



Tujunga-Pacoima Watershed Plan

The River Project is a non-profit 501(c)(3) organization dedicated to planning for natural resource protection, conservation and enhancement in Los Angeles County. Our mission is to encourage responsible management of our watershed lands and revitalization of our rivers for the social, economic and environmental benefit of our communities. Through outreach, advocacy, scientific research and hands-on educational programs, we provide communities with the tools to reclaim their riverfront lands. The River Project was founded by Melanie Winter. Information available on the web at www.theriverproject.org

TUJUNGA/PACOIMA WATERSHED PLAN

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The Plan is written to be useful to the broadest possible audience. With that in mind, we designed it to be accessed in two ways. If you find it easier to work with hard copy documents you can print the pdf version, but you won't see footnotes except in the Appendices. The web-based version includes hotlinks to references and useful resources throughout and can be found at www.tujungawash.org

The Plan has been printed on Forest Stewardship Council–certified recycled paper.

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Chapter 1 INTRODUCTION

1.1 Context

Anything else you're interested in is not going to happen if you can't breathe the air and drink the water. Don't sit this one out. Do something. You are by accident of fate alive at an absolutely critical moment in the history of our planet.

—Carl Sagan

Most people still believe the myth that Los Angeles is a desert. In fact the availability of local water supply and the uncommon beauty of our local waterways was the reason Los Angeles was founded where it was. But Los Angeles—once considered an Eden—has changed considerably over the past 100 years. Ask a random group of Angelenos today where their water comes from or where the closest creek or river is and odds are good you'll get blank stares or furrowed brows in response. It is apparent that we have room for improvement in how we consider, appreciate and manage this most fundamental asset.

Today, nearly 20 percent of the state's electrical energy and 33 percent of its natural gas energy costs go to moving water around the state and treating it, and a significant percentage of that energy goes to import and treat water for Southern California. Climate change and numerous recent court decisions will force us to find ways to do a much better job of conserving and utilizing our own local supplies. We currently spend \$1 billion a year to import 85 percent of our water supply from other regions whose ecosystems are seriously threatened by that loss. During the storms of 2004/05, years' worth of water supply was sent speeding out to the ocean rather than being captured for future use. Meanwhile, the aquifer beneath the San Fernando Valley that could be supplying much of our water needs is dangerously depleted. Most of our waterways have been encased in concrete and much of our land has been covered in asphalt. We have fewer parks and less open space than any other major city in the country. Ninety-eight percent of our riverside habitat and 75 percent of our overall habitat has been lost. The water quality in our waterways and beaches is so poor that we're under Federal court order to find ways to improve it. Water supply, water quality, land use, and habitat are all related, but we're unaccustomed to looking at them that way. To move to a more sustainable model in this century, we need to begin to embrace a more integrated perspective.

Everything is connected to everything else. Everything must go somewhere. Nature knows best. There is no such thing as a free lunch. If you don't put something in the ecology, it's not there.

—Barry Commoner's Five Laws of Ecology

This Watershed Management Plan recognizes these innate connections and shows us how to do things differently. Changing our approach to land use—throughout the watershed—is one of the most critical changes we need to make if we want healthy communities, revitalized rivers, and a sustainable economic, social, and environmental future. With land and housing costs on the increase, single-family homes being replaced with larger ones, low-rise apartments being replaced with multi-story condominiums, and commercial corridors being rebuilt over time, much of the San Fernando Valley faces the potential of widespread redevelopment. Finally, as distant water supplies become more and more scarce, now is the time to explore a more creative, holistic approach to managing land use and our limited resources.

The world that we have made as a result of the level of thinking that we have done so far has created problems we cannot solve at the level of thinking at which we created them ... We shall require a substantially new manner of thinking if humankind is to survive.

—Albert Einstein

Watersheds are a common sense, natural framework for better understanding, managing and protecting the value inherent in our natural resources. Native Hawaiian cultures divided and managed land by watershed,

As water moves along its path, it interacts with everything it touches. It may exchange molecules with soil, vegetation, paved surfaces or trash affecting the suitability of the aquatic environment for plants, fish, birds, animals and other organisms. Because the native species within this system are specifically adapted to their natural environment and to each other, too much of an introduced substance or species can throw the whole system off track and may determine whether native species can thrive or even survive in their habitat. Aquatic life is an important component of the world's web of genetic diversity. Each species exists because they serve some necessary function in the larger inter-related system we are all a part of. Their health is an indicator of the availability and cleanliness of the water supplies we all need for our own survival.

1.3 The Tujunga/Pacoima Watershed

For many of us, water simply flows from a faucet, and we think little about it beyond this point of contact. We have lost a sense of respect for the wild river, for the complex workings of a wetland, for the intricate web of life that water supports.

—*Sandra Postel*

The Tujunga/Pacoima Watershed drains to the Los Angeles River and is the largest subwatershed of the Los Angeles River Watershed, which drains to the Pacific Ocean in Long Beach. This 225-square-mile subwatershed comprises both remote open space of the Angeles National Forest, and the highly urbanized lands of the cities of Los Angeles and San Fernando. The watershed has a very steep slope—the high elevations of the San Gabriel Mountains in the upper watershed drop rapidly to the valley floor at an average rate of 41 feet/mile. Dozens of streams feed the three main tributaries—the Big Tujunga, Little Tujunga, and Pacoima Washes.

The watershed has a population of approximately 525,000, is roughly 61 percent Latino with 32 percent of the population under the age of 17 and 19 percent living in poverty. While the upper watershed includes more than 165 square miles of the Angeles National Forest and a large regional recreation area behind Hansen Dam, the lower watershed is extremely park-poor.

Our watershed's Mediterranean ecosystem, the California Floristic Province, is one of the world's top ten "hotspots" of biodiversity and is considered more threatened than the rainforest. Our region was once alive with native plants and animals that evolved and adapted over millions of years to be perfectly adapted to our cycles of drought and inundation. Of the 4,426 vascular plants found here, 48 percent are found nowhere else in the world. There are more plant species native to this ecosystem than in the whole central and northeastern United States combined. More bird species breed in our region than anywhere else in the country.

Although Los Angeles averages only 15 inches of annual rainfall, the higher elevations of this watershed receive some of the most concentrated rainfall in the United States. Historically, the Tujunga/Pacoima Watershed was a major contributor of groundwater supply. It sits atop the San Fernando Groundwater Basin—a natural underground reservoir that has become depleted over the years as most of the valley floor became impervious. Most of the rain that used to soak into the ground now runs off of concrete and asphalt and directly into the stormdrains, channelized washes, and the Los Angeles River. Prior to the channelization of our river systems and the subsequent intense development, it was estimated by Los Angeles County flood control engineers that 80 percent of stormwater percolated to groundwater. Current estimates are that around 8 percent of rainfall in urbanized areas percolates, the rest being lost to the ocean via the channelized system, carrying contaminants from urbanized land uses.

The San Fernando Groundwater Basin currently provides nearly 15 percent of Los Angeles's drinking water but has the potential to provide much more.

Although watersheds share similar form and functions, each has unique characteristics that reflect the geography, geology, and topography of each. The essential characteristics of Tujunga/Pacoima Watershed—

high biodiversity, concentrated rainfall, steep slopes, pervious soils, and a capacious underground reservoir—offer our strongest regional opportunity to secure a sustainable local water supply. Enabling these attributes to work in concert again is the central objective of watershed management.

1.4 Moving from Twentieth- to Twenty-first-Century Planning

Growth for the sake of growth is the ideology of the cancer cell.

—*Edward Abbey*

In the twentieth century, city planners did not worry as much about integrating with either the aesthetic or functional aspects of the watershed because of our newfound ability to quickly engineer our way around what were considered the natural “limitations” of these systems. Local engineers suggested zoning regulations to prohibit construction in floodplains in 1927 and in 1934. Their recommendations were never codified because political leadership prioritized economic growth, allowing development to progress at an extremely fast rate and depriving us of the benefits of nature’s services to cleanse and infiltrate rainwater runoff and secure local water supplies. As our built environments have become further and further removed from their natural context, the utility of twentieth century urban design has reached an end. New Orleans showed us that as a city stops working within its natural and functional parameters, its future becomes less secure: nature always bats last. There is no longer a quick fix for urban watersheds. They must now be redesigned to function as part of an integrated system.

Water links us to our neighbor in a way more profound and complex than any other.

—*John Thorson*

With such a disconnect from our natural context, it is no surprise that so many city dwellers lack a coherent and meaningful sense of belonging, a sense of place. Cities like Manchester or Detroit illustrate that at a certain point this disconnect leads to social decline, urban unrest, disinvestment and long-term blight. Even though they were the center of progress in their day, these cities did not thrive because they came to be valued chiefly for their industries, which came and went. They ignored one of the most important elements of the human condition: relationship to the natural world and its rhythms. The great cities of the world have not only used their water resources for functional and economic benefit, but they have also embraced both the functionality and the natural beauty of these resources in their urban design, and formed richer places because of it. In order to regain our sense of connection, both the form and function of our watershed ecosystems must be pieced back together and integrated into the urban fabric.

In the 19th Century, we devoted our best minds to exploring nature. In the 20th Century, we devoted ourselves to controlling and harnessing it. In the 21st Century, the best minds are working on how to restore nature.

—*Stephen Ambrose*

In the Tujunga/Pacoima Watershed, healthy rivers and streams, sufficient parks and open spaces, protected hillsides and floodplains are not secondary amenities: they are integral to our future social and economic health. Water supply is a fundamental need. Adapting our land use template to one that takes advantage better of nature’s services is the most cost-effective way of ensuring that we have sufficient clean water, vibrant habitats, cleaner air and healthy neighborhoods. The template used to build the San Fernando Valley fostered a car-dependant culture and deprived us of our most precious natural resource. But that template is not immutable.

Since most of the watershed was developed quickly, cheaply and around the same time, much of our built environment is aging at the same rate. Areas considered ripe for redevelopment can be designed differently so that over time, the template shifts. The recent trend towards densification could provide an opportunity to transform the template to a more sustainable one if we simultaneously ‘undevelop’ those areas of land that can best serve our water supply and public health needs.

Thinking about “highest and best use” and “overriding considerations” in a watershed context can re-define the language of land use planning and facilitate a transition to greener infrastructure and a more sustainable future. Making that transition successfully involves a set of fundamental paradigm shifts that require collective cooperation and effort.

The first step in developing a viable plan for change is finding common ground: bringing diverse people together to collaborate and create a consensus vision, a mutually supportive set of goals, and a holistic, proactive approach.

1.5 How This Plan Was Developed

Men and nature must work hand in hand. The throwing out of balance of the resources of nature throws out of balance also the lives of men.

—*Franklin Delano Roosevelt*

In 2004, The River Project (TRP) received a grant from the state’s CalFed Bay-Delta Program to develop a Watershed Management Plan for the Tujunga/Pacoima Watershed. TRP assembled a Project Team of specialists in the various watershed disciplines and brought together representatives from federal, state, and local government agencies committed to working cooperatively to guide the Plan development. A public outreach effort was launched to engage participation from local elected officials, neighborhood councils, community groups, and interested residents.

This diverse group of stakeholders from the public, private and non-profit sectors began meeting in April of 2005 to collaboratively develop a socially, environmentally, and economically sustainable plan of action for managing water resources that is both integrated with urban development and based on the watershed ecosystem. A Stakeholder Steering Committee and Technical Advisory Committee were established to inform and guide the Plan development. Their mission was to achieve consensus on outlining actions, programs and projects to improve the healthy functioning of the watershed, and provide a set of principles to guide future project and management efforts.

Through this consensus process, a diverse range of Goals and Objectives were identified (and are included in Chapter 3). Three basic premises underlie these desired outcomes:

- Water is a valuable asset.
- The watershed must be the primary basis for urban planning and design.
- Green infrastructure is cost efficient, multipurpose, and fosters community identity.

Ongoing outreach and education, special workshops, and development of a k–12 curriculum supported continued community involvement throughout the process. Input and feedback were collected at Stakeholder meetings, which were usually held once a month.

The Project Team produced a demographics report of the watershed, worked with stakeholders to gather and review the available data on the physical, biological, social and economic variables that characterize the watershed, and compiled the data in a geographic information systems (GIS) format Inventory. Project Team engineers worked with the Technical Advisory Committee to select a suite of appropriate numeric models that could be used to analyze current conditions as well as past and potential future conditions.

Using the data and models, a Watershed Assessment (summarized in Chapter 2) was developed to define the current condition of the watershed. This was then compared to the desired condition as described by the Goals & Objectives in order to determine relative health. The 217-page report identified specific system stressors, described various opportunities and constraints, and made recommendations for management actions and policies to improve ecosystem function (see Appendix 8).

TRP then organized a public education series called Watershed-U Tujunga. It was a crash course on our watershed that took place one evening a week for six weeks that got over 100 local community leaders involved and inspired. A k–12 curricula was created to support student learning of the Tujunga/Pacoima Watershed using the watershed as a context for project-based, hands-on learning. In the elementary level, each grade has a specific “theme” so that as students move up through each grade level they build on their knowledge of their watershed. Each grade level theme is designed to teach specific California State content standards. The secondary level includes a set of activities and worksheets designed specifically for groups of youth. As a part of the program they explore their part of the watershed; work as a team to observe and map their community; and use their own ideas and voice to carry out a project while finding others in the community to help (refer to Appendix 13)

The Project Team spent several months meeting with stakeholders at all levels to identify over 200 potential projects that could move us toward a healthier balance. Agencies, Non-Governmental Organizations (NGOs) and residents all contributed project ideas. The Land Use committees of the Neighborhood Councils were particularly engaged in the process (refer to Appendix 10).

The Technical Advisory Committee worked with stakeholders to develop a Decision Support System (DSS) to help rank and prioritize the projects. A Geographic Information System analyzed criteria such as infiltration potential; park needs; distance from nearest park, trail or storm drain; habitat connectivity; and special districts. These tools helped stakeholders to quantify potential project benefits and identify their capacity to serve as green infrastructure for water supply recharge, water quality improvement, and flood management.

Using this information, stakeholders selected twenty-four neighborhood-scale and thirteen watershed-scale projects that represent the Project Scenario presented in Chapter 4 this Plan. Collectively, this holistic scenario represents many of the best opportunities to improve watershed health and create a more sustainable future. The Project Team used modeling to quantify the estimated cumulative water supply benefits of implementing the Project Scenario (Chapter 5). Stakeholders proposed a range of studies that could be undertaken to develop a stronger knowledge base about watershed issues, and numerous programs designed to benefit watershed health (Chapter 6). Stakeholders also made specific policy recommendations on issues that need to be addressed in order to facilitate watershed management (Chapter 7), and outlined a range of actions that individuals and entities can take to cooperatively facilitate Plan implementation (Chapter 8).

1.6 What This Plan is For

We can require ourselves to be accountable to our grandchildren and to their great-grandchildren. By making the right choices now, we can promise them bright streams and lasting forests and rewarding employment and welcoming communities.

—Charles Wilkinson

This Plan is intended to facilitate positive change. As we undertake to redevelop our region and adapt to change, it can help us shift our planning framework to a more holistic perspective, one that uses the watershed as a basis for decision making.

Shifting existing patterns of development and employing an integrated management context can help us to: increase local water supplies; improve water quality; restore habitat; better manage open-space; make more parks; create new recreational opportunities; and design viable multi-modal transit.

Shifting from the current “silo system” of management to a more cooperative “systems approach” can help us to: partner more effectively; identify necessary funding sources; increase our quality of life; and develop a monitoring plan that will alert us to things that need our attention and tell us what strategies work.

In short, this Plan can show us how to rebuild and sustain a great place.

This plan is intended as a resource for anyone interested in working towards a sustainable future in this region. It aims to educate and inspire and to provide local advocates, urban planners, agencies, elected officials, policy-makers, individual property owners, residents, and youth a road map and a toolkit to do the following:

- Develop a more holistic understanding of the our local environment
- Facilitate widespread watershed awareness and education
- Empower the community to be directly engaged in the decision making process
- Catalyze actions to sustain support and implementation of the Plan over the long term
- Improve coordination and integration among agencies
- Enhance communication and collaboration between agencies and other stakeholders
- Bring together key agencies with other stakeholders to plan the financing and implementation of large-scale watershed retrofitting

This is intended to be a LIVING Plan that will adapt over time through continued participation from and collaboration between all stakeholders. It provides a sound foundation to support consensus decisions and actions now and in the future.

There can be no purpose more inspiring than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us.

—*E.O. Wilson*

Chapter 2 WATERSHED CONDITIONS

2.1 Introduction

A river is the report card for its watershed.

—Alan Levere

An assessment of the current functional condition of the Tujunga/Pacoima Watershed was developed in October 2006. The report describes the physical, socio-economic, and political conditions in the watershed, and looks at the cultural and historic framework that has led to its current condition. It also examines the stressors imposed on the watershed and associated management issues. The report discusses the connections between land use, natural processes, and limiting factors; identifies key data gaps and monitoring needs; looks at priorities for restoration; and makes general management recommendations. The key findings of the assessment are summarized below. For the complete assessment, refer to Appendix 8.

2.2 Overview

The Tujunga/Pacoima Watershed is the largest subwatershed of the Los Angeles River Watershed and encompasses 225 square miles in north-central Los Angeles County, California (Figure 2-1). It includes both remote open space of the Angeles National Forest and the urbanized lands of the cities of Los Angeles and San Fernando, at elevations that range from about 560 to 7,130 feet.

The watershed can generally be described in two parts: the upper watershed (above Hansen and Pacoima Dams), which is relatively undisturbed open space, and the lower watershed, which is mostly urbanized and highly degraded. Dozens of streams feed the three main tributaries—the Big Tujunga, Little Tujunga, and Pacoima Washes. Pacoima Wash becomes channelized below the Lopez Debris Basin. Big and Little Tujunga Wash meet in the reservoir behind Hansen Dam. Below Hansen Dam, Pacoima Wash joins the channelized Tujunga Wash as it flows to its confluence with the Los Angeles River in Studio City.

In a reasonably healthy condition, the primary function of the watershed would be to infiltrate, filter and store local rainfall within its large underground reservoir: the San Fernando Groundwater Basin.

2.3 The People: Changing Cultural & Socio-Economic Conditions

Unfortunately, our affluent society has also been an effluent society.

—Hubert H. Humphrey

Cultures and societies evolve over time, sometimes responding to natural events and constraints, sometimes causing them. Historical events, environmental forces, cultural sensibilities, and socioeconomic changes have all shaped the current state of the watershed.

Certain seminal events that would ultimately have a direct impact on much of the southwest's water took place within the Tujunga Watershed: lawsuits over riparian rights, which ultimately led to the legal determination asserting the city's Pueblo Rights; the arrival of the railroad, which altered a critical point in the region's hydrology and spawned the genesis of modern flood control; and the creation of the Owens Valley Aqueduct, which became the first of several massive man-made delivery systems to alter eco-

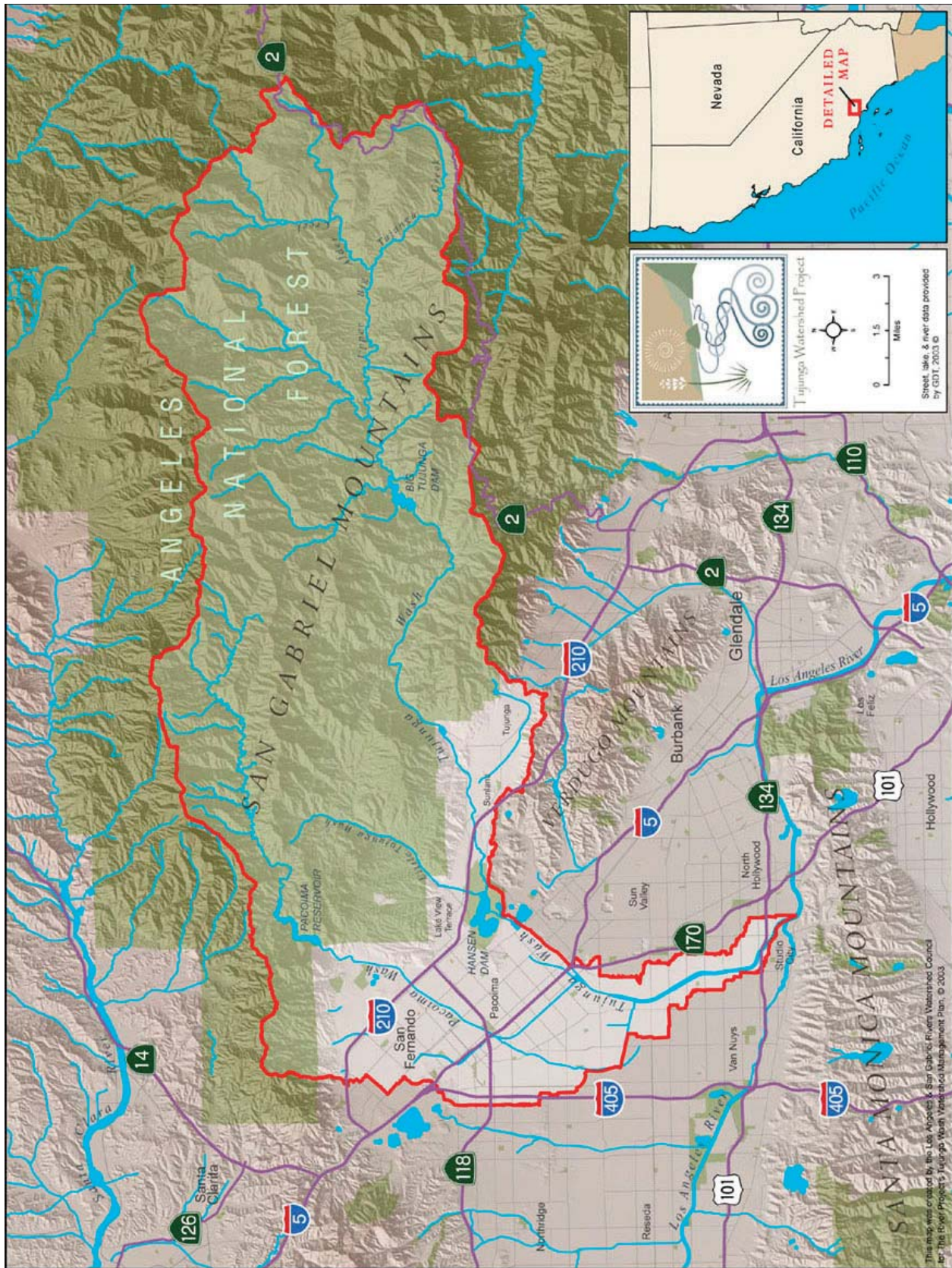


Figure 2-1 Tujunga/Pacoima Watershed
 Source: Los Angeles and San Gabriel Rivers Watershed Council 2003



Figure 2-2 Opening of the Los Angeles Aqueduct, 1913

Source: San Fernando Historical Society

systems far beyond local boundaries (Figure 2-2). These events together facilitated the rampant development and sprawl that now impedes our watersheds natural function.

The indigenous Tataviam people that originally inhabited this region understood the natural cycles of the watershed, located their settlements out of floodplains, and preserved the natural landscape to work with natural hydrologic cycles. As settlers began to move to the region and introduce new types of land use practices, they often ignored or disturbed natural conditions and suffered the consequences of flooding. In the twentieth century, modern engineering made it possible to obviate human accommodation to nature, but also had the effect of limiting human awareness of natural conditions and access to precious natural resources. The unabated development that followed produced a lack of public open space, significant traffic, and air and water pollution.

In the latter nineteenth century, numerous landowners attempted to legally assert their riparian rights to both the surface waters of the Los Angeles River (and tributaries) and the San Fernando Groundwater Basin. These lawsuits culminated in a decision by the California Supreme Court that conferred to Los Angeles all the water rights it enjoyed as a Spanish pueblo, by virtue of the Treaty of Guadalupe Hidalgo, limiting the ability of private landowners to divert water or pump groundwater.

With their pueblo rights established, Los Angeles had sufficient water to meet its needs. However, given the expanse of the landscape, empire builders of the period saw the growth potential of the region as limited only by its water supply. This led to a plan to surreptitiously buy up land and associated water rights in the Owens Valley and the construction of the first Los Angeles Aqueduct, completed in 1913. In 1915, nearly all of the subdivisions in the watershed were incorporated into the City of Los Angeles, excluding the Cities of San Fernando, Burbank and Glendale. The availability of water from the Owens Valley contributed to the development booms of 1916 to 1923 and post-World War II (Figure 2-3).

The arrival of the railroad in 1869 brought more than just transportation and people to the region, as the rail infrastructure was hurriedly developed, often within floodplains, changing the historic course of Tujunga and Pacoima washes. Intermittent storms washed out rail bridges, spawning various attempts at flood control, which led to the complete channelization of the Los Angeles River and its tributaries. Confinement of the waterways, in turn facilitated increased development of the floodplains, severely limiting groundwater recharge capacity.

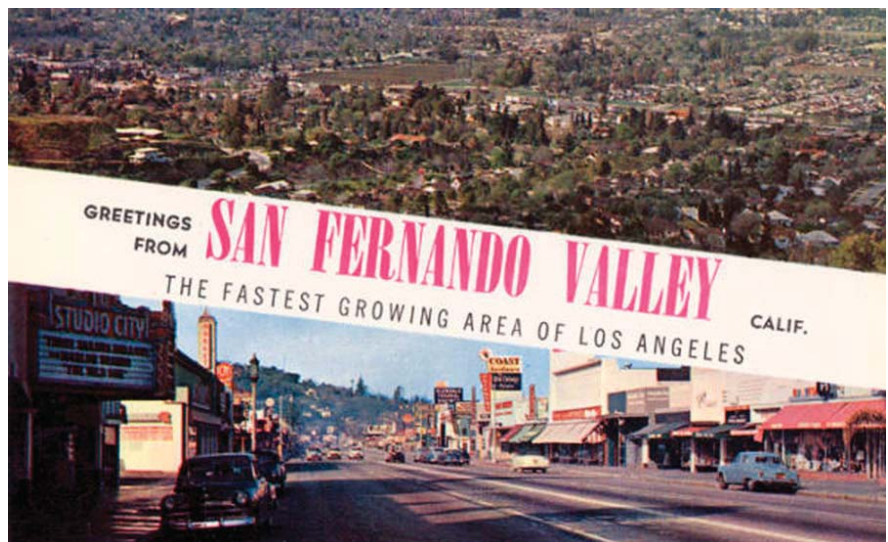


Figure 2-3 1950s postcard

Source: Delmar T. Oviatt Library, Urban Archives Center

Today, the watershed has a diverse population of approximately 525,000, with the vast majority concentrated in the lower watershed. While ethnic enclaves dominate particular neighborhoods, as a whole, the watershed demographics are representative of many portions of Los Angeles County. All economic indicators, including median household income, population densities within residential communities, and housing in the watershed are quite variable. Affordable housing shortages are due largely to population growth, lack of mixed-use development, and poor use of space.

The majority of the transportation options in the watershed require the use of a private automobile. Transportation by car could be considered the most damaging to watershed health because of the large amount of paved surfaces needed to accommodate vehicles, and their associated pollutants. Pedestrian, equestrian and bicycle corridors exist, but most are fragmented and do not provide access to important destinations such as civic and commercial centers, or linkages to other transportation routes. Users are often discouraged by disconnected corridors and dangerous traffic.

Major businesses in the watershed include entertainment, biotechnology, healthcare, medical supply provision and various types of manufacturing. The area includes seventy-six schools and two community colleges, and is in proximity to several universities as well as workforce assistance programs designed to provide training to prepare workers for the regions economic opportunities.

Community development within the watershed is important, as the watershed will benefit from communities with a mix of uses, transit-oriented development, and accessible green space. Redevelopment is occurring rapidly in the watershed due to aging housing stock and an increasing population. High-density developments are replacing single-family residences, predominantly near designated transit corridors, although the current criteria for what constitutes a transit corridor is somewhat overbroad.

Much of the lower watershed lacks sufficient community and neighborhood parks and recreational facilities. The lower watershed does not meet the national standard of between 6.5 and 10 acres of parks per 1,000 residents; it comes closer to about 1.5 acres per 1,000 residents. This scarcity is exacerbated by the poor distribution of parks, which adequately serve only a small proportion of residents. Because the watershed is highly developed, creativity and determination will be required to set aside natural land for parks and open spaces. However, if parks and open space can be considered green infrastructure for water supply, their provision becomes a higher priority and multiple funding sources to create them can be accessed.

Over the years, various individuals and groups have made recommendations for open space and land use that reflected an awareness and appreciation of the natural character of the watershed that could support and improve both quality of life and local water resources. However, expediency, profit, or the difficulty in adopting new paradigms have limited progress on such efforts.

With a growing awareness of the relationships between land use, climate change, public health, and economics, many people are now beginning to think critically about their relationship to the land and how some of the negative impacts of development can be ameliorated or reversed. If this awareness translates into action, it may finally result in more substantive change in the watershed.

2.4 The Wildlife Habitat: Flora & Fauna- Know Your Neighbors

We all tend to feel better in the natural environment - so why are we working so hard to destroy it?

—Dr Michael Dixon

Although much of the habitat in the lower watershed has been displaced by development, habitat in the upper watershed remains abundant and robustly bio-diverse. Restoring habitat health and functionality to the region will require addressing the needs of the comparatively natural upper watershed as well as the densely settled, urbanized lower watershed.

We have three general types of habitat in our watershed: aquatic, riparian, or terrestrial (or upland). Aquatic habitats are those that depend on water for existence, including seasonal inundation such as wetlands. Riparian habitats are a transitional zone between aquatic and terrestrial habitats where proximity to water is a requirement. Terrestrial or upland habitats make up most of the watershed.

In the upper watershed, most of which is Angeles National Forest, species richness is high. Alluvial fan and coastal sage scrub transition into a wide band of lower chaparral and a narrower zone of upper chaparral. Mixed oak-conifer woodlands and forests segue into higher altitude coniferous forests. Riparian corridors follow stream courses throughout.

This diversity extends to the number of threatened and endangered species (TES) that may be found in the watershed, including thirty-eight amphibians, reptiles, fish, and birds, and twenty-four plants. The watershed also includes seven ecosystems or plant communities that are designated as of special concern, including: Southern California Arroyo Chub/Santa Ana Sucker Stream, Riversidean Alluvial Fan Sage Scrub, Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Mixed Riparian Forest (Figure 2-4), Southern Sycamore Alder Riparian Woodland, and California Walnut Woodland (refer to Appendix 8 for more detail).



Figure 2-4 Southern Mixed Riparian Forest, Upper Big Tujunga Creek

Source: MacDonald 2005

With the exception of the human alteration of natural fire ecology, habitat conditions of the uppermost watershed are relatively high quality, and remarkably similar to habitat that existed before European settlement of California. Mammals include black-tailed jackrabbit, American badger, porcupine, gray fox, bobcat, mountain lion, and black bear. Mule deer are abundant. Bighorn sheep are present although most of their recent range is outside the watershed. Grizzly bear, once a keystone species, were extirpated from the region in 1916.



Mule deer



Black bear



Arroyo toad



Lazuli bunting

Figure 2-5 Common Animals in the Watershed

Sources: South Dakota Tourism n.d.; Las Pilitas n.d.; Los Angeles Times n.d.; Cam MacDonald n.d.

Birds include Golden eagle, California condor, Peregrine falcon, Least Bell's vireo, California quail, Lazuli Bunting, Steller's jay, Western Bluebird, Western yellow-billed cuckoo, woodpeckers, Anna's Hummingbird, Costa's Hummingbird, and the large, rare California spotted owl. The American Bald Eagle winters here. Reptiles include California mountain kingsnake, and several TES including the silvery legless lizard and coastal rosy boa. Aquatic habitat is less intact and many native species are imperiled or extirpated, but arroyo chub, Santa Ana Sucker, California red-legged frog, and arroyo toad are still present.

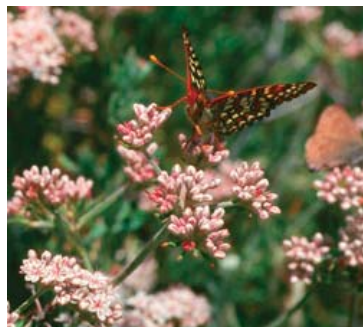
Heavy visitor use in some areas, and the introduction of exotic species, has produced impacts to habitat that need to be addressed. Trash left by visitors affects water quality and degrades habitat overall. Parking restrictions in sensitive habitat areas are warranted, and education is critical. Invasive species such as mustard, tamarisk, brome grass, and giant reed compete with native species and degrade wildlife habitat. Invasive plants increase fire intensity and frequency, exacerbate erosion, and have negative impacts on water supply and hydrology. Eradication and control efforts and targeted education need to proceed.

Watershed protection was the primary rationale for Forest conservation in 1892. Sustained protection of existing resources is crucial. To maintain existing conditions, protect sensitive species, and make future restoration projects in the upper watershed successful, strong support for and involvement with local and regional Forest Service conservation and planning efforts must continue.

The habitat of the urban fringe (between the upper and lower watershed) has been heavily impacted by effects of urbanization and is under increasing threat by development. Impacted habitat includes white sage,



Coyote brush



California buckwheat



California sunflower

Figure 2-6 Common Plants in the Watershed

Source: Blueplanet Biomes n.d.; Lynn Watson n.d.; BonTerra Consulting n.d.

mulefat, mugwort, yucca, California buckwheat, California juniper, cholla, spineflowers, willows, sycamore, cottonwood, mulefat, coast live oak, and Southern California black walnut. Remnant functional habitat remains such as the alluvial fan

sage scrub and coastal sage scrub along Big Tujunga Wash. The alluvial fan sage scrub of Big Tujunga Wash is unique, highly endangered and about the last of its kind in the region (Figure 2-7).



