



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

**Strategies and Innovations in Financing Local Stormwater and Dry Weather
Runoff Improvements
--- Gary Hildebrand---**



LA BASIN REGIONAL WATER SUPPLY AND DEMAND



Los Angeles County is one of the largest in the nation.

LOS ANGELES COUNTY

- Los Angeles County covers over 4,000 square miles and has a population of 9 million people in 88 cities and 1 million people in unincorporated areas.
- 27 percent of California’s residents live in Los Angeles County .

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

- Operates and maintains a system of flood control and water conservation facilities that provide flood protection and increase local water supply.
- Boundaries encompass an area of 2,752 square miles
- Facilities include 14 dams and reservoirs, 485 miles of open channel, 80,000 catch basins, 2,800 miles of underground storm drain, 61 pump plants, 155 sediment (debris) entrapment basins, 20 low-flow diversions, 229 concrete check dams, 26 spreading grounds, and 3 seawater intrusion barriers

STORMWATER CAPTURE

- LA River – 10% stormwater capture
- San Gabriel River within the San Gabriel Valley– 90% stormwater capture

REGIONAL WATER SUPPLY AND DEMAND

LA Basin

- 56% Import
- 44% Local
- 1,515,000 AFY Demand

LA City

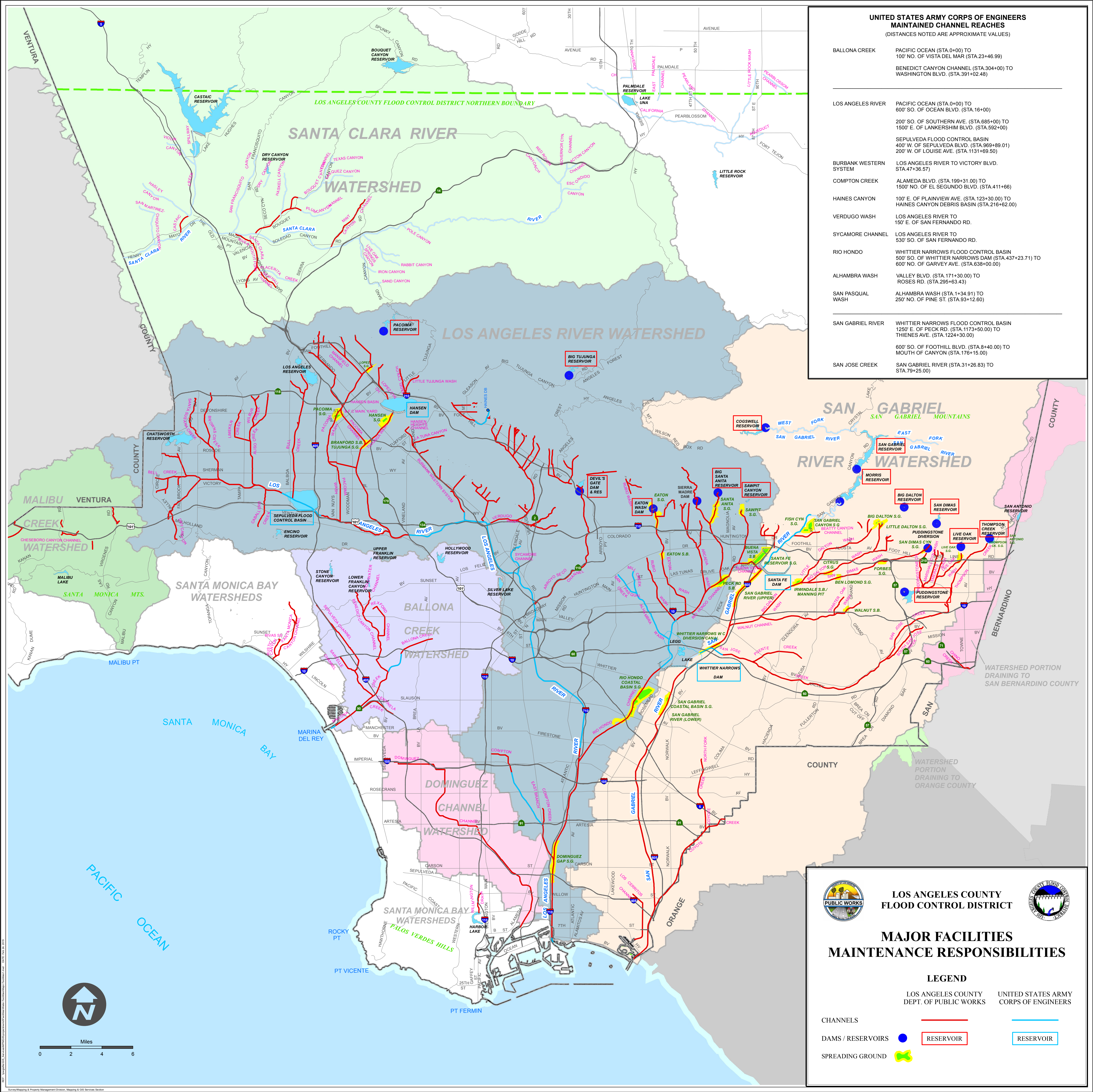
- 88% Import
- 12% Local (includes 1% Recycled)
- 621,700 AFY Demand

