

COMMON GROUND

from the Mountains to the Sea

Watershed and Open Space Plan

San Gabriel and Los Angeles Rivers

October 2001

Prepared by:

The California Resources Agency
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
Santa Monica Mountains Conservancy

With the assistance of:

EIP Associates
Arthur Golding & Associates
Montgomery Watson Harza
Oralia Michel Marketing & Public Relations
Garvey Communications
Tree People

CONTENTS

	<u>Page</u>
PREFACE	v
EXECUTIVE SUMMARY	1
MAJOR PLAN ELEMENTS	9
1. BACKGROUND	11
A. Introduction.....	11
B. Historical Context.....	11
C. Planning Context.....	13
2. CURRENT CONDITIONS	17
A. Physical Setting.....	18
B. Watershed Hydrology.....	19
C. Habitat	23
D. Open Space and Recreation.....	30
E. Water Supply.....	32
F. Water Quality.....	36
G. Flood Protection	39
H. Regional Demographics.....	42
3. A VISION FOR THE FUTURE	47
A. Vision.....	47
B. Guiding Principles.....	47
C. Strategies.....	50
1. Education	50
2. Partnerships	52
3. Funding.....	53
4. Multiple-Objective Planning.....	54
5. Management of Public Lands.....	55
6. Monitoring and Assessment.....	56
D. Opportunities.....	56
1. Land Acquisition, Connectivity, and Open Space	56
2. Public Access	65
3. Native Plants and Wildlife	66
4. Water Resources.....	70
E. Next Steps	73
1. Rivers and Mountains Conservancy.....	73
2. Santa Monica Mountains Conservancy.....	76
3. Other Agencies and Cities	76
APPENDICES	
A Photo Credits.....	79
B Acronyms	81
C Glossary.....	82
D References	87
E RMC Project Authority.....	94
F Project Evaluation Criteria.....	106
G Threatened and Endangered Species	121
H Potential Indicator Species.....	126

FIGURES

Figure 2-1	San Gabriel and Los Angeles Rivers Watersheds	17
Figure 2-2	Seasonal Variation in Rainfall Amounts	19
Figure 2-3	Long-term Variation in Rainfall Amounts	19
Figure 2-4	Spatial Variation of Average Precipitation in the Watersheds	20
Figure 2-5	Major Sub-watersheds of the San Gabriel and Los Angeles Rivers.....	20
Figure 2-6a	Historical (Circa 1870) Distribution of Wetlands	21
Figure 2-6b	Current Distribution of Wetlands	22
Figure 2-7	The Ratio of Annual Runoff in the Los Angeles River Measured at Firestone Blvd. to the Annual Precipitation at the Los Angeles Civic Center from 1928 to 1998.....	23
Figure 2-8	Significant Ecological Areas and Critical Habitat Designations	27
Figure 2-9	Sources of Water Supply.....	33
Figure 2-10	Groundwater Basins Underlying the Watersheds.....	34
Figure 2-11	Cross-section of the Los Angeles Coastal Plain Groundwater Basin.....	34
Figure 2-12	Impaired Reaches of the San Gabriel and Los Angeles Rivers and Tributaries.....	38
Figure 2-13	Los Angeles County Flood Management Facilities	40
Figure 2-14	Land Use in the Watersheds.....	43
Figure 2-15	Los Angeles County Population Growth by Decade, 1900–2000	42
Figure 2-16	Population Density (Persons per Square Mile) by Zip Code	44
Figure 2-17	Median Household Income by Zip Code	45
Figure 3-1	Proposed River Parkway	57
Figure 3-2	Preservation Opportunities in the Mountains, Foothills, and Hills	62
Figure 3-3	Open Space Opportunities Along Tributaries	63
Figure 3-4	Habitat Linkages	67
Figure 3-5	Open Space Planning Timeline.....	76

TABLES

Table 1	Agencies Administering Open Space and Recreational Areas.....	30
Table 2	Special Designations within the Angeles National Forest.....	30
Table 3	Major Open Space and Recreational Facilities within the Watersheds.....	31
Table 4	Capacity of Local Groundwater Basins	33
Table 5	Water Recharged During the 1999–2000 Water Year (Acre-feet).....	35
Table 6	Pollutants of Concern in the Watersheds.....	37
Table 7	Los Angeles County Flood Management Facilities	41

PREFACE

Through the California Resources Agency, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, or Rivers and Mountains Conservancy (RMC), in conjunction with the Santa Monica Mountains Conservancy (SMMC), jointly developed this Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers.