Figure 2-7 Riversidean Alluvial Fan Sage Scrub, Big Tujunga Wash

Source: Winter 1998

The lower Tujunga/Pacoima Watershed (Figure 2-8) has been most dramatically altered. Historically sage scrub, some prairie grassland, and wildflowers were typical. Dominant plants were drought-deciduous, soft-leaved plants that included California sagebrush, black sage, California buckwheat, and coyote brush. The more permanent of the braided stream channels supported riparian corridors, with black walnut woodlands and floodplain forest at major stream confluences.



Figure 2-8 Lower Tujunga/Pacoima Watershed

Source: The River Project 2005

Most of the habitat in the lower watershed has been displaced by development, and channelization of stream courses has made aquatic and riparian habitats very rare, although some remnants have survived or become established within or along the edges of flood protection and groundwater recharge facilities.

Numerous native birds, insects, reptiles and mammals have adapted to the urbanized portions of the lower watershed, and take advantage of proximity to open space, parks, or other undeveloped lands. Nearly 300 species of birds have been identified at Hansen Dam. But the absence of large areas of intact habitat, or even linear habitat corridors in the lower watershed has limited the number and distribution of native species.

Nevertheless, because old stream courses can be identified, the opportunities for successful restoration of lower watershed habitats are greatly enhanced. The highly permeable soils of the alluvial fan are still there, with their ability to capture and infiltrate stormwater to recharge the aquifer. Prioritizing these areas for reclamation and restoration can have tremendous impact on our available amounts of local water supply.

Along restored riparian corridors connecting the mountains and the washes, habitat for wildlife could be integrated with multiple-use parkland for people. Permanent protection of open space is warranted, particularly along these corridors and in the urban fringe above Hansen Dam.

It is critical to continually educate watershed residents and other stakeholders about the special nature of the Tujunga/Pacoima Watershed and its significance as a sustainable habitat for plants, wildlife, and people, and encourage their participation in habitat restoration projects. Ideally, K–12 schools in the watershed will permanently incorporate this plan’s watershed-specific grade-level curricula into their educational programs, and community colleges will encourage students to pursue site-specific watershed-based science that is relevant to them and to their community.

2.5 The Land: Its Form, Its Function & How We (Could) Use it

We abuse land because we view it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.

—Aldo Leopold

The landform of the watershed has been shaped over time by powerful natural processes: tectonic forces, seismic activity, regional climate, and the movement of water acting upon the natural materials of the earth. The effect of these forces determines the function, or the highest and best use of the land. How we choose to use and live on the land can either provide us with, or deprive us of, the benefits of our natural resources.

The western San Gabriel Mountains are an exceptional geologic assemblage shaped by extreme tectonism. Four major faults affect the Tujunga/Pacoima Watershed including the San Andreas, San Gabriel, Sierra Madre, and Verdugo. The highly dynamic mountain range features very steep slopes, shallow soils, and watercourses contained within bedrock channels. About half the upper watershed rocks are among the oldest in the Western United States. Centuries of rainfall and snowmelt have eroded rocks, gravels, and sandy soils—known as alluvium—down steep slopes and deposited them at the base of the mountains, forming a broad alluvial fan that is the predominant feature of the lower watershed.

The watershed is comprised of three major drainage systems: Pacoima Wash, Big Tujunga Wash, and Tujunga Wash (Figure 2-9). Big Tujunga and Little Tujunga Washes meet in the reservoir behind Hansen Dam. Below Hansen Dam, Pacoima Wash joins the Tujunga Wash as it flows to its confluence with the Los Angeles River in Studio City. The Big Tujunga Wash is largest, making up 68% of the watershed, followed by Pacoima Wash (27 percent) and Tujunga Wash (5 percent).

The hydrology of the upper watershed has been minimally affected by human modification. As this area is mostly protected as National Forest land, development here has been limited, minimizing human impacts

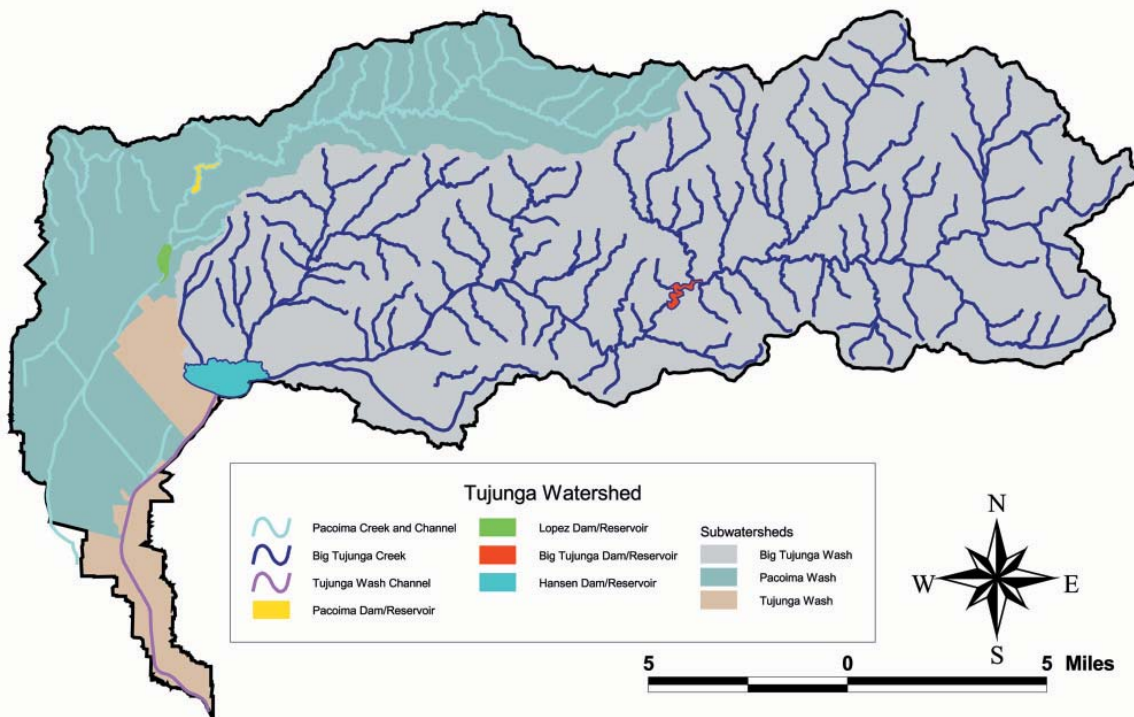


Figure 2-9 Tujunga/Pacoima Subwatersheds

Source: Everest International Consultants 2006

associated with suburban or urban land uses. Four dam/reservoirs—Big Tujunga, Hansen, Pacoima, and Lopez—control mountain runoff and limit natural sediment transport, which historically deposited alluvium in streambeds and along floodways.

The hydrology of the lower watershed has been substantially modified with channelized streams, spreading basins, and more than 42 percent impervious surface land cover. As a result, it is estimated that only approximately 8 percent of rainfall in urbanized areas soaks into the ground, while the rest is carried off via street gutters, storm drains, and the channelized washes. The concrete lining the former stream channels prevents surface water from infiltrating into the underlying ground water basin (and groundwater from entering stream channels). In addition, hydrologic connections between the stream channel and the adjacent floodplain have been reduced or eliminated.

The dams, debris basins, and channelized streams, which comprise the existing flood protection system in the Tujunga/Pacoima Watershed, provide sufficient capacity to manage up to at least a 50-year storm. However, the system lacks sufficient capacity to convey both the 100-year and 133-year storms in some areas within the Tujunga Watershed, such as the area downstream of the Pacoima Channel confluence with the Tujunga Wash.

Approximately 80 percent of the land within the overall Tujunga/Pacoima Watershed is undeveloped. The vast majority of it is in the federally protected Angeles National Forest of the upper watershed.

Although 72 percent of the lower watershed is now covered by urban development, it is still primarily underlain by sandy soils and gravels typical of an alluvial fan, making this portion of the watershed an ideal location for the infiltration of snowmelt and stormwater runoff.

While single-family residential development has been the dominant land use (approximately 43 percent) in the lower Tujunga/Pacoima Watershed for at least fifty years, recently, multi-family and mixed residential use is increasing rapidly. Commercial and service uses comprise roughly 9 percent of land use (Table 2-1).

Table 2-1 Land Use in Lower Watershed

Land Use	Acreage	Sq Mi	Percent
Multi-Family Residential	1,921	3.0	5.2
Mixed Residential	393	0.6	1.1
Single-Family Residential	15,746	24.6	42.9
Commercial and Service	3,176	4.9	8.7
Industrial	1,736	2.7	4.7
Communication and Utilities	475	0.7	1.3
Transportation	1,266	1.9	3.5
Hydrology	1,529	2.4	4.2
Agriculture	547	0.8	1.5
Vacant	8,669	13.5	23.6
Open Space & Recreation	994	1.5	2.7
Other	228	0.4	0.6
Total	36,680	57.3	100.0

Source: SCAG 2000

in and around the watershed are located directly adjacent to freeways (Richie Valens Park, Paxton Park, Valley Plaza Park, Strathern Park West, and North Hollywood Park West). This was likely less an intentional planning decision than it was an opportunistic one as excess freeway parcels were retroactively converted. Approximately 31.5 miles of freeway rights of way exist within the watershed.

The watershed includes two rail lines that function for both commuter and freight, and one dedicated east-west busway. Bikeways and trails exist but are generally fragmented.

Other public rights-of-way crossing the watershed include 27.75 miles of channelized streams and five transmission line corridors. These interconnect with spreading grounds throughout the watershed, providing an ideal opportunity to create green infrastructure for stormwater capture, groundwater recharge, and habitat that can provide a network of trails, pocket parks, and community gardens.

The underlying geology of the alluvial outwash at the base of the Tujunga Wash created productive sites for gravel mining operations. The two now-exhausted gravel pits in the watershed have excellent potential to be converted to serve multiple watershed benefits. Excess stormflows could be diverted from Tujunga Wash for detention in these large pits, and then sent to adjacent spreading grounds for retention and infiltration while also providing wetlands and park space.

The 352 acres of spreading grounds in the watershed are all that remains of the County's original recommendation (prior to the area's annexation to the City) to set aside 3,135 acres for streamflow infiltration. These could all be retrofit, enhancing their infiltration potential and providing some measure of habitat and public trail access.

To restore watershed resources and facilitate more sustainable development patterns, city and county general plan policies should be revised to avoid development along historic floodways, on hillsides, and in sensitive habitat areas; establish a long-term program to acquire land along floodways; protect existing

Schools cover 978 acres of the lower watershed. The Los Angeles Unified School District owns and operates the majority of the schools in the watershed. School parking lots and playgrounds have high potential to be beneficially retrofitted to capture and re-use or infiltrate rainfall on-site. Strategic tree planting can help manage storm flows and offset energy consumption, and more thoughtful landscape selection can reduce water use. Joint-use of facilities can help meet community needs for active recreation.

Although a sizeable percentage of vacant land still exists in the urban fringe just below the Forest jurisdiction (within the unincorporated portions of Los County and along the city of Los Angeles's northern fringe), there is an increasing threat of residential and infill development among many of the foothill equestrian communities and single-family residences in Sylmar, Lake View Terrace, Sunland, and Tujunga. Additionally, the City of Los Angeles owns approximately 480 acres of surplus land within and adjacent to the watershed.

The most densely populated areas of the watershed tend to be the most park-deficient. Although there are a total of thirty-six city and county parks within the lower watershed and seven adjacent parks, park space comprises less than 3 percent of the area. Many parks

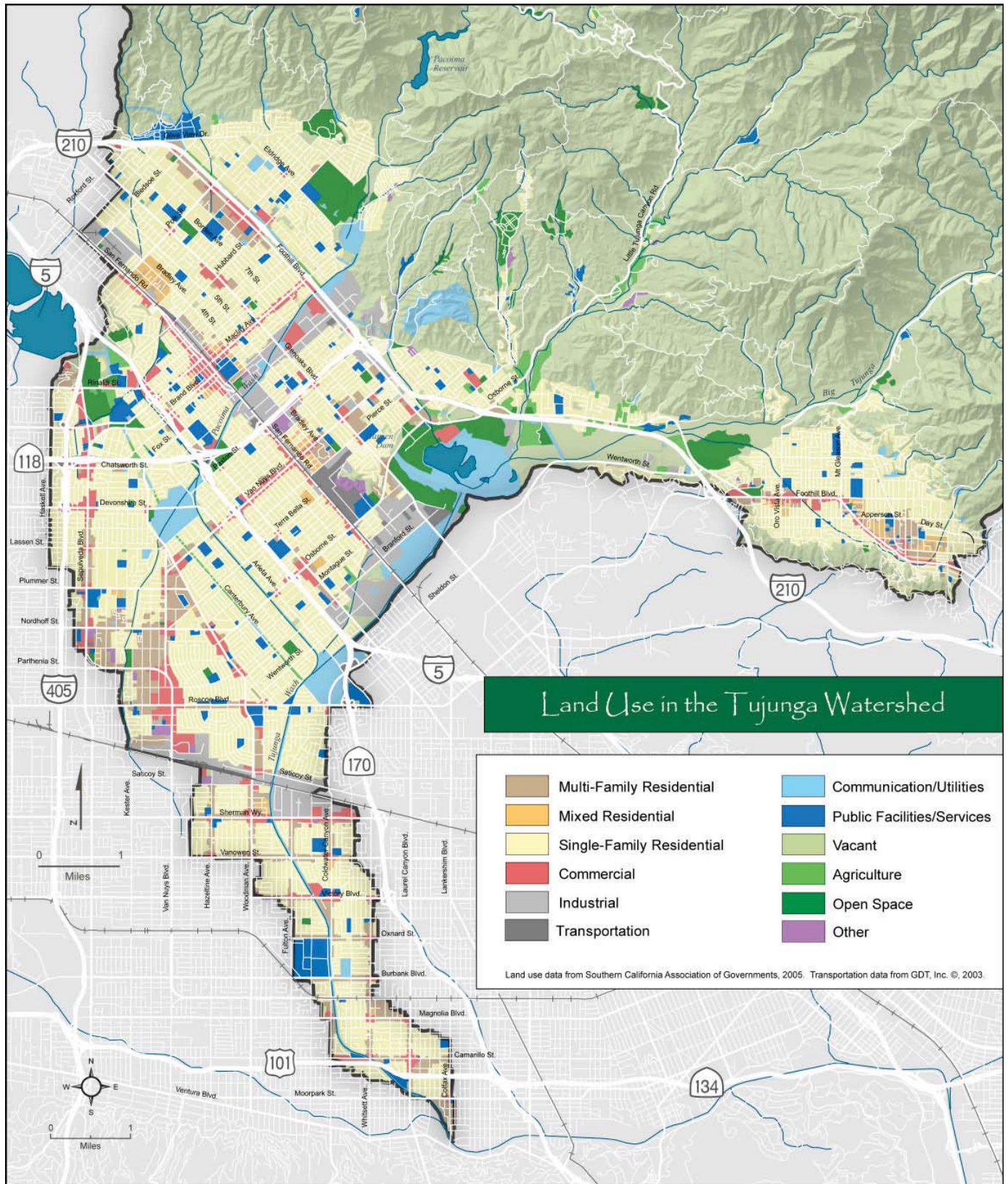


Figure 2-10 Land Use in the Tujunga/Pacoima Watershed
 Source: State of the Tujunga 2006

parks, public rights of way, agricultural land, and surplus properties as open space; require provision of new, adequate open space as part of any concentrated redevelopment; improve and enhance public transportation; require on-site retention and infiltration of stormwater; and incentivize projects that balance recreation and habitat needs.

2.6 The Water: Climate, Supply & Quality

Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our waters is the principal measure of how we live on the land.

—Luna Leopold

Water is a finite resource. The availability of our local water resources is connected to the amount of local precipitation and how we choose to manage it. Our ability to use it depends on how well we protect both the land and the water itself. In the Tujunga/Pacoima Watershed, nature balances our natural cycle of short periods of rain followed by longer periods of drought with the land's ability to quickly absorb water where it falls and store it underground. But our land use practices have disconnected the land from the water, creating negative impacts to our water quality, and sending most of our precipitation to the ocean. We need a more integrated approach to meet future conditions.

The Tujunga/Pacoima Watershed has a Mediterranean climate, typical of Southern California, with mild winters and warm summers, moderated by proximity to the Pacific Ocean. Average annual precipitation varies considerably in the watershed, with between 11 and 15 inches in the lower watershed and between 20 and more than 35 inches in the upper watershed. These averages are influenced by long lasting temperature shifts in the Pacific Ocean and are characterized as El Niño (warm phases) and La Niña (cold phases).

Global climate changes in the twenty-first century are likely to extend the duration of drought cycles and increase the intensity of wet cycles in parts of Southern California, including the Tujunga/Pacoima Watershed. Increasing temperatures could increase demand for traditional landscape irrigation and increase surface water evaporation rates in above-ground reservoirs. Increased droughts throughout the state would certainly decrease the availability of imported water supplies and reduce the reliability of snowmelt and rainwater that can locally be captured, infiltrated and stored. Increased intensity or duration of storm events could result in runoff that exceeds the capacity of the existing flood protection system if the means to offset peak flows are not implemented.

Based on population estimates within the watershed and individual average water consumption of Los Angeles residents, Tujunga/Pacoima Watershed residents collectively utilize an estimated daily average of 249 acre-feet of water (approximately 81,375,000 gallons a day).

Historically, groundwater provided the water supply to the watershed, but in the last century, as natural hydrologic functions were degraded by development, groundwater levels dropped and more distant sources were tapped. Now, water is purchased from the Metropolitan Water District (MWD) and supplemented by local groundwater. Currently only 15 percent of the water supply for the City of Los Angeles comes from local native groundwater.

The City of Los Angeles owns water rights in two Upper Los Angeles River Area groundwater basins in the Tujunga/Pacoima Watershed: the San Fernando (under the lower watershed) and the Sylmar (in the area along the Pacoima Wash above Lopez Dam) with a combined capacity of 3,510,000 acre-feet (Figure 2-11). Approximately 90,255 acre-feet are extracted from these two basins each year and are used as potable water after treatment to meet applicable drinking water standards. However, groundwater levels in these basins are well below capacity, as natural recharge has been limited by the extent of impervious surfaces in the lower watershed and channelization of streams, which precludes infiltration. The water in these (and most other local) groundwater basins has been subject to adjudication, a legal decision that allocates water to parties in proceedings and is overseen by a court-appointed Watermaster.

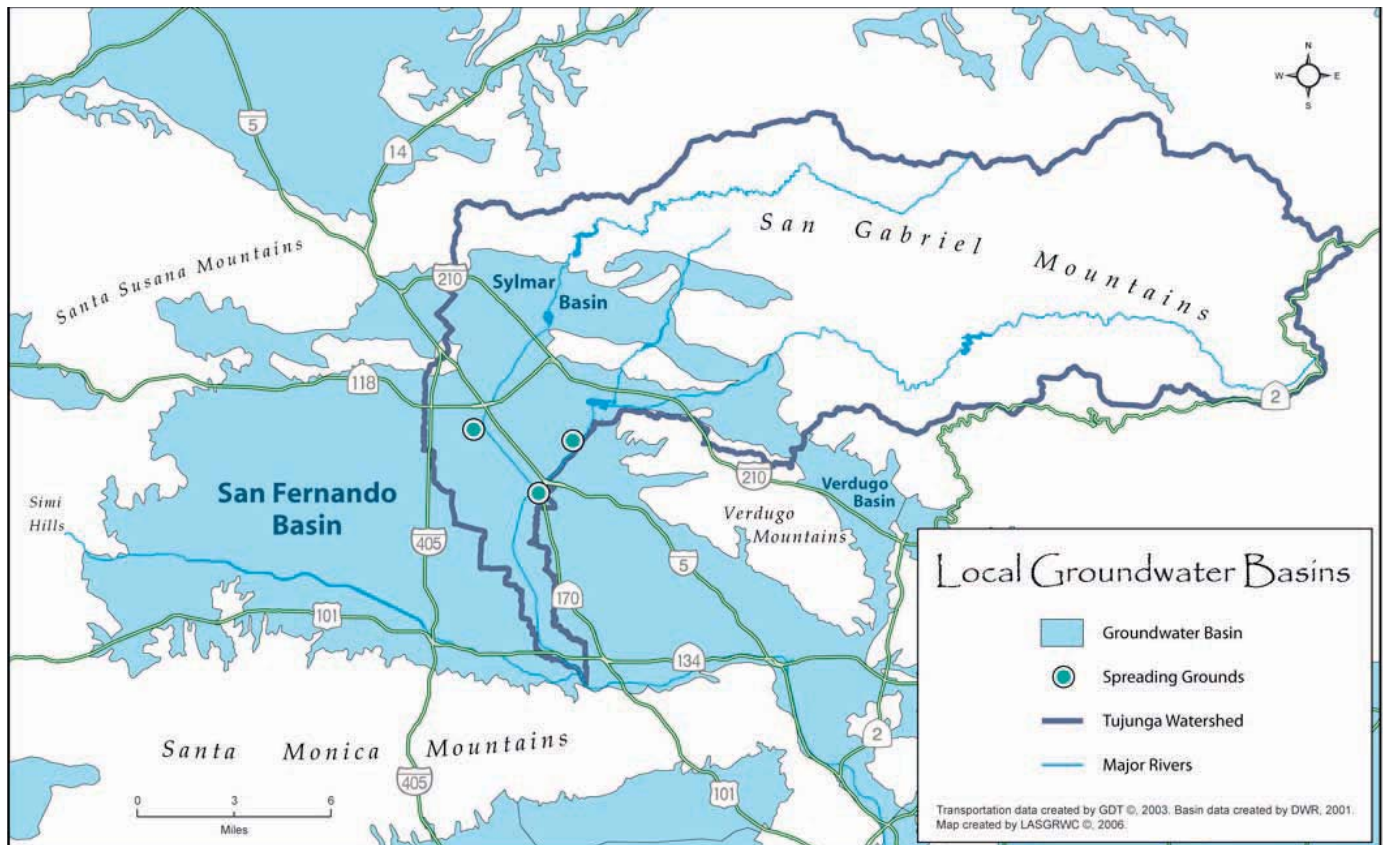


Figure 2-11 Local Groundwater Basins

Source: DWR 2001; LASGRWC 2006

The four reservoirs in the watershed (Lopez, Pacoima, Big Tujunga, and Hansen) have a total storage capacity of 39,517 acre-feet. Snowmelt, and rainwater runoff stored in these reservoirs is slowly released and diverted into five spreading grounds (Lopez, Pacoima, and Branford spreading grounds along Pacoima Wash, and Hansen and Tujunga spreading grounds along Tujunga Wash) (Figure 2-12). These five spreading grounds collectively infiltrated to groundwater 32 percent of the local surface water conserved in all Los Angeles County between 2003 and 2006.

The remaining 85 percent of water supply for the City of Los Angeles is imported from distant sources via a delivery system that accounts for a significant percentage of our total statewide energy costs.

Imported water comes from the Owens Valley and the Mono Basin in the northern Sierra Nevada via the City of Los Angeles’ Los Angeles Aqueduct. Additional supplies provided by the MWD through the State Water Project come from the Sacramento-San Joaquin Delta via the California Aqueduct (Figure 2-13). MWD also imports water to Southern California from the Colorado River via the Colorado River Aqueduct; however, all MWD water provided to the Tujunga/Pacoima Watershed area is from the State Water Project. The availability of water from these sources has varied considerably from year to year, primarily depending on local precipitation.

Recent court decisions limit our ability to derive water from the Sacramento Bay-Delta, Owens Valley and Mono Basin. Exports from the Sacramento Bay-Delta may be reduced by at least 30 percent for some time. The effects of this, coupled with impacts from climate change, will require reduction in water demand (particularly for landscape irrigation), expanded conservation and re-use programs, exploration of other water supply options, and increased reliance on local supplies.

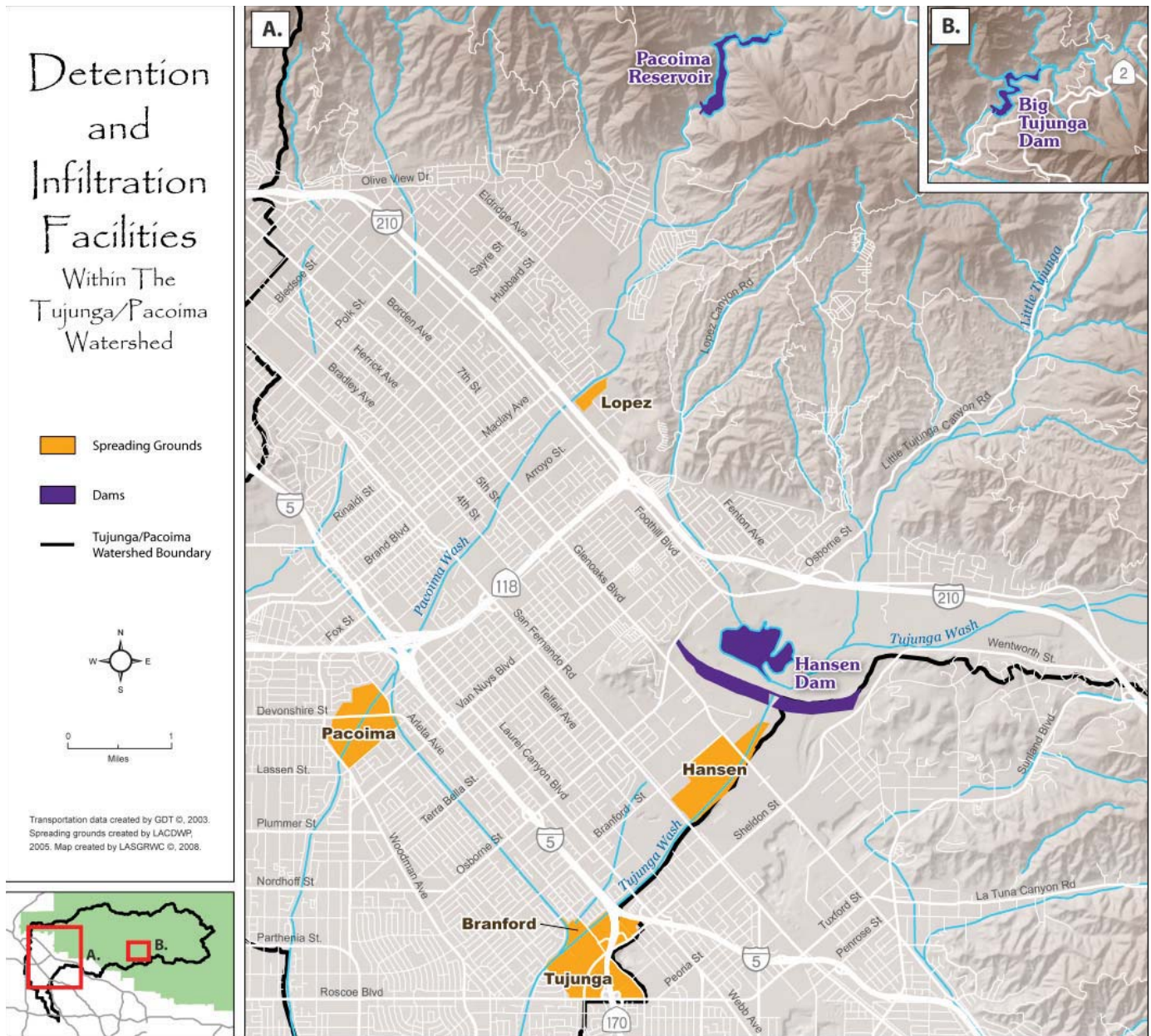


Figure 2-12 Spreading Grounds

Source: LASGRWC 2008

Wastewater from the watershed is treated to tertiary standards by the City of Los Angeles at the Tillman Reclamation Plant. A portion of the treated water is recycled for municipal and industrial uses, but the vast majority is discharged to the Los Angeles River. The City plans to expand recycled water distribution lines (purple pipes) for large potential users, including the Hansen Dam Recreation Area and the Valley Generating Station. Nonetheless, recycled water remains an underutilized resource, partially due to lack of distribution infrastructure.

The LADWP Urban Water Management Plan has identified other potential water sources, including: water transfers (the lease or sale of water or water rights between consenting parties); seawater desalination (the process of desalting seawater to produce potable drinking water); graywater (household waters that have not come in contact with toilet waste); and beneficial uses of stormwater and urban runoff (capturing rainwater and runoff for infiltration and/or reuse).



Figure 2-13 Los Angeles Water Sources

Source: MWD 2006

The groundwater basins in the watershed are critical to local water supply. The capture, storage, and infiltration of snowmelt and stormwater in these basins have the potential to significantly increase the amount and reliability of local supplies. Reducing reliance on imported sources would save energy and reduce greenhouse gas emissions. The expanded use of groundwater basins may require reconsideration of the adjudication decisions allocating groundwater, if the amount of recharged water exceeds the estimated supply upon which the adjudication was based.

Water quality is a critical element of watershed health. Impairments to water quality affect the ability to utilize groundwater for drinking supplies, tax the capacity of biotic systems to remediate pollutants, and impact aquatic life.

In California, Regional Water Quality Control Boards (RWQCB) identify beneficial uses of water bodies. Together with water quality objectives, these beneficial uses form the basis for determining the appropriate level of water

quality. Beneficial uses for the Tujunga Wash between Hansen Dam and Los Angeles River include potential beneficial uses for municipal and domestic supply, contact water recreation, wildlife habitat, and warm fresh water habitat. Intermittent beneficial uses include ground water recharge and non-contact water recreation. Per the federal Clean Water Act, the State of California is required to identify water bodies that do not meet applicable water quality standards. These water bodies are placed on the “303(d)” list, which refers to a section of the Clean Water Act. The state is obligated to establish the maximum amount of a contaminant that can be present in the water and still meet the applicable standard. That amount is known as a Total Maximum Daily Load (TMDL).

The Tujunga Wash from the Los Angeles River to Hansen Dam is included on the 303(d) list for ammonia, copper, bacteria (coliform), and trash. Runoff from the Tujunga/Pacoima Watershed eventually discharges into Reach 4 of the Los Angeles River. Reach 4 of the Los Angeles River is impaired for ammonia, nutrients (algae), bacteria (coliform), lead, trash, and metals. Total Maximum Daily Loads (TMDLs) have been established for bacteria, trash, and metals for the Los Angeles River, while TMDLs for the other impairments are in development or pending.

Identifying and addressing the specific sources of surface water quality problems in the Tujunga/Pacoima Watershed is difficult due to limited sampling. Receiving waters for the entire watershed are sampled annually at only one monitoring site, located just upstream of the confluence of Tujunga Wash and the Los Angeles River. A more comprehensive monitoring program should include several sites on both Tujunga and Pacoima Wash. The City of Los Angeles identified ten high-concentration trash sites in the watershed (Figure 2-14), with the highest concentrations located in the community of Valley Glen.

Current plans to meet the three existing TMDLs appear to rely exclusively on retrofitted engineering solutions, such as trash screens on catch-basins, low-flow diversions, sand filters and infiltration trenches. But solving the water quality problems in the watershed will entail substantive changes to existing infrastructure, beyond retrofits, including some single-purpose water quality Best Management Practices (BMPs). However, priority must be given and the balance of investment weighted to projects that deliver more benefits and promote holistic solutions.

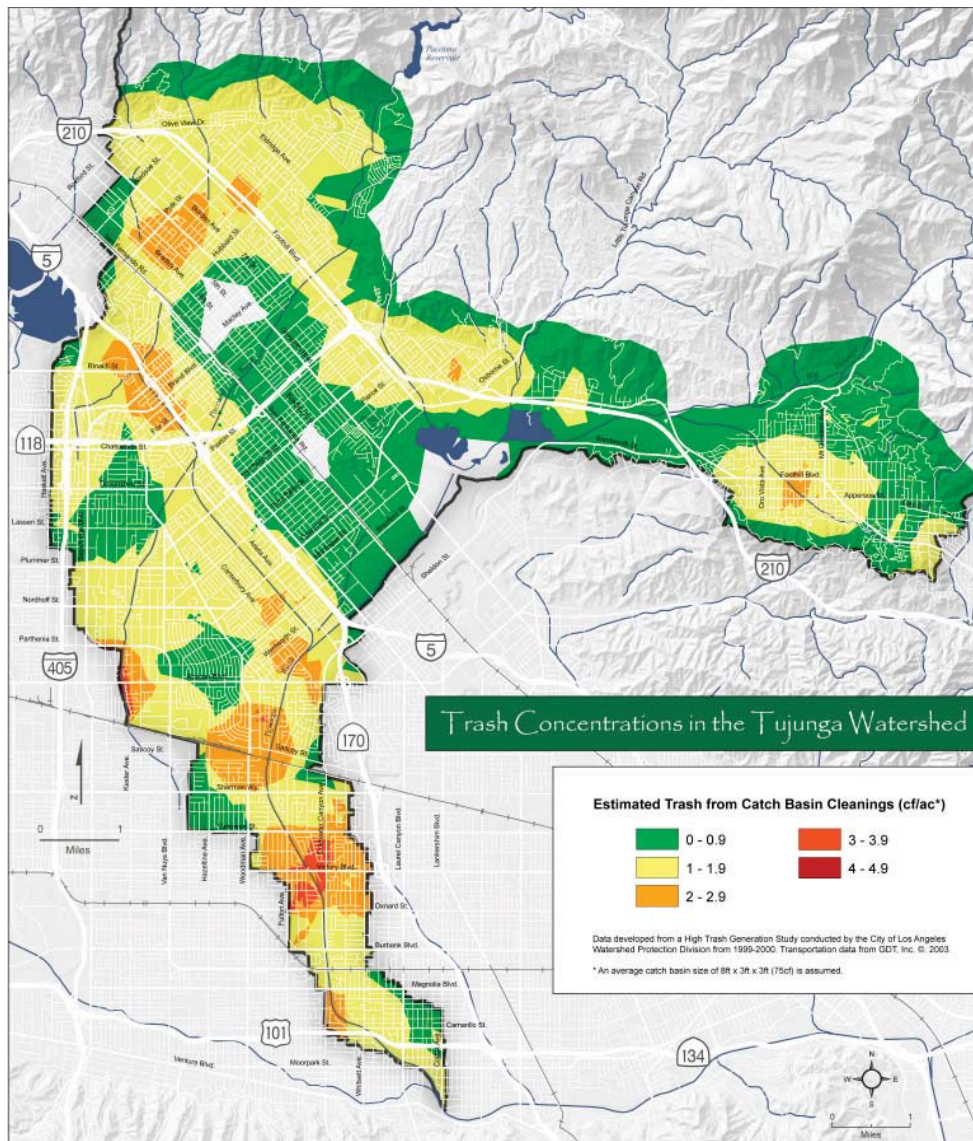


Figure 2-14 Sources of Trash in the Watershed

Source: The State of the Tujunga 2006

Due to contamination from past urban land uses, particularly historic aerospace and industrial activities and the improper storage and disposal of chemical wastes, concentrations of chlorinated volatile organic compounds (VOC), specifically trichloroethylene (TCE) and perchloroethylene (PCE), were found in 1980 to be above regulatory levels in a number of production wells. TCE and PCE are associated with adverse health effects such as liver problems and increased risk of cancer. In response to the public health threat, residents have been provided with alternate, more expensive drinking water supplies, including imported water or groundwater mixed with imported water.