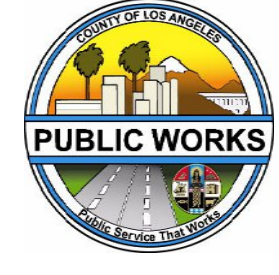



**UNITED STATES ARMY CORPS OF ENGINEERS
MAINTAINED CHANNEL REACHES**

(DISTANCES NOTED ARE APPROXIMATE VALUES)

BALLONA CREEK	PACIFIC OCEAN (STA.0+00) TO 100' NO. OF VISTA DEL MAR (STA.23+46.99)
	BENEDICT CANYON CHANNEL (STA.304+00) TO WASHINGTON BLVD. (STA.391+02.48)
LOS ANGELES RIVER	PACIFIC OCEAN (STA.0+00) TO 600' SO. OF OCEAN BLVD. (STA.16+00)
	200' SO. OF SOUTHERN AVE. (STA.685+00) TO 1500' E. OF LANKERSHIM BLVD. (STA.592+00)
	SEPULVEDA FLOOD CONTROL BASIN 400' W. OF SEPULVEDA BLVD. (STA.969+89.01) 200' W. OF LOUISE AVE. (STA.1131+69.50)
BURBANK WESTERN SYSTEM	LOS ANGELES RIVER TO VICTORY BLVD. STA.47+36.57)
COMPTON CREEK	ALAMEDA BLVD. (STA.199+31.00) TO 1500' NO. OF EL SEGUNDO BLVD. (STA.411+66)
HAINES CANYON	100' E. OF PLANVIEW AVE. (STA.123+30.00) TO HAINES CANYON DEBRIS BASIN (STA.216+62.00)
VERDUGO WASH	LOS ANGELES RIVER TO 150' E. OF SAN FERNANDO RD.
SYCAMORE CHANNEL	LOS ANGELES RIVER TO 530' SO. OF SAN FERNANDO RD.
RIO HONDO	WHITTIER NARROWS FLOOD CONTROL BASIN 500' SO. OF WHITTIER NARROWS DAM (STA.437+23.71) TO 600' NO. OF GARVEY AVE. (STA.638+00.00)
ALHAMBRA WASH	VALLEY BLVD. (STA.171+30.00) TO ROSES RD. (STA.295+63.43)
SAN PASQUAL WASH	ALHAMBRA WASH (STA.1+34.91) TO 250' NO. OF PINE ST. (STA.93+12.60)
SAN GABRIEL RIVER	WHITTIER NARROWS FLOOD CONTROL BASIN 1250' E. OF PECK RD. (STA.1173+50.00) TO THIENES AVE. (STA.1224+30.00)
	600' SO. OF FOOTHILL BLVD. (STA.8+40.00) TO MOUTH OF CANYON (STA.176+15.00)
SAN JOSE CREEK	SAN GABRIEL RIVER (STA.31+26.83) TO STA.79+25.00)