The RMC is required by legislation to prepare the parkway and open space plan addressing the San Gabriel River watershed, the lower Los Angeles River watershed, and San Gabriel Mountains, portions of which are in the upper Los Angeles River watershed. In order to effectively plan land and water conservation measures for the lower Los Angeles River, plans for the upper Los Angeles River must be addressed. Also, the Rio Hondo sub watershed connects the rivers and is integral to the function of both. Some portions of the upper Los Angeles River are included within the territory of the SMMC. Recognizing the importance of a holistic approach, the Secretary of Resources directed the RMC and SMMC to jointly develop a coordinated plan for the entire San Gabriel and Los Angeles Rivers watersheds.

This plan is intended to support and inform planning efforts by cities, federal, state and local agencies, communities, groups and individuals in the watershed. This includes ongoing (or pending) subwatershed plans and future plans for parks, open space, and bike trails in individual cities. The State Conservancies will encourage incorporation of the concepts embodied in the guiding principles set forth in this plan into future open space, water resource, and habitat projects, to advance restoration of the watershed.

This plan aims to extend the discussion of restoring balance between human and natural systems from beyond the rivers to the entire watershed. Every community, including those without direct connections to the rivers or tributaries, has a role to play in the creation of new open space, trails, and bike paths, the enhancement of water resources, preservation of wildlife habitat, and maintenance of flood protection. This plan is intended as a tool to build consensus and reach *common ground*.

The California Resources Agency, comprised of 27 departments, commissions, and conservancies, is responsible for the conservation, enhancement, and management of California's natural resources, including land, water, wildlife, parks, minerals, and historic sites. The Agency advises the Governor on issues related to the State's natural resources and is responsible for interpreting the California Environmental Quality Act. The RMC and SMMC both report to the Resources Agency.

The RMC was created in 1999 to preserve urban open space and habitat for the enjoyment of, and appreciation by, present and future generations. To fulfill that mission, the RMC will undertake projects that provide low-impact recreation, education, wildlife and habitat restoration, and watershed improvements, prioritizing river-related recreation, greening, aesthetic improvements, and wildlife habitat.

The SMMC was established in 1980 to acquire land and operate programs for conservation, parkland, and recreation purposes. The SMMC's objectives are guided by the goals of creating an inter-linking network of parks and trails, preserving critical wildlife habitat and ensuring open space and recreation lands in Los Angeles and Ventura counties for the future of all Southern California residents. The mission of the SMMC is to strategically buy back, preserve, protect, restore, and enhance treasured pieces of Southern California to form an interlinking system of urban, rural, and river parks; open space; trails; and wildlife habitats that are easily accessible to the general public.

A number of public agencies, by virtue of their missions, are currently partners with the State Conservancies and will partner with the Conservancies throughout the life of the plan. The mission statements of these partner agencies are listed below.

■ U.S. Forest Service

Caring for the land and serving people.

■ U.S. Army Corps of Engineers

To provide quality, responsive engineering services to the nation including:

- Planning, designing building, operating water resources and other civil works projects
- Designing and managing the construction of military facilities for the Army and Air Force
- Providing design and construction management support for other Defense and federal agencies

■ U.S. National Park Service

To preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

■ California Department of Parks and Recreation

To provide for the health, inspiration, and education of the people of California by helping to preserve the State's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.

■ California Coastal Conservancy

- Improves public access to the coast and bay shores by acquiring land and easements and by building trails and stairways; it also seeks to create low-cost accommodations along the coast, including campgrounds and hostels.
- Protects and enhances coastal wetlands, streams and watersheds
- Restores urban waterfronts for public use and coastal dependent industries, especially commercial fishing
- Resolves coastal land use conflicts
- Acquires and holds environmentally valuable coastal lands for purposes that are in keeping with the Coastal Act
- Protects agricultural lands
- Accepts donations and dedications of land easements for public access, agriculture, open space, and habitat protection

■ California Department of Fish and Game

To manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

■ California Wildlife Conservation Board

To select, authorize, and allocate funds for the purchase of land and waters suitable for the preservation, protection, and restoration of wildlife habitat.