Since the late 1980s, the US Environmental Protection Agency (USEPA), in cooperation with state and local agencies, has been conducting clean-up of the San Fernando Valley Groundwater Basin by pumping groundwater from a series of wells and treating the water to remove VOCs. Pockets of contamination are

located largely outside the watershed boundary, but increases in groundwater levels overall could affect water quality throughout the aquifer. Cleaning up groundwater can use half as much energy as importing water from the Delta. Continued clean up of the groundwater basins should be a priority.

In the future, TMDL implementation plans could do more to guide development and redevelopment by encouraging municipalities to consider non-structural means of attaining water quality standards such as source control, outreach, education, and ordinances that support increased pervious surfaces and restoration of natural hydrologic processes throughout the watershed. While the RWQCB cannot dictate land use, it can incentivize land use that is protective of water quality by granting credits to communities that take an integrated approach.

We have been quick to assume rights to use water but slow to recognize obligations to preserve and protect it ... In short, we need a water ethic—a guide to right conduct in the face of complex decisions about natural systems we do not and cannot fully understand.

—Sandra Postel

Chapter 3 GOALS AND OBJECTIVES

The goal of life is living in agreement with nature.

—Zeno, Greek philosopher

The following goals and objectives were generated through a collaborative stakeholder process. Each goal includes subgoals and related objectives. Collectively, they reflect a single over-arching goal:

To revitalize the Tujunga/Pacoima Watershed, balancing water supply, water quality, community open space needs, environmental protection and restoration, and public safety.

■ Optimize Local Water Resources to Reduce Dependence on Imported Water

- Improve groundwater infiltration:
 - > Develop groundwater management strategy for optimum use of local water resources.
 - > Improve quality and quantity of on-site water recharge to the SFV Groundwater Basin.
 - > Restore natural streams, washes, and floodplains in areas of high soils permeability.
- Reduce dependence on imported water:
 - > Facilitate on-site collection systems for stormwater and graywater.
 - > Expand water conservation programs.
 - > Extend the distribution and range of uses for reclaimed water.
- Integrate groundwater infiltration with other public and/or beneficial uses:
 - > Provide for compatible public activities and uses in infiltration areas.
 - > Restore natural streams, washes, and floodplains and associated habitats.

■ Improve Surface Water & Groundwater Quality

- Reduce pollutant loads:
 - > Expand source reduction programs.
 - > Implement Best Management Practices.
 - > Implement institutional controls such as water quality zones, urban forestry, product substitution/ source control, and public outreach and education.
- Maximize “nature’s services” before utilizing manufactured solutions:
 - > Reinstate sediment transport to support assimilative capacity.
 - > Increase permeable surfaces throughout the watershed area.
- Implement a citizen-based water quality monitoring program.

■ Restore Hydrologic Function to the Watershed while Maintaining Public Safety

- Reestablish functional streams:
 - > Restore/acquire functional floodplains.
 - > Restore natural, bioengineered streambanks.
 - > Daylight/reestablish tributary streams where feasible.
 - > Develop sediment management strategy.
 - > Establish meanders as needed to facilitate dynamic equilibrium of sediment transport.
- Design restoration projects to maintain flood protection:
 - > Capture and infiltrate stormwater where it falls to reduce runoff volume in streams.
 - > Acquire gravel pits for stormwater detention.
 - > Remove or elevate structures in floodways.
 - > Implement a flood hazard warning system.

■ Enhance Quality, Quantity and Connectivity of Native Terrestrial and Riparian Habitats

- Restore, protect, and augment terrestrial and aquatic species habitat:
 - > Create habitat corridors along Tujunga and Pacoima washes.
 - > Restore riparian habitat along historic tributaries where feasible.
 - > Identify, enhance, and restore natural habitat and wildlife corridor between Verdugo and San Gabriel mountains.
 - > Acquire land or conservation easements in ecologically sensitive areas, including along streams.
- Integrate fire and vector management strategies into native vegetation zones.
- Reduce extent of invasive, non-native species.
- Expand use of native plants in landscaping through mandate on publicly-owned lands and through incentives on private lands.

■ Improve and Increase a Network of Public Open Space

- Augment overall open space network to meet the national standard for park space per capita ratio:
 - > Protect existing open spaces.
 - > Implement a targeted, prioritized program to utilize surplus properties and acquire land from willing sellers.
- Improve connectivity and access to Tujunga and Pacoima washes and the Angeles National Forest using tools such as easements and greenway linkages.
- Develop a design standard for open space that integrates natural resources management with various recreational needs.
- Provide for maintenance and security of parks, open space, and trails.

■ Create Green Transit Linkages and Recreational Access

- Improve multi-modal transit:
 - > Create a watershed-wide network of pedestrian, equestrian and bicycle routes utilizing BMPs in design.
 - > Connect multi-modal transportation routes to communities, public facilities, transit focal points, greenways, and other open spaces.
 - > Design multi-modal routes for user safety.
- Enhance and expand recreational opportunities to meet needs of local communities:
 - > Determine appropriate recreational uses with local community guidance.
 - > Group activities according to use compatibility.
 - > Provide a diversity of recreational opportunities and experiences within each community.

■ Promote Watershed Awareness & Increase Stewardship through Public Outreach and Education

- Conduct education and outreach programs to expand appreciation of the natural character of Tujunga & Pacoima Washes and the importance of watershed restoration:
 - > Identify and understand target audiences to develop and deliver most effective outreach and educational programs.
 - > Focus on local eco-system, groundwater/water supply issues, flood safety, sustainable living, and environmental justice.
 - > Develop and deliver an educational curriculum for grades K-12.
 - > Partner with community colleges to gather data, monitor conditions, and implement plan development and also encourage continued participation of local universities.
 - > Use the internet as an informative outreach tool.
- Engage community interest through participation in restoration activities:
 - > Include youth and community groups in watershed restoration activities.
 - > Involve the business community.
 - > Provide opportunities and resources for individuals to participate on their property.
- Protect and interpret natural, cultural, and historic resources.

■ Implement Watershed-based Planning and Projects

- Implement ordinances and incentives to protect watersheds and streams:
 - > Require “no net gain” of stormwater runoff on developed sites, based on natural conditions.
 - > Create a River Overlay Zone to acquire floodplains opportunistically or through long term programs.
 - > Incentivize multiple-objective developments and BMP integration in private-sector projects.
 - > Develop alternative approaches to land use designations in order to integrate, preserve, and protect natural systems within urban environments.

- Require integrated open space in mixed use, live/work developments:
 - > Recycle underused sites along Tujunga & Pacoima Washes.
 - > Leverage Quimby and other park funds to acquire parkland in developed areas.
 - > Increase park acreage required by General Plan.
- Preserve agricultural zones.

■ **Improve Collaboration among all Agencies, Organizations & Communities in the Watershed**

- Institute a comprehensive program to facilitate communication and collaboration:
 - > Involve elected officials and their staff, governmental, regulatory and infrastructure agencies, NGOs, CBOs, professional and business organizations and individuals in a cooperative watershed stewardship program.
 - > Assign a liaison with decision-level capability from each agency to communicate with each other and the stakeholders.
 - > Develop a system that fosters early notification and cooperation amongst all stakeholders prior to all project planning.
- Encourage mutual understanding of the goals, objectives, and roles of each individual agency and organization involved.
- Partner with existing local programs and projects where appropriate.
- Develop a collaborative strategy to finance implementation of the Plan.

Chapter 4 PROJECTS

4.1 Project Identification

Planning is bringing the future into the present so that you can do something about it now.

—Allen Lakein

The Project Team spent several months meeting with stakeholders at all levels to identify and/or develop over two hundred potential green infrastructure projects that could address watershed conditions and move us toward a healthier balance (refer to Appendix 10). Once these projects were identified, stakeholders were asked to quantify potential project benefits for water supply recharge, water quality improvement, and flood management; and define additional benefits such as public access, open space, habitat, and recreation.

A Geographic Information System analyzed criteria such as infiltration potential; park needs; distance from nearest park, trail or storm drain; habitat connectivity; and special districts. A Decision Support System was used to review and prioritize the projects, considering additional factors such as innovation, watershed awareness, and potential to improve collaboration. After analyzing the results, stakeholders looked also for a range of project types and their geographic distribution throughout the watershed. The twenty-four neighborhood-scale and thirteen watershed-scale projects presented in this chapter represent the preferred project scenario. (Note: the numbers assigned to each project do not represent a priority order or ranking.)

Collectively, these fully integrated, multi-objective projects represent the best opportunities to make progress towards the goals and objectives of this plan. These projects will also make progress towards the planning targets identified in the Integrated Regional Water Management Plan (IRWMP) for Greater Los Angeles County. These projects have been included in the IRWMP project database and will be considered for future IRWMP funding opportunities. However, as those funds will be limited, the County, the cities, agencies and other organizations can and should pursue these projects by using the funding mechanisms discussed in Chapter 7.

4.2 Projects Scenario

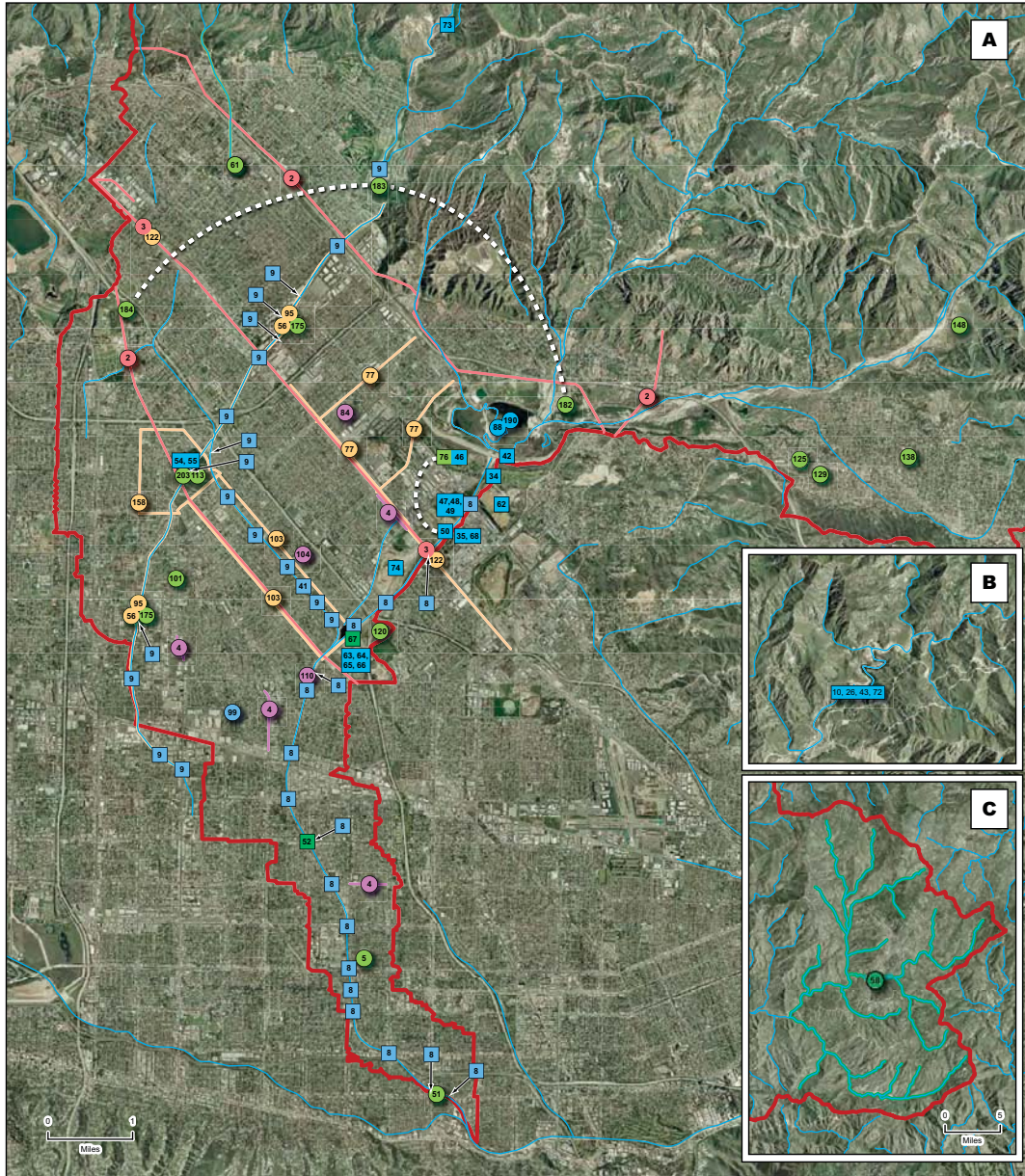
Great things are not done by impulse, but by a series of small things brought together.

—Vincent van Gogh

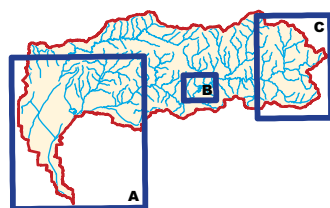
The scenario created by these thirty seven projects covers a broad range of approaches to accomplish improved stormwater retention, water quality, and habitat (refer to Figure 4-1 [Preferred Scenario Map]). Projects range from very large, infrastructure-related projects (Big Tujunga Dam Retrofit) to very small, neighborhood-scale improvements (Wyngate Pocket Park) and are distributed geographically throughout the watershed area. Opportunities exist for stakeholders of every level to participate in contributing to improved watershed functionality.

Management measures include the following:

- Modification of existing stormwater spreading grounds to increase capacity
- Neighborhood retrofits for “green streets”
- Retrofits of existing parks through landform grading to maximize bioretention
- Reduction of impervious surfaces
- Disconnection of impervious surfaces through grading and distributed infiltration areas
- Utilization of median curb cuts and pervious gutters on major boulevards
- Conversion of surplus properties for multiple benefits



PREFERRED ALTERNATIVE SCENARIOS
 Neighborhood & Large-scale Projects
 Tujunga Watershed Management Plan



- Tujunga Watershed Boundary
- Combined Projects
 Combined Projects are represented in a variety of ways (either by a connecting white dashed-line, or group project symbols) based on their proximity to each other, their project size, and/or their type.
- 76 46
- 95 56 175
- PROJECT SIZE
 □ Large
 ○ Neighborhood (Small)
- PROJECT TYPES
 ● Dams & Spreading Grounds
 ● Parks and Open Space
 ● Street Retrofits
 ● Trails and Bike Paths
 ● Right of Ways
 ● Channel Retrofits
 ● Habitat

Figure 4-1 Preferred Scenario Map
 Source: The River Project 2007

- Installation of cisterns under sports fields to capture and reuse water for irrigation
- Beneficial use of existing reclaimed water supplies
- Joint use of schools and utility easements for stormwater remediation and infiltration
- Trash capture devices
- Protection of areas that provide water quality benefits and riparian habitat
- Hillside conservation to prevent erosion and sediment loss
- Enhancing buffers along tributary streams
- Modified dam flow releases to protect and enhance aquatic species
- Flow diversions for detention and infiltration
- Conversion of mined-out gravel pits to multi-use detention and/or infiltration sites
- Stream daylighting
- Promoting shared parking between a church and neighboring businesses
- Neighborhood-scale native habitat restoration
- Invasive species control for protection of endangered species habitat
- Installation of additional groundwater wells

Projects also advance other goals of the WMP, including the following:

- Increased park acreage and access
- Recycling of underutilized properties along Tujunga and Pacoima Washes
- Expansion of recreational opportunities to meet the needs of local communities
- Improved connectivity between tributary streams and the Angeles National Forest
- Creation of multi-modal green transit linkages
- Protection and interpretation of natural, cultural, and historic resources

All dams and spreading grounds in the watershed are targeted for improvements that would generate a meaningful increase in the total volume of stormwater recharged to groundwater. Big Tujunga Dam would be structurally rehabilitated to provide significantly enhanced storage capacity, improved downstream flood protection and a modified flow release regime designed to support habitat viability. Hansen Dam would be managed to enhance storage capacity through removal of sediment and implementation of operational changes. Pacoima Reservoir would generate additional storage capacity through removal of accumulated sediment. All these changes at the dams significantly increase the amount of water available for groundwater recharge through the spreading grounds. Spreading grounds themselves would be optimized through modernization and automation of intake structures, reconfiguration of spreading basins, and installation of rubber dams and vertical trench drains.

The neighborhood-scale projects generally advance a means to capture and infiltrate rainwater where it falls through a distributed, watershed-wide approach that uses landform grading and rehabilitation of native soil type functionality. These projects also address various other goals such as habitat restoration, recreational and transit linkages, and education.

With respect to the location and distribution of the projects:

- Seven projects are located with the Sun Valley Neighborhood Council district (NC); five are within the Pacoima NC; four are within the Sunland/Tujunga NC; three are within each of the Arleta, Valley Glen, and Mission Hills NC; two projects are within each of the Sylmar, Panorama City, and Foothill Trails NC; one project is within the Studio City NC; and three projects are situated across multiple NC jurisdictions.
- Fifteen projects are located within Los Angeles City Council District (CD) 7, thirteen are within CD6, and eight are within CD2. Of those projects, four are in both CD6 and CD7, and one is situated across districts 2, 5, 6, and 7. Two projects are located within unincorporated areas.\

- Eight projects are located within the Sun Valley Community Redevelopment Area and five are within the Environmental Justice Improvement Area.
- Twenty-seven projects are located within California State Assembly District (AD) 39, four within AD38. Two projects each are located in AD43 and AD59 and one in AD42. One project is situated across districts 39, 42, and 43.
- Twenty-seven projects are located within California Senate District (SD) 20, four within SD17, three within SD29, and two within SD21. One project is situated across districts 20, 21, and 23.

4.3 Individual Projects

The man who moves a mountain begins by carrying small stones.

—Chinese proverb

Summary descriptions of the projects, including maps indicating their location; BMP illustrations; and images of similar project types; are provided on the following pages. The back of each page lists the complete information provided by project proponents as it appears in the project database.

4.4 Projects Completed & Underway

Because things are the way they are, things will not stay the way they are.

—Bertold Brecht

In the time between the inception of the planning process and its completion, one watershed-based project was completed and three others are underway. Along the Tujunga Wash between Vanowen Avenue and Oxnard Boulevard, a mile-long project completes the first phase of the Tujunga Wash Greenway, and includes a meandering stream, walking paths, native landscaping, interpretive displays, benches, and a shaded picnic area (Figure 4-2).

The project takes urban runoff from the Pacoima Wash channel that was routed to the underground stormdrain system feeding the Los Angeles River, and diverts it through a gravity-fed pipe to the project site.



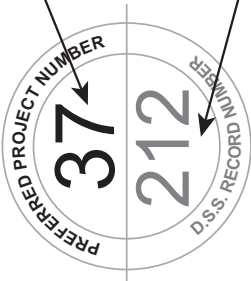
The runoff then feeds a re-created streambed alongside the concrete Tujunga Wash channel where it is infiltrated to groundwater rather than being lost to the ocean. Native plants in the streambed help clean the water, and establish habitat for animals such as birds, frogs, and lizards. During a year with average rainfall, as much as 325,000 gallons of water per day will flow through the streambed and will produce enough groundwater recharge to provide 760 families of four with drinking water for an entire year.

In addition, the first phase of the Pacoima Wash Greenway, retrofit of Big Tujunga Dam, and enhancements to Hansen Spreading Grounds are now underway.

Figure 4-2 Tujunga Wash Side Channel

Source: MRCA 2008

How the project description sheets are organized



Project number as listed in the preferred project scenario

Project location is highlighted as an excerpt of the "Preferred Alternatives Scenario" exhibit

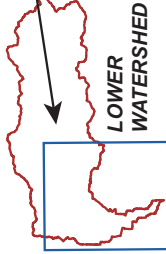
Lower number identifies a project according to the order in which it was received and entered into the Decision Support System — multiple numbers indicate instances where multiple projects were integrated into one project sheet

A vicinity map provides a context for the proposal and a general understanding of nearby public streets

Key map describes approximate project location within the watershed

PROJECT TITLE:
as provided by project submitter

PROJECT SUBMITTER:
name of agency or organization



PRIMARY BENEFITS



Dark green icons symbolize which of the three primary Tujunga-Pacoima Watershed Plan Goals the project satisfies (left to right):

- Increases Water Supply
- Improves Water Quality
- Enhances Wildlife Habitat



Tujunga Watershed Project



PREFERRED ALTERNATIVE SCENARIOS
Neighborhood & Landscape Projects
Tujunga Watershed Management Plan



PROJECT DESCRIPTION:

Each project is described as submitted by stakeholders. The reverse side of each sheet summarizes additional information submitted, such as integration with other projects in the watershed, estimated costs, geographic coordinates, jurisdictions, and how the project satisfies specific plan goals.



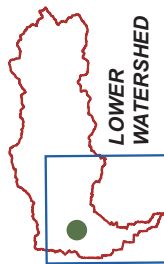
Maps.Google.com

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Power Line Easement Recharge Project

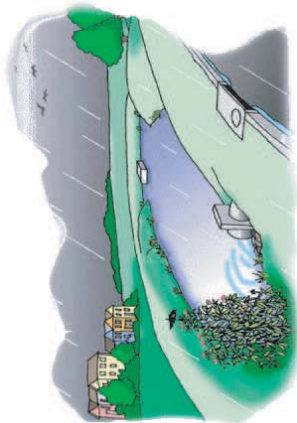
PROJECT SUBMITTER:
City of L.A. Department of Water and Power and The River Project



PRIMARY BENEFITS



Tujunga Watershed Project



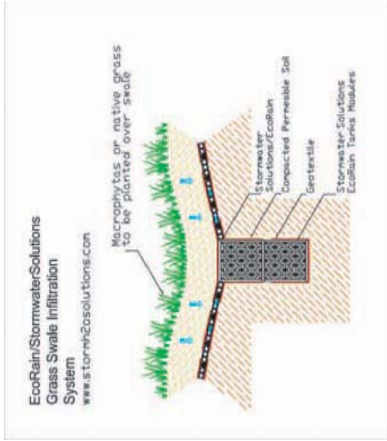
www.cfn.iflas.ufl.edu



Trail on Southern California Edison easement at Whittier Narrows Natural Area. Photo by NPS.



www.JFNew.com/stormwater



www.EcoRain.com



Bimini Slough project - North East Trees - www.bresee.org



PROJECT DESCRIPTION:

Capture and infiltrate storm water along existing power line easements for groundwater recharge, TMDL compliance and flood protection. Consider opportunities for pocket parks, recreation areas and trails linking large portions of the watershed. In addition, the project will provide water quality benefits, and habitat restoration opportunities that are lacking in the region.

Preferred Project No. 1

Project Information Summary	Integration Opportunities
Power Line Easement Recharge Project	Project has the potential to link neighborhoods with a recreational trail network.
Project Submitter	Project Benefits
City of Los Angeles Department of Water and Power / The River Project	Increases local water supply by more than 170 acre-feet per year, per quarter mile; potential for as much as 7,000 acre-feet per year. Generally improves water quality, enhances 500 to 1,000 acres of land for public access, open space, habitat and recreation. DWP is working on an initial pilot project along this easement. TRP proposes implementation along all transmission easements once DWP's pilot has been implemented and monitored.
On-line information	Generally satisfies all nine goals of the Tujunga Watershed Management Plan.
www.ladpw.com and www.theriverproject.org	
Contact Information	
Mark Hanna, (213) 367-1289 or mark.hanna@ladpw.com	
Jurisdiction	
City of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
34.3080315, -118.42782	The transmission corridor provides opportunities for multiple benefits on under-utilized lands. A latitudinal area of the watershed and residential communities are linked with habitat zones within the watershed.
Estimated Capital Cost	Work Product or Deliverable
\$10 to 50 million	Detention and recharge basins, recreation trails, habitat enhancements and other native plantings.
Estimated Annual O&M Costs	
\$100,000	
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
2012 for LADWP pilot	City of Los Angeles, Council Districts 6 and 7 (multiple Neighborhood Councils) - Community Redevelopment Agency (CRA) Project Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
2030 for all easements	



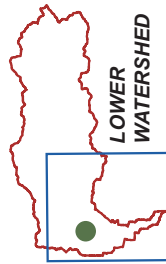
Tujunga Watershed Project

Tujunga Watershed Management Plan



PROJECT TITLE:
Railroad Right of Way Improvement

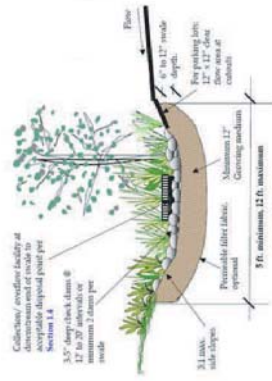
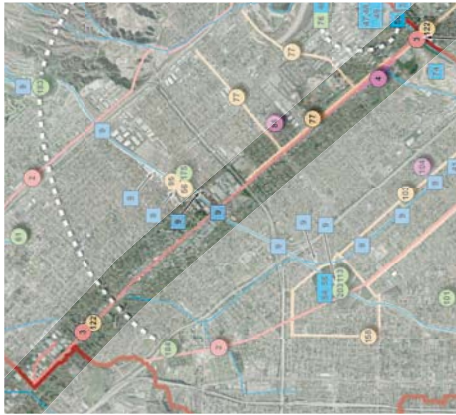
PROJECT SUBMITTER:
The River Project



ANTICIPATED BENEFITS



Tujunga Watershed Project



www.Ci.Sandy.OR.US



Volume 48, No.5
www.LandandWater.com



Santa Clarita Trail -
Southern California Regional Rail Authority
www.techtransfer.berkeley.edu



San Fernando's Mission City Trail -
Southern California Regional Rail Authority
www.techtransfer.berkeley.edu



Coastal Rail Trail, Carlsbad - www.MarinBike.org



www.MarinBike.org



Los Angeles Circa 1870
Jim Doolin, 1996

PROJECT DESCRIPTION:

Enhance railroad right of way to increase flood protection, provide a trail, create swales for storm water capture, improve water quality, integrate BMP's and restore wildlife habitat. Project would promote ground water infiltration and clean storm water before it enters Pacoima Wash, Tujunga Wash and Hansen spreading grounds.

Preferred Project No. 2

Project Information Summary	Integration Opportunities
Railroad Right of Way Improvement	Pacoima Wash and Greenway, Tujunga Wash and Greenway and Hansen Spreading Grounds.
Project Submitter	
The River Project	
On-line information	Project Benefits
www.TujungaWash.org	Increases local water supply by more than 1,000 acre-feet annually, generally improves water quality, enhances approximately 800 acres of land for public access, open space, habitat and recreation. The project aims to extend and or replicate a powerline easement proposal from the Sun Valley Watershed Management Plan. Generally satisfies seven of nine goals under the Tujunga Watershed Management Plan.
Contact Information	
Melanie Winter, (818) 980-0660 Winter@TheRiverProject.org	
Jurisdiction	
City of Los Angeles Union Pacific Railroad	
Latitude and Longitude Coordinates	Additional Considerations
34.2978108, -118.456959	Significant opportunity to improve water quality associated with the rail system and surrounding roadways while expanding bicycle and pedestrian linkages in urban San Fernando Valley. Utilizes space for natural (non-structural) BMP's and increased groundwater infiltration.
Estimated Capital Cost	
Greater than \$50 million	
Estimated Annual O&M Costs	Work Product or Deliverable
\$1 million to 10 million	The project will require a feasibility study, right of way plans, encroachment permits and right of entry agreement from the railroad, identification of implementation costs and public agency sponsor to collaborate with railroad and qualify for public transportation funds.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
August, 2009	City of Los Angeles, Council Districts 6 and 7 (Pacoima Neighborhood Council) - CRA Project Area and Environmental Justice (EJ) District California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
August, 2012	



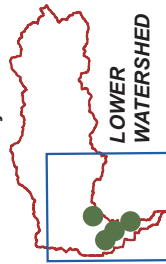
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Primary Street Improvement Project: San Fernando Road, Woodman Ave, Victory and Van Nuys Boulevards

PROJECT SUBMITTER:
The River Project



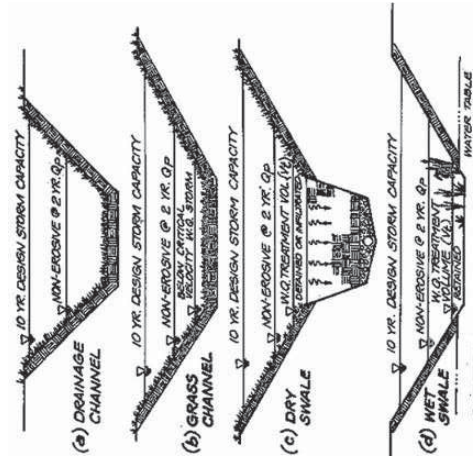
PRIMARY BENEFITS



Tujunga Watershed Project



www.EcoRain.com



www.fhwa.dot.gov



www.chesterfield.gov, originally from Pierce County, WA



www.ConcreteDecor.net



Center for Watershed Protection

PROJECT DESCRIPTION:

Demonstrate methods of cleaning and infiltrating stormwater along four major roadways, increase pervious surface area on major roads by improving or creating medians with curb-cuts and installing pervious gutters for water quality improvements, ground water recharge, and flood protection. Provides incidental habitat and expands urban forest cover.



Preferred Project No. 3

Project Information Summary	Integration Opportunities
Primary Street Improvement Project (4 arterial streets)	Connections with Tujunga Wash Greenway, Pacoima Wash Greenway, and local neighborhood council trail networks.
Project Submitter	Project Benefits
The River Project	Increases local water supply by more than 1,000 acre-feet annually, generally improves water quality, improves roughly 2,000 acres of land for neighborhood beautification and urban habitat.
On-line information	Satisfies seven of nine goals of the Tujunga Watershed Management Plan.
www.TheRiverProject.org	Additional Considerations
Contact Information	Provides large scale BMPs for water quality improvements in the watershed and significant opportunities to capture and infiltrate stormwater. Project is feasible but requires additional analysis for grading and drainage constraints. May be eligible for local (Prop. O) funding. Project is located along major transportation corridors.
The River Project, (818) 980-9660 Winter@TheRiverProject.org	Builds on the success of demonstration projects in Seattle, Oregon and Australia with proven success toward stormwater capture and pollutant remediation.
Jurisdiction	Work Product or Deliverable
Cities of Los Angeles and San Fernando	Streets would be sloped to medians with native-planted curb-cuts and pervious gutters, creating large-scale BMP's for water quality improvements, capturing and infiltrating stormwater along major roadways
Latitude and Longitude Coordinates	Jurisdictional Areas
34.2306278, -118.43666	City of Los Angeles, Council Districts 6 and 7 (multiple Neighborhood Councils) - Not located in CRA Project Area or EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Estimated Capital Cost	
Greater than \$50 Million	
Estimated Annual O&M Costs	
\$10 to 50 Million	
Status	
Conceptual	
Target Date for Implementation	
2010	
Anticipated Date of Completion	
2025	



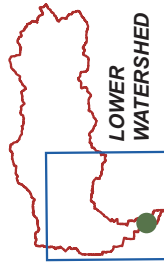
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
CBS-Viacom Radio Community Park

PROJECT SUBMITTER:
The River Project



PRIMARY BENEFITS



Tujunga Watershed Project



www.Panoramio.com



homepage.mac.com/bobgoldberg/FoWP



Solano Canyon Community Garden photo by NPS



Center for Watershed Protection



PROJECT DESCRIPTION:

Provide a community park in an underserved residential area, with a detention basin designed to capture and infiltrate stormwater to groundwater during storm events.