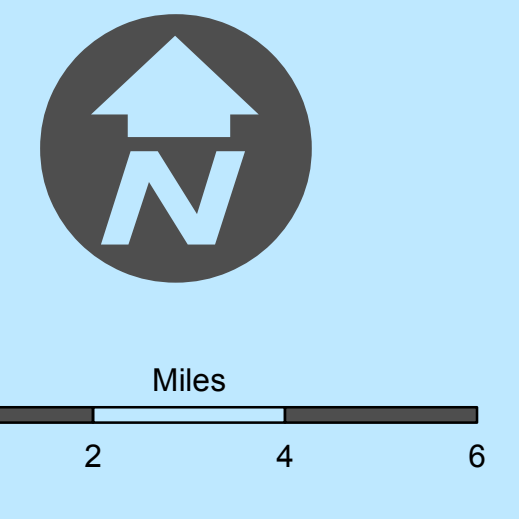
**LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT**

**MAJOR FACILITIES
MAINTENANCE RESPONSIBILITIES**

LEGEND

LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS	UNITED STATES ARMY CORPS OF ENGINEERS
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CHANNELS		
DAMS / RESERVOIRS		
	RESERVOIR	RESERVOIR
SPREADING GROUND		



Survey Mapping & Property Management Division, Mapping & GIS Services Section
 DATE: 06/23/2015

Regional Water Reliability – Spreading Grounds



Hansen Spreading Grounds - Empty (Aerial images courtesy of Google earth)



Hansen Spreading Grounds- Full (Aerial images courtesy of Google earth)

SUN VALLEY WATERSHED RORY M. SHAW WETLANDS PARK



Los Angeles
Department of
Water & Power

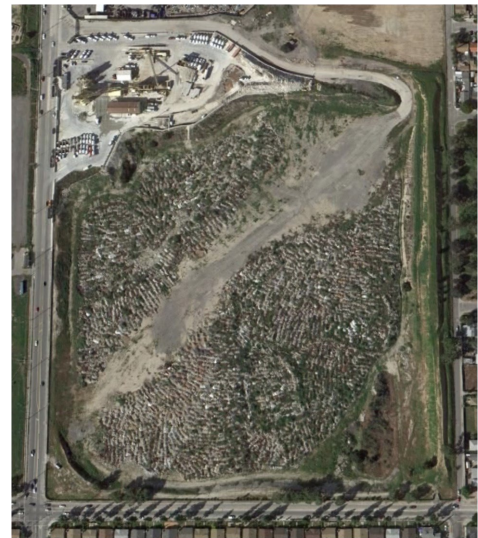
The Sun Valley—Rory M. Shaw Wetlands Park Project is identified as a major component of the Sun Valley Watershed Management Plan, a plan developed by the Los Angeles County Flood Control District to solve the major flooding problem, while retaining all stormwater runoff from the watershed, increasing water conservation, recreational opportunities, and wildlife habitat, and reducing stormwater pollution.

Project Description

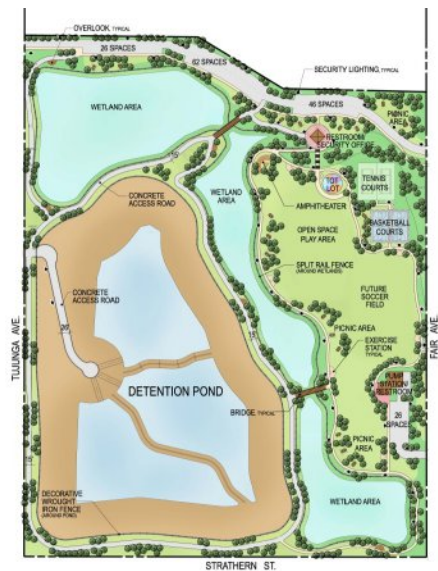
The Sun Valley Watershed—Rory M. Shaw Wetlands Park Project is a collaborative effort amongst the Los Angeles Flood Control District, the City of Los Angeles, and the Sun Valley Watershed Stakeholders Group to address flooding downstream of the Strathern Pit site, at the intersection of Tujunga Avenue and Strathern Street.

The project proposes to convert a 46-acre, engineered, inert landfill into a multi-purpose wetlands park. A storm drain system will be constructed to collect stormwater runoff from the upstream 929-acre drainage area and convey them into the project site. Detention ponds and wetlands will be constructed to capture and treat stormwater runoff to provide water quality enhancement. The treated flows will then be pumped to the adjacent Sun Valley Park for infiltration into existing infiltration basins, providing recharge into the groundwater. The water conservation benefit is expected to be 590 acre-feet per year. In addition to water quality improvements, the constructed wetlands will also enhance native vegetation and create opportunities for wildlife habitat. The project will provide an additional 46 acres of open space recreation to a community that is currently underserved for recreational opportunities. Proposed recreational enhancements include trails, active recreational amenities, educational signage and restrooms.

