

**Proposition 50, Chapter 7, Large Landscapes – 40 Controllers**

Funding Total: \$204,000  
 Funding Source: State Department of Water Resources: \$101,000  
 Funding Source: LADWP and DRP (In-kind service): \$103,000  
 Description: This project will install 40 smart irrigation controllers at the following parks by the fall of 2008.

CD-1	Sycamore Grove Park
CD-1	San Pasqual Park
CD-4	Griffith Park Recreation Center & Pool
CD-5	Cheviot Hills Recreation Center
CD-8	Martin Luther King Recreation Center
CD-9	Harvard Recreation Center
CD-10	Jim Gilliam Recreation Center
CD-11	Del Rey Lagoon
CD-15	Point Fermin Park and Lighthouse

**Action by Public Agencies**

**Goal:** Improving water efficiency at all City Department facilities. LADWP provides incentive funding and technical assistance to City Departments for the installation of high efficiency urinals and smart irrigation controllers, and helps them identify other opportunities to improve water use efficiency.

**Water Savings:** Estimated to save at least 10 percent from existing use, totaling as much as 1,888 AFY in water savings.

**Action Plan:** Government agencies in Los Angeles use approximately 50 percent of their water outdoors. LADWP will advise City Departments on reducing their outdoor water use through retrofitting inefficient sprinkler systems, checking timers, installing

weather-based smart sprinklers at City facilities, and replacing inefficient indoor plumbing fixtures.

LADWP will assist City Departments and other public agencies in leveraging incentive funds to retrofit their facilities. The Public Sector Conservation Incentive Program, offered through MWD in conjunction with LADWP, provides up-front incentives for public agencies to purchase water-efficiency technology.

Large landscape customers can also better track outdoor water use and save money by installing a dedicated large landscape meter, which allows customers to more easily identify outdoor water efficiency. This will result in water savings by providing customers with water use information that is otherwise combined with domestic consumption.

Taking the lead in this effort, all urinals at LADWP headquarters have been retrofitted to reduce use no more than one-half gallon per flush.

### **Raising Awareness**

**Goal:** Increase water conservation awareness to achieve water savings.

**Action Plan:** LADWP has proposed \$2.3 million in the fiscal year 2008-09 budget for a general awareness campaign, water conservation program outreach, and school education programs and materials.

### **Background:**

Ongoing conservation awareness is crucial to sustained conservation achievements. In the past year LADWP has already taken a number of steps to heighten awareness of the critical water shortage and the need to conserve and reduce water use, including:

- Reinstated the “Drought Busters” to provide a visible presence in the community, respond to inquiries and complaints about wasting water, and educate the public regarding the prohibited uses. Drought Busters are equipped with door hangers, brochures and other water conservation literature, as well as water-saving hardware (including low-flow showerheads and faucet aerators) to provide to the public. Since Drought Busters was re-introduced, the program has responded to nearly 1,000 reports of water leaks or other prohibited water uses.
- Spent over \$300,000 on radio and print advertisements promoting water conservation and publicizing prohibited water uses. Among other steps, this effort involved publishing four-page advertising inserts in the *Los Angeles Times*, the *Daily News*, and *La Opinion*, and placing ads in English, Spanish, Chinese, and Korean.

- Provided information on the LADWP website about water conservation programs currently available, those planned for the future, and tips for conservation.
- Printed messages to promote water conservation and programs on bill inserts.
- Displayed posters and banners promoting water conservation and water efficiency programs at all LADWP Customer Service Centers, as well as offered water saving hardware (i.e. low-flow shower heads and aerators for faucets) to walk-in customers at the centers.
- Provided training to Customer Contact Center and Commercial Resource Center employees to establish uniformity of information disseminated to ensure water conservation awareness and promotion of LADWP's efficiency programs.
- Promoted a toll-free phone number—1-800-DIAL DWP—for people to report water waste to the Customer Contact Center.