Preferred Project No. 4

Project Information Summary	Integration Opportunities
CBS-Viacom Radio Community Park	Relates to Tujunga Wash Greenway, Valley Glen Community (Erwin) Park Retrofit
Project Submitter	Project Benefits
The River Project	Increases local water supply by 50 to 100 acre-feet per year while generally improving water quality, enhances 10 to 20 acres of land for public access, open space, habitat and recreation.
On-line information	Satisfies eight of nine goals within the Tujunga Watershed Management Plan.
www.TheRiverProject.org	
Contact Information	
The River Project, (818) 980-9660 Winter@TheRiverProject.org	
Jurisdiction	Additional Considerations
City of Los Angeles Valley Glen Neighborhood Council	Project has the potential to develop passive recreational facilities in park poor area, increase native habitat, and provide opportunities to capture and infiltrate stormwater prior to entering Tujunga Wash. Existing open lot with radio towers includes surplus lands that are feasible for ancillary park development. Large project near Los Angeles Valley College on primary roadway and one block east of Tujunga Wash. Public/private partnership would provide community and watershed benefits while maintaining property's current use.
Latitude and Longitude Coordinates	
34.1825631, -118.41937	
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Deliverables will include a passive recreation park and possible detention basin with trails and native plants.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
June, 2009, assuming cooperation of property owner	City of Los Angeles, Council District 2 (Valley Glen Neighborhood Council) - Not located in CRA Project Area or EJ Area California State Assembly District 43 California State Senate District 21 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
June, 2010	



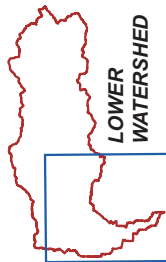
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Tujunga and Pacoima Wash Bridge Retrofit and Channel Expansion

PROJECT SUBMITTER:
The River Project



PRIMARY BENEFITS



Tujunga Watershed Project



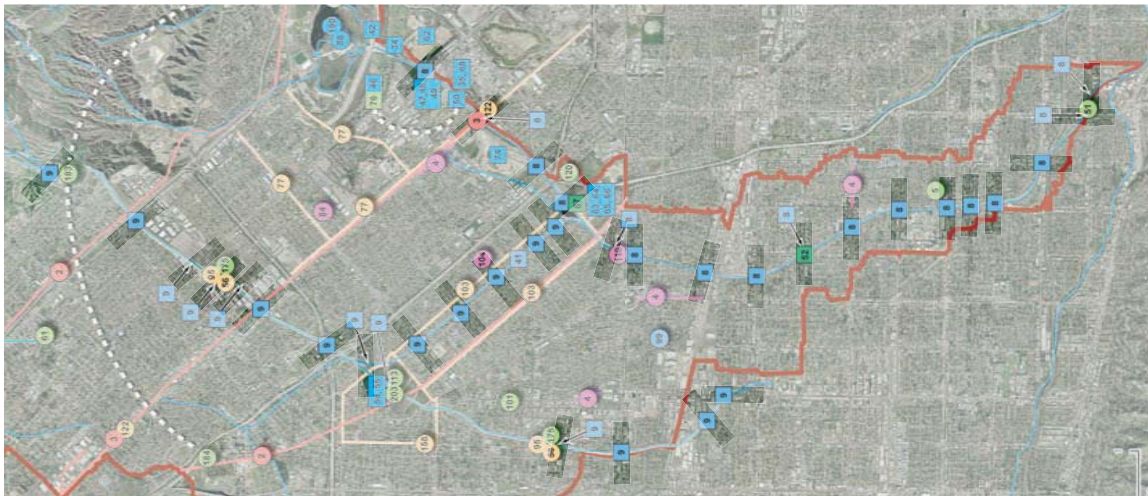
www.BayTrail.ABAG.ca.gov



www.NewAlmaden.org



www.GeoCities.com_rthoril



www.LAcipw.org

PROJECT DESCRIPTION:

Retrofit existing bridges to provide increased channel width for both hydrologic and habitat improvements, and to allow continuous creek adjacent circulation along Pacoima and Tujunga Wash easements. Project aims are to remove concrete and increase the infiltration of ground water, and facilitate removal of sediment, trash and metals prior to confluence with the L.A. River, increasing habitat improving flood protection.

Preferred Project No. 5

Project Information Summary	Integration Opportunities
Tujunga and Pacoima Wash Bridge Retrofit and Channel Expansion	Links recreational access from the Los Angeles River to Pacoima Wash, Hansen Dam, Tujunga Wash and Angeles National Forest, providing longer bridge spans so that channel width may be increased, concrete may be removed and natural river function is restored.
Project Submitter	Project Benefits
The River Project	Generally increases local water supply, improves water quality, enhances land for public access, open space, habitat and recreation. Specific benefits have not been be quantified at this time.
On-line Information	Satisfies eight of nine goals established by the Tujunga Watershed Management Plan.
www.TheRiverProject.org	Additional Considerations
Contact Information	Provides adaptive use of a concrete channel to improve hydrologic function, aesthetics, habitat, and recreation. Feasibility would depend upon purchase program of adjacent land and alterations to O&M regime at Hansen and Big Tujunga Dams. Project requires analysis and phasing, provides large scale visibility from surrounding communities to the scientific and natural resources stewardship community, possibly serving as a precedent in waterway restoration efforts.
Melanie Winter, (818) 980-9660 Winter@TheRiverProject.org	Work Product or Deliverable
Jurisdiction	Widening of the existing Tujunga Wash and Pacoima Wash channels, creating new bridges with bicycle accessibility and removal of concrete where deemed appropriate.
City of Los Angeles	Jurisdictional Areas
Latitude and Longitude Coordinates	City of Los Angeles, Council Districts 2, 5, 6 and 7 (many Neighborhood Councils) - Some sites located in CRA Project Area and EJ Area California State Assembly Districts 39, 42 and 43 California State Senate Districts 20, 21 and 23 U.S. House of Representatives, 27th and 28th Districts, California
34.1565706, -118.403638 34.2872006, -118.425955	
Estimated Capital Cost	
Greater than \$100 Million	
Estimated Annual O&M Costs	
\$20 to 50 Million	
Status	
Conceptual	
Target Date for Implementation	
2010	
Anticipated Date of Completion	
2015-2025	



Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Big Tujunga Dam Enhancement Project

PROJECT SUBMITTER:
L.A. County Flood Control District and City of L.A. Department of Water and Power



Tujunga Watershed Project



L.A. County DPW - www.TheRiverProject.org



Big Tujunga Reservoir
Photo by NPS, for the River Project



Big Tujunga Creek
Photo by NPS, for the River Project



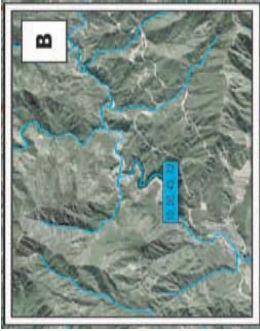
Spillway dam partition at Hoover Dam
www.ArjunPrabhu.com



maps.Google.com



San Gabriel Mountains Slender Salamander
CalPhotos.Berkeley.edu
William Flaxington, 2008



California Department of Fish & Game

PROJECT DESCRIPTION:

Replace concrete on the downstream face of the existing arch dam, add new dam to spillway to moderate regulation of downstream flood protection and flow releases as to sustain habitat and provide an additional 4,500 acre-feet of water for graduated release and recharge downstream. Create a sediment bypass to re-establish natural sediment transport according to USACE specifications. Restore sediment transport to decrease the scour potential of water released by the dam and decrease the sediment accumulation behind the dam.

Preferred Project No. 6

Project Information Summary	Integration Opportunities
Big Tujunga Dam Enhancement Project	Integrates with the Big Tujunga Dam retrofit and the Hansen Dam sediment gate, enlarging the capacity of Hansen Spreading Grounds.
Project Submitter	Project Benefits
L.A. County Flood Control District and City of L.A. Department of Water and Power	Increases local water supply by 5,000 acre-feet per year, generally improves water quality, enhances downstream acreage of land for public access and enjoyment, riparian habitat and recreation.
On-line information	Satisfies four to five goals of the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Angela George, (626) 458-4341 AGeorge@ladpw.org	Decreases siltation behind Big Tujunga Dam, maintains the Dam's long-term storage capacity and restores a more natural hydrologic function to the system; timely opportunity is leveraged if projects are coordinated appropriately. Further analysis and engineering design is required; could be incorporated into the total cost of the dam retrofit.
Jurisdiction	Work Product or Deliverable
Los Angeles County Flood Control District U.S.F.S. Angeles National Forest	Sediment gate will provide for prescribed amounts of sediment to be transported past the dam to reduce hungry water scour and erosion.
Latitude and Longitude Coordinates	Jurisdictional Areas
34.293333, -118.186667	County of Los Angeles, 5th Supervisorial District California State Assembly District 59 California State Senate District 17 U.S. House of Representatives, 25th District, California
Estimated Capital Cost	
Greater than \$50 million	
Estimated Annual O&M Costs	
\$1 to 10 Million	
Status	
In Construction	
Target Date for Implementation	
April, 2008	
Anticipated Date of Completion	
September, 2010	



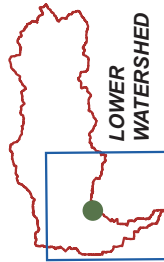
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Tujunga-Sun Valley
Tujunga Wash Diversion
Project

PROJECT SUBMITTER:
Los Angeles County
Flood Control District



PRIMARY BENEFITS



Tujunga Watershed Project



View from Hansen Dam: www.you-are-here.com/location/tujunga_wash.jpg



www.shawsheen.org



www.floodcontrol.co.riverside.ca.us



maps.google.com



PROJECT DESCRIPTION:
Divert stormwater flows from the Tujunga Wash, below Hansen Dam, to Sheldon Pit for groundwater recharge, wetlands water quality enhancement and multiuse recreational opportunities.



Recharge basin photo by NPS

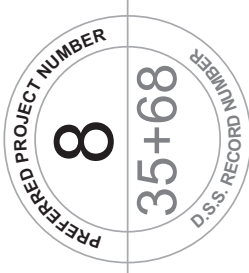
Preferred Project No. 7

Project Information Summary	Integration Opportunities
Tujunga-Sun Valley Tujunga Wash Diversion Project	Hansen Lake and Dam Retrofit, Tujunga Wash Greenway; surface mine reclamation project.
Project Submitter	
Los Angeles County Flood Control District	
On-line information	Project Benefits
www.SunValleyWatershed.org	Increases local water supply by 2,000 acre-feet per year, improves water quality, enhances land for public access, open space, habitat and recreation.
Contact Information	
Angela George, (626) 458-4341 AGeorge@ladpw.org	Satisfies seven of the nine goals of the Tujunga Watershed Management Plan.
Jurisdiction	
County of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
34-15'-12" - 118-23'-09"	Project supported by Los Angeles Department of Water and Power in cross-submittal, DSS project number 62.
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Greater than \$50 Million	Reclamation plan to address soil stabilization, hydrology, erosion control, landscape planning, habitat restoration and public access.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
January, 2009	City of Los Angeles, Council District 7 (Sun Valley Neighborhood Council) - Located within an EJ Area (Not CRA Project Area) California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
January, 2010	



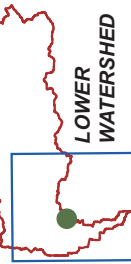
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Valley Generating Station
Storm Water Capture

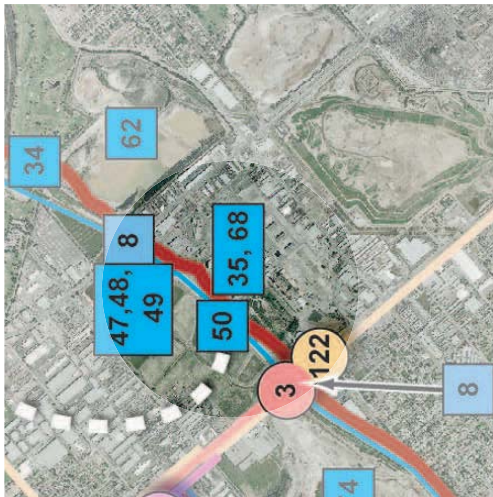
PROJECT SUBMITTER:
City of L.A. Department
of Water and Power and
Los Angeles County
Flood Control District



PRIMARY BENEFITS

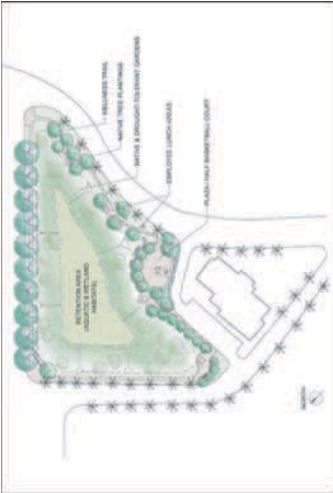


Tujunga Watershed Project

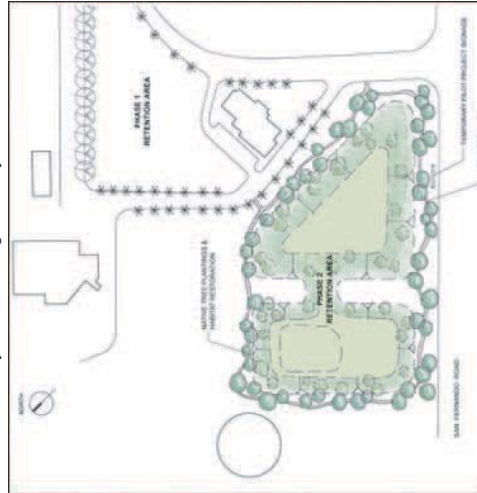


maps.Google.com

commons.wikimedia.org



www.sunvalleywatershed.org/PilotProjects/SteamPlant



www.TheRiverProject.org



www.WalkingLA.com/2002



www.tcd.ie/Civil_engineering

PROJECT DESCRIPTION:

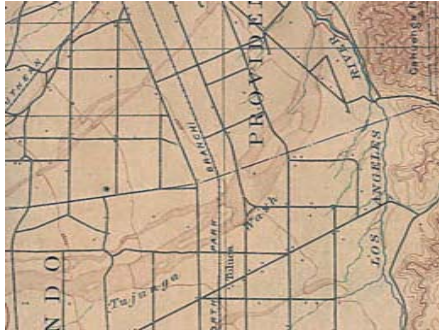
Capture stormwater from the Valley Generating Station property and recharge it on site through BMP's and diversion to the abandoned gravel pit.

Preferred Project No. 8

Project Information Summary	Integration Opportunities
Valley Generating Station Storm Water Capture	Initially proposed in the Tujunga and Sun Valley Watershed Management Plan to alleviate the localized flooding problem in the Sun Valley area.
Project Submitter	Project Benefits
City of L.A. Department of Water & Power and L.A. County Flood Control District	Increases local water supply by 100 to 1,000 acre-feet per year. Also improves water quality, enhances land for open space, habitat and recreation.
On-line information	
http://www.sunvalleywatershed.org/PilotProjects/SteamPlant.asp	Satisfies four of nine goals of the Tujunga Watershed Management Plan.
Contact Information	
Mark Hanna, (213) 367-1289 or mark.hanna@ladwp.com	
Jurisdiction	
City of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
34.23941667, -118.3937222	None reported by submitter.
Estimated Capital Cost	
\$10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
\$10,000	Reclamation plan to address hydrology and drainage, landscape planning and habitat restoration.
Status	
Concept complete	
Target Date for Implementation	Jurisdictional Areas
January, 2010	City of Los Angeles, Council District 6 (Sun Valley Neighborhood Council) - Located within CRA Project Area and EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
January, 2013	



Tujunga Watershed Project



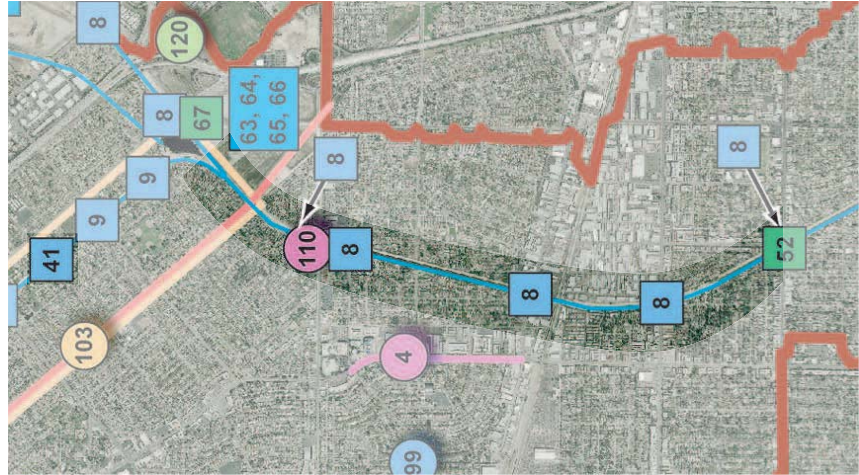
www.lib.utexas.edu



Photo by MRCA

PROJECT DESCRIPTION:

The County will collaborate with U.S. Army Corps of Engineers to extend the Tujunga Wash Greenway and Stream Restoration Project north from Vanowen Street. The project extends along the west bank of the Tujunga Wash and will enhance habitat, add open space, and improve water quality.

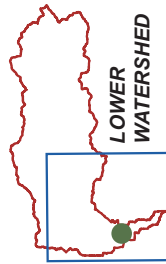


Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Tujunga Wash Project,
Section 1135

PROJECT SUBMITTER:
Los Angeles County
Flood Control District



PRIMARY BENEFITS



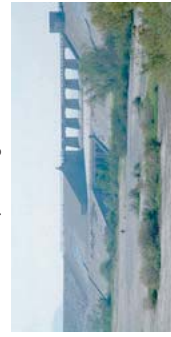
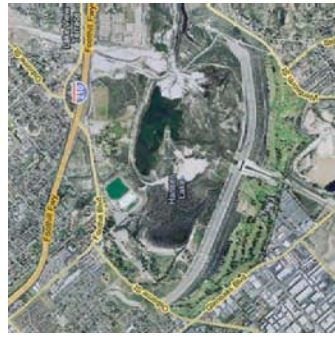
Tujunga Watershed Project

Preferred Project No. 9

Project Information Summary	Integration Opportunities
Tujunga-Sun Valley Tujunga Wash Diversion Project	None reported by submitter.
Project Submitter	
Los Angeles County Flood Control District	
On-line information	Project Benefits
	Increases local water supply by approximately 365 acre-feet per year, improves water quality, enhances land for public access, open space, habitat and recreation.
Contact Information	Satisfies six of the nine goals in the Tujunga Watershed Management Plan.
Angela George, (626) 458-4341 AGeorge@ladpw.org	
Jurisdiction	
County of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
34-13'-38" - 118-25'-05"	None reported by submitter.
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
(Unknown)	Diversion structure design and construction, landscape planning, habitat restoration and public access design.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
January, 2009	City of Los Angeles, Council District 2 (Valley Glen Neighborhood Council) - Not located in CRA Project Area or EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
January, 2010	



Tujunga Watershed Project

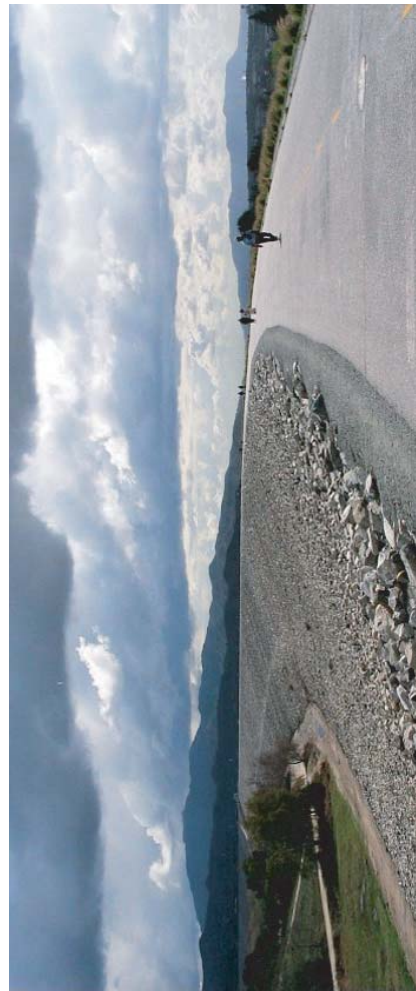


PROJECT DESCRIPTION:

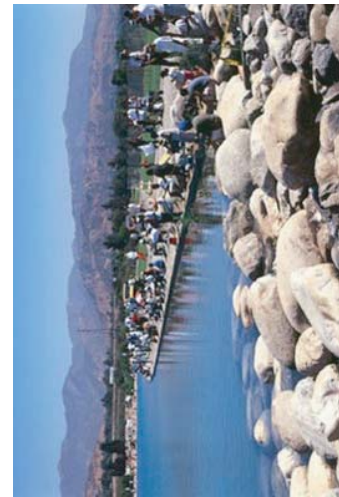
Change management regime of Hansen Dam to conserve water by maintaining a water conservation pool within the reservoir during and subsequent to flood season.



Hansen Dam basin photographs by NPS



www.you-are-here.com/location/hansen_dam



www.right-realty.net



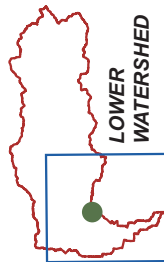
Hansen Dam outlet photo by NPS

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Hansen Dam Water Conservation and Supply

PROJECT SUBMITTER:
Los Angeles County Flood Control District



PRIMARY BENEFITS



Tujunga Watershed Project

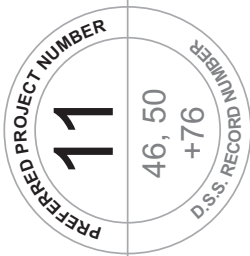
Preferred Project No. 10

Project Information Summary	Integration Opportunities
Hansen Dam Water Conservation and Supply	None reported by submitter.
Project Submitter	
Los Angeles County Flood Control District	
On-line information	Project Benefits
	Increases local water supply by as much as 3,400 acre-feet per year and improves water quality.
Contact Information	Satisfies four of the nine goals in the Tujunga Watershed Management Plan.
Terri Grant, (626) 458-4309 tgrant@ladpw.org	
Jurisdiction	
County of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
34.26833, -118.38417	Feasibility study required.
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Approximately \$650,000	None reported by submitter, beyond feasibility study.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
January, 2009	City of Los Angeles, Council District 7 (Pacoima Neighborhood Council) - Not located in a CRA Project Area, nor EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 27th District, California
Anticipated Date of Completion	
Unknown	



Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Hansen Golf Course
Water Recycling Project

PROJECT SUBMITTER:
City of Los Angeles
Department of Water and
Power



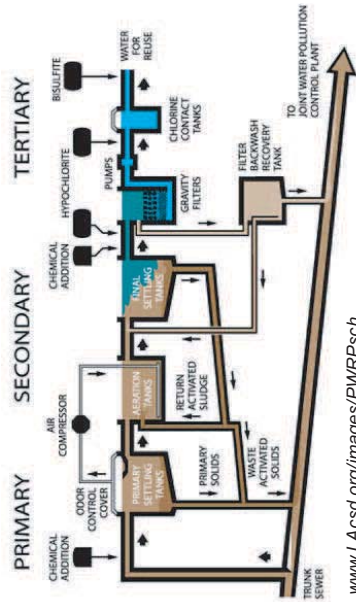
PRIMARY BENEFITS
WATER CONSERVATION



Tujunga Watershed Project

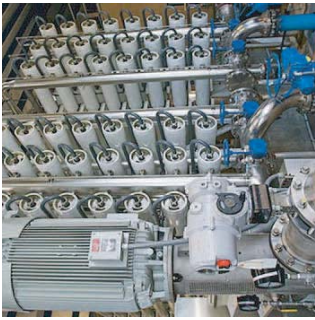


Tillman Wastewater Treatment Plant at Sepulveda Basin - www.laist.com



www.LAcsl.org/images/PWRPpsch

www.rainbird.com/landscape/products/valves



my.stwmtd.gov/portal



www.csiro.au/news



Maps. Google.com



www.greenskeeper.org

PROJECT DESCRIPTION:

Construct 8,600 feet of pipeline and a booster pumping station to deliver recycled water from the Tillman Plant to the Hansen Golf Course. Water will be pumped from the Hansen Tank.



Hansen Golf Course is bisected by Tujunga Wash below Hansen Dam (Photo by NPS)

Preferred Project No. 11

Project Information Summary	Integration Opportunities
Hansen Golf Course Water Recycling Project	Beneficial use and application of recycled water to offset demand of potable resources currently used for irrigation to reduce the golf course demand on imported supplies.
Project Submitter	Project Benefits
Los Angeles Department of Water & Power	Conserves as much as 600 acre-feet from annual domestic water supply.
On-line information	Satisfies three goals from the Tujunga Watershed Management Plan.
www.ladwp.com	
Contact Information	
Paul Liu, (213) 367-0761 paul.liu@ladwp.com	
Jurisdiction	
City of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
N 34 deg 16' 24.6", W 118 deg 23' 38.1"	Hansen Golf Course will offset potable demand by up to 600 acre feet year by using recycled water. Highly feasible and visible in the community.
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	8,600 feet of piping and booster pumping station will deliver water from the Hansen Tank to the Hansen Golf Course.
Status	
Under construction	
Target Date for Implementation	Jurisdictional Areas
December, 2007	City of Los Angeles, Council District 7 (Foothill Trails Neighborhood Council) - Not located in a CRA Project Area, nor EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 27th District, California
Anticipated Date of Completion	
December, 2009	



Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Hansen Spreading Grounds Enhancement

PROJECT SUBMITTER:
City of Los Angeles Department of Water and Power



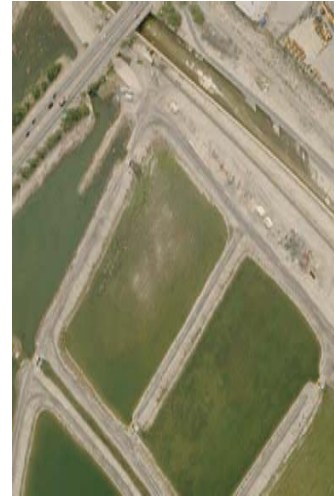
PRIMARY BENEFITS



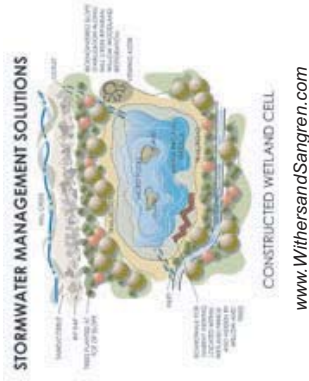
Tujunga Watershed Project



Maps: Google.com



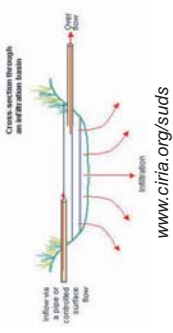
Division outlet between Tujunga Wash and Hansen Spreading Grounds at Glensoks Boulevard - Maps.Live.com/birdseye



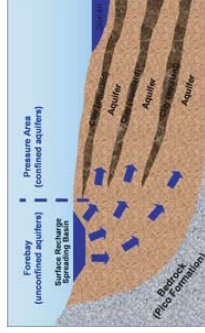
www.WithersandSangren.com



Great Egret photo by Dan Ng, NPS



www.citra.org/suds



www.wrrd.org



www.TheRiverProject.org

PROJECT DESCRIPTION:

Increase the capacity of recharge grounds by modernizing and automating intake structures and improving spreading basins to enhance groundwater infiltration, install landscaping around perimeter. Replace existing steel radial gate in Tujunga Wash with a rubber dam; provide for monitoring and remote operation.

Preferred Project No. 12

Project Information Summary	Integration Opportunities
Hansen Spreading Grounds Enhancement	Develops compatible uses of spreading grounds otherwise lacking in the region (habitat restoration, open space, passive recreation), takes advantage of the additional water conservation benefit from Project No. 6, Big Tujunga Dam. Enhances efficiency of operations and lessens long-term maintenance of intake works.
Project Submitter	Project Benefits
L.A. City Department of Water & Power L.A. County Department of Public Works	Increases local water supply by 1,400 to 3,000 acre-feet per year, generally improves water quality, enhances marginal lands for public access, open space, habitat and recreation.
On-line information	Satisfies seven of nine goals from the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Angela George, (626) 458-4341 AGeorge@ladpw.org	Increases groundwater recharge and moves toward sustainable water supply. Project is feasible and implemented within a short time frame. Design and project specifications are complete. LADWP is providing financial support for these enhancements.
Jurisdiction	Work Product or Deliverable
Los Angeles County Flood Control District	Increased or enhanced storage capacity, groundwater recharge, and operations would result from regrading basins and modernizing distribution system within the facility. Three phases are proposed: basin improvements, an intake facility upgrade and natural area restoration.
Latitude and Longitude Coordinates	Jurisdictional Areas
N 34 deg 15' 19.4," W 118 deg 23' 35.6"	City of Los Angeles, Council Districts 6 and 7 (Sun Valley Neighborhood Council) - Located in a CRA Project Area and EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Estimated Capital Cost	
\$10 to 20 Million	
Estimated Annual O&M Costs	
\$100,000 to 500,000	
Status	
Now in construction, with second phase now under design.	
Target Date for Implementation	
July, 2008	
Anticipated Date of Completion	
October, 2009	



Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Moorpark Park Retrofit

PROJECT SUBMITTER:
City of Los Angeles and
County of Los Angeles



PRIMARY BENEFITS



Tujunga Watershed Project



Maps.Google.com



Santa Ana River photo by NPS



Guadalupe River - www.geotitles.com/horli



Maps.Live.com/birdseye



Guadalupe River - www.geotitles.com/horli

PROJECT DESCRIPTION:
Alter the existing park to incorporate additional land area, demolish concrete edges of the park and riverbank of the Tujunga Wash and improve landscape with native plants. Implement bicycle and pedestrian trails.

Preferred Project No. 13

Project Information Summary	Integration Opportunities
Moorpark Park Retrofit	Related to the L.A. River Revitalization Master Plan, the project would create a green network of parks, bikeways and open space for the communities along the L.A. River, adding recreational space to the urban areas of Los Angeles and effectively managing stormwater runoff .
Project Submitter	Project Benefits
City of Los Angeles and County of Los Angeles	Increases or enhances two acres of land for public access, open space, habitat and recreation.
On-line information	Generally satisfies four of the nine goals in the Tujunga Watershed Management Plan.
Contact Information	
Renee Ellis, (213) 485-4299 renee.ellis@lacity.org	
Jurisdiction	
City of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
34.149592, -118.396513	None reported by submitter.
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
(Unknown)	None reported by submitter.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
January, 2009	City of Los Angeles, Council District 2 (Studio City Neighborhood Council) - Not located in CRA Project Area or EJ Area California State Assembly District 42 California State Senate District 21 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
January, 2012	



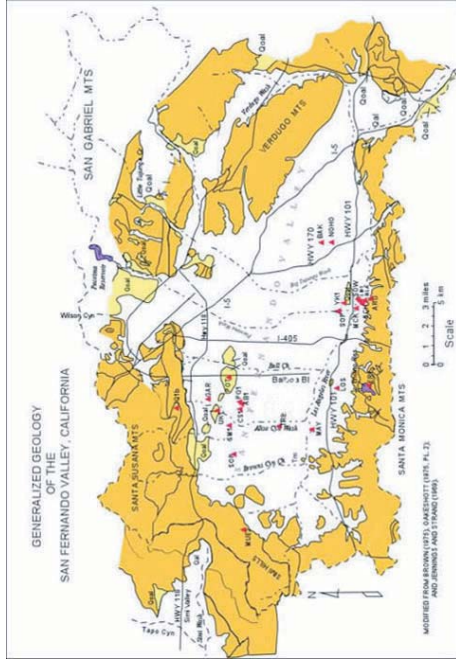
Tujunga Watershed Project



www.invisibles.org



www.GeisslerEngineering.com



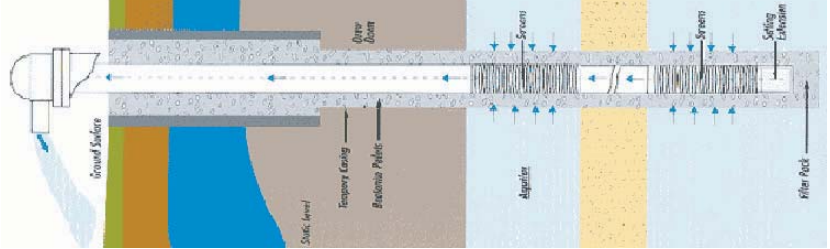
pubs.USGS.gov

PROJECT DESCRIPTION:

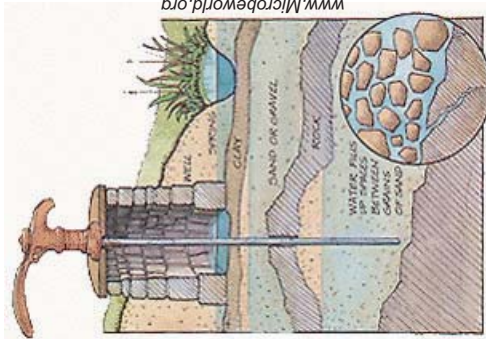
Add as many as eight new water wells in North Hollywood, each with a capacity of approximately eight cubic feet per second (cfs), increasing the North Hollywood Well Field capacity by 64 cfs.



onresed.agros.org



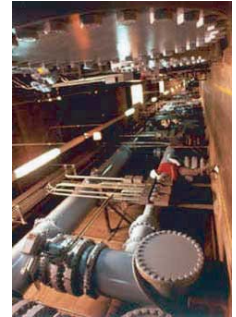
www.Euroslot-Screens.com



www.Microbeworld.org



www.Bcgroundwater.ca



wsoweb.ladwp.com

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
North Hollywood Well Field

PROJECT SUBMITTER:
City of Los Angeles Department of Water and Power



PRIMARY BENEFITS



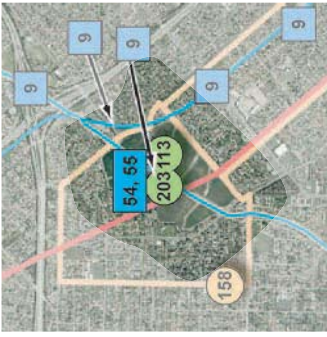
Tujunga Watershed Project

Preferred Project No. 14

Project Information Summary	Integration Opportunities (None reported by submitter)
North Hollywood Well Field	
Project Submitter	
City of Los Angeles Department of Water and Power	
On-line information	Project Benefits (None reported by submitter)
	Satisfies three of nine goals under the Tujunga Watershed Management Plan.
Contact Information	
Mark Aldrian, (213) 367-0968 mark.aldrian@ladwp.com	
Jurisdiction	
City of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations (None reported by submitter)
34.19383333, -118.42275	
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	Work Product or Deliverable (None reported by submitter)
(Unknown)	
Status	
(Unknown)	
Target Date for Implementation	Jurisdictional Areas
January, 2013	City of Los Angeles, Council District 2 (Valley Glen Neighborhood Council) - Not located in CRA Project Area or EJ Area California State Assembly District 43 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
January, 2015	



Tujunga Watershed Project



Maps.Google.com



Pacoima spreading grounds photo by NPS



Pacoima intake and diverter - Maps.Live.com



Green Heron photo by Will Elder, NPS



www.cyburba.org



www.WithersandSangren.com



www.ci.Knoxville.tn.us

PROJECT DESCRIPTION:

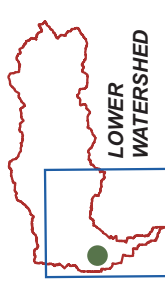
Optimize the recharge capacity of the spreading grounds by modernizing and automating the existing intake structures and improving the spreading basins to increase retention capacity. Replace the existing Pacoima Diversion Channel radial gate with a rubber dam and provide for monitoring and remote operation, install trash rack and updated flow measurement instrumentation at intake works; replace existing open channel at headworks with buried drains; install vertical trench drains in spreading basin bottoms to enhance percolation; enhance landscaping around the perimeter of the facility.