The total cost for design and construction is estimated at \$52 million and will be funded by the Los Angeles County Flood Control District, the Los Angeles Department of Water and Power, and Proposition O grant funds. The Project is currently in the design phase .



EXISTING LANDFILL SITE



PROPOSED WETLANDS PARK

SUN VALLEY WATERSHED SUN VALLEY PARK DRAIN AND INFILTRATION SYSTEM PROJECT



The Sun Valley Watershed—Sun Valley Park Drain and Infiltration System Project is identified as a major component of the Sun Valley Watershed Management Plan, a plan developed by the Los Angeles County Flood Control District to solve the major flooding problem, while retaining all stormwater runoff from the watershed, increasing water conservation, recreational opportunities, and wildlife habitat, and reducing stormwater pollution.

Project Description

The Sun Valley Watershed – Sun Valley Park Drain and Infiltration System Project converted an existing municipal park into a flood mitigation, water quality treatment, and water conservation multi-use site. Localized flooding is alleviated in the area as stormwater runoff from the 21-acre drainage area is collected through a constructed storm drain system to the Sun Valley Park. Runoff is routed through a water quality treatment system at the park to remove suspended solids and heavy metals. The treated runoff is then directed into two underground infiltration basins where the water is naturally filtered and recharged into the groundwater aquifer. The water conservation benefit is estimated to be 30 acre-feet per year. The infiltration basins are buried beneath the soccer and baseball fields to maintain the park's functionality. Vegetated swales with California native plants were also strategically placed throughout the park to treat runoff from the surrounding areas. In addition, the project also included enhancements to the park's recreational amenities, such as new soccer and baseball fields, bleachers, sports lighting, and interpretive signage.



Construction of the project was completed in 2006 with total project cost of approximately \$7 million. The project was funded by the Department of Water Resources (Local Groundwater Assistance) grant, a Proposition 12 (Murray-Hayden) grant received by TreePeople, and the Los Angeles County Flood Control District.

Designed By: CH2MHill

Constructed by: Southwest Engineering, Inc.

Operated and Maintained By: Los Angeles County Flood Control District, City of Los Angeles Bureau of Sanitation, and City of Los Angeles Department of Recreation and Parks



DOMINGUEZ GAP WETLANDS MULTI-USE PROJECT

The Dominguez Gap Wetlands Multi-Use Project is located on the east bank of the Los Angeles River just south of Del Amo Blvd in the City of Long Beach. The project was identified in the Los Angeles River Master Plan, adopted in 1996, as one of the top five demonstration projects that would provide flood management, water quality and environmental enhancements, and recreation and educational improvements.

Project Description

The Dominguez Gap Wetlands Multi-Use Project converted an existing, 37-acre, spreading ground basin into a multi-benefit wetlands. Flows from the Los Angeles River and local urban runoff are routed through the basin to sustain a year-round aquatic habitat for riparian plant species and native wildlife. The wetland also removes pollutants such as heavy metals, organic carbons, oil, grease, and nutrients from the runoff. The treated runoff is then directed into the Dominguez Gap Spreading Grounds West Basin for storage and groundwater recharge. During high flows from the surrounding tributary areas, flows from the wetlands are pumped into the Los Angeles River. In addition, the wetlands provide increased opportunities for open space and passive recreational amenities, such as an equestrian trail, bike path and walkways that are accessible to the public and interpretive signage.

Construction of the project began in 2006 and was completed in 2008 with a total project cost of approximately \$7.1 million. The project was funded by Proposition 13 CALFED grant, Proposition 40 funds administrated through the Rivers and Mountains Conservancy, the California Coastal Conservancy Wetland Recovery Project, and the Los Angeles County Flood Control District.



Pre-Construction Photo: Spreading Ground Basin



Post-Construction Photo: Wetlands

Designed By: CH2MHill

Constructed by: Environmental Construction, Inc.