Additional water conservation actions will include:

- Conduct outreach to Neighborhood Councils to promote water conservation.
- Distribute table tent cards for Los Angeles area restaurants citing the importance of water conservation and indicating that water will only be served upon request.
- Produce door hangers for Los Angeles area hotel room restrooms encouraging water conservation and asking patrons to consider using their towels more than once.
- Develop static cling signage to be affixed upon bathroom mirrors in government and public buildings throughout Los Angeles, asking people to not let the water run unnecessarily.
- Update water conservation literature for website posting and for distribution at community events and public meetings.
- Increase water conservation promotion at community events, especially those involving LADWP.
- Expand water conservation awareness education programs for Los Angeles Unified School District students.

- Disseminate print and radio advertisements to heighten awareness about conservation measures and highlight funding incentives available to both residential and commercial customers.
- Place conservation awareness signage on LADWP vehicles.

### **Enhancing Conservation through Review of New Developments**

**Goal:** Ensure specifications for the Los Angeles Green Building program include water efficiency measures.

**Water Savings:** The Green Building Program can yield significant water savings through water conservation measures.

**Action Plan:** LADWP will continue working with the City’s Green Building Team to pursue desired changes in local codes and standards to promote water efficiency in new construction projects and major building renovations.

Potential measures include:

- Enhancing irrigation requirements (subject to the City’s Landscape Ordinance). This may include smart irrigation controllers and landscaping using a specified plant palette.
- Improving plumbing fixture requirements. This would include high efficiency toilets (1.28 gallons per flush or less, includes dual flush) and urinals (0.5 gallons per flush or less, includes no flush urinals).
- Installing high efficiency restroom faucets (1.0 gallon or less per minute, public restrooms – 0.5 gallons or less per minute self closing faucet) and high efficiency showerheads (2.0 gallons or less per minute).
- Prohibiting multiple showerhead systems (multiple showerheads within a single shower stall).
- Requiring individual metering for all dwelling units and commercial spaces, along with separate metering or sub-metering for all landscapes of 5,000 square feet or more.

**LADWP Green Building Policy:** LADWP’s Green Building Policy, approved in 2006, includes a water conservation element. In order to be eligible for energy efficiency incentives under LADWP’s performance-based new construction incentive program, a project must achieve at least one LEED point for water conservation.

**Review and Comment on Environmental Impact Reports:** LADWP will begin reviewing and providing written comments on all Environmental Impact Reports (EIRs) for new development in the City. The comments will include LADWP’s recommendations for incorporating water conservation measures, and identify existing available incentive programs.

In addition, all developments of 500 units or more must demonstrate that they have an adequate water supply. LADWP will issue a water supply assessment for those large developments.

## **Strategy 2: Maximizing Water Recycling**

**Goal:** Increase the total amount of recycled water used in the City of Los Angeles six-fold by 2019 – expanding from the current 1% to 6% of annual water demand.

**Water Savings:** 50,000 AFY by 2019

### **Background:**

As the City's imported water supply becomes more critical, so does the need to develop local, sustainable water resources. LADWP, in partnership with the Department of Public Works Bureau of Sanitation (BOS), has long worked toward expanding the use of recycled, highly treated wastewater. The BOS is responsible for the City's wastewater treatment. Four plants produce a total of 463 million gallons per day (mgd), or 518,560 AFY, of highly treated wastewater.

Los Angeles has used recycled water since 1979 for irrigation and industrial purposes at locations such as Griffith Park, Mount Sinai and Forest Lawn Memorial Parks. Since the early 1990s, the City of Los Angeles has constructed numerous projects that replace potable water with treated wastewater for irrigation, industrial, seawater barrier, and environmental beneficial purposes. In the San Fernando Valley, the City uses recycled water from the Donald C. Tillman Water Reclamation Plant for golf courses, environmental beneficial reuse to the Los Angeles River, Lake Balboa, the Wildlife Lake, and the Japanese Gardens.