■ California Department of Transportation

To improve mobility across California.

■ Los Angeles and Santa Ana Regional Water Quality Control Boards

To preserve and enhance California's water resources and ensure their proper allocation and efficient use for the benefit of present and future generations.

■ Los Angeles County Department of Public Works

To integrate natural resources, stormwater and water conservation and management of high quality stormwater to increase protection of our communities and obtain a higher quality of life for the citizens of our county.

■ Orange County Planning and Development Services

To provide, operate, and maintain quality public facilities and regional resources for the enjoyment, mobility, protection, and business of the people in Orange County.

EXECUTIVE SUMMARY

With more than seven million people living in the watersheds drained by the San Gabriel and Los Angeles Rivers, the effects of humans on natural ecosystems are extensive: native habitat is scarce, wildlife movement is obstructed, surface and groundwater quality is largely impaired, and ocean water quality is adversely affected. While flood protection has been a high priority and largely successful, creation of sufficient park space, a comprehensive network of trails and bike paths, and opportunities to observe nature in urban settings have been a low priority.



Los Angeles Region from Space

In recent years, cities, communities, agencies, and groups have been working to propose new solutions to these problems. To build upon these recent efforts, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) and the Santa Monica Mountains Conservancy (SMMC) have jointly developed this Watershed and Open Space Plan.

The purpose of this plan is twofold: (1) articulate a vision for the future of the San Gabriel and Los Angeles Rivers Watersheds; and (2) provide a framework for future watershed and open space planning.

The vision for the future can be summarized simply:

Restore balance between natural and human systems in the watersheds.



Los Angeles River at Elysian Park

To achieve that vision, the central element of this plan is a set of **Guiding Principles**, which provide over-arching goals that can be used to guide open space planning in the watersheds. Cities, communities, federal, state and local agencies, groups, and individuals can use the guiding principles to develop plans and projects.

This plan discusses, but does not propose, specific projects. Subsequent plans will be necessary to determine how and where the majority of specific projects will occur. These include subwatershed plans and open space, trail and bike path plans to be developed by individual cities, agencies and organizations. This plan is intended as a living document that will evolve over time, as priorities evolve and needs dictate, based on periodic assessments of progress. As other related plans are developed, they will serve as elements of a comprehensive plan for open space.



Bosque del Rio Hondo



San Gabriel Mountains

A. GUIDING PRINCIPLES

The Guiding Principles are intended to allow jurisdictions to advance, promote, and enable the following concepts:

■ **LAND: Grow a Greener Southern California**

Create, Expand, and Improve Public Open Space Throughout the Region

Improve Access to Open Space and Recreation for All Communities

Improve Habitat Quality, Quantity, and Connectivity

Connect Open Space with a Network of Trails

Promote Stewardship of the Landscape

Encourage Sustainable Growth to Balance Environmental, Social, and Economic Benefits



Pan Pacific Park

■ **WATER: Enhance Waters and Waterways**

Maintain and Improve Flood Protection

Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters and Extend Open Space

Improve Quality of Surface Water and Groundwater

Improve Flood Safety Through Restoration of River and Creek Ecosystems

Optimize Water Resources to Reduce Dependence on Imported Water

■ **PLANNING: Plan Together to Make It Happen**

Coordinate Watershed Planning Across Jurisdictions and Boundaries

Encourage Multi-Objective Planning and Projects

Use Science as a Basis for Planning

Involve the Public Through Education and Outreach Programs

Utilize the Plan in an On-Going Management Process



Arroyo Seco

B. STRATEGIES

To grow greener, enhance waters and waterways, and plan together, the RMC and SMMC will develop and implement strategies that translate the guiding principles into project-specific plans and work programs, from which individual projects can be identified, proposed, and developed. These strategies include:

Education: The State Conservancies will place a high priority on public education and outreach. Restoration of the watersheds will require changes in behavior, shifts in resource priorities, and decisions on how to balance environmental and

economic needs. This requires local understanding of the key issues to allow the public to make informed choices.