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Pacoima Spreading Grounds Enhancements

PROJECT SUBMITTER:
L.A. City Department of Water and Power with L.A. County Public Works



PRIMARY BENEFITS



Tujunga Watershed Project

Preferred Project No. 15

Project Information Summary	Integration Opportunities
Pacoima Spreading Grounds Enhancements	Explore opportunities for compatible uses of spreading grounds for needs that are not adequately served in the region (e.g. habitat restoration, open space, passive recreation). Once the proposed project's new underground intake drains are constructed, the land over the drains could be available for urban park development.
Project Submitter	
L.A. City Department of Water & Power L.A. County Public Works Department	
On-line information	
None	
Contact Information	Project Benefits
Mark Hanna, (213) 367-0932, mhanna.acevedo@ladwp.com Keith Zimmer, (626) 458-6188, KZimmer@ladpw.org	Increases local water supply by 2,000 acre-feet per year and enhances 1.5 linear miles of perimeter lands for public access, open space, habitat and recreation.
Jurisdiction	Generally satisfies five out of nine goals from the Tujunga Watershed Management Plan.
Los Angeles County Flood Control District	
Latitude and Longitude Coordinates	
34.2575, -118.4444167	
Estimated Capital Cost	Additional Considerations
\$10 to 50 Million	(None reported by submitters)
Estimated Annual O&M Costs	Work Product or Deliverable
(Unknown)	(None reported by submitters)
Status	
Conceptual plan in development	
Target Date for Implementation	Jurisdictional Areas
January, 2010	City of Los Angeles, Council District 7 (Mission Hills Neighborhood Council) - Not located in CRA Project Area or EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
January, 2012	



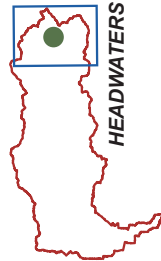
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Invasive Plant Removal
and Maintenance of
Endangered Arroyo Toad
Habitat

PROJECT SUBMITTER:
Forest Service



PRIMARY BENEFITS



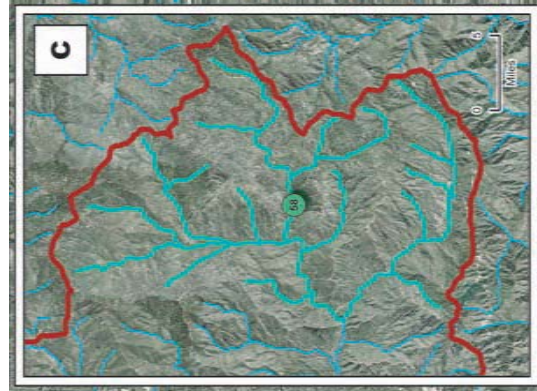
Tujunga Watershed Project



Photo by NPS, for the River Project



Luigi Rignanesse - Calphoto.Berkeley.edu



Maps.Google.com



Louis-M. Landry - Calphoto.Berkeley.edu



California Department of Fish and Game



PROJECT DESCRIPTION:
Maintain federally listed
Arroyo Toad (*Bufo*
microscaphus
californicus) habitat
from invasive White
Sweetclover (*Meililotus*
alba).

Preferred Project No. 16

Project Information Summary	Integration Opportunities
Invasive Plant Removal and Maintenance of Endangered Arroyo Toad Habitat	(None reported by submitter)
Project Submitter	
U.S. Forest Service Angeles National Forest	
On-line information	Project Benefits
	Benefits accrue to endangered species protection and habitat restoration.
Contact Information	Satisfies three of nine project goals of the Tujunga Watershed Management Plan.
Steve Bear, (626) 574-5233 sbear@fs.fed.us	
Jurisdiction	
Angeles National Forest	
Latitude and Longitude Coordinates	Additional Considerations
N 34 deg-19'-45," W 118 deg-09'-04"	(None reported by submitter)
Estimated Capital Cost	
(Unknown)	
Estimated Annual O&M Costs	Work Product or Deliverable
(Unknown)	(None reported by submitter)
Status	
Ready for implementation	
Target Date for Implementation	Jurisdictional Areas
Immediately	County of Los Angeles, 5th Supervisorial District California State Assembly District 59 California State Senate District 29 U.S. House of Representatives, 26th District, California
Anticipated Date of Completion	



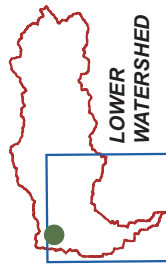
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Wilson Canyon Wash and Sylmar High School Retrofit

PROJECT SUBMITTER:
The River Project



PRIMARY BENEFITS



Tujunga Watershed Project



Wilson Canyon Dam - www.Live.com



Wilson Canyon Channel- www.Live.com



Sylmar High School - www.Live.com



www.SoCalMIB.com



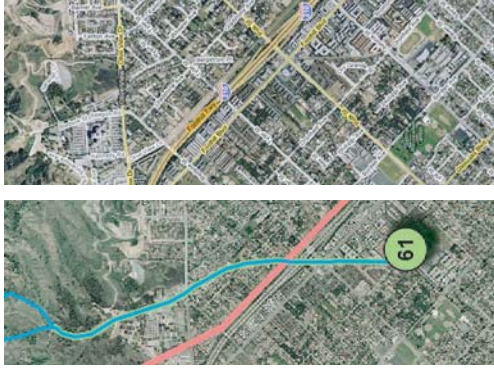
www.Annapolis.gov



www.werf.org



www.EcoRain.com



PROJECT DESCRIPTION:

Create a recreation trail system, 1.3 miles long, along the Wilson Canyon Wash easement and plant it with California natives. The wash disappears into an culvert beneath a street on the edge of Sylmar High School's recreation fields. Capture water in a cistern and encourage infiltration to groundwater and to offset irrigation of existing playing fields. Use nearby open parcels to naturalize the bank, daylight the wash and create an outdoor classroom or detention area and provide habitat by planting similar plants at the school, trail and school adjacent Sylmar Park.

Preferred Project No. 17

Project Information Summary	Integration Opportunities
Wilson Canyon Wash and Sylmar High School Retrofit	Pacoima Wash landscaping improvements, Sylmar Park plantings and the Transmission Line Easement Project
Project Submitter	Project Benefits
The River Project	Increases local water supply by 500 acre-feet per year, generally improves water quality, enhances 5 acres of land for public access, open space, habitat and recreation.
On-line information	Generally satisfies eight of nine goals under the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Melanie Winter, (818) 980-9660 Winter@TheRiverProject.org	Provides recreation access to the Angeles NF, educational outreach and opportunities to capture and utilize storm water for infiltration and irrigation. Project is feasible with willing land sellers and trail alternative route at the 210 Freeway. Similar projects are proposed along the other washes in the watershed and have been implemented in other areas, which demonstrate general feasibility. Project would have significant visibility as it offers significant educational benefits from the forest to the urban creek.
Jurisdiction	Work Product or Deliverable
City of Los Angeles	Final deliverables include a recreational trail system along Wilson Canyon Wash, a diversion of flow into a cistern for capture and infiltration and the creation of an outdoor classroom.
Latitude and Longitude Coordinates	Jurisdictional Areas
34.31281, -118.43944	City of Los Angeles, Council District 7 (Sylmar Neighborhood Council) - Not located in CRA Project Area or EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 27th District, California
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	
Less than \$100,000	
Status	
Conceptual	
Target Date for Implementation	
2010	
Anticipated Date of Completion	
2013	



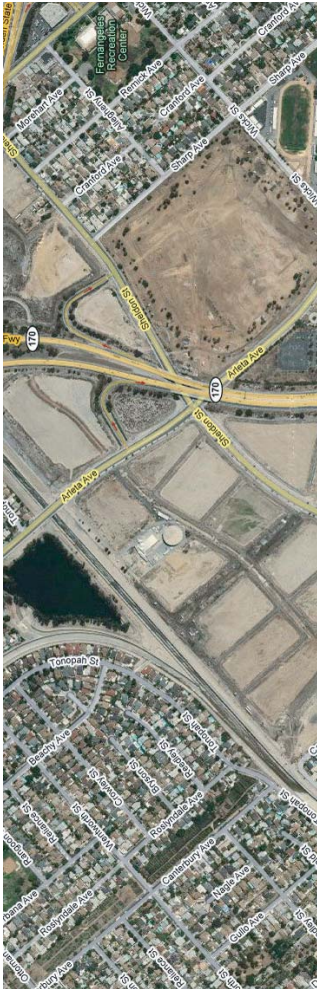
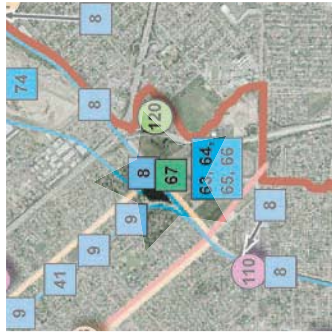
Tujunga Watershed Project

Preferred Project No. 18

Project Information Summary	Integration Opportunities
Tujunga Spreading Grounds Optimization	Adjacent to Cesar Chavez Complex. Opportunities for compatible uses of spreading grounds that are lacking in the region (e.g. habitat restoration). Project concept supported by related DSS submittals numbered 63, 65 and 66.
Project Submitter	Project Benefits
City of Los Angeles Department of Water and Power	Increases local water supply by approximately 10,800 acre-feet annually and enhances 41 acres of land for public access, open space, habitat and recreation.
On-line information	Generally satisfies five of the nine goals from the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Mark Hanna, (213) 367-1289 or mark.hanna@ladwp.com	None reported by submitter.
Jurisdiction	Work Product or Deliverable
City of Los Angeles County of Los Angeles	Improved storage and recharge capacity, improved operations, open space and public access. Development of facilities and operating process to remove sediment on a regular basis.
Latitude and Longitude Coordinates	Jurisdictional Areas
34.22755556, -118.4107778	City of Los Angeles, Council District 6 (Sun Valley Neighborhood Council) - Not located within CRA Project Area nor EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	
\$1 Million	
Status	
Concept drawings complete, design in progress	
Target Date for Implementation	
January, 2010	
Anticipated Date of Completion	
January, 2011	



Tujunga Watershed Project



Maps, Google.com



www.spencer-harris.com

PROJECT DESCRIPTION:

Plan, design and construct the Tujunga Wells Ammoniation Station to add aqua ammonia and form a chloramine disinfectant for water being supplied to customers from the Tujunga Pumping Station.



www.airgasspecialtyproducts.com



www.ecsammonia.com



Maps.Live.com

Tujunga-Pacoima Watershed Plan

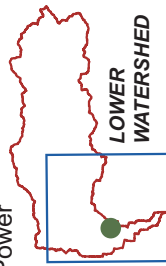


PROJECT TITLE:

Tujunga Wells Ammoniation Station

PROJECT SUBMITTER:

City of Los Angeles Department of Water and Power



PRIMARY BENEFITS



Tujunga Watershed Project

Preferred Project No. 19

Project Information Summary	Integration Opportunities
Tujunga Wells Ammoniation Station	Project related to Sun Valley Watershed Management Plan, intended to help alleviate the flooding problem in the Sun Valley area
Project Submitter	Project Benefits
City of Los Angeles Department of Water and Power	Increases local water supply availability by 100 to 1,000 acre-feet per year.
On-line information	Satisfies four of nine goals of the Tujunga Watershed Management Plan.
Contact Information	
Steve Ott, (213) 367-4187 steve.ott@ladwp.com	
Jurisdiction	
City of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
34.23941667, -118.3937222	Reduces the amount of disinfectant by-products in the water supplied to customers compared to using chlorine only.
Estimated Capital Cost	Work Product or Deliverable
\$7.6 Million	(None reported by submitter)
Estimated Annual O&M Costs	
(Unknown)	
Status	
Target Date for Implementation	Jurisdictional Areas
February, 2009	City of Los Angeles, Council District 6 (Sun Valley Neighborhood Council) - Not located within CRA Project Area nor EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
September, 2009	



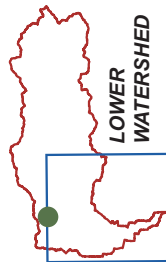
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Pacoima Reservoir
Sediment Removal

PROJECT SUBMITTER:
L.A County Department
of Public Works



PRIMARY BENEFITS



Tujunga Watershed Project



pasadena.wr.usgs.gov



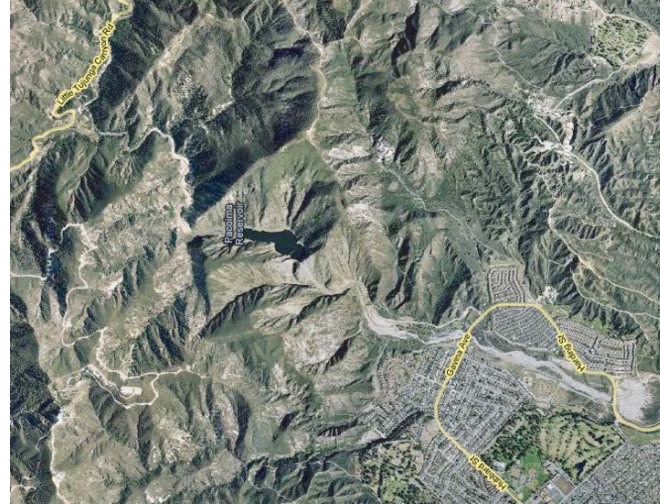
LADPW - www.theRiverProject.org



Pacoima Reservoir photo by NPS



Upper Pacoima reservoir - Maps.Live.com



Maps.Google.com



PROJECT DESCRIPTION:
Remove approximately
1.5 million cubic yards of
accumulated sediment
from Pacoima Reservoir.

Preferred Project No. 20

Project Information Summary	Integration Opportunities
Pacoima Reservoir Sediment Removal	The project will enhance the benefits of LACDPW's proposed Pacoima Spreading Grounds Improvements Project by creating additional water storage in the Pacoima Canyon Reservoir.
Project Submitter	Project Benefits
Los Angeles County Department of Public Works	Increases local water supply by up to 3,000 acre-feet per year.
On-line information	Satisfies four of the nine goals of the Tujunga Watershed Management Plan.
Contact Information	
Patricia Wood, (626) 458-6131, pwood@ladpw.org	
Jurisdiction	
Los Angeles County Flood Control District	
Latitude and Longitude Coordinates	Additional Considerations
34.31464, -118.39925	The project also provides enhanced flood protection for communities in the San Fernando Valley.
Estimated Capital Cost	
\$25 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Not applicable	Development of facilities and operating process to remove sediment on a regular basis. The reservoir capacity will increase. Plans and specifications must be prepared and an environmental analysis prepared and circulated.
Status	
Feasibility study in progress	
Target Date for Implementation	Jurisdictional Areas
Spring, 2013	County of Los Angeles, 5th Supervisorial District California State Assembly District 38 California State Senate District 17 U.S. House of Representatives, 27th District, California
Anticipated Date of Completion	
Winter, 2015	



Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Boulevard Pit
Stormwater Storage

PROJECT SUBMITTER:
City of Los Angeles
Department of Water and
Power



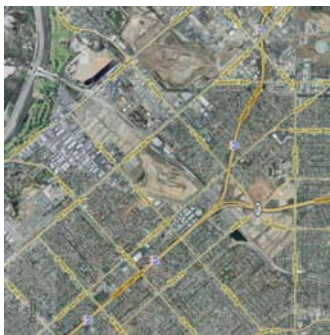
PRIMARY BENEFITS



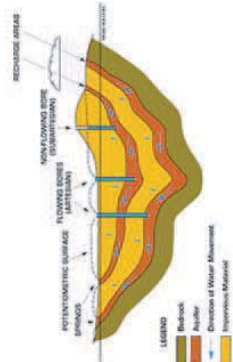
Tujunga Watershed Project



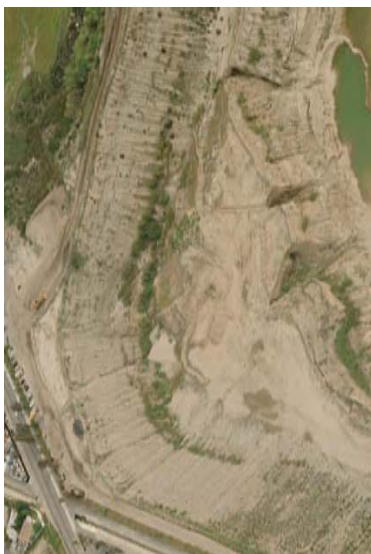
Maps.Google.com



www.TheRiverProject.org



OPERATION OF AN ARTESIAN BASIN
www.onlineopinion.com.au



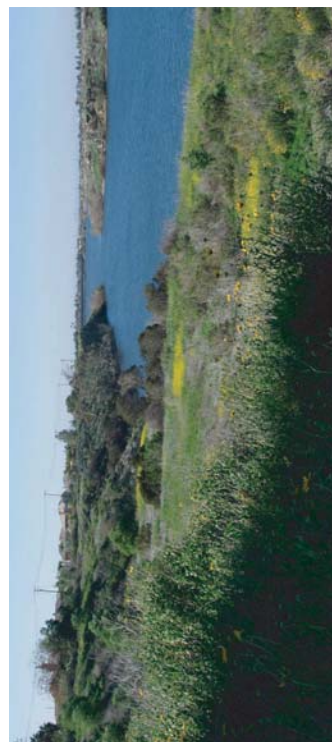
Boulevard Pit - Maps.Live.com/birdseye



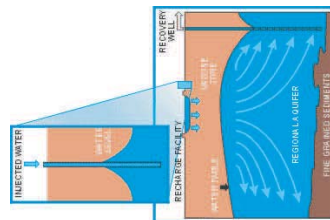
Boulevard Pit - Maps.Live.com/birdseye

PROJECT DESCRIPTION:

Acquire and develop the Boulevard Pit as a multi-use retention and recharge facility to enhance stormwater conservation.



Operational groundwater recharge basin photo by John Moore, SCGA



www.hoses.co.za

Preferred Project No. 21

Project Information Summary	Integration Opportunities
Boulevard Pit Stormwater Storage	Project will seek to balance water conservation, water quality, open space, and habitat restoration in an integrated fashion; project complements other efforts in the area to better utilize our local water resources.
Project Submitter	Project Benefits
City of Los Angeles Department of Water and Power	Increases local water supply by more than 4,000 to 6,000 acre-feet annually.
On-line information	Goals of the Tujunga Watershed Management Plan not specifically addressed by submitter; appears to satisfy as many as five of the nine goals.
Contact Information	
Mario Acevedo, (213) 367-0932 Mario.Acevedo@LADWP.com	
Jurisdiction	
City of Los Angeles	
Latitude and Longitude Coordinates	Additional Considerations
N 34 deg 14' 53.2," W 118 deg 24' 10.9"	(None reported by submitter.)
Estimated Capital Cost	
\$50 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
\$100,000 to 500,000	(None reported by submitter; likely to be similar to open mining pit reclamation projects proposed by DWP and L.A. County: soil stabilization and erosion control plans to be prepared by civil engineer, perimeter landscape treatment)
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
2015	City of Los Angeles, Council District 6 (Sun Valley Neighborhood Council) - Located in CRA Project Area and EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
2019	



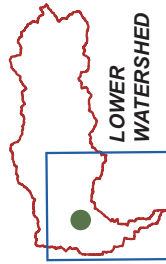
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Pacoima Median and
Bike Trail

PROJECT SUBMITTER:
Pacoima Neighborhood
Council



PRIMARY BENEFITS



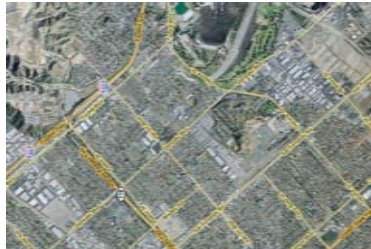
Tujunga Watershed Project



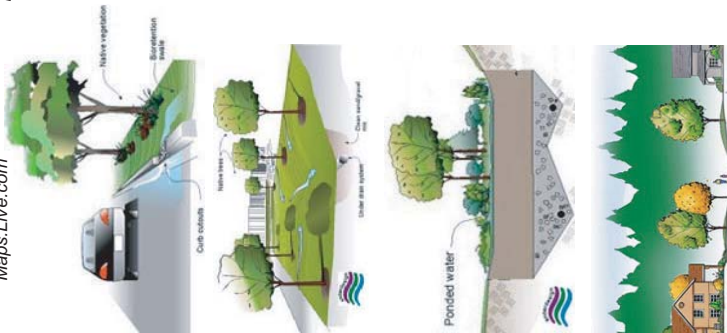
Intersection of Van Nuys Blvd and San Fernando Rd
Maps.Live.com



Intersection of San Fernando Rd and Osborne St
Maps.Live.com



Maps.Google.com



Berlin- journal.davidbyme.com



Montreal- ebent.files.wordpress.com



New York -
www.goodexperience.com



Berkeley- ebdailynews.com



PROJECT DESCRIPTION:

Develop Class I Bike Path and median planting for 1.6 miles of Van Nuys Boulevard, 2.2 miles of San Fernando Road and 4.5 miles along Osborne Street. Improvements would include native plants with curb cuts and regrading the street toward the median to facilitate stormwater capture, infiltration and remediation. Provides opportunity for trash, sediment and metals to be retained upstream of Tujunga Wash. Provides safe travel for children of Pacoima neighborhoods.

Preferred Project No. 22

Project Information Summary	Integration Opportunities
Pacoima Median and Bike Trail	Integrates with Tujunga Wash Greenway, Los Angeles River, Hansen Spreading Grounds, Hansen Lake, Dam and Recreational Area Projects, MRCA Project
Project Submitter	
Pacoima Neighborhood Council	
On-line information	Project Benefits
	Increases local water supply by 1 to 100 acre-feet annually, generally improves water quality and enhances marginal right of way lands for public access, open space, habitat and recreation.
Contact Information	
Edwin Ramirez, (818) 590-4992	Satisfies five of nine goals under the Tujunga Watershed Management Plan.
Jurisdiction	
City of Los Angeles and Pacoima Neighborhood Council	
Latitude and Longitude Coordinates	Additional Considerations
N 34 deg 16' 33.86," W 118 deg 24' 30.41"	Opportunities to capture storm flows and create safe and beautiful pedestrian bike trails and medians. Visible as a gateway to Pacoima as well as a transition zone linking systematically and aesthetically to the Tujunga Wash.
Estimated Capital Cost	
(Unknown)	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Requires collaboration with and approval by L.A. Department of Transportation
Status	
Conceptual	
Target Date for Implementation	Legislative Districts
June, 2008	City of Los Angeles, Council District 7 (Pacoima Neighborhood Council) - Located in CRA Project Area but not an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
June, 2009	



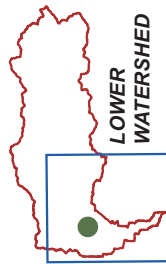
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Pacoima Neighborhood
Retrofit

PROJECT SUBMITTER:
Pacoima Neighborhood
Council



PRIMARY BENEFITS



Tujunga Watershed Project



www.EcoRain.com



Stormwater.wordpress.com/2007



Maps.Live.com/birdseye



Maps.Google.com



Seattle Public Utilities Department



Seattle Public Utilities Department



PROJECT DESCRIPTION:
Develop neighborhood street edge alternatives (SEA) to include addition of adjacent surplus property, create a swale network and promoted water capture, increase pervious surfaces, planting of native species and capture and infiltration of stormwater and remediation of polluted surface water runoff.

Preferred Project No. 23

Project Information Summary	Integration Opportunities
Pacoima Neighborhood Retrofit	Adds value to local recharge and stormwater treatment when combined with Osborne, San Fernando Road and Van Nuys bike paths as well as the Tujunga Wash Greenway.
Project Submitter	Project Benefits
Pacoima Neighborhood Council	Increases local water supply by more than 1,000 acre-feet annually and improves water quality.
On-line information	Satisfies four of nine goals from the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Edwin Ramirez, (818) 590-4992	Presents Opportunities to capture storm water on site(s), decrease irrigation needs and beautify the neighborhood. Project is feasible as there are no existing sidewalks or storm drains within the neighborhood. This project can serve as a precedent for long range cost effective means for building and/or improving communities.
Jurisdiction	Work Product or Deliverable
City of Los Angeles	Final deliverables include planning preparations and design, swales, sidewalks, the regrading of courtyards as detention basins and planting a drought tolerant landscape.
Latitude and Longitude Coordinates	Jurisdictional Areas
N 34 deg, 16' 00," W 118 deg 25' 03"	City of Los Angeles, Council District 7 (Pacoima Neighborhood Council) - Located in CRA Project Area but not an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	
\$100,000 to 500,000	
Status	
Conceptual	
Target Date for Implementation	
January, 2009	
Anticipated Date of Completion	
January, 2010	



Tujunga Watershed Project



pe.com

PROJECT DESCRIPTION:

Develop local recreation trail system to create continuous access over seven miles of the Pacoima Wash easement from the Angeles National Forest to local parks, Pacoima spreading Grounds, Pacoima Wash Diversion and urban parks, including Ritchie Valens. Trail will accommodate bicycle, equestrian and pedestrian use and include decomposed granite, native landscaping and future access to spreading grounds. Flood control easements currently exist along the length of Pacoima Wash, though access is not permitted.



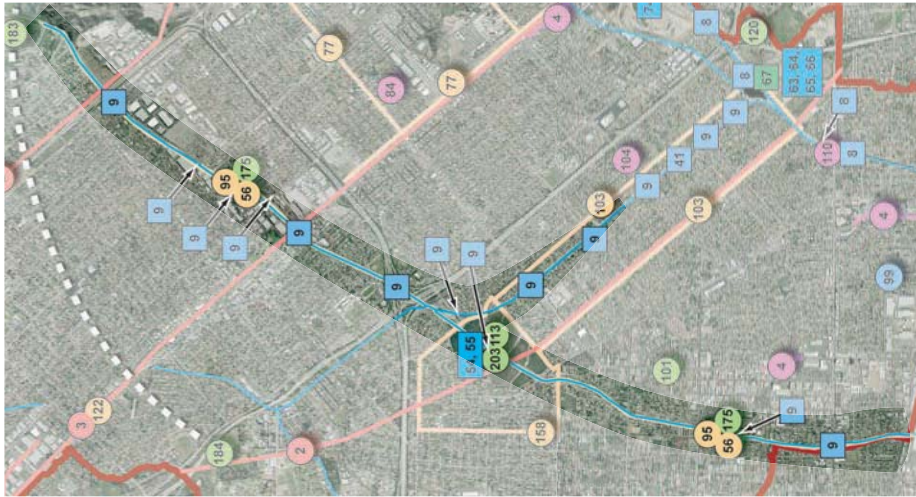
geocities.com.rhori



Photo by NPS



Photo by MRCA



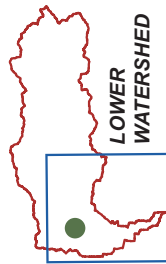
bike.route.com

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Pacoima Wash Recreation Trail

PROJECT SUBMITTER:
Panorama City Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project

Preferred Project No. 24

Project Information Summary	Integration Opportunities
Pacoima Wash Recreation Trail	Creates access from the Angeles Forest through the daylight portion of Pacoima Wash. Regional trails to link Sylmar, City of San Fernando, Mission Hills, Pacoima, Arleta, North Hills East and Panorama City. Extended project along the Pacoima Diversion Channel will connect it to the Tujunga Wash Greenway providing access to Hansen Dam and the Los Angeles River.
Project Submitter	Project Benefits
Panorama City Neighborhood Council	Increases local water supply by approximately 100 acre-feet per year and improves water quality, enhances 17 acres of land for local public access, open space, habitat and recreation.
On-line information	Satisfies seven of nine goals of the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Tony Wilkinson, (818) 785-9355 info@pcnc.us	Project is a cornerstone access project for providing recreational links through 8 stakeholder boundaries including the Angeles National Forest. Project is feasible with permission by Army Corps. Project is ready and more easily constructed due to the existing flood channel conditions. Project would link half of the watershed providing a much desired recreational experience in the watershed. The recreational trail builds on the success of the Los Angeles River access projects and aims link to the greater system via the Tujunga Wash Greenway.
Jurisdiction	Work Product or Deliverable
City of Los Angeles	Final deliverables include bike, equestrian and pedestrian trails, decomposed granite, native planting.
Panorama City Neighborhood Council	Jurisdictional Areas
Latitude and Longitude Coordinates	City of Los Angeles, Council District 7 (Mission Hills Neighborhood Council) - Located in CRA Project Area but not an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
N 34 deg 16' 55," W 118 deg 25' 44"	
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	
\$100,000 to 500,000	
Status	
Conceptual	
Target Date for Implementation	
2009	
Anticipated Date of Completion	
2014	



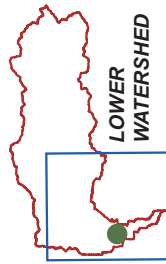
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Panorama City Creek
Restoration

PROJECT SUBMITTER:
Panorama City
Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



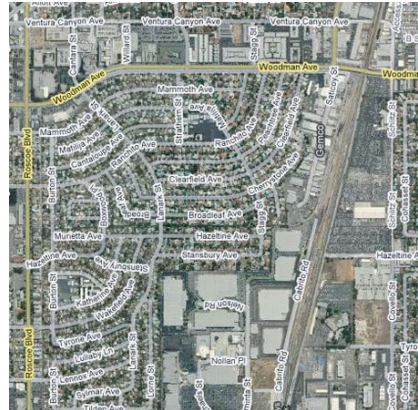
Lincoln Creek, Auburn - www.hamfordarc.com



Las Virgenes Creek, photo courtesy of Jessica Hall; Concept - www.CityofCalabasas.com



Maps.Live.com/birdseye



Maps.Google.com

PROJECT DESCRIPTION:

Restore a half-mile long neighborhood creek three acres of land to include concrete removal, regrading of banks, recreation trail on one side, invasive weed removal and California native plants. Create swale network for stormwater capture, infiltration and surface water pollution remediation.



Strawberry Creek, Berkeley - www.ecocitybuilders.org

Preferred Project No. 25

Project Information Summary	Integration Opportunities
Panorama City Creek Restoration	Connections to Pacoima Wash and Los Angeles River
Project Submitter	Project Benefits
Panorama City Neighborhood Council	Increases local water supply by 50 acre-feet annually, generally improves water quality and enhances three acres of land for public access, open space, habitat and recreation.
On-line information	Satisfies seven of nine goals under the Tujunga Watershed Management Plan.
Contact Information	
Tony Wilkinson, (818) 785-9355 info@pcnc.us	
Jurisdiction	Additional Considerations
City of Los Angeles Panorama City Neighborhood Council	Opportunity for the neighborhood to become stewards of their backyard creek, which is currently viewed as an eyesore. Project is feasible as all of the proposed restoration culvert is daylight and the existing infrastructure would not be touched. Project can be visible to the surrounding communities. Project will redefine a creek and provide an aesthetic and functional watershed demonstration.
Latitude and Longitude Coordinates	
34.2174899, -118.438568	
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Final deliverables include a 0.5 mile long, 3 acre neighborhood creek, with soft bottom, naturally stabilized banks, recreation trail on one side, invasive weed removal and replanted with California native plantings.
Status	
(Not reported by submitter)	
Target Date for Implementation	Jurisdictional Areas
2009	City of Los Angeles, Council District 6 (Panorama City Neighborhood Council) - Located in CRA Project Area but not an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
2010	



Tujunga Watershed Project



Maps.Live.com



PROJECT DESCRIPTION:

Develop neighborhood parks with native plantings, proposed swale network, retention basin, passive recreation component, and community garden. Vacant land is located five blocks from Pacoima Wash.