The 6.5-acre Japanese Garden at the Tillman Plant uses approximately 4,500 acre-feet of recycled water per year. In 1991, the Tillman Plant began serving recycled water to the adjacent 11-acre Wildlife Lake. The following year the 27-acre Lake Balboa opened when it was served with recycled water. Approximately 25,750 acre-feet of recycled water pass through these lakes annually. The recycled water from the Japanese Garden and the two lakes flow into the Los Angeles River where the water provides additional environmental benefits. These bodies of water are home to native plants and animals and over 200 bird species, including flocks of migrating geese.

On the Westside, recycled water from the Hyperion Treatment Plant provides irrigation and industrial uses in the City of Los Angeles and surrounding communities through sales to the West Basin Municipal Water District. Recycled water service to Loyola Marymount University was re-established in 2007, while Westchester Golf Course and the Playa Vista development are anticipated to come on-line in 2008.

In the Harbor area, the Terminal Island Water Reclamation Plant supplies recycled water to the Dominguez Gap Seawater Intrusion Barrier to protect drinking water aquifers and to LADWP's Harbor Generating Station for cooling the generators.

In the Los Angeles-Central City, the LA-Glendale Water Reclamation Plant supplies recycled water to Griffith Park, Forest Lawn Memorial Park, Mount Sinai Memorial Park, Universal Studios, and Lakeside Golf Course.

Retail sales of recycled water increased from 2,400 AFY to 4,300 AFY from fiscal years 2005-06 to 2006-07—an 80 percent increase. Much of the increase was due to the Terminal Island Advanced Wastewater Treatment Facility coming online in February 2006, providing 2,200 AFY of even higher level, advanced treated waste water as a seawater intrusion barrier for the Dominguez Gap Seawater Barrier.

2007-08 Fiscal Year Recycled Water Usage  
City of Los Angeles

	Million Gallons per Day			Acre-Feet per Year		
	Sales	Environmental	Other	Sales	Environmental	Other
Hyperion						
In-plant Use			7.5			8,400
West Basin Municipal Water District			36			40,320
DWP Customers	0.3			350		
Donald C. Tillman						
In-plant Use			2.2			2,460
Japanese Gardens		4			4,500	
Lake Balboa and Wildlife Lake		23			25,750	
LA River <i>(Sum of the above)</i>		27				
DWP Customers	0.2			150		
Los Angeles-Glendale						
In-plant Use			0.7			780
DWP Customers	1.4			1,600		
City of Glendale Irrigation & Power Plant			1.3			1,450
Terminal Island						
In-plant Use			0.3			340
Dominquez Gap Barrier	2.1			2,400		
TOTALS:	4	27	48	4,500	30,250	53,750

NOTE: Values are approximate

The City of Los Angeles current potable water demand is approximately 670,000 AFY. About 520,000 AFY of wastewater is treated by the Bureau of Sanitation (BOS) four wastewater treatment plants: Hyperion, Donald C. Tillman, Los Angeles-Glendale, and Terminal Island. These wastewater treatment plants provide approximately 90,000 AFY, or 17 percent of their total output, of recycled water for beneficial uses. These



include water sales to LADWP customers to displace the need for potable water (such as for irrigation and industrial uses, and for the Dominguez Gap Seawater Intrusion Barrier); environmental enhancements for lakes, gardens, and other wildlife areas; in-plant operations at the BOS wastewater plants; and regional uses through the West Basin Municipal Water District.

### **Action Plan:**

**Develop Recycled Water Master Plan:** LADWP and BOS will prepare a detailed Recycled Water Master Plan that will outline the steps and costs of boosting our recycled water level to 6 percent of total demand for the City. The Master Plan will provide a blueprint for reaching this goal by expanding the existing recycled water pipeline system and using recycled water for groundwater replenishment.

### **Increase Recycled Water for Irrigation and Industrial Use**

LADWP is aggressively working to expand recycled water for nonpotable uses. In fiscal year 2007-08, LADWP expects recycled water sales to increase to about 4,500 AFY. Woodley Golf Course and Loyola Marymount University began recycled water deliveries in October 2007. LADWP's Valley Generating Station and the Balboa, Encino and Westchester Golf Courses are expected to begin recycled water deliveries by July 2008.