Educating the Next Generation

Partnerships: Restoration of balance to the watersheds will require that the State Conservancies work with agencies, cities, communities, neighborhoods, interest groups and individuals to form partnerships to develop plans and implement projects.

Funding: To restore the watersheds, substantial financial resources will be needed. The State Conservancies will encourage, coordinate, and support efforts to secure additional funding from traditional sources, such as Congress, the State legislature, and government agencies, as well as corporations, private foundations, trusts and individuals.



Simi Hills

Multi-Objective Planning: All relevant federal, state and local agencies, cities, private groups and

individuals will be encouraged to incorporate the guiding principles into the development of plans and projects. The Conservancies will also ask the cities to consider incorporation of the guiding principles into the next update of their General Plan.

Management: Open space should be managed consistently for the benefit of the people, wildlife, and the environment. Whenever feasible, acquisition of open space should include a plan to identify responsibility and funding for future management of open space.

Monitoring and Assessment: The State Conservancies will work to develop a joint assessment process for restoration of the watersheds, monitor progress towards meeting the goals described in this plan, and periodically revise and update the plan as appropriate.



Headwaters of the Los Angeles River

C. OPPORTUNITIES

To achieve the vision of the future for the watersheds, to encourage use of the guiding principles, and to implement the strategies described above, the State Conservancies will work with agencies, cities, and groups to identify opportunities and individual projects.

■ Land Acquisition, Connectivity, & Open Space

River Parkways: Create a continuous ribbon of open space, trails, active and passive recreation areas, and wildlife habitat along the Los Angeles, San Gabriel, and Rio Hondo Rivers. The specific treatment of each segment of the greenway should be determined by the existing conditions of the parcel, the needs and desires of the local community and



Conceptual River Parkways

the opportunities for connection and linkages presented at that location.

Urban Lands: Acquire parcels in urbanized areas where appropriate to provide open space, passive

recreation, habitat restoration, and flood mitigation uses. Balance acquisition costs, including clean up of brownfields where feasible, with the value of providing additional open space.

Mountains, Foothills and Hills: Acquire mountain and hillside open spaces that provide important wildlife habitat and open space values. The hillside open space network, in conjunction with the river network, should connect the San Gabriel Mountains with the Puente and Chino Hills and the Santa Ana Mountains, the Angeles National Forest with the Cleveland National Forest and the Santa Monica Mountains with the Santa Susana Mountains, Verdugo Hills and Simi Hills, and the San Gabriel Mountains.



Urban Riverfront Parcel



Trail in the Whittier Hills

Tributaries: Provide open space along tributaries in urbanized areas to extend the river parkways and allow for pedestrian and bike paths, restoration of habitat, water quality improvement, and flood protection.

Trails and Bike Paths: Create a comprehensive network of pedestrian, bike, and equestrian trails that use existing corridors (such as rivers, tributaries and powerline rights-of-way) where available and provide new connections where needed.



Upper San Gabriel River Trail

Community Gardens: A network of community gardens, that incorporate native plants, throughout the urbanized portions of the watersheds, to provide gardening opportunities for residents that do not have access to private land.

■ Public Access

Improve and Expand Existing Facilities: The State Conservancies will work with individual cities and agencies to identify opportunities for the enhancement of existing open spaces within their jurisdictions, and assist in identifying funding sources.

Create New Facilities: The State Conservancies will work to identify opportunities to acquire land and develop new facilities, encourage donations of land parcels, and secure and maintain conservation easements where acquisition or donation is not feasible.



Confluence of the Rio Hondo and Los Angeles River

■ Water Resources

Flood Protection: Maintain and enhance flood protection using a range of flood protection methods, both structural and non-structural. Use open spaces and planted areas to filter, cleanse, and retain stormwater and enhance groundwater infiltration.

Surface Water: Improve water quality to optimize water supplies and protect beneficial uses. Encourage infiltration of urban runoff into groundwater where consistent with water quality goals, to extend the water supply and reduce reliance on imported water.

Groundwater: Expand and enhance groundwater infiltration and recharge wherever possible, and when consistent with water quality goals.