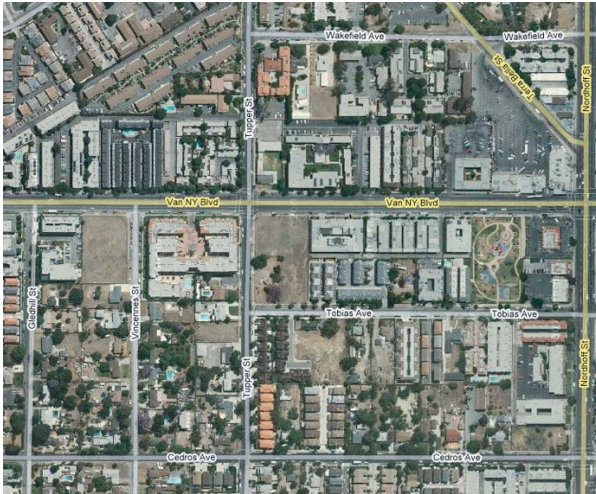
Maywood River Park photo by NPS



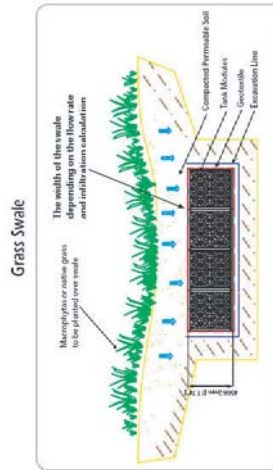
SIPA Garden photo by NPS



www.plangreen.net



Maps. Google.com



www.constructionecoservices.com



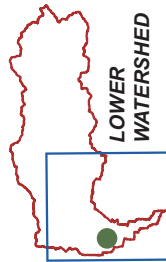
www.geocities.com/rhori

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
 Van Nuys Boulevard Pocket Parks

PROJECT SUBMITTER:
 Panorama City Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project

Preferred Project No. 26

Project Information Summary	Integration Opportunities
Van Nuys Blvd Pocket Parks	Pacoima Wash Recreation Trail
Project Submitter	Project Benefits
Panorama City Neighborhood Council	Increases local ground water supply by 50 acre-feet per year as a benefit to providing open space to increase on-site infiltration and improve water quality while adding park land for public access, incidental habitat and recreation gains.
On-line information	Satisfies five of nine goals from the Tujunga Watershed Management Plan.
Contact Information	
Tony Wilkinson, (818) 785-9355 info@pcnc.us	
Jurisdiction	Additional Considerations
City of Los Angeles Panorama City Neighborhood Council	Project provides a unique opportunity for community gathering combined with a watershed underbody. Projects are feasible with willing seller. Ready to purchase land and begin design. Highly visible projects fronting onto Van Nuys Blvd and surrounded by apartment building, church and residences.
Latitude and Longitude Coordinates	
34.2405898, -118.450881	
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Final deliverables include the purchase and design of vacant Van Nuys Boulevard parcels to create neighborhood parks with a swale network, retention basin, passive recreation component, and community garden planted with native plantings.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Area
2008	City of Los Angeles, Council District 7 (Panorama City Neighborhood Council) - Located in CRA Project Area but not an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 27th District, California
Anticipated Date of Completion	
2010	



Tujunga Watershed Project



PROJECT DESCRIPTION:

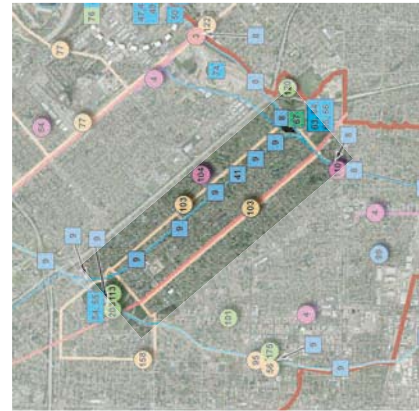
Develop recreation trail loop connecting the Pacoima Spreading Grounds, Tujunga Spreading Grounds and Branford Spreading Grounds by utilizing the LADWP power transmission line easement and Pacoima Diversion Channel. The trail will include separate pedestrian trails and bike paths, swales, native planting and pocket parks with future access to spreading grounds, if permitted. This trail and bike path would provide a safe route for alternative to cars, connecting area residents to work and schools. The project would also create detention basins within the powerline easement to reduce existing flooding issues and provide an opportunity to capture storm water before it flows into the spreading grounds.



images.nashville.com



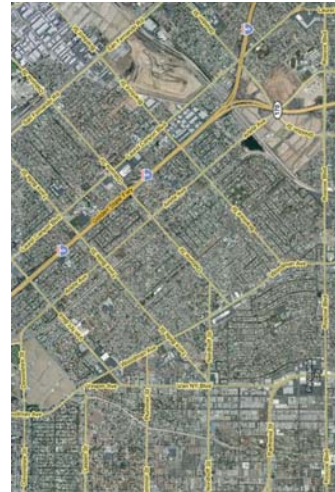
www.irvinehousingblog.com



detroitrising.com



www.ci.seal-beach.ca.us



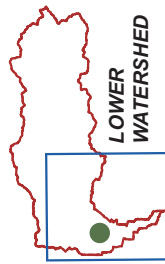
Maps.Google.com

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Arleta Greenbelt

PROJECT SUBMITTER:
Arleta Neighborhood Council



LOWER WATERSHED

PRIMARY BENEFITS



Tujunga Watershed Project

Preferred Project No. 27

Project Information Summary	Integration Opportunities
Arleta Greenbelt	Transmission Line Easement, Pacoima Recreational Trail, Tujunga Wash Greenway and regionally proposed bicycle and hiking trail networks in Sun Valley, Pacoima and Foothills neighborhoods.
Project Submitter	Project Benefits
Arleta Neighborhood Council	Increases local water supply by 100 to 1,000 acre-feet annually, generally improves water quality and enhances land for public access, open space, habitat and recreation.
On-line information	Satisfies seven of nine goals from the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Albert Plantanida, (818) 897-9122	Project aims to improve the existing flooding problems in Arleta by capturing and infiltrating water, while creating a recreational component. Project would create a loop trail accessible to the broader Arleta neighborhood with the opportunity to connect to the larger trail proposals. This project builds on the success of the Los Angeles River projects and creates a functional, aesthetic, recreational, educational, benefit from underutilized watershed land.
Jurisdiction	Work Product or Deliverable
City of Los Angeles Arleta Neighborhood Council	Deliverables include separate pedestrian trails and bike paths, swales, native planting. The project also creates detention basins within the powerline easement to reduce existing flooding issues and provide an opportunity to capture water before it flows into the spreading grounds.
Latitude and Longitude Coordinates	Jurisdictional Areas
34.2357199, -118.430527	City of Los Angeles, Council District 6 (Arleta Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	
Less than \$100,000	
Status	
Conceptual	
Target Date for Implementation	
2010	
Anticipated Date of Completion	
2015	



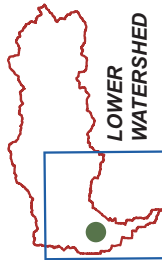
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Arleta Neighborhood Retrofit

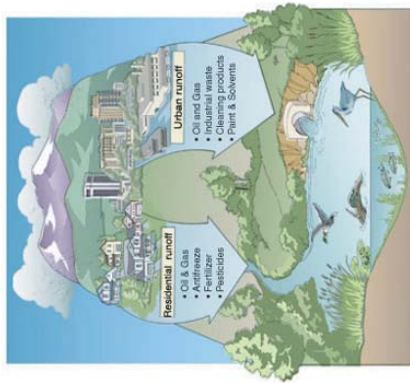
PROJECT SUBMITTER:
Arleta Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



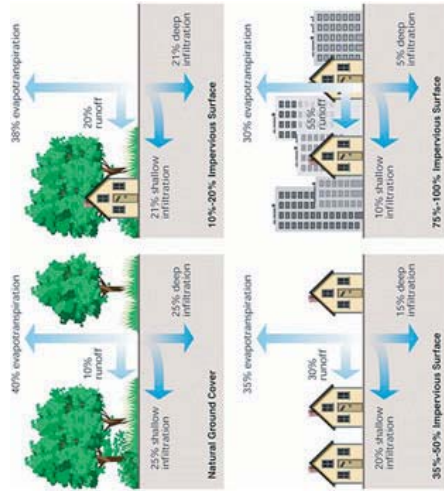
cityofmarion.org



www.LASGRWC.org



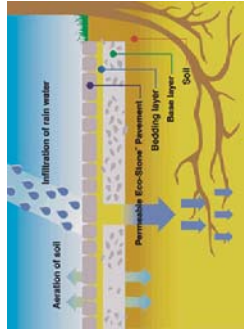
www.plangreen.net



www.planningwithpower.org



www.healthywaterways.org



www.lifestyleenvironmentsinc.com

PROJECT DESCRIPTION:

Build "street edge alternative" project to remedy existing flooding problems in a neighborhood devoid of sidewalks and gutters. Capitalize on the existing drainage patterns and create swale systems and a trail network with native plantings and pervious gutters to capture and clean stormwater in a 88 acre area, providing natural means for flood protection and decreasing storm flows to the Pacoima Diversion Channel.

Preferred Project No. 28

Project Information Summary	Integration Opportunities
Arleta Neighborhood Retrofit	Project connects with the Pacoima and Tujunga Spreading Grounds and the Arleta Greenbelt.
Project Submitter	Project Benefits
Arleta Neighborhood Council	Increases local water supply by 100 to 1,000 acre-feet annually, generally improves water quality and enhances land for public access, open space, habitat and recreation.
On-line information	Satisfies seven of nine goals from the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Albert Piantanida, (818) 897-9122 macyet@aldehydia.net	Project addresses current flooding issues in the Arleta neighborhood between Interstate 5 and the Pacoima Diversion Channel, suggests retrofit options and subscribes a means to capture, infiltrate and clean the stormwater. Project is feasible and similar to proposals in Sun Valley and in the Seattle SEA demonstration projects, building on the SEA street success as well as the Sun Valley proposals to create a solution to flooding, water loss and public access.
Jurisdiction	Work Product or Deliverable
City of Los Angeles Arleta Neighborhood Council	Deliverables include a swale system and trail network with native plantings, and pervious gutters to capture and clean stormwater in a 88 acre area.
Latitude and Longitude Coordinates	Jurisdictional Areas
N 34 deg 14' 31," W 118 deg 25' 34"	City of Los Angeles, Council District 6 (Arleta Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Estimated Capital Cost	
Greater than 50 Million	
Estimated Annual O&M Costs	
\$100,000 to 500,000	
Status	
Conceptual	
Target Date for Implementation	
2010	
Anticipated Date of Completion	
2013	



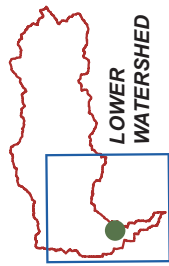
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Grace Community Church of the Valley Parking Retrofit

PROJECT SUBMITTER:
Arleta Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



www.LASGRWC.org



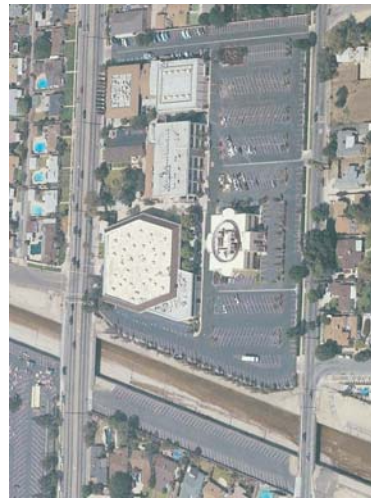
www.LASGRWC.org



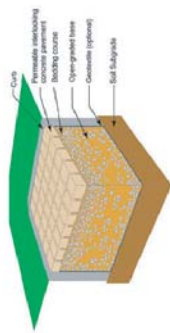
plcasaweb.google.com



www.LASGRWC.org



Maps: Google.com and Maps.Live.com/birdseye



ings.ebuild.com



PROJECT DESCRIPTION:

Incorporate medians for shade trees and stormwater capture, the use of permeable paving and gutters in the approximately 2.75 acre parking lot at Grace Community Church of the Valley to provide for infiltration of storm water, which currently flows directly into Tujunga Wash. Site presents an opportunity for public-private partnership to facilitate possible future development of and access to Tujunga Greenway.

Preferred Project No. 29

Project Information Summary	Integration Opportunities
Grace Community Church of the Valley Parking Retrofit	Project connects with the Tujunga Spreading Grounds, the Arleta Greenbelt, and the Tujunga Wash Greenway.
Project Submitter	
Arleta Neighborhood Council	
On-line information	Project Benefits
	Increases local water supply by 1 to 100 acre-feet annually, generally improves water quality over a collection area of 2.75 acres.
Contact Information	
Albert Plantanida, (818) 897-9122, macyet@adelphia.com	Satisfies four of the nine goals from the Tujunga Watershed Management Plan.
Jurisdiction	
City of Los Angeles Arleta Neighborhood Council	
Latitude and Longitude Coordinates	Additional Considerations
34.2224229, -118.423202	Opportunity to prevent metals, sediment and oil from flowing directly into Tujunga Wash. The project would be visible as it would reflect upon the historic Grace Community Church of the Valley.
Estimated Capital Cost	
\$100,000 to 500,000	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Deliverables include median cuts with curb-cuts the use of permeable paving and gutters and the planting of drought tolerant plants.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
2009	City of Los Angeles, Council District 6 (Arleta Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
2010	



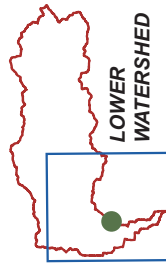
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Tujunga Wash Outdoor
Classroom

PROJECT SUBMITTER:
Sun Valley
Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



Arroyo Pescadero amphitheater photo by NPS



Market Creek Plaza on Chollas Creek, photo by NPS



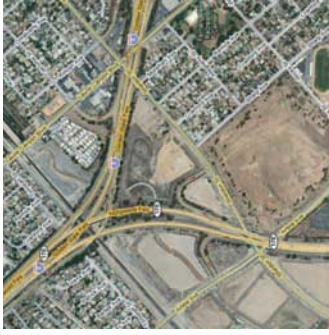
Steelhead Park photo by NPS



Richard Lillard Outdoor Classroom photo by NPS



Maps.Live.com



Maps.Google.com



PROJECT DESCRIPTION:

Improve 13 acres of LADWP property with a swale system and trail, an amphitheater, and an outdoor classroom for two local schools with a native plant garden, outdoor education center and sports fields. Site would be designed to capture and infiltrate stormwater.

Preferred Project No. 30

Project Information Summary	Integration Opportunities
Tujunga Wash Outdoor Classroom	Tujunga Spreading Grounds, Sun Valley Greenbelt, Sun Valley Outdoor Classroom, Tujunga Wash Greenway and San Fernando Road Trail
Project Submitter	
Sun Valley Neighborhood Council	
On-line information	Project Benefits
	Increases local water supply by approximately 500 acre-feet per year. Demonstrates local ground water recharge concepts and enhances 13 acres of land for public access, open space, habitat and recreation.
Contact Information	
Mark Hanna, (213) 367-1289 or mark.hanna@ladwp.com	Satisfies eight of the nine project goals of the Tujunga Watershed Management Plan. Classroom project can be incorporated into the Tujunga Spreading Grounds Enhancement Project (#18).
Jurisdiction	
City of Los Angeles Sun Valley Neighborhood Council	
Latitude and Longitude Coordinates	Additional Considerations
34.2305465, -118.407491	Public property currently used for construction staging located near Francis Polytechnic Junior High School and North Hollywood Poly Community Adult School. Property cannot be sold or reclassified as surplus.
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
\$100,000	(None reported by submitter)
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
2012	City of Los Angeles, Council District 6 (Sun Valley Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 28th District, California
Anticipated Date of Completion	
2013	



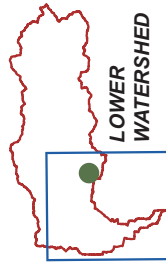
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Sunland Park Retrofit

PROJECT SUBMITTER:
Sunland-Tujunga Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



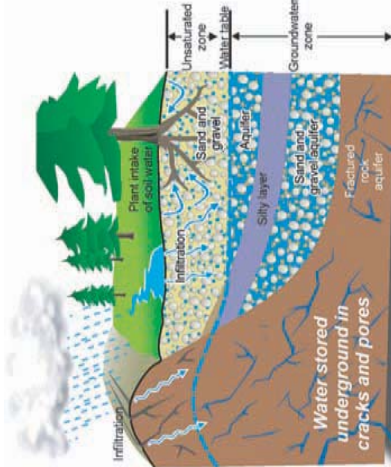
www.healthofchildren.com



Yellow Warbler photo by Dan Ng, NPS



Maps.Live.com/birdseye



geoscape.nrcan.gc.ca



www.sw-soil.com



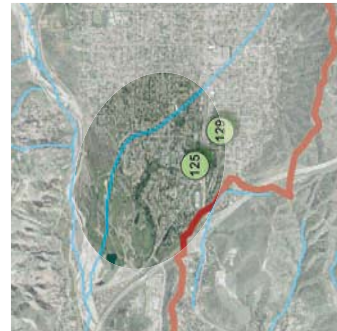
www.gradindexcavation.com



www.LASGRWC.org



www.ci.sandy.or.us



Maps.Google.com

PROJECT DESCRIPTION:
Retrofit and update a 16 acre park with existing large ball fields and adjacent storm drains so that stormwater is captured, infiltrated to offset irrigation use, and plant with native species.

Preferred Project No. 31

Project Information Summary	Integration Opportunities
Sunland Park Retrofit	Emulates other successful projects at local public facilities.
Project Submitter	
Sunland-Tujunga Neighborhood Council	
On-line information	Project Benefits
	Increases local water supply by approximately 100 acre-feet per year. Enhances ecological function of existing park lands.
Contact Information	Satisfies five of nine goals from the Tujunga Watershed Management Plan.
Jeannine Crowley, (818) 951-7411 secretary@stnc.org	
Jurisdiction	
City of Los Angeles Sunland-Tujunga Neighborhood Council	
Latitude and Longitude Coordinates	Additional Considerations
N 34 deg, 15' 39", W 118 deg 19' 19"	Important to increase permeable paving.
Estimated Capital Cost	
\$500,000 to 1 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Final deliverables include a swale network, retention basin, passive recreation component, community garden and increase permeable paving.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
January, 2009	City of Los Angeles, Council District 2 (Sunland Tujunga Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 38 California State Senate District 17 U.S. House of Representatives, 27th District, California
Anticipated Date of Completion	
January, 2010	



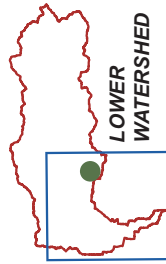
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Wyngate Street Pocket
Park

PROJECT SUBMITTER:
Sunland-Tujunga
Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



www.wildscaping.com



Gardening Shortcuts.Blogspot.com



www.LasFlittas.com



Maps.Google.com



Bresee Foundation park - www.LASGRWC.org



Los Feliz gateway to L.A. River, photo by NPS



PROJECT DESCRIPTION:

Develop a 1.2-acre neighborhood pocket park. Regrade the site to capture storm water for infiltration from adjacent parking lot and neighborhood, plant with native California species that are appropriate for the climate zone.



Maps.Live.com

Preferred Project No. 32

Project Information Summary	Integration Opportunities
Wyngate Street Pocket Park	Demonstrates uses of natural resources in local urban area to encourage widespread use and restoration.
Project Submitter	
Sunland-Tujunga Neighborhood Council	
On-line information	Project Benefits
	Increases local water supply by approximately 50 acre-feet per year, generally improves water quality, adds 1.2 acres of park land with an emphasis on water conservation and enhanced habitat.
Contact Information	Satisfies five of nine goals from the Tujunga Watershed Management Plan.
Jeannine Crowley, (818) 951-7411 secretary@stnc.org	
Jurisdiction	
City of Los Angeles Sunland-Tujunga Neighborhood Council	
Latitude and Longitude Coordinates	Additional Considerations
34.2581807, -118.317586	Enhance and expand recreational opportunities to meet needs of local communities, increase park acreage required for local residents.
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Neighborhood pocket park would be graded to capture storm water for infiltration and planted with California native plants.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
January, 2009	City of Los Angeles, Council District 2 (Sunland Tujunga Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 38 California State Senate District 17 U.S. House of Representatives, 27th District, California
Anticipated Date of Completion	
January, 2010	



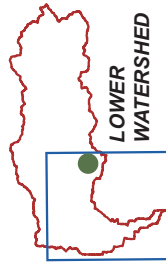
Tujunga Watershed Project

Tujunga-Pacoima
Watershed Plan



PROJECT TITLE:
Verdugo Hills
High School Retrofit

PROJECT SUBMITTER:
Sunland-Tujunga
Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



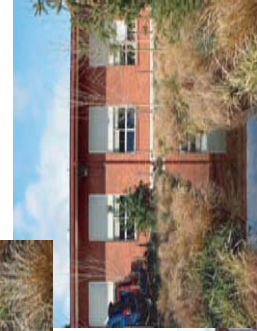
Maps.Google.com



Maps.Live.com

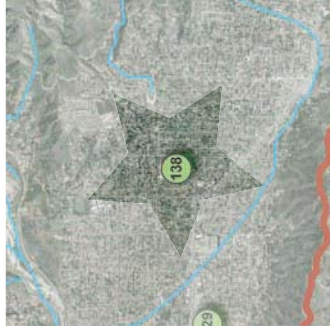


Mount Tabor Middle
School Rain Garden
Portland, OR



www.sztukakrajobrazu.pl

Broadous Elementary School Retrofit
www.SunValleyWatershed.org



PROJECT DESCRIPTION:

Reconstruct playfields to capture and percolate water underground, create of a swale system, amphitheater to serve second use as retention basin, and an outdoor classroom with native plants for student education and use.

Preferred Project No. 33

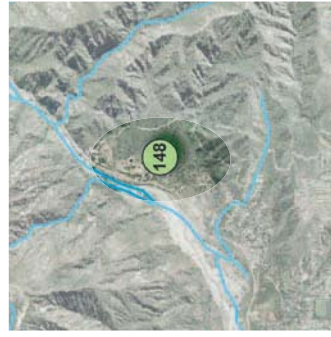
Project Information Summary	Integration Opportunities
Verdugo Hills High School Retrofit	Central to the upper urban Sunland-Tujunga sub-basin of the Tujunga Watershed.
Project Submitter	
Sunland-Tujunga Neighborhood Council	
On-line information	Project Benefits
	Increases local water supply by approximately 100 acre-feet per year, generally promotes water quality improvement. Project has the potential to improve ecological function of the existing school grounds.
Contact Information	Satisfies four of nine goals from the Tujunga Watershed Management Plan.
Jeannine Crowley, (818) 951-7411 secretary@stnc.org	
Jurisdiction	
City of Los Angeles Sunland-Tujunga Neighborhood Council	
Latitude and Longitude Coordinates	Additional Considerations
34.2620951, -118.299443	Strategy for optimum use of local water resources. Prevent flooding and prevent trash from washing into local storm drains.
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	School district agreement, civil engineer's plan, site development proposal, and other preparatory documents. Scope of work involves disruption of school grounds and coordination between school calendar and installation schedule.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
January, 2009	City of Los Angeles, Council District 2 (Sunland Tujunga Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 38 California State Senate District 29 U.S. House of Representatives, 25th District, California
Anticipated Date of Completion	
January, 2011	



Tujunga Watershed Project



Photo by Jim Gramann, NPS



PROJECT DESCRIPTION:

Preserve 125 acres of land for wildlife habitat and migration, access to Rim of the Valley trail, and outdoor classroom development with possible added use for detention basins.



Calphotos. Berkeley.edu, by Ricky Grubb



Maps. Google.com

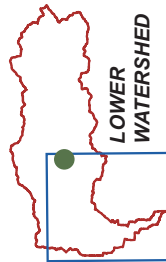


Maps.Live.com

Tujunga-Pacoima Watershed Plan

PROJECT TITLE:
Angeles Gateway Preserve

PROJECT SUBMITTER:
Sunland-Tujunga Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project

Preferred Project No. 34

Project Information Summary	Integration Opportunities
Angeles Gateway Preserve	MRCA-County Park Project
Project Submitter	Project Benefits
Sunland-Tujunga Neighborhood Council	Places 125 acres in conservation and protects downstream water quality from future impacts, should the property have been otherwise developed, and assure long-term ecological function.
On-line information	Satisfies five of nine goals from the Tujunga Watershed Management Plan.
Contact Information	
Jeannine Crowley, (818) 951-7411 secretary@stnc.org	
Jurisdiction	Additional Considerations
City of Los Angeles Sunland-Tujunga Neighborhood Council	Extremely important to protect existing open spaces and maintain ecological health within the watershed. Vacant land is otherwise in jeopardy of development. Site is highly visible, near existing Little League baseball fields and Big Tujunga Canyon Road and river. Community is attempting to preserve a sub-watershed and provide a buffer between development and wilderness.
Latitude and Longitude Coordinates	
34.2822913, -118.289967	
Estimated Capital Cost	
\$10 to 50 Million	
Estimated Annual O&M Costs	Work Product or Deliverable
Less than \$100,000	Opportunity to preserve 125 acres of land for wildlife habitat and migration.
Status	
Conceptual	
Target Date for Implementation	Jurisdictional Areas
Now pending	City of Los Angeles, Council District 2 (Sunland Tujunga Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 38 California State Senate District 29 U.S. House of Representatives, 25th District, California
Anticipated Date of Completion	
Pending	



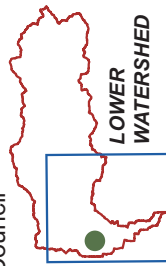
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
Mission Hills Greenbelt

PROJECT SUBMITTER:
Mission Hills Neighborhood Council, with Arleta Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



BayTrail.ABAG.ca.gov



www.OCParks.com



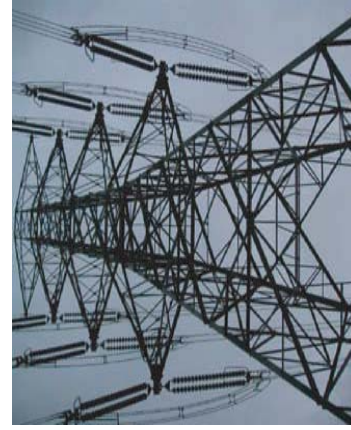
Maps.Live.com



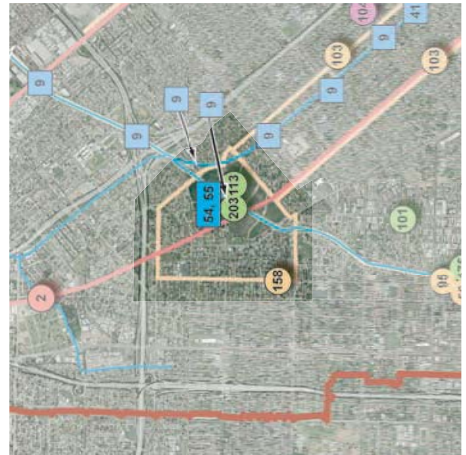
NewAlmaden.org



NewAlmaden.org



www.nationalemendmentomain.com



Maps.Google.com



PROJECT DESCRIPTION:
Create a linear park with a swale, permeable trail systems and detention basins that connect park area and surrounding vacant parcels to Pacoima Spreading Grounds. Grade for stormwater capture, infiltration and remediation and plant with California native species.

Preferred Project No. 35

Project Information Summary	Integration Opportunities
Mission Hills Greenbelt	Pacoima Spreading Grounds Optimization, Pacoima Wash Greenway, Transmission Line Easement Project
Project Submitter	Project Benefits
Mission Hills Neighborhood Council with support from Arleta NC	Increases local water supply by 1 to 100 acre-feet annually, generally improves water quality and enhances land for public access, open space, habitat and recreation.
On-line information	Satisfies seven of the nine goals defined by the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Lee Bauer, (818) 891-2722 dclb@earthlink.net	Project provides recreational with a watershed functional component, cleaning the storm water run-off before it enters Pacoima Spreading Grounds and Wash. The project is feasible as land is currently vacant and partially encumbered with a powerline easement. Project will create accessibility linking the Pacoima Spreading Grounds and Pacoima Wash Greenway.
Jurisdiction	Work Product or Deliverable
City of Los Angeles	Final deliverables include a linear park with a swale, permeable trail systems and detention basins, and planted with native California species.
Latitude and Longitude Coordinates	Jurisdictional Areas
N 34 deg , W 118 deg	City of Los Angeles, Council District 7 (Mission Hills Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 39 California State Senate District 28 U.S. House of Representatives, 27th and 28th Districts, California
Estimated Capital Cost	
\$1 to 10 Million	
Estimated Annual O&M Costs	
Less than \$100,000	
Status	
Conceptual	
Target Date for Implementation	
2009	
Anticipated Date of Completion	
2011	



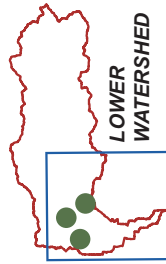
Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan



PROJECT TITLE:
"Tujunga" Tataviam Village Parks

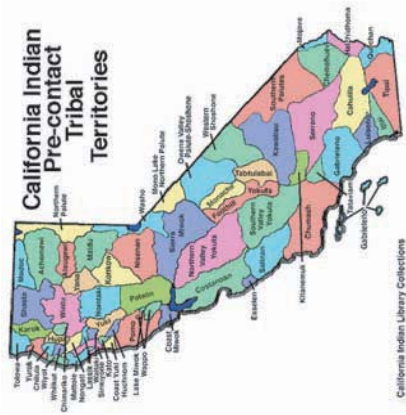
PROJECT SUBMITTER:
Tataviam



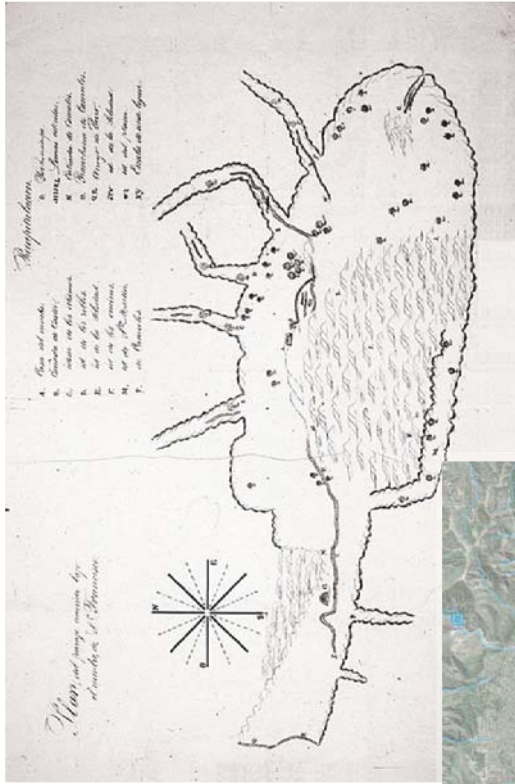
PRIMARY BENEFITS



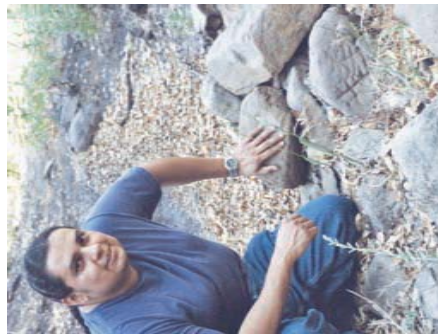
Tujunga Watershed Project



www.kstrom.net



www.scvhistory.com



www.wrmag.net



www.scvhistory.com



www.heritageedu.com



www.ci.Carson.ca.us

PROJECT DESCRIPTION:

The Tataviam Village Park would include an interpretive center, trails, outdoor classroom, habitat, native plantings, water capture, passive recreation, kiish (traditional dwellings) and infiltration basins.

Preferred Project No. 36

Project Information Summary	Integration Opportunities
"Tujunga" Tataviam Village Parks	The adjacent Tujunga Wash and Orcas Park provide trail linkages to Little Tujunga and Hansen Dam and Recreation Areas. "Achoicominga" Park, "Pashanga" Tataviam Park-Pacoima Wash would serve as a multi-location cultural and environmental learning spaces telling the story of the Tataviam through time and space.
Project Submitter	Project Benefits
Tataviam	Increases local water supply by 1 to 100 acre-feet annually and enhances 60 acres of land for public access, open space, habitat and recreation.
On-line information	
www.tataviam.us	Satisfies eight of nine goals from the Tujunga Watershed Management Plan.
Contact Information	Additional Considerations
Rudy Ortega Jr., (818) 837-0794 rortega@tataviam.us	Project serves as a cultural and environmental educational opportunity and provides storm water capture for infiltration while creating habitat. Project is feasible and public land is currently available. Project is ready for discussion with custodial agency to begin design phase of the project. The project creates a needed cultural destination by recreating native dwellings with interpretive center for the visitors and native vegetation.
Jurisdiction	Work Product or Deliverable
City of Los Angeles	Project deliverables include design and construction of Tataviam structures, interpretive center with signage, detention basin, native plants and trails.
Latitude and Longitude Coordinates	Jurisdictional Areas
34.2715639, -118.363297	City of Los Angeles, Council District 7 (Foothill Trails & Sylmar Neighborhood Councils)
Estimated Capital Cost	- Not located in CRA Project Area, nor an EJ Area
\$1 to 10 Million	California State Assembly District 39
Estimated Annual O&M Costs	California State Senate District 20
\$100,000 to 500,000	U.S. House of Representatives, 27th District, California
Status	
Conceptual	
Target Date for Implementation	
2008	
Anticipated Date of Completion	
2009	



Tujunga Watershed Project

Tujunga-Pacoima Watershed Plan

PROJECT TITLE:
Hansen Dam Wildlife Lake Improvement

PROJECT SUBMITTER:
City of Los Angeles Recreation and Parks Pacoima Neighborhood Council



PRIMARY BENEFITS



Tujunga Watershed Project



Maps.Live.com



Photo by NPS



Maps.Google.com



www.CountyofSB.org

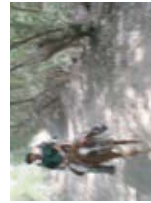


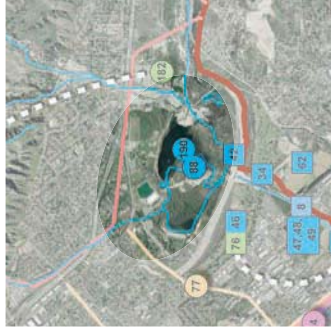
Photo by NPS



Maps.Live.com

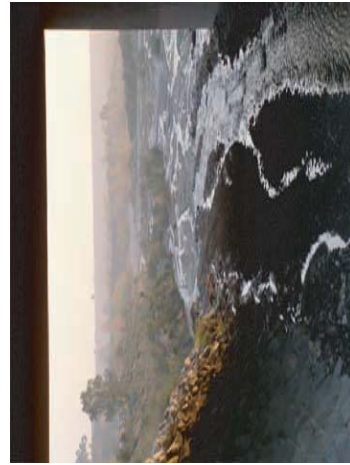


Little Tujunga Creek north of Foothill Blvd - Photo by NPS

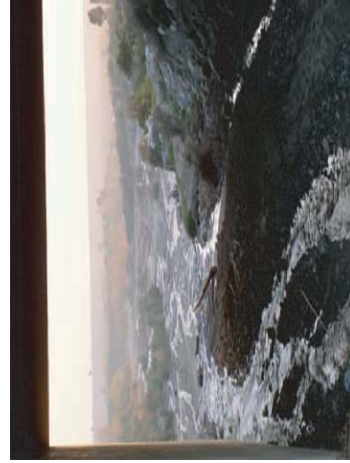


PROJECT DESCRIPTION:

Remove approximately 160 acres of sediment to restore aquatic habitat and increase dam storage capacity, install sediment gate on Hansen Dam to allow sediment migration and to sustain wildlife habitat. Enhance terrestrial wildlife habitat zones by restoring California native species, and create additional trail with interpretive signs and passive recreational opportunities.