Operated and Maintained By: Los Angeles County Flood Control District, City of Long Beach Department of Parks, Recreation, and Marine

TUJUNGA WASH ECOSYSTEM RESTORATION PHASE I



The Tujunga Wash Ecosystem Restoration Phase I Project was a collaborative effort between the Los Angeles County Flood Control District, the Santa Monica Mountains Conservancy and the Mountains Recreation and Conservancy Authority to restore both sides of the Tujunga Wash channel between Vanowen Street and Oxnard Street and provide open space and passive recreational opportunities.

Project Description

The Tujunga Wash Ecosystem Restoration Phase I Project restored a one-mile reach along the Tujunga Wash and provides open space within the Valley Glen community. The project restored riparian habitat, allows for groundwater recharge, enhances water quality, and serves as a model for the creation of a sustainable and healthy alternative stream system in a dense urban setting. In addition, both banks of the channel include pedestrian walkways, seating areas, native and drought-tolerant landscaping and new entryways.

Construction of the project was completed in 2007 with total project cost of approximately \$7 million. The project was funded by County Supervisor Zev Yaroslavsky (3rd District) through Proposition A, the Department of Water Resources, the Resources Agency, and Los Angeles County Flood Control District. The project was managed by the Santa Monica Mountains Conservancy and Mountains Recreation and Conservation Authority.



Before construction



After construction — Completed 2007

Designed By: Los Angeles County Flood Control District, Mountains Recreation and Conservation Authority
 Operated and Maintained By: Mountains Recreation and Conservation Authority

TUJUNGA WASH ECOSYSTEM RESTORATION PHASE II



**US Army Corps
of Engineers®**

Tujunga Wash is a nine-mile concrete rectangular channel that conveys runoff from Hansen Dam to the Los Angeles River. The Tujunga Wash Ecosystem Restoration Project is a collaborative effort between the Los Angeles County Flood Control District and the U.S. Army Corps of Engineers to restore both sides of the Tujunga Wash channel between Vanowen Street and Sherman Way.

This project creates a new naturalized stream that meanders along the west bank of the channel. Both banks includes pedestrian walkways, seating areas, native and drought-tolerant landscaping, and new entryways. This project greatly enhances the environment by providing more than 10 acres of open space in an area that significantly lacks this resource. The project also restores riparian habitat and serves as a model for a sustainable and healthy stream system in a dense, urban setting.

The Corps of Engineers, under Section 1135 of the Water Resources Development Act, performed a reconnaissance study and determined the project was eligible for Federal participation and funding. Under this program, the Corps of Engineers funded 75 percent and the Flood Control District funded 25 percent of the total project costs. Construction of the project was completed in July 2012 with a total project cost of approximately \$7 million.

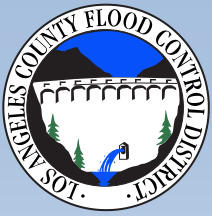


before construction



After construction —Completed 2012

This project is an extension of the Tujunga Wash Greenway and Stream Restoration Phase I between Vanowen Street and Oxnard Street which was completed in 2007. In total, both projects provide over 1.75 miles of enhanced Flood Control right-of-way.