LADWP's current Water Recycling Capital Budget provides funding for 21 projects that will increase recycled water deliveries from 4,500 AFY to 19,350 AFY by 2014, adding more than 106,300 feet of new pipe and saving potable water for nearly 31,000 households throughout the City.

Potential customers in future years include several parks (Taylor Yard, Elysian, Branford, Woodley, and Balboa parks); Harbor and Scattergood Generating Stations; Hansen Dam and Van Nuys golf courses; oil refineries in the Harbor area; LAX cooling towers; schools in the Sepulveda Basin, the Los Angeles Zoo, and the Playa Vista development. Under the City's Water/Wastewater Integrated Resources Plan, 30,250 AFY of treated water will continue to be used to support habitat in the Japanese Gardens, Lake Balboa, the Wildlife Lake and the Los Angeles River.

### **Use Recycled Water for Groundwater Replenishment**

Advanced treated recycled water can be sent to spreading basins to percolate underground and become part of the City's groundwater system for later use. This process – also termed groundwater replenishment– is a proven alternative for expanding locally produced, safe, high-quality drinking water. The process has been successfully implemented in Orange County, Australia, and Singapore, and is being considered in other U.S. and worldwide locations.

In 1990, LADWP began developing what was known as the East Valley Water Recycling Project, designed to deliver tertiary treated recycled water from the Donald C. Tillman Water Reclamation Plant for groundwater replenishment in the Hansen

Spreading Grounds located in the San Fernando Valley. The full project was never implemented and LADWP focused on using the Tillman Plant and related facilities to deliver recycled water for irrigation and industrial uses, rather than pursuing groundwater replenishment.

The critical water shortage facing Los Angeles today makes it imperative that the City revisit this strategy, understanding that this initiative will require extensive public education, as well as thorough discussion and vetting through a public process. The public acceptance and technological feasibility of Orange County's groundwater replenishment program demonstrates that this is a viable, long-term water supply solution.

**Initiate Stakeholder Planning Process:** LADWP will engage stakeholders from the Water/Wastewater Integrated Resources Plan (IRP) process in analyzing alternatives necessary for maximizing recycled water. These alternatives include implementing groundwater recharge with advanced treatment in the San Fernando Valley as well as expanding the purple pipe system to supply recycled water for irrigation and industrial uses.

**Upgrade Tillman Wastewater Treatment Plant:** Groundwater replenishment will require upgrading the Tillman Plant with state-of-the-art, advanced treatment capability similar to the Orange County Water District's recently implemented Groundwater Replenishment System, which has received widespread support. Advanced treatment would be constructed at the Tillman Plant, and the highly treated wastewater would be piped to spreading basins for groundwater recharge.

**Pursue All Possible Funding Sources:** The City will actively seek all available sources of grant funding to offset costs from expanding its use of recycled water.

### **Benchmarks:**

- Recycled Water Master Plan
  - Develop Scope of Work – Summer 2008
  - Award contract – early 2009
  - Complete Master Plan – Winter 2011
- Stakeholders Planning Process
  - Initiate stakeholder process – February 2009
- Recycled Water Pipeline Installation
  - 2007-08 – 10,400 feet
  - 2008-09 – 10,700 feet
  - 2009-10 – 27,900 feet
  - 2010-11 – 23,300 feet
  - 2011-12 – 22,600 feet

- 2012-13 – 11,400 feet  
Total 106,300 feet of new pipe by 2013
- New Recycled Water Customers
  - 2007-08 – 6
  - 2008-09 – 8
  - 2009-10 – 1
  - 2010-11 – 10
  - 2011-12 – 2
  - 2012-13 - 10  
Total 37 new customers by 2013
- Acre-Feet per Year of Recycled Water
  - 2007-08 – 4,500 AFY
  - 2008-09 – 8,000 AFY
  - 2009-10 – 8,750 AFY
  - 2010-11 – 9,250 AFY
  - 2011-12 – 9,650 AFY
  - 2012-13 – 15,350 AFY
  - 2013-14 – 19,350 AFY
  - 2014-15 – 22,480 AFY
  - 2015-16 – 25,610 AFY
  - 2016-17 – 28,740 AFY
  - 2017-18 – 31,870 AFY
  - 2018-19 – 50,000 AFY (15,000 AFY from groundwater replenishment)