Little Tujunga passes beneath Interstate 210 - Photographs by NPS



Preferred Project No. 37

Project Information Summary	Integration Opportunities
Hansen Dam Wildlife Lake Improvement	Relates to the Tujunga Wash Greenway, MRCA Parking Lot Project, Hansen Dam, Tujunga Watershed and Los Angeles River
Project Submitter	
City of Los Angeles Department of Recreation and Parks	
On-line information	Project Benefits
	Increases local water supply by approximately 200 acre-feet per year, improves water quality and enhances land and water for wildlife habitat and recreation.
Contact Information	Satisfies all nine goals of the Tujunga Watershed Management Plan.
Ramon Barajas, (818) 756-8189 ramediv@yahoo.com	
Jurisdiction	Additional Considerations
City of Los Angeles Pacoima Neighborhood Council	By widening the channel width, the project will optimize dam capacity, increase permeable surface area to promote water infiltration, and reduce pollutants and trash through bioremediation. There is the potential to offset costs by permitting gravel extraction. Project aims to protect habitat of endangered species and provide recreational, educational opportunities and trails for visitors.
Latitude and Longitude Coordinates	
34.2680771, -118.393935	
Estimated Capital Cost	Work Product or Deliverable
Greater than \$50 Million	Deliverables include restoration of habitat lake and increased dam storage capacity, installation of a sediment gate on Hansen Dam, habitat improvements and planting of California native species and creation of trails with interpretive signage.
Estimated Annual O&M Costs	
\$100,000 to 500,000	
Status	Jurisdictional Areas
Conceptual	City of Los Angeles, Council District 7 (Pacoima Neighborhood Council) - Not located in CRA Project Area, nor an EJ Area California State Assembly District 39 California State Senate District 20 U.S. House of Representatives, 27th District, California
Target Date for Implementation	
2011	
Anticipated Date of Completion	
2016	



Tujunga Watershed Project

Chapter 5 QUANTIFYING BENEFITS

5.1 Estimating Benefits

Can we afford clean water? Can we afford rivers and lakes and streams and oceans which continue to make possible life on this planet? Can we afford life itself? Those questions were never asked as we destroyed the waters of our nation, and they deserve no answers as we finally move to restore and renew them. These questions answer themselves.

—Senator Ed Muskie

Based on analysis of information provided by the stakeholders, if all the projects presented in Chapter 4 were implemented (the preferred project scenario), we could potentially increase our local water resources by 38,865 acre-feet a year. That's enough to provide nearly 80,000 families of four with enough drinking water for an entire year.

This would indicate that by making some simple modifications in our land use and development practices, we could have more water supply, better water quality, improved public safety, more open space, and increased habitat. How do we know this? In general terms, experience with recent projects can be extrapolated to other proposed projects of a similar type.

The County's Tujunga Wash Greenway Project now accepts diverted flows the Pacoima Wash Channel and infiltrates them to groundwater through a re-created linear stream adjacent to the channelized Wash (project #9 in Chapter 4 would extend the greenway northward). Based on initial monitoring, the County calculated that the project will infiltrate 325,000 gallons of water a day—enough water for 760 families of four for a year. As those flows are eliminated from the main channel flows, flood safety is also enhanced. Additionally, the project provides some native habitat and creates new pedestrian and bicycle linkages for the community.

The retrofits of Big Tujunga Dam (project #26 in Chapter 4) now underway are estimated to provide 5,000 acre-feet/year of additional storage capacity, enhancing flood safety. Some of these additional volumes can now be more effectively diverted to spreading grounds for infiltration. In addition, these more thoughtful flow releases can benefit aquatic species habitat.

NorthEast Trees recently partnered with the City of Los Angeles to create a “green street” on Oros Street in the Elysian Valley area, adjacent to the Los Angeles River just upstream of the confluence with the Arroyo Seco. The project captures stormwater runoff from private homes and a residential street and cleans it through a series of soil filtration and vegetative treatments before discharge to storm drains and the Los Angeles River. The project also improves and beautifies a neighborhood with new green infrastructure that addresses both storm and dry weather runoff.

The Los Angeles and San Gabriel Rivers Watershed Council (LASGRWC) is partnering with TreePeople and the City of Los Angeles to undertake a neighborhood retrofit on Elmer Avenue as a demonstration project of the Water Augmentation Study (WAS), in the Sun Valley watershed, immediately adjacent to the Tujunga/Pacoima. The project aims to capture stormwater and dry weather runoff from approximately 40 acres of residential land use to reduce significant flooding, improve water quality, increase groundwater recharge, and beautify the neighborhood with native habitat. The project is designed to handle greater than a 2-year storm or approximately 80 percent of the annual rainfall and is estimated to infiltrate greater than

13 acre-feet of water annually. This \$1.5- to \$2-million project is funded by California State Department of Water Resources, U.S. Bureau of Reclamation, and the WAS partner agencies.

The latest data from the 8-year-long LASGRWC Los Angeles Basin WAS shows that stormwater infiltrated to groundwater in the east San Fernando Valley causes no measurably negative impacts to groundwater quality for a wide range of contaminants. This indicates that storm water projects can be less heavily reliant on expensive technological solutions to meet water quality improvements, making them more cost effective overall. And every time we undertake a project, we learn more about what works. Further, the more projects we do, the greater the economies of scale.

LADWP is now using some rough estimates to calculate the potential water supply, flood reduction, and economic benefits of proposed projects. While the precise benefits are always project and site specific (i.e. soil conditions, extent of project, size of drainage area captured, etc.), the following general estimates can be utilized: In dry weather, soils are well drained and thus most receptive to infiltrating stormwater, so it is possible to get a lot of water (approximately 1 ft/hr) into the ground instantaneously. After complete saturation of the soil occurs (steady state), it is possible to infiltrate approximately 1 cubic foot per second (cfs) per acre of infiltration area. In a simulated wash or maintained recharge basin, that can equal 2 acre-ft/day. Every cfs infiltrated into the ground frees up downstream flood conveyance capacity by an equal amount.

While these amounts might not seem great, the water supply benefits can be estimated at about \$300 per acre-foot of recharged water, and LADWP pays approximately \$6,000 per cfs for peak conveyance costs. Assuming a project life of +/-30 years, the overall water supply benefit per acre-foot recharged equals \$9,000. And if flood control is considered an annual benefit, the overall flood protection benefit over the life of a project may potentially exceed \$180,000.

Based on the projects and conceptual estimates noted above, we can see that there would be clear benefits to undertaking a watershed approach for water supply, water quality, and public safety. Habitat benefits are harder to quantify, but implementation of the plan scenario would result in an overall increase in open space and associated native vegetation, and increased access to parks. In addition, it would be more cost effective overall than our current approach.

5.2 Modeling

But after observation and analysis, when you find that anything agrees with reason and is conducive to the good and benefit of one and all, then accept it and live up to it.

—Buddha

To estimate the potential benefits of the project scenario with reasonable accuracy, we need to have some means of establishing both current and changed conditions throughout the Tujunga/Pacoima Watershed. In order to do this, a numeric modeling approach was developed that would utilize and link three existing, accepted models: (1) a hydrodynamic model to simulate volumes, velocities, and sediment transport in stream channels; (2) a watershed model to simulate rainfall and evapotranspiration to determine runoff, infiltration, and water quality parameters; and (3) a groundwater model to simulate the long-term changes to groundwater elevation and flows.

These models were used to establish existing conditions, based on all the available data (See Appendix 12). To establish potential future conditions, the models would use the project data provided by stakeholders to identify how conditions would change under the proposed project scenario. By comparing the two results, the models would be able to estimate the comparative affects of implementing the project scenario.

Stakeholders that proposed projects were asked to provide as much of the relevant information as they could about the range of project benefits (refer to Appendix 9, project information form) to inform project

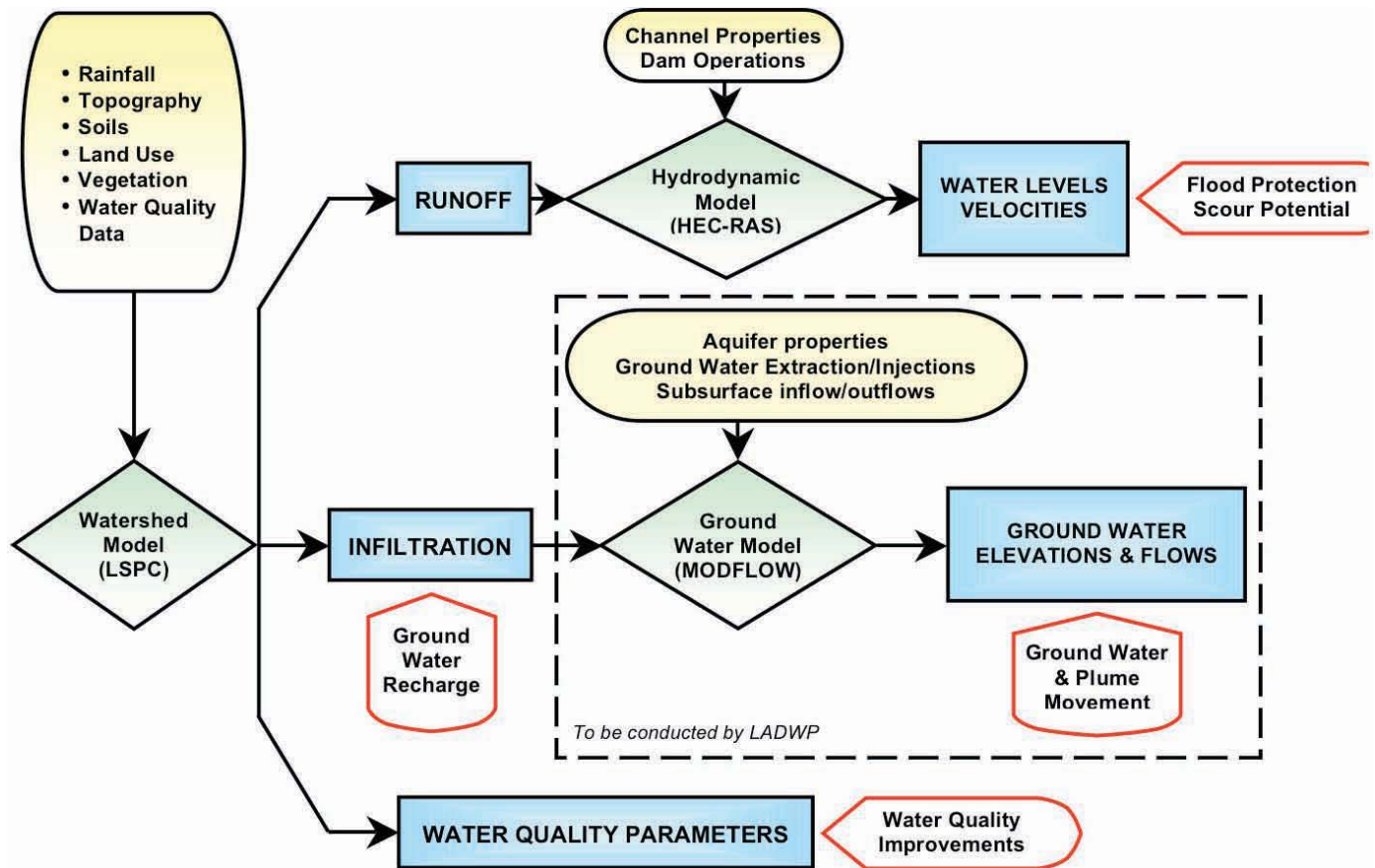


Figure 5-1 Modeling Approach Flowchart

Source: Everest Interational, 2005

evaluation and modeling. Although stakeholders provided information sufficient to establish a relative comparison of projects based on their potential benefits, as there is a wide range of expertise and resources among stakeholders, getting data specific enough to satisfy modeling requirements proved difficult.

In general, individuals, Neighborhood Councils, and NGOs that proposed projects lack sufficient capacity to analyze and provide data that is detailed enough to meet model criteria, and agencies lack the staff and resources to assist these stakeholders in developing this data. Some agencies also proved to be reluctant to share data developed for their own projects. Although the project schedule was extended to afford stakeholders more time, and numerous attempts were made to obtain and/or develop the information needed to conduct the modeling, the required information and data were not provided within the timeframe required to complete the modeling for this plan. This resulted in numerous information gaps that precluded implementation of the proposed modeling approach.

In response, the project team developed and proposed a modified modeling and analysis approach to stakeholders that would provide quantitative information within the limits imposed by the available time and information. Due to time constraints, the groundwater model had to be dropped.

An analysis of pre-development (i.e., historical land use) conditions was conducted to define an upper limit on the potential for land use modification to result in improvements in water quality, infiltration, and flood reduction. Comparing existing conditions to predevelopment conditions demonstrated that urban development has increased stormwater runoff, decreased groundwater infiltration, decreased water quality, and increased flood risk (e.g., increased water levels and velocities attributed to increased surface water runoff and channelization).

For the neighborhood-scale projects in the project scenario, the watershed model was used to estimate the potential water storage and water quality benefits. The model interpreted the neighborhood-scale projects as conversion of land use from urban to open, or conversion of impervious surfaces to pervious surfaces, and analyzed the benefits (i.e., decreased runoff, increased infiltration, and improved water quality) associated with those projects for which sufficient information was available. Based on the results of numerical watershed modeling and analysis of information provided by the stakeholders, implementation of the preferred scenario is expected to have significant benefits (38,865 acre-feet a year) to water storage, but relatively small benefits to water quality. The model found that these changes would be expected to make an impact on overall watershed flows but that the relatively small area of the projects relative to the entire watershed area would limit this impact. However, results showed that even modification of only 2 percent of the watershed area resulted in a 1 percent to 2 percent reduction in storm flows and associated pollutant loads, thus implementation of additional neighborhood-scale projects over time could eventually yield significant water quality benefits.

Additionally, projects like Elmer Street or the Tujunga Wash Greenway can accommodate and treat runoff from areas larger than the project site itself. And as pollutant loads in runoff may vary depending on land use, focusing projects in specific areas could create significant improvements where pollutant loads are greatest. Thus 10 percent of the land in a relatively small drainage area may accomplish 80 percent of the needed improvements. Because infiltration rates, pollutant loads, and pollutant-removal efficiencies are all site specific and project-type specific, project siting and design will substantially affect the resultant benefits.

Although implementation of the large-scale projects was not analyzed to evaluate benefits to water quality, it is unlikely that most of these projects would yield substantial improvements in water quality. This is because most of the large-scale projects would be implemented in the upper watershed or just downstream of the dams, and most pollutants enter the system below these locations in the urbanized (downstream) portion of the watershed. This suggests that some combination of large-scale and neighborhood-scale projects will be needed to maximize stormwater infiltration and manage pollutant loads.

Implementation of the neighborhood-scale projects would yield relatively small reductions in surface water runoff during extreme storm events, thereby producing small benefits during flood conditions. However, implementation of additional neighborhood-scale projects over time could eventually yield significant reductions in surface water runoff that could produce greater benefits during flood conditions. In addition, implementation of the neighborhood-scale projects could result in substantial flood benefits for local areas (e.g., city streets) under smaller events (e.g., 5-year or 10-year storms). Implementation of the large-scale projects was not analyzed to evaluate flood benefits. However, most of the large-scale projects would be implemented in the upper watershed or just downstream of the dams, which is where most storm flows enter the system so there is potential for significant improvements in flood management.

While the modified modeling approach did not provide the originally hoped for level of accuracy, the process itself produced other useful outputs. The U.S. Army Corps of Engineers (USACE) maintains a flood model for the entire Los Angeles River that is used for all planning level analyses and permitting activities conducted along the river. Whenever this model is modified for use on a project, it must first be approved through the USACE before it can be utilized for existing and future applications. The flood model utilized for this plan was a hydrodynamic, steady state (steady state means no changes in time) version of the USACE model that was modified through a preliminary study of the Tujunga Wash, which was funded by the California Coastal Conservancy and undertaken by The River Project in 2002. In the early phase of this project, the USACE approved those modifications to their model, thereby advancing development of the flood model for the Los Angeles River system. An unsteady state version of the flood model was developed for this plan and will be made available to all stakeholders, including the USACE, further advancing flood model development for the Los Angeles River system.

A unique aspect of this plan's development was the integration of numerical modeling throughout the watershed management planning process. Many watershed management planning efforts identify the need

for watershed-scale analyses and modeling, so the inclusion of numerical modeling from the start of the effort was deemed a worthy endeavor. However, implementation of the numerical modeling proved difficult for many reasons, some of which are described above. It is hoped that this effort can inform future watershed management planning efforts such that success can be achieved.

If future watershed modeling in a transparent environment is to be successful, then one of two things needs to happen. Either the work needs to be led by a NGO with full sharing of information/data at all levels or one of the primary stakeholder agencies needs to lead the modeling and data collection through a transparent process involving active communication of all aspects of the work with all stakeholders. Although the modeling did not produce anticipated results, this effort demonstrates that an improvement in collaboration and information sharing would benefit the region.

Chapter 6 STUDIES AND PROGRAMS

6.1 Introduction

Action without study is fatal. Study without action is futile.

—Mary Ritter Beard

During the development of the plan, certain gaps in information and data were identified. Stakeholders proposed several key studies that could be undertaken to develop a stronger knowledge base about watershed issues. Better information can help the community to make more informed decisions and take appropriate actions. A range of monitoring and educational programs were also proposed that could expand awareness, strengthen collaboration and partnerships, and create opportunities to engage residents in becoming active stewards of the watershed.

6.2 Studies

Research is to see what everybody else has seen, and to think what nobody else has thought.

—Albert Szent-Gyorgyi

■ **Conceptual Model for an Integrated Approach to Water Quality City of Los Angeles LARWQCB** **\$100K–\$500K**

In order to help the community understand the linkage between functioning ecosystems and water quality, develop a quantitative numeric model to forecast the water quality benefits of pervious surfaces and functional streams. That model needs to help quantify load reductions attained by the full range of alternatives, not just sand filters, and infiltration trenches. It needs to tell people “if you capture and infiltrate X acre-feet of water, you will get Y pounds of credit towards the load allocation; if you make X acres of land pervious, you will get Y pounds per year credit; if you restore X miles of stream to natural condition, you will get Y pounds per year of credit.” The model would be tested through pilot projects and monitoring. This could be done as a special study through the City of Los Angeles’ CREST effort, in partnership with watershed stakeholders. The objective would be to work with the RWQCB to enable increasing pervious surfaces and restoring fluvial processes as valid TMDL implementation strategies.

■ **Framework for Water Quality Monitoring Program Initiative City & County of Los Angeles, LARWQCB** **\$100K–\$500K**

A key component to the development of a comprehensive water quality monitoring program is having sufficient base information. This becomes important in site selection for potential monitoring sites. A complete survey of the storm drain outlets (with metadata) is needed along the armored portion of the main stems and their associated open channel tributaries. Attribute information needed for those outlets include location, ID, diameter/length, shape, subwatershed ID, accessibility, etc. Other support data that would need to be collected include entry locations (gates) that lead into the channel and access availability (key required, permitting, etc). Once this is completed, the outlet information could then be analyzed with other relevant data (land use, storm drains, existing water quality data, and subwatershed boundaries) to determine potential wet and dry weather sampling sites and what constituents should be tested at each site. The project could go even further and analyze potential “home base” meeting locations that are centrally

located for future sampling events. Furthermore, they could develop directions from the base location to each sampling site and directions between adjacent sampling sites upstream and downstream from each other.

■ **Groundwater System Improvement Study (Includes the following two studies)**
LADWP **\$20M**

■ **San Fernando Groundwater Basin Management Plan**
LADWP **\$10M–\$50M**

Conduct a comprehensive groundwater study for the San Fernando Basin (SFB). Develop recommendations for implementing programs and/or projects that will maximize the use of its groundwater supply. Provide an independent study to identify, characterize and evaluate emerging water quality constituents; Provide an independent expert evaluation of the LADWP's existing groundwater facilities and its current operational strategies; Research and evaluate the need for the installation of new monitoring wells and provide geotechnical and engineering services for the installation of the proposed monitoring wells; Develop a short-term research monitoring program and monitor; Provide independent expert recommendations to assist in planning for short-term and long-term capital improvement projects to maximize the use of the SFB groundwater supply.

■ **Water Reuse Feasibility Study**
LADWP **\$1.2M**

LADWP to obtain consultant support to facilitate an 18-month water reuse feasibility planning process, as an extension of the Water/Wastewater Integrated Resources Planning process. The goal is to conduct a balanced, comprehensive, and science-based feasibility study of all water reuse opportunities in the City, including groundwater replenishment with advanced treated recycled water from the Tillman Plant. The study will require widespread and active participation of key stakeholders such as neighborhood councils, community groups, environmental groups, business, and elected officials. The stakeholder workshops are scheduled to begin in the fall of 2008.

■ **Tujunga Wash Industrial Facilities Analysis**
Sun Valley Neighborhood Council **<\$100K**

Develop study to determine impacts of industrial facilities on the water supply and recommend appropriate actions, BMPs, and education program for businesses. In the Sun Valley Neighborhood Council in the City of Los Angeles, there exist large zones of industrial metal plating yards and other industry adjacent to Tujunga Wash, Hansen Spreading Grounds, and the Sheldon Gravel Pit. There is little data identifying specific sources of these pollutants or site-specific BMPs for mitigation. Deliverables include monitoring data, guidelines to recommend appropriate actions, BMPs and an education program for industrial facilities.

■ **Tujunga Watershed School Retrofit Analysis**
TreePeople **\$100K–\$500K**

Project will analyze the costs, benefits, and institutional barriers to retrofitting school campuses within the watershed. There are 76 schools in the Tujunga/Pacoima Watershed, comprising 978 acres of land that can be retrofitted to both capture water and minimize water use. cursory analysis shows significant impervious surfaces on school grounds in the watershed as well as opportunities to utilize recreation areas and school frontages as areas of infiltration. Elements for school retrofits proposed include tree plantings, swale/trail networks, outdoor classroom and/or amphitheater to double as retention basins, and the planting of drought

tolerant California Natives. Significant water can be captured by retrofitting existing recreation fields to function as stormwater detention basins and cisterns have proven to be useful in capturing storm flows for infiltration and irrigation purposes. A simple increase in permeable paving will increase infiltration as well as provide BMPs for Metals and Trash. School property provides the opportunity to work on large pieces of the watershed with an educational component. It encourages students to be stewards of their environment. Deliverables include identification of institutional barriers and recommendations for change, priority designation of schools for retrofit, specification of BMPs, and definition of costs and potential funding sources.

■ **Paths & Trails Analysis**

Mission Hills Community College and Los Angeles Valley College

<\$100K

Develop a comprehensive trails database and map for the Angeles National Forest (ANF). Currently, there is no freely available data documenting trail locations (major or minor) and trail characteristics. Using elevation/slope data, habitat sightings information, students can put together a practical guide for hiking in the forest, including information on hiking difficulty, length of time to hike a particular trail, and animal sightings.

■ **Historic Vegetation/Habitat Analysis**

Los Angeles & San Gabriel Rivers Watershed Council

\$100K to \$500K

Using information about existing California vegetation, historic topographic and soil maps, Spanish land grant maps, published reports, unpublished data, historic narratives, and other sources, identify and map the broader native plant communities, resultant habitat, and associated wildlife likely to have existed in the lower Tujunga/Pacoima Watershed prior to their eradication/extirpation/reduction in abundance. Speculation should be done with restoration opportunities and species of concern in mind.

■ **Riparian Habitat Hydroperiod Analysis**

Los Angeles & San Gabriel Rivers Watershed Council

\$100K - 500K

Identify an area that has recently (<10 years) burned and acquire historical aerial photographs of that area. Use the aerial photographs combined with field survey ground-truthing methods to track the habitat successional development along the riparian corridor within the burn area. Conduct an analysis of precipitation, stream flows, and stream water elevations during the same period to determine the hydroperiod response during the post recovery. Conduct analyses to correlate riparian habitat and hydroperiod to establish a relationship between riparian habitat (vegetation) type and hydroperiod.

■ **Climate Database**

Los Angeles & San Gabriel Rivers Watershed Council

<\$100K

NOAA and the County of Los Angeles Department of Public Works currently have endless amounts of climate data that isn't necessarily GIS-ready nor is it easily accessible. This information has been collected over different time periods and within different timeframes (hourly, daily, monthly, annually) depending on the site. In addition, depending on the type of information being collected, NOAA may or may not charge a fee. Using the climate station list generated through the development of this plan, create a climate database that links the spatial component (station locations) to the associated tabular information (precipitation, cloud cover, ET, etc.). Once the DB is assembled, characteristics such as precipitation can be interpolated between stations into a GRID for the entire watershed using the NRCS PRISM model (interpolation based on elevation/terrain).

6.3 Programs

In the end we retain from our studies only that which we practically apply.

—Johann Wolfgang Von Goethe

■ **Watershed U—Tujunga TRP**

<\$100K

Continue the successful Watershed U-Tujunga training program for the Tujunga/Pacoima Watershed on an annual basis. Watershed U is designed to increase awareness of, and communication among watershed stakeholders, and to engage local decision makers in the process of restoring watershed function. The program builds watershed awareness, increases stakeholder capacity and cooperation, and builds partnerships for project development, implementation, and stewardship.

■ **Tujunga/Pacoima Urban Water Sampling Program City & County of Los Angeles, LARWQCB**

\$100K to \$1M

The proposed water quality monitoring program has two components: Baseline and Ongoing Sampling. There are three objectives to the Baseline sampling program: 1) to generate an understanding of water quality in the lower Tujunga/Pacoima watershed, 2) to identify and confirm key sources of nonpoint pollution in the lower watershed; and 3) to identify wet vs. dry season trends. This would be completed at a number of locations throughout the watershed. The objective of the Ongoing sampling program is to assess changes in water quality due to implementation of TMDLs and other projects in the watershed. The program should be undertaken annually after the baseline period. The TMDLS currently in place are based off of no real data from this watershed, so it is imperative that real source data be developed. The initial Baseline report would identify sources of nonpoint pollution and robust water quality data for the watershed. The Ongoing program would produce an annual report to stakeholders.

■ **Tujunga/Pacoima Watershed Guide for Neighborhood Councils TRP**

<\$100K

Program to develop and disseminate a handbook for City of Los Angeles Neighborhood Councils that can develop local community capacity to work productively with the City and the development community in creating watershed-friendly land use practices and design features.

■ **Parking Lot Retrofit Guidelines Panorama City Neighborhood Council**

<\$100K

Program to mandate medians/tree wells in parking lots with native plantings and permeable gutters within the Panorama City NC area through an amendment to the community plan. There is continual construction in the Panorama City NC and an opportunity to benefit the watershed and environment through developing guidelines for parking lot retrofits and all new construction. The objective would be to incorporate the new guidelines into the local community plan.

■ **Equestrian BMPs in the Tujunga/Pacoima Watershed Sunland-Tujunga Neighborhood Council**

<\$100K

Program to work with property owners through education or enforcement to implement BMPs for equestrian facilities and “backyard livestock.” Project aims to decrease and/or manage fecal coliform in the watershed. Addresses water quality improvements through collaboration between the Neighborhood Council & local residents. Deliverables include cooperative BMP implementation in at least 6 sites.

■ **Education for Conservation in Tujunga/Pacoima Watershed TRP** **<\$100K**

Produce and distribute a watershed-specific brochure to educate watershed residents, Neighborhood Councils and businesses about ways to conserve water: ET meters and weather sensors, native landscaping, residential landform grading, dry wells, pervious surfaces, cisterns, graywater systems, and other measures.

■ **Environmental Education Camps on Angeles National Forest U.S. Forest Service, LAUSD** **\$500K–\$1M**

Replace poorly-operated and existing organization camps on ANF with upgraded residential camp facilities for school-system-run environmental education. No limits on ideas - water treatment on site as educational tool, study of native habitat. Site could be used as a base for field trips to local water facilities and lessons about their function and their effects on watershed.

■ **Big Tujunga Dam Operation and Maintenance Plan U.S. Forest Service, U.S. Army Corps of Engineers, LACDPW** **Cost TBD**

Refine and adopt a revised Operation and Maintenance Plan for the dam and other facilities within the Big Tujunga Reservoir. Addresses local water resources, water quality, hydrologic function & watershed-based planning and projects.

Chapter 7 POLICY RECOMMENDATIONS

7.1 Introduction

No policy that does not rest upon some philosophical public opinion can be permanently maintained.

—Abraham Lincoln

The Tujunga/Pacoima Watershed has incredible diversity and untapped potential. An integrated watershed approach to land use and natural resource conservation can generate enormous benefits, making the watershed a more sustainable place to live, work, and recreate. But jurisdictional complexity, a disintegrated budget approach, and the single-purpose missions of most public agencies complicate these possibilities.

To address the range of opportunities in the Tujunga/Pacoima watershed and facilitate a transition to green infrastructure, the following policy recommendations focus on the major issues identified in Chapter 2 (State of the Tujunga) and reflect the goals and objectives articulated in Chapter 3 (Goals & Objectives). The intent is to provide specific policy recommendations that foster enlightened planning, robust resource conservation, regular infrastructure maintenance, improved agency coordination, and expanded funding opportunities. Additional detailed recommendations are provided in the State of the Tujunga report

7.2 Land Use

The western model of growth is intrinsically toxic. It uses huge resources—energy and materials—and generates enormous waste ... it remains many steps behind the problems it creates. We have no choice but to reinvent the development trajectory.

—Sunita Narain

Current city and county land use policies facilitate diffuse development patterns and generally fail to consider watershed resources. To realize the vision identified by stakeholders, a major shift in thinking and action is required. The Southern California Association of Governments (SCAG) Compass Growth Vision Report (SCAG 2004) suggests that all future growth in the SCAG region can be accommodated on only two percent of the land area. New development and redevelopment should be coupled with the provision of new parks and naturalized open space to serve the existing and expanded population, and concentrated in existing neighborhood centers and along active transit corridors, particularly at transit stations. As density is increased in select locations, incentives should be concurrently provided to capture under-utilized sites for use as new parks and protect greenfield sites. Development should be restricted in sensitive areas such as existing native habitat, potential habitat restoration areas, hillsides, agriculturally-zoned areas, pervious soil areas, and historic floodways. The cities and county should revise their general plan policies to be consistent with these concepts. The City of Los Angeles should develop and adopt a watershed element of the General Plan and a Stream Protection Ordinance. The City of Los Angeles should prohibit the sale of surplus properties in the watershed and prioritize their use as multi-benefit projects that include the capture and infiltration of stormwater.

7.3 Water Supply

Children of a culture born in a water-rich environment, we have never really learned how important water is to us. We understand it, but we do not respect it.

—William Ashworth

Research strongly indicates that we are moving into a period of sustained drought. The Mayors of Los Angeles and San Fernando should make a declaration of drought, triggering mandatory water conservation measures.

Substantially more snowmelt and rainwater runoff could be recharged through expansion or reconfiguration of spreading basins and the expansion, reconfiguration, or re-operation of upstream dams augmenting local supplies and reducing demand on distant sources. The County and the City of Los Angeles should complete their study of groundwater recharge enhancement in the San Fernando Valley and implement all feasible recommendations. This should include consideration of gravel pit acquisition as their operations phase out and their incorporation as detention, and/or infiltration facilities.

Groundwater cleanup strategy and procedures in the San Fernando Valley should be reassessed to expedite the return to service those portions of the groundwater basin that are currently out of service due to pockets of contamination. Cost-benefit analyses should measure cleanup costs against water supply benefits, taking into account the large quantities of stormwater and treated wastewater that could potentially be recharged, versus the incremental cost of imported water. Expanded recharge may also require collaborative interagency agreements and procedures that take into account adjudicated water rights.