Legg Lake in Whittier Narrows

■ Native Plants and Wildlife

Habitat/Corridors: Preserve and protect important terrestrial, avian, and aquatic habitats in the watersheds. Preserve or establish habitat linkages and/or corridors in the Santa Susana Pass, Newhall Pass, Angeles National Forest to the Verdugo Mountains, Griffith Park to the Verdugo Mountains, the Verdugo Mountains and San Gabriel “Stepping Stones,” the San Gabriel River, the Puente & Chino Hills, the Puente Hills to San Jose Hills and the San Gabriel Mountains, and the Los Angeles River.



Great Blue Heron

Wetlands: Restore and expand wetlands wherever feasible in the watersheds, and incorporate those wetlands as elements of natural systems, to treat urban run-off, improve water quality, and provide wildlife habitat.

D. NEXT STEPS

To restore balance to human and natural systems in the watersheds, plans and projects for open space, habitat, and water resources should incorporate the relevant Guiding Principles articulated in this plan. This includes the Los Angeles River Master Plan and ongoing (or pending) subwatershed plans (including Arroyo Seco Watershed Restoration Feasibility Study), the (in progress) San Gabriel River Master Plan, and future plans for parks, open space, and bike trails in the counties, and individual cities and communities.



Trail Above Monrovia

Following adoption of this plan, the RMC and SMMC will develop and propose specific projects within their territories to begin prompt implementation of the plan. These projects will be evaluated using the project evaluation criteria included in Appendix E.

The Resources Agency will work on the California Continuing Resource Investment Strategy Project (CCRISP), an initiative to help state agencies and the state’s conservation partners make better decisions about how to conserve our state’s precious natural resources.

The Rivers & Mountains Conservancy will, within three years, work with appropriate partners to develop the following plans: River Parkways Plan; Tributaries Plans, Trails and Bike Paths Plan; Mountains, Hills & Foothills Plan; Habitat Conservation

Plan; Cultural Landscapes Plan; and a Monitoring and Assessment program.

The Santa Monica Mountains Conservancy will develop a Watershed Work Program.

California State Parks will implement the urban park strategy for the Los Angeles area. The California Coastal Conservancy will develop wetlands restoration projects. The California Department of Fish and Game will work on habitat conservation planning. The Wildlife Conservation Board will work on acquisition of critical habitat and public access funding. Caltrans will develop bikeways and restoration projects. The Los Angeles and Santa Ana Regional Water Quality Control Boards will coordinate water quality improvements with interested parties. The US Forest Service will complete a Forest Plan Update that includes the Angeles National Forest. The US Army Corps of Engineers will continue work on wetlands restoration and flood control projects. The US National Park Service will prepare a River Parkways Study (if funded) and develop the De Anza Trail. The Los Angeles County Department of Public Works will complete the San Gabriel River Master Plan and work on river-related projects. The Orange County Office of the Chief Executive will complete a subwatershed plan for Coyote Creek (with the assistance of the Army Corps) and implement watershed related improvements. Individual Cities will identify new projects and consider incorporation of the Guiding Principles into the next update of their General Plans.