### **Strategy 3: Enhancing Stormwater Capture**

**Goal:** Increase groundwater recharge by retrofitting the Big Tujunga Dam and other large-scale projects through cooperative efforts with the Los Angeles County Flood Control District and other agencies.

**Water Captured:** Minimum of 20,000 AFY on average

**Background:**

The San Fernando Groundwater Basin is the City’s primary local water source, providing approximately 11 percent of the total water supply. However, the Basin is experiencing a decline in groundwater levels that threaten its long-term sustainability. One of the key factors impacting the local groundwater supply is increased urbanization over the last several decades. As more and more pavement covers the Earth, urbanization decreases the amount of open land that provides natural groundwater recharge.

To address this situation, LADWP is moving forward with several stormwater capture projects with the goal of increasing long-term groundwater recharge by a minimum of 20,000 AFY. LADWP, in partnership with the Los Angeles County Flood Control District

and other agencies, is in various stages of stormwater enhancement planning and projects. The following are the large-scale projects that are expected to be completed or in construction within the next five years:

**Big Tujunga Dam – San Fernando Basin Groundwater Enhancement Project:** On September 18, 2007, the LADWP Board approved Agreement No. 47717 to provide \$9 million to the Los Angeles County Flood Control District for the construction of the Big Tujunga Dam Project – an effort to seismically retrofit the dam, increase its water storage capacity, improve its reliability as a supply source, enhance flood protection measures, and green the environment.

The restoration of the dam is conservatively estimated to result in the additional capture and recharge of 4,500 AFY at the Hansen and Tujunga Spreading Grounds, and more in wet years. The project will make structural improvements to Big Tujunga Dam to restore its historical retention capacity of 6,000 acre-feet; currently the dam is restricted to 1,500 acre-feet of storage capacity.

- Schedule: In construction; scheduled to be completed by December 2010
- Budget: \$100 million of which LADWP is providing \$9 million
- Resources: Los Angeles County Flood Control District is the project manager
- Potential Water Savings: Capture an additional 4,500 AFY of stormwater on average, up to 10,000 AFY or more in extremely wet years.

**Sheldon-Arleta Project – Cesar Chavez Recreation Complex Project Phase I:** On December 19, 2006, the Board of Water and Power Commissioners approved Agreement No. 47448 to provide up to \$5.25 million to the City of Los Angeles Department of Public Works for the construction of the project (the total project cost is about \$9 million). The project will upgrade the methane gas extraction system at the Sheldon-Arleta Landfill that is necessary to allow the full use of the adjacent Tujunga Spreading Grounds. Currently, the spreading grounds are restricted to an operating capacity of 50 cubic feet per second (cfs) or 20 percent of the full operating capacity of 250 cfs.

- Schedule: In construction; scheduled to be completed by late-2008
- Budget: \$9 million of which LADWP is providing \$5.25 million
- Resources: Los Angeles Department of Public Works is the project manager
- Potential Water Savings: Capture of an additional 6,000 to 10,000 AFY of stormwater

**Hansen Spreading Grounds Enhancement Project:** LADWP has entered into Agreement No. 47739 to share the costs of the construction of the Hansen Spreading Grounds Project with the District. The project will increase the capacity and efficiency of the spreading grounds by: 1) combining and deepening the existing basins, and 2) installing and building a new rubber dam, intake structure, control house, and upgrading the telemetry system. The Los Angeles County Board of Supervisors approved the

agreement on March 11, 2008, and the LADWP Board of Commissioners approved it on April 1, 2008.