RECLAMATION

Managing Water in the West

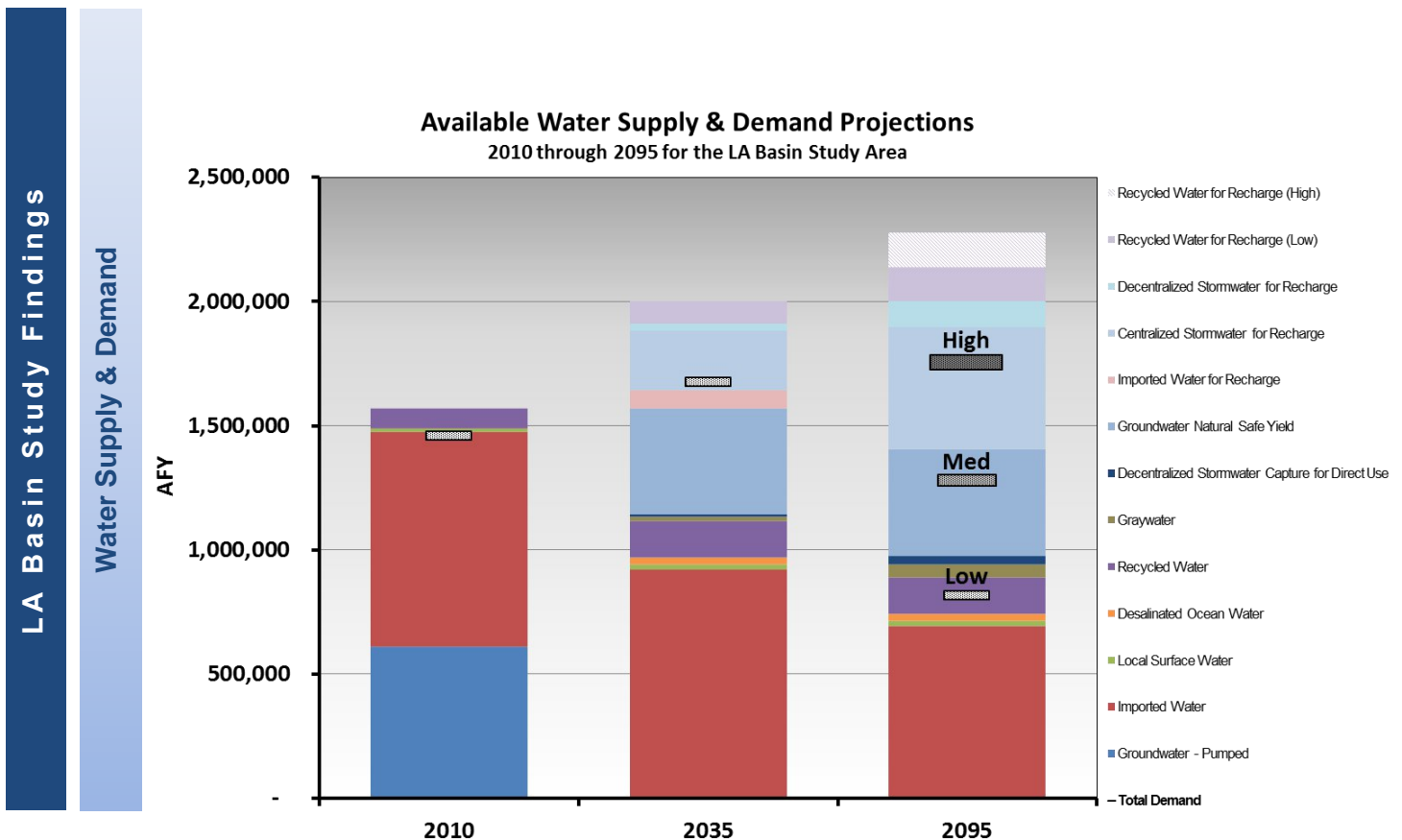
LOS ANGELES BASIN STORMWATER CONSERVATION STUDY

The Los Angeles Basin Stormwater Conservation Study (LA Basin Study) is assessing the region's major water conservation and flood control infrastructure to prepare for future changes in climate and population. The LA Basin Study is a long-range planning effort that is evaluating the potential of the existing Los Angeles County Flood Control District (LACFCD) facilities and other new stormwater capture concepts to increase the local water supply under an uncertain future. Detailed scientific, engineering, and economic analyses are being conducted to help address future water supply demands and challenges as a result of climate change and population growth. The study is a collaboration between the LACFCD and the Bureau of Reclamation to ensure continued reliability and further enhancement of stormwater as a locally sustainable supply source. This effort is estimated to cost \$2.4 and take three years to complete.

The LA Basin Study has completed the analysis of the following:

1. Future climate change projections and hydrologic modeling
2. Water supply and water demand projections
3. Existing infrastructure response to future conditions

The study is now focusing its efforts on developing stormwater capture concepts that can help the region become more resilient to climate change by taking steps to further secure stormwater as a local water supply. These concepts will undergo an economic cost-benefit analysis before the final recommendations are made in **December 2015**.



Study Partners »

- Los Angeles County Flood Control District (LACFCD)
- U.S. Department of the Interior - Bureau of Reclamation (Reclamation)
- U.S. Army Corps of Engineers
- Over 35 members on the Stakeholder Technical Advisory Committee such as LADWP, MWD, TreePeople, Council for Watershed Health, USGVMWD, etc.

Objectives »

- Evaluate *existing* water conservation under *future* conditions
- Evaluate *potential new* facilities & operational changes for climate change

KEY
CONSIDERATIONS

» *Climate Change*
» *Population Growth*

Study Tasks »