The expanded utilization of recycled water could reduce reliance on imported sources, but regulatory concerns and public perception have limited the use of this valuable resource. Use of recycled water in some locations is limited by access to this source. The City of Los Angeles should aggressively implement the Integrated Resource Program for recycled water and the related Go-Policy Directions. This program should include (1) distribution lines that create “purple corridors” and improve access to potential users; (2) incentives for use of recycled water in new development and retrofit of existing development; (3) verification of the feasibility of using recycled water for groundwater recharge that addresses technical and regulatory concerns; (4) a vigorous outreach and education effort to address public concerns; and (5) consideration of the use of recycled water to support vegetation in restored washes, taking into account historic seasonal flows and the plant communities adapted to those conditions.

Reducing outdoor water use significantly reduces overall water demand, but design standards and building codes don’t always include the full range of water conservation measures, particularly for landscape irrigation. The cities and county should review and revise building and planning codes to encourage a range of water conservation measures and reduce irrigation water demand, including the use of greywater systems, smart irrigation controllers, and native and other climate-appropriate plants. Public agencies, including Caltrans, should mandate the use of native landscaping and smart irrigation controllers for all public facilities.

Development standards typically permit coverage of a large portion of a lot, reducing the potential for detention and infiltration of stormwater. The cities and county should review and revise building and planning codes to limit the portion of lots that can be covered by development or impervious surfaces, prohibit dry-weather runoff from leaving sites, require on-site retention of stormwater instead of discharge to the street and storm drain, incentivize greywater systems, and encourage infiltration and/or storage and reuse of stormwater for irrigation. The county and cities should remove all unnecessary pavements in street and parking medians, integrate porous pavements into sidewalks, gutters, and street programs, and require porous pavements in all new public facilities and large private developments greater than 1 acre

The Los Angeles Unified School District (LAUSD) owns and operates significant land holdings in the watershed that have potential to beneficially manage stormwater as well as meet wider community needs

for active recreation. LAUSD should work with the City of Los Angeles and DWP to update their sustainability guidelines to include to capture, infiltration and/or reuse of stormwater on-site, and develop joint-use agreements for community access to recreation facilities.

7.4 Stormwater Quality

We all live downstream.

—David Suzuki

Current TMDL programs focus on a single suite of contaminants (e.g., metals) which typically results in single-purpose projects and programs. The Los Angeles Regional Water Quality Control Board should coordinate development of a suite of TMDL regulations to foster integrated action, which should incorporate stakeholder-led processes such as CREST.

Runoff from urban development contains many contaminants which compromise the quality of downstream channels and water bodies. Capturing, storing and/or infiltrating runoff where it falls, or cleansing it before discharge could greatly enhance the quality of stormwater runoff and reduce TMDL implementation costs. Mandates and/or incentives should be implemented to prohibit dry-weather runoff and to capture and infiltrate stormwater on private sites or store and reuse it for irrigation. Neighborhood scale multiple-objective projects should be developed to detain, cleanse and infiltrate stormwater, using public rights-of-way, available surplus public sites or newly acquired sites. In addition, public parks, schools, colleges, transportation rights-of-way, and utility corridors could be reconfigured to detain, cleanse and infiltrate stormwater, or where appropriate stored in cisterns for later use. Los Angeles Regional Water Quality Control Board should revise future stormwater permits to encourage integrated actions to enhance stormwater quality, and the cities and county should revise their general plans and their planning and zoning codes to reflect this new integrated approach to stormwater quality management.

7.5 Public Safety

Any river is really the summation of the whole valley. To think of it as nothing but water is to ignore the greater part.

—Hal Borland

The flood management strategy implemented in the last century contained three basic elements: storage reservoirs to detain runoff, channelized streams to quickly convey runoff downstream, and debris basins in the mountains to reduce sediment deposition in the Los Angeles and Long Beach Harbors. A more integrated approach to flood management could enhance water supply, improve runoff water quality, enhance habitat, and provide recreational opportunities and reduce potential flood risks. The Board of Supervisors should ask the Legislature to reconstitute the Flood Control District as a Watershed Management District with a mission statement and organizational structure that provides more equal emphasis to watershed management, water conservation, and flood management.

The county, the cities, and the U.S. Army Corps of Engineers should develop a new comprehensive flood management plan for the watershed that includes (1) changes in the configuration, operation, and maintenance of existing flood facilities; (2) naturalized stream channels that enhance infiltration, create habitat, and provide recreational opportunities; (3) a sediment management strategy that supports the natural assimilative capacity of streams; (4) new multiple-purpose sites along the floodways of the Tujunga and Pacoima washes that provide habitat, recreation, and stormwater management; (5) new stormwater detention and infiltration facilities on publicly-owned sites; and (6) on-site stormwater infiltration on residential and commercial properties. In conjunction with this plan, the cities and county should revise their general plans to establish a long-term program to acquire land along floodways from willing sellers at fair market value along Tujunga Wash, Pacoima Wash and tributaries which would maintain neighborhood integrity

while assembling parcels for multiple benefit public uses, including habitat, recreation, and stormwater detention, cleansing, and infiltration.

As bridge retrofits occur on the Tujunga and Pacoima Washes, they should be designed to accommodate, at a minimum, continuous greenway bicycle and pedestrian paths, and facilitate the future restoration of functional floodways.

The U.S. Army Corps of Engineers participation in ecosystem restoration and integrated flood management projects is greatly influenced by a definition of the “waters of the United States” which confers jurisdiction to the Corps based on the commerce clause of the constitution. Recent Supreme Court rulings have reduced the breadth of Corps jurisdiction and have been based on concepts grounded in the hydrology of the Eastern U.S. The U.S. Army Corps of Engineers should complete development of and institute a definition of Waters of the United States specific to Southwestern streams.

7.6 Parks and Open Space

The importance of parks cannot be measured, but most other important things in life cannot be measured either: Friendship, beauty, love, and loyalty are examples. Parks and other pedestrian places are essential to a city’s happiness.

—*Enrique Peñalosa*

Access to parks and open space varies significantly throughout the developed portions of the watershed. Easy access to parks is strongly correlated with lower rates of obesity, diabetes, and other childhood and adult-onset diseases, creates opportunities for all residents to include exercise as a key element of a healthier lifestyle, and can reduce air quality impacts associated with travel to these places. Although improved access to parks could benefit watershed residents, this issue extends across the San Fernando Valley and much of the Los Angeles metro region. The cities, the county, and the state should develop a regional open space plan, in coordination with non-profit land conservation organizations, that establishes an integrated strategy with acreage targets, location criteria, timelines, and funding mechanisms to increase the amount of, and access to, public open space, especially in underserved areas and along watercourses, while providing appropriate public safety measures.

New parks should function as multiple-objective projects that balance recreation and habitat uses, detain, cleanse, and infiltrate stormwater, and reduce peak flood flows when feasible. Priorities for recreational uses should be based on local demographics and access. Priority access to new parks should promote pedestrian, bicycle, and sustainable transit linkages. Priorities for designating habitat areas within parks should be based on sensitivity, connectivity, habitat quality, and related criteria. The regional public open space plan should provide policies to balance these uses by means of a stakeholder process. The cities and county should revise open space elements of their general plans to reflect these criteria for new parks and open space and retrofit existing parks to incorporate ecosystem services (or green infrastructure) as standard elements of all parks.

7.7 Habitat & Native Vegetation

In the end, only a profound philosophical shift in how we view our relationship to the natural world can assure that we halt our plunge into a biologically barren future.

—*Kenny Ausubel*

The need to preserve and restore functional ecosystems requires more than the conservation of pockets of habitat and or expansive areas of native vegetation. Instead, a landscape-level approach must be used which reflects the composition and functions of the aquatic, riparian, and terrestrial ecosystems that encompasses groups of species, plant communities, and ecosystems while recognizing the need for rare and endangered species conservation and management.

Much of the open space in the watershed lies within the National Forest and will continue to be subject to the management policies and programs of the Forest Management Plan. However, the foothills between the national forest and developed areas face increasing pressure for development and much of the habitat along the washes and tributary streams has been lost. The regional open space plan (discussed above) provides an opportunity to restore native vegetation and where appropriate, functional habitats and biological/wildlife corridors, to reduce habitat fragmentation and loss and restore the potential for those lands to serve as functional ecosystems. Public agencies should mandate the predominant use of native plants for public properties and incentivize the use of locally-derived native and other climate-appropriate plants on private property, to extend opportunities for native species to reestablish their historic range.

The proposed restoration of washes and tributary streams will require the development of a program that balances the intent to create or restore habitat (including removal of invasive species) with the need to maintain flood protection. In conjunction with the Army Corps of Engineers and appropriate resource management agencies, the County of Los Angeles should develop criteria for incorporation of native vegetation of different species and sizes within streambeds and floodplains, which would allow for periodic inundation and disturbance under flood conditions and occasional maintenance to preserve functionality.

7.8 Coordination & Planning

The scarcest resource is not oil, metals, clean air, capital, labor, or technology. It is our willingness to listen to each other and learn from each other and to seek the truth rather than seek to be right.

—*Donella Meadows*

To establish a regular ongoing process for interagency communication, cooperation and collaboration, the existing steering and technical advisory committees that guided this plan should be extended for implementation of the watershed plan. The County and the cities of Los Angeles and San Fernando should jointly support continuation of, and provide technical support to a Tujunga/Pacoima Watershed Group to guide implementation of the plan. This group should include a steering committee, technical advisory committee, and an inter-agency working group, provide regular opportunities for stakeholder input and participation in decision-making, and public notice of all meetings. The group should work closely with senior staff of U.S. Senators and Representatives, state Senators and Assemblymembers to forge a clear consensus on watershed issues and funding priorities at state and federal level. The committee should develop model agreements that establish maintenance responsibilities for interagency multiple-objective projects.

To effectively implement watershed-based planning, a regional approach to deal with the interrelated issues of land use, water supply, public open space, public health, flood management, and water quality needs to be promoted. The Southern California Association of Governments should incorporate the Local Government Commissions Ahwahnee Water Principles into their work on the Compass Growth project, and jointly provide specific recommendations to foster informed decision-making, including assistance to elected officials and staff to facilitate their understanding and communication of a watershed-based approach.

The City of Los Angeles established Neighborhood Councils so that city government would be more responsive to local needs, and to promote public participation in the decision making and problem solving processes. The Neighborhood Councils have a tremendous opportunity to communicate local needs and desires to adopt and implement watershed-based planning principles and demand that individual project proposals respond to the needs of the watershed. To better inform the councils of the potential opportunities, the California Department of Conservation should fund development of a Watershed Planning Guide for Neighborhood Councils in the city of Los Angeles.

Public outreach and education efforts should be intensified to build public understanding and support for watershed management, including targeted programs for elected and appointed officials, and the general

public (ratepayers and voters). With assistance from the County and the cities, the California Department of Conservation should fund a targeted public outreach effort in the watershed to inform and engage elected officials and the general public. The Los Angeles Unified School District should adopt and implement the watershed curriculum for k-12 schoolchildren included in the State of the Tujunga Report.

7.9 Funding

In the Western United States, water flows uphill to money.

—*Glen Sanders*

In recent years, voter-approved bonds have been the primary source of funding to implement watershed projects. Bond monies are insufficient for the task at hand, are inconsistently available, and typically cannot be utilized for maintenance of projects. Stable long term funding for land acquisition, capital improvements and maintenance and operations of multiple-objective watershed projects must be developed, which may include user fees and property taxes, and consolidation of funding currently allocated to disparate departments and programs.

The City of Los Angeles should reallocate the profits from the Department of Water and Power currently given over to the City's General Fund to a new program that invests in sustainable water supply and energy infrastructure.

The City of Los Angeles Community Redevelopment Agency should fund the projects (identified in Chapter 4) that are located within the Community Redevelopment Area.

The Metropolitan Water District should fund sustainable, environmentally sound water projects in the Tujunga/Pacoima Watershed consistent with the provisions of SB 60 (Statutes of 1999), which require consideration of groundwater recharge and replenishment, watershed management, habitat restoration, and environmentally compatible community development utilizing the resource potential of the Los Angeles River—including stormwater runoff.

U.S. Senate & Congressional representatives should work to provide the USEPA with additional funding to address groundwater contamination, and work to provide the U.S. Army Corps of Engineers with funding for Ecosystem Restoration projects in the watershed.

A public outreach and education campaign should be developed through stakeholder participation to build understanding and support maintenance of green infrastructure, restored floodplains and naturalized streams. Following that campaigns launch, the County of Los Angeles should implement the proposal for a ballot measure to bring a funding plan for a multi-purpose watershed infrastructure program to the voters.

Chapter 8 NEXT STEPS

8.1 Introduction

Find your place on the planet. Dig in, and take responsibility from there.

—Gary Snyder

This Plan is intended to facilitate positive change in our individual and institutional behaviors that can, move us towards a more holistic, sustainable approach to managing our resources—one that uses the watershed as a basis for decision-making. This chapter provides specific guidance to those various audiences—residents; agencies; local, state, and federal governments—on how best to implement the Plan’s recommendations and achieve the goals and objectives identified in Chapter 3.

8.2 Watershed Residents

Each of us can work to change a single portion of life’s events, and in the total of those acts will be written the history of this generation.

—Senator Robert F. Kennedy Jr.

When people begin to see themselves as an intrinsic part of the watershed, their collective actions can create tremendous change. The most relevant actions relate to water supply, water quality, habitat, and the application of social and political pressure to effect positive change. To make these actions become meaningful habits, start by becoming more connected to where you live.

Develop a ‘Sense of Place’: Start by changing your perception of the Southern California landscape. Re-establish a sense of place rooted in our Tujunga/Pacoima watershed and its natural systems: learn its geography; the particular value of its soils; the inherent beauty of this landscape, its seasons and colors; the butterflies, birds and other creatures that make this place their home. Become part of the watershed community.

- Read about the unique history of the watershed in the State of the Tujunga Report.
- Try to picture what your neighborhood looked like 250 years ago: the plants, the animals. ... What would you eat, where would you get your water, where would you build your home?
- Locate where you are in relation to the nearest wash or creek. Learn its name, its source and follow its current path up and downstream. Picture it in its natural state.
- Watch how water moves through your neighborhood in a rainstorm today.
- Spend the day at Hansen Dam.
- Take a hike up into the Angeles National Forest.
- Plant some native wild lilac, hummingbird sage, or wild rose near your windows. Inhale.

Conserve Water: To make the most of water supplies, residents should become mindful of their water use, making every effort to conserve water, both indoors and outside. Keep your ‘water footprint’ small. Remember, when you conserve water, you’re also conserving energy (19 percent of our total electrical energy and 33 percent of our gas energy costs are used to move and treat water around the state), protecting other ecosystems (water we take from the Sacramento Bay–Delta is degrading those ecosystems in the same way that water we took from the Owens Valley degraded those ecosystems), and saving money.

Indoors: Simple things can make a real difference:

- Fix leaky faucets.
- Turn the water off when brushing your teeth.
- Be more time-efficient in the shower—keep it under 5 minutes.
- Install aerators on faucets.
- Install low-flow toilets and showerheads.
- Fill the sink to hand wash dishes—don't leave the water running.
- Use a high water-efficiency clothes washer.*
- Run your clothes and dishwashers only when you have full loads.

* MWD can provide you with a rebate.

Outdoors: Landscape irrigation accounts for more than half of residential demand. Changing your outdoor water habits will result in significant savings on your water bill.

- Water your yard between dusk and 8am to reduce evaporation.
- Check your irrigation system for leaks, broken sprinkler heads, and overspray and replace old water wasting sprinkler heads with efficient rotating sprinkler heads.*
- Look into 'smart' irrigation controllers, which automatically make adjustments based on the time of year and the current weather.*
- Use a drip irrigation system instead of sprinklers to get water to plant roots more efficiently.
- Turn off sprinklers when late fall season rains arrive and only water during long periods between rain storms.
- Use a broom instead of a hose to clean your driveway and sidewalk.
- Wash your car on the lawn, using a bucket and biodegradable soap, or go to a car wash (most recycle their water).
- Use pool and spa covers.
- Install a greywater system to re-use sink and shower water for your landscape.
- Use mulch around trees, shrubs and other plantings to keep moisture in and weeds out.
- Get free mulch from the City of Los Angeles or make your own using yard clippings and kitchen waste like vegetable peelings, coffee grounds and eggshells.
- Don't overseed lawns with cool season rye grasses
- Keep turf grass to a minimum and use low-water using, warm season species like St. Augustine and buffalo grasses.
- Consider transitioning to a native or Mediterranean-based landscape.
- Replace lawn areas with synthetic turf,* reducing your water bill, eliminating the need for fertilizers or pesticides, and saving time as you'll never have to mow the lawn again.
- Call 1-800-DIAL-DWP to report water waste in the City of Los Angeles.

* MWD can provide you with a rebate.

Capturing Rainwater On-site: Each piece of property can function as its own little subwatershed, capturing, infiltrating and/or re-using every drop of water. Managing rainwater on-site adds to our local water supply, enhances flood protection, and lowers your water bill.

- Use a rain barrel to capture the rain coming off your roof and use it to irrigate your landscape.
- Apply a little landform grading to change your yards topography with swales, berms, and a rain garden to keep every drop on site.
- Make your driveway, walkways, and outdoor spaces as pervious as possible by using decomposed granite, gravel, porous pavers, or permeable concrete.
- Install a dry well or French drain at the end of your driveway.

Improving Water Quality: Changing a few everyday habits can keep trash, bacteria, pesticides, metals and oil from washing into and contaminating our streams and groundwater.

- Avoid chemical pesticides and fertilizers—use organic, non-toxic products sparingly.
- Sweep trash from your property into a dustpan and use yard trimmings for natural fertilizer and garden mulch.
- Clean up after your dog, cat or horse. Pet waste harms aquatic life by raising nitrogen levels, resulting in excessive algae growth; and increasing the amount of bacteria like *E. coli*.
- Help keep litter out of the streets and gutters. All our gutters empty into our waterways.
- Report full catch basins: LA City: (800) 974-9794, LA County: (800) 303-0003
- Dispose of paint, batteries, and other hazardous materials at the Tujunga/Pacoima watersheds permanent drop-off center (11025 Randall St., Sun Valley 91352, Sat. to Mon, 9:00 A.M. to 3:00 P.M.) or call (888)CleanLA for a schedule of household hazardous waste collection events near you.
- Recycle your used motor oil at gas stations, auto parts stores, and garages. Never pour it down the drain, in the gutter, or on the ground. Motor oil is extremely toxic.
- Maintain your car to keep it running efficiently. Leaking oil and spilled fuel, copper and asbestos from brake linings, and zinc from tires all contribute to water pollution.
- Look for opportunities to drive less: walk if it's a one mile round trip, bike if it's a little further, try public transit more often.
- Purchase environmentally sensitive products and services, and avoid over-packaged products
- Support your local farmers market
- Choose a dry cleaner that doesn't use perchlorethelyne.
- Say no to plastic bags. Get in the habit of bringing your own canvas or other reusable shopping bag with you to the store. Plastic bags create loads of unnecessary litter; they are easily blown by the wind, and often end up in the ocean. Plastic takes hundreds of years to biodegrade, and creates hazards for marine life and other wildlife
- Choose tap water over bottled water. Carry your own refillable water bottle. Bottled water costs approximately 28,000 times more than tap water, is less regulated for quality, and takes significant energy to bottle, transport, and even recycle.

Enhancing Habitat: Native plants need very little water, saving precious supplies for potable use. Native landscapes create habitat and protect our biodiversity. Biodiversity can both prevent, and enable recovery from, a variety of disasters. Biodiversity creates opportunities for medical discoveries.

- Replace your lawn with a combination of native or Mediterranean drought tolerant plants, fruit trees, and an edible garden. Save water, create a habitat for hummingbirds and butterflies, and help feed your family while improving your relationship to nature and its cycles.
- Visit your local native plant nursery, the Theodore Payne Foundation in Sun Valley, familiarize yourself with and learn more about the values of native plants. Join your local chapter of the California Native Plant Society.
- Don't plant invasive species like tree of heaven, ivy, vinca, ice plant, fountain grass, pampas grass and fennel.
- Encourage commercial nurseries to carry more indigenous native, and Mediterranean stock.
- Volunteer with the Forest Service to clean up trash from creeks or eradicate invasive species.

Applying Political and Social Pressure: Given the jurisdictional complexity of the watershed, change on the order of magnitude required will not be easy. But there's always a tipping point. Remember, your government representatives work for you, and an informed, engaged and vocal constituency is a powerful force.

Residents should demand that elected officials work in watershed-friendly ways to do the following:

- Recognize the importance of the Tujunga/Pacoima watershed to our local water supply.
- Restrict development in hillsides and historic floodplain areas.
- Expand the use of pervious surfaces throughout the watershed to enhance the capture, infiltration, and natural storage of water.
- Require that all new and re-development produce a net increase in park space.
- Expand and improve access to parks and open space.
- Expand public transit options and redefine the concept of a transit corridor.
- Create walkable, bikeable communities.
- Provide incentives for watershed-friendly residential landscapes.
- Enact a strong plastic bag ordinance.

8.3 Los Angeles City Neighborhood Councils

Significant social change comes from the bottom-up, from an aroused opinion that forces our ruling institutions to do the right thing.

—Senator Paul Wellstone

The City of Los Angeles has established Neighborhood Councils to provide input to planning decisions and these councils have an opportunity to shape the future of land use and development decisions. Members of these councils should do the following:

- Demand that developers incorporate low-impact development criteria in site development and design projects to include on-site stormwater capture, treatment, and infiltration.

- Demand that developers incorporate native and/or Mediterranean landscaping in projects.
- Encourage businesses to add trees to their parking lots.
- Work with the City to develop a more practicable definition of transit corridor.
- Actively encourage the City to include a Watershed Element in the General Plan that avoids development of greenfield sites or in sensitive habitat areas, limits development in historic floodways, establishes a long-term program to acquire land along floodways, requires on-site retention and infiltration of stormwater, focuses development along viable transportation corridors, and couples that development with the provision of new multi-purpose parks to meet higher standards of acreage per capita and access, especially in underserved neighborhoods.
- Participate in the revision of Community Plans that meet the above criteria.
- Support the reallocation of DWP profits, which are currently given over to the City's General Fund, to a new program that invests in sustainable water supply and energy infrastructure.
- Look for opportunities to create pocket parks and community gardens in your Council area.
- Participate in the Tujunga/Pacoima Watershed Group to oversee plan implementation.

8.4 *City of Los Angeles*

It would be disastrous if bad planning policy meant that today's new developments become tomorrow's climate slums.

—*Tim Yeo*

The City of Los Angeles should do the following:

- Acknowledge that the long-range vision and projects identified in the Los Angeles River Revitalization Master Plan (LARRMP) cannot be accomplished without the watershed-wide approach to land use and stormwater management exemplified by this Plan. As the largest subwatershed of the Los Angeles River, restoration of the Tujunga/Pacoima watershed will have a major impact on stormwater management and groundwater recharge, increasing water supplies and reducing dependence on imported water. The stakeholder-identified goals, objectives, policy recommendations, and projects in this plan should guide future land use and development initiatives for those areas outside the relatively narrow corridor considered in the LARRMP.
- Declare a drought.
- Revise the general plan to include a new watershed element that avoids development of greenfield sites or in sensitive habitat areas, limits development in historic floodways, establishes a long-term program to acquire land along floodways, requires on-site retention and infiltration of stormwater, focuses development along viable transportation corridors, and couples that development with the provision of new multi-purpose parks to meet higher standards of acreage per capita and access, especially in underserved neighborhoods.
- Revise Community Plans to meet the above criteria.
- Work with Neighborhood Councils to develop a more practicable definition of transit corridors.
- Review and revise building and planning codes to (1) include a new Stream Protection Ordinance that limits development along natural stream courses, (2) require on-site retention of stormwater to the maximum extent feasible, (3) encourage infiltration and/or storage and reuse of stormwater for

irrigation, (4) encourage a range of water conservation measures and reduce irrigation water demand, and (5) incentivize the use of native and other climate-appropriate plants on private property.

- Participate in the development of a regional open space plan that establishes an integrated strategy with acreage targets, location criteria, timelines, and funding mechanisms and aggressively pursue creation of multiple-objective parks that balance recreation and habitat uses, detain, cleanse, and infiltrate stormwater, and reduce peak flood flows when feasible.
- Participate in the development of a new comprehensive flood management plan for the watershed.
- Support the reallocation of DWP profits, which are currently given over to the City's General Fund, to a new program that invests in sustainable water supply and energy infrastructure.
- Prohibit the sale of surplus properties in the watershed and prioritize their use as multi-benefit projects that include the capture and infiltration of stormwater.
- Support the continuation of, participate in, and provide technical support to the Tujunga/Pacoima Watershed Group to oversee plan implementation.
- Implement the Integrated Resources Program for expanded use of recycled water and related Go-Policy Directions.
- Complete the study (with the County of Los Angeles) of groundwater recharge enhancement in the San Fernando Valley and implement all feasible recommendations.
- Mandate the use of recycled water in all public projects and incentive use in private projects.
- Mandate the use of native landscaping and smart irrigation controllers for all public facilities.

8.5 City of San Fernando

If you cannot do great things, do small things in a great way.

—Napoleon Hill

The City of San Fernando should do the following:

- Declare a drought.
- Revise general plan policies to include a new watershed element that avoids development of greenfield sites or in sensitive habitat areas, limits development in historic floodways, establishes a long-term program to acquire land along floodways, requires on-site retention and infiltration of stormwater, focuses development along viable transportation corridors, and couples that development with the provision of new multi-purpose parks to meet higher standards of acreage per capita and access, especially in underserved neighborhoods.
- Review and revise building and planning codes to (1) require on-site retention of stormwater to the maximum extent feasible, (2) encourage infiltration and/or storage and reuse of stormwater for irrigation, (3) encourage a range of water conservation measures and reduce irrigation water demand, and (4) incentivize the use of native and other climate-appropriate plants on private property.
- Participate in the development of a regional open space plan that establishes an integrated strategy with acreage targets, location criteria, timelines, and funding mechanisms and aggressively pursue creation of multiple-objective parks that balance recreation and habitat uses, detain, cleanse, and infiltrate stormwater, and reduce peak flood flows when feasible.

- Participate in the development of a new comprehensive flood management plan for the watershed.
- Support the continuation of, participate in, and provide technical support to the Tujunga/Pacoima Watershed Group to oversee plan implementation.
- Mandate use of recycled water in all public projects and incentive use in private projects.
- Mandate the use of native landscaping and smart irrigation controllers for all public facilities.

8.6 County of Los Angeles

The majority of men meet with failure because of their lack of persistence in creating new plans to take the place of those which fail.

—Napoleon Hill

The County of Los Angeles should do the following:

- Work with the state legislature to reconstitute the Flood Control District as a Watershed Management District with a mission statement and organizational structure that provides more equal emphasis to watershed management, water conservation, and flood management.
- Revise general plan policies to avoid development of greenfield sites or in sensitive habitat areas, establish a long-term program to acquire land along floodways, require on-site retention and infiltration of stormwater, focus development along viable transportation corridors, and promote creation of new multi-purpose parks, especially in underserved neighborhoods.
- Review and revise building and planning codes to (1) require on-site retention of stormwater to the maximum extent feasible, (2) encourage infiltration and/or storage and reuse of stormwater for irrigation, (3) encourage a range of water conservation measures and reduce irrigation water demand, and (4) incentivize the use of native and other climate-appropriate plants on private property.
- Participate in the development of a regional open space plan that establishes an integrated strategy with acreage targets, location criteria, timelines, and funding mechanisms and aggressively pursue creation of multiple-objective parks that balance recreation and habitat uses, detain, cleanse, and infiltrate stormwater, and reduce peak flood flows when feasible.
- Participate in the development of a new comprehensive flood management plan for the watershed.
- Support the continuation of, participate in, and provide technical support to the Tujunga/Pacoima Watershed Group to oversee plan implementation.
- Develop criteria for incorporation of native vegetation of different species and sizes within streambeds and floodplains.
- Complete the study (with the City of Los Angeles) of groundwater recharge enhancement in the San Fernando Valley and implement all feasible recommendations.
- Mandate use of recycled water in all public projects and incentive use in private projects.
- Mandate the use of native landscaping and smart irrigation controllers for all public facilities.
- Develop and launch a public outreach and education campaign to build understanding of, and support for maintenance of green infrastructure.
- Implement the proposal for a ballot measure to bring a funding plan for a multi-purpose watershed infrastructure program to the voters.

8.7 Los Angeles Unified School District

Human history is a race between education and catastrophe.

—H G Wells

The LAUSD should do the following:

- Work with the City of Los Angeles and DWP to update their sustainability guidelines to include capture, infiltration and/or reuse of stormwater on-site, and develop joint-use agreements for community access to recreation facilities.
- Support use of the Educators Guide to the Tujunga/Pacoima Watershed in all schools in the watershed.

8.8 Southern California Association of Governments

Can you think of anything that can get better if we crowd more people into our cities, our towns, into our state our nation or on this earth?

—Dr Albert Bartlett

SCAG should do the following:

- Incorporate the work of the Local Government Commissions Ahwahnee Water Principles into their work on the Compass Growth Project.

8.9 State of California

Unless commitment is made, there are only promises and hopes; but no plans.

—Peter F. Drucker

The Los Angeles Regional Water Quality Control Board should do the following:

- Coordinate development of a suite of TMDL regulations to foster integrated action, which should incorporate stakeholder-led processes such as CREST.
- Revise future stormwater permits to encourage integrated actions to enhance stormwater quality.
- Exercise the intent of the RWQCB 2005-002 Hydromodification resolution to maintain the functional integrity of all remaining natural watercourses.
- Support community-based monitoring programs to expand the collection and analysis of water quality data.
- Support the continuation of, participate in, and provide technical support to the Tujunga/Pacoima Watershed Group to oversee plan implementation.

Caltrans should do the following:

- Utilize smart irrigation controllers and native landscaping in all freeway easements and other public rights of way.

The Coastal Conservancy should do the following:

- Lead the effort to develop a regional open space plan that establishes an integrated strategy with acreage targets, location criteria, timelines, and funding mechanisms.

The Rivers and Mountains Conservancy should do the following:

- Partner with the U.S. Forest Service to fund invasive species management efforts in the upper watershed.

The Mountains Recreation Conservation Association should do the following:

- Utilize bond funds to support development of greenway projects specified in this plan.
- Support the continuation of, participate in, and provide technical support to the Tujunga/Pacoima Watershed Group to oversee plan implementation.

The Department of Water Resources should do the following:

- Support the continuation of, participate in, and provide technical support to the Tujunga/Pacoima Watershed Group to oversee plan implementation.

The Department of Conservation should do the following:

- Provide financial and technical support to the development of a Tujunga/Pacoima Watershed Committee to oversee plan implementation.
- Fund the development of a Tujunga/Pacoima Watershed Guide to Land Use Planning for Los Angeles City Neighborhood Councils to build capacity for residents to participate effectively in fostering watershed-friendly land-use practices and design features.

8.10 Federal Government

But while nature has considerable resilience, there is a limit to how far that resilience can be stretched. No one knows how close to the limit we are getting. The darker it gets, the faster we're driving.

—*Douglas Adams*

The U.S. Army Corps of Engineers should do the following:

- Lead development of a new comprehensive flood management plan for the watershed that includes (1) changes in the configuration, operation, and maintenance of existing flood facilities; (2) naturalized stream channels that enhance infiltration, create habitat, and provide recreational opportunities; (3) a sediment management strategy that preserves the natural assimilative capacity of streams; (4) new multiple-purpose sites along the floodways of the Tujunga and Pacoima washes that provide habitat, recreation, and stormwater management; (5) new stormwater detention and infiltration facilities on publicly-owned sites; and (6) on-site stormwater infiltration on residential and commercial properties.
- Implement the projects identified in their Tujunga Wash Feasibility Study.
- Complete development of and adopt a definition of Waters of the United States specifically applicable to Southwestern streams.
- Support the continuation of, participate in, and provide technical support to the Tujunga/Pacoima Watershed Group to oversee plan implementation.

The U.S. Environmental Protection Agency should do the following:

- Increase funding for and expedite the cleanup of the San Fernando Groundwater Basin.

8.11 Conclusion

You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.

—*Buckminster Fuller*

With distant water supplies becoming scarce and much of the San Fernando Valley facing the potential of widespread redevelopment, we must change our approach to land use, water supply, and flood management in ways that respect the intrinsic connections between the built and natural environment.

The Tujunga/Pacoima watershed is unique within the City of Los Angeles for its innate ability to capture and store water in its capacious underground reservoir. The practical and economic costs of continuing to develop with a twentieth century template and invest in traditional water supply infrastructure can no longer be justified. Undertaking a watershed approach that invests in green infrastructure and capitalizes on our inherent assets can yield green jobs, improved public health, a sustainable water supply future, and widespread neighborhood improvements.

Making this transition will require a fundamental paradigm shift that demands collective cooperation and persistent effort. Making these changes will not be easy—individual habits and perceptions die hard, and institutions are change averse entities. But failure to act will leave our neighborhoods and communities in peril from the affects of climate change and the possibilities of urban decline.

The first step in developing a viable plan for change is finding common ground: bringing diverse people together to collaborate and create a consensus vision, a mutually supportive set of goals, and a holistic, proactive approach. This watershed plan has accomplished that task.

Now we must commit to work cooperatively and purposefully to implement the specific actions of this plan and continue to create and undertake new ones. It is up to us all to reclaim and maintain the healthy rivers and streams, sufficient parks and open spaces, protected hillsides and floodplains that are integral to our social and economic health.

Make no little plans; they have no magic to stir people's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that your children and grandchildren are going to do things that would stagger us. Let your watchword be order and your beacon beauty.

—*Daniel H. Burnham*