The District has completed the design and specifications for the project and is prepared to move forward upon execution of this agreement. Construction is tentatively scheduled to commence in mid-2008 and be completed within 18 months. The project is conservatively estimated to result in the additional capture and recharge of approximately 1,200 AFY at the Hansen Spreading Grounds.

- Schedule: Scheduled to go into construction in summer 2008; completion expected within 18 months
- Budget: Up to \$15 million; LADWP is providing up to \$7.5 million, with remaining costs covered by the LA County Flood Control District
- Resources: Los Angeles County Flood Control District is the project manager
- Potential Water Savings: Capture of an additional 1,200 to 3,000 AFY of stormwater

**Tujunga Spreading Grounds Enhancement Project:** This project proposes to deepen the spreading basins, increase their storage capacity, replace the existing diversion structure with two diversion structures, and add remote automation of the operating structures.

- Schedule: Planning and design 2008-09; construction in 2010
- Budget: \$1.3 million for design; \$24 million for construction (LADWP funded)
- Resources: LADWP will be the project manager
- Potential Water Savings: Capture of an additional 8,000 to 12,000 AFY of stormwater

**Pacoima Spreading Grounds Enhancement Project:** This project proposes to deepen the spreading basins, increase their storage capacity, replace existing diversion structure, and add remote automation of the operating structures.

- Schedule: Planning and design 2008-09; construction in 2011
- Budget: \$1.3 million for design; \$20 million for construction (LADWP may provide some funding for this project)
- Resources: Los Angeles County Flood Control District will be the project manager
- Potential Water Savings: Capture of an additional 1,500 to 3,000 AFY of stormwater

**Development of Additional Projects:** LADWP is a participant in the proposed Sun Valley Neighborhood Retrofit Project led by the Los Angeles and San Gabriel Rivers Watershed Council and TreePeople. The project will enhance an entire block to capture stormwater, reduce flooding and water pollution, and add green space. Additional projects such as this will need to be considered to further enhance the capture of stormwater.

## **Strategy 4: Accelerate Clean-Up of the San Fernando Groundwater Basin**

**Goal:** Clean up the contaminated San Fernando Groundwater Basin to expand groundwater storage and the ability to fully utilize the City's groundwater supplies

**Reduction of Imported Water:** Up to 87,000 AFY – LADWP's annual allocation of San Fernando Valley groundwater supplies.

### **Background:**

Groundwater is the primary source of local water supply for the City of Los Angeles, historically providing as much as 107,000 AFY. In the past, groundwater supplied as much as 30 percent of the City's water supplies during drought years. While local groundwater has historically provided Los Angeles with a high-quality, reliable water supply, existing groundwater contamination in the San Fernando Basin has impacted LADWP's ability to fully utilize this valuable resource.

The primary contaminants of concern include trichloroethylene (TCE), perchloroethylene (PCE), nitrates, perchlorate, hexavalent chromium, and emerging contaminants. To date, over 47 percent of LADWP's production wells in the San Fernando Basin have been removed from service due to contamination issues. With the discovery of new contamination sites and the migration of existing contaminant plumes, it is expected that more of LADWP's production wells will be curtailed, thereby forcing LADWP to increase dependence on imported supplies.

LADWP is advocating strongly for the United States Environmental Protection Agency (EPA), Los Angeles Regional Water Quality Control Board, and the California Department of Toxic Substances Control to identify and hold the responsible parties accountable for cleaning up the Basin. LADWP is also pursuing a parallel track to explore other administrative or legal remedies available to expedite cleanup, including the pursuit of monetary compensation for water lost due to contamination and the resulting pumping limitations.

Recognizing the urgency and importance of this work, LADWP is working with government and elected officials to expedite the San Fernando Basin groundwater clean-up. This effort will be costly, and could reach \$500 million to \$1 billion. To fund clean-up activities, LADWP will need to hold polluters accountable, and actively seek state and federal funding.

### **Action Plan:**

Cleaning up the San Fernando Groundwater Basin is a massive undertaking that will transform one of the City's key water sources. The effort will require investment and commitment from across L.A., and the LADWP will work to ensure that this Basin remains a consistent, stable and reliable resource for years to come.

**Work with Regulatory Agencies and Governmental Officials:** LADWP will continue to encourage the EPA to develop a long-term, comprehensive solution for existing and emerging contamination issues in the Basin. In addition to the EPA, LADWP will work with the Los Angeles Regional Water Quality Control Board and the California Department of Toxic Substances to find and hold polluters accountable for cleaning up the Basin.

**Groundwater System Improvement Study (GSIS):** LADWP will conduct a comprehensive groundwater study for the Basin. This study is a necessary step to evaluate the groundwater quality in the Basin and recommend treatment options to maximize the utility of the groundwater supply.

- Schedule: Contract award in mid-2008; contract term is 6 years
- Budget: \$10 million (LADWP funded)
- Resources: LADWP will serve as contract manager and administrator
- Benefit: Will provide vital information to develop a long-term strategy to remediate groundwater contamination in the San Fernando Basin.

**Monitoring Well Drilling Contract:** LADWP will install up to 40 new monitoring wells throughout the Basin to provide vital water quality information necessary for the Groundwater System Improvement Study.

- Schedule: Construction contract award in mid-2009; contract term is 2 years
- Budget: \$7.5 million (LADWP funded)
- Resources: LADWP will serve as contract manager and administrator
- Benefit: The monitoring wells can be routinely sampled during and after the GSIS to provide vital information on groundwater contaminants and their concentration levels

**Interim Wellhead Treatment:** LADWP will install interim treatment for select wellheads in the Tujunga Well Field in order to maintain groundwater pumping production. An amount of \$3 million has been included in the budget for this work.

## **Strategy 5: Expanding Groundwater Storage**

**Goal:** Pursue opportunities to expand groundwater storage.

### **Action Plan:**

LADWP is investigating opportunities for increased storage of groundwater, creating a cost-effective, environmentally friendly reserve of water resources in case of extreme drought or other emergencies. Currently, the City has significant amounts of stored groundwater in the San Fernando Basin. However, contamination restricts the ability to effectively utilize this resource. As a result, it is critical for L.A. to invest in a long-term plan for expanding our storage capacity and ensuring a sustainable source for the future.

**Explore Opportunities for Groundwater Storage Along the Los Angeles Aqueduct:**

As part of a proposed study of the impact of climate change on our water system, LADWP will examine opportunities for increased groundwater storage in the Owens Valley and the Antelope Valley. LADWP will also continue to engage in a groundwater rights adjudication process underway in the Antelope Valley.

**Pursue Storage Project in Los Angeles County Water Basins:** LADWP is investigating a groundwater conjunctive use storage project in the LA County groundwater basins. This project would enable LADWP to store significant amounts of water during periods of drought or emergency.

**Los Angeles Aqueduct and California Aqueduct Interconnection:** LADWP is planning to construct an interconnection between the Los Angeles Aqueduct and the California Aqueduct, located where the two aqueducts intersect in the Antelope Valley. The interconnection will allow for water transfers or exchanges, and could be used to help move water to facilitate groundwater storage opportunities.

The design phase of the interconnection is almost complete. LADWP is waiting for a permit to build on land owned by the State Department of Water Resources (DWR). LADWP plans to begin construction in 2008.

## **Conclusion**

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A reliable, affordable water supply is essential to sustain Los Angeles and Southern California. Over the past 25 years, Los Angeles residents have done an excellent job at conserving water, but the recent water shortage has highlighted the need to implement measures to ensure a sufficient water supply in the coming decades. This Water Supply Plan outlines a future of responsible water management and long-term planning. It sets the City on a course to meet all new water demand through conservation and recycling. It takes into account the realities of climate change and tackles the dangers of drought and dry weather head-on. Working together, local leaders and residents will get through the tough times and plan ahead – and future generations of Angelenos will reap the benefits of our commitment and vision.