Los Angeles River

Major Plan Elements

San Gabriel & Los Angeles Rivers Watershed and Open Space Plan

Guiding Principles	Strategies	Opportunities	Next Steps and Plans
<p>■ Land: Grow Greener <i>Create, Expand and Improve Public Open Space Throughout the Region</i> <i>Improve Access to Open Space and Recreation for All Communities</i> <i>Improve Habitat Quality, Quantity and Connectivity</i> <i>Connect Open Space with a Network of Trails</i> <i>Promote Stewardship of the Landscape</i> <i>Encourage Sustainable Growth to Balance Environmental, Social and Economic Benefits</i></p> <p>■ Water: Enhance Waters <i>Maintain and Improve Flood Protection</i> <i>Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters and Extend Open Space</i> <i>Improve Quality of Surface Water and Groundwater</i> <i>Improve Flood Safety Through Restoration of River and Creek Ecosystems</i> <i>Optimize Water Resources to Reduce Dependence on Imported Water</i></p> <p>■ Planning: Plan Together <i>Coordinate Watershed Planning Across Jurisdictions and Boundaries</i> <i>Encourage Multiple-Objective Planning and Projects</i> <i>Use Science as a Basis for Planning</i> <i>Involve the Public Through Education and Outreach Programs</i> <i>Utilize the Plan in an Ongoing Management Process</i></p>	<p>■ Education <i>Develop and Implement Watershed-wide Public Outreach, Education and Interpretive Programs</i></p> <p>■ Partnerships <i>Include Local, State, Federal and Private Partners in Project Planning and Implementation</i></p> <p>■ Funding <i>Secure Additional Funding from Local, State, Federal, Private and Corporate Entities</i></p> <p>■ Multi-Objective Planning <i>Use Guiding Principles to Maximize Projects and Minimize Costs</i></p> <p>■ Management of Public Lands <i>Create a Process for Consistent Management and Staff for Existing and Future Parks</i></p> <p>■ Monitoring and Assessment <i>Assess Progress and Adjust Plan</i></p>	<p>■ Land Acquisition, Connectivity & Open Space <i>River Parkways</i> <i>Urban Lands</i> <i>Mountains, Foothills, and Hills</i> <i>Tributaries</i> <i>Trails & Bike Paths</i> <i>Community Gardens</i></p> <p>■ Public Access <i>Create New Facilities</i> <i>Expand & Improve Existing Facilities</i></p> <p>■ Water Resources <i>Flood Protection</i> <i>Surface Water</i> <i>Groundwater</i> <i>Private & Common Lands (Backyards)</i></p> <p>■ Native Plants and Wildlife <i>Habitat and Linkages</i> <i>Wetlands</i> <i>Private & Common Lands</i></p>	<p>■ The Resources Agency <i>California Continuing Resources Investment Strategy Program</i></p> <p>■ Rivers & Mountains Conservancy <i>Phase II—Working with Cities on:</i> <i>River Parkways Plan</i> <i>Tributary (Subwatershed) Plans</i> <i>Trails and Bike Paths Plan</i> <i>Mountains, Hills & Foothills Plan</i> <i>Habitat Conservation Plan</i> <i>Cultural Landscapes Plan</i> <i>Monitoring & Assessment</i></p> <p>■ Santa Monica Mountains Conservancy <i>Watershed Work Program</i></p> <p>■ California Parks and Recreation <i>Implement the Urban Parks Strategy for the Los Angeles area.</i></p> <p>■ California Coastal Conservancy <i>Wetlands Restoration</i></p> <p>■ California Fish and Game <i>Habitat Conservation Planning</i></p> <p>■ Wildlife Conservation Board <i>Acquisition / Public Access Funding</i></p> <p>■ Caltrans <i>Bikeways and Restoration Projects</i></p> <p>■ State and Regional Water Boards <i>Water Quality Improvements</i></p> <p>■ US Forest Service <i>Forest Plan Update</i></p> <p>■ US Army Corps of Engineers <i>Wetlands Restoration & Flood Control</i></p> <p>■ US National Park Service <i>Parkway Study & De Anza Trail</i></p> <p>■ LA County Public Works <i>San Gabriel River Master Plan and River-Related Projects</i></p> <p>■ Orange County <i>Coyote Creek Watershed Plan</i></p> <p>■ Cities <i>Identify New Projects and Incorporate Guiding Principles into General Plans</i></p>

1. BACKGROUND

A. INTRODUCTION

This document is a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers watersheds. A natural planning boundary, a watershed is the area drained by a single river and its tributaries. This plan addresses the linked watersheds of the San Gabriel and Los Angeles Rivers, which together drain 1,513 square miles from the San Gabriel Mountains to the Pacific Ocean, an area in which more than 7 million people currently live.

Transformation of the land along the San Gabriel and Los Angeles Rivers began with the arrival of settlers in the 18th Century. Densely vegetated wildlands were cleared, irrigated, and planted with grains and vegetables to feed the settlers. The arrival of the railroads and imported water facilitated a second transformation: the patchwork of farmland grew into a major urban metropolis. A third transformation is now possible. A network of open spaces, anchored by parkways along the rivers, can link sustainable communities together with trails, bike paths, and landscaped areas.

In recent years, cities, communities, groups, and agencies have worked to improve and expand open space, optimize water resources, preserve habitat, and create a network of trails and bike paths. Some of these efforts have been informally coordinated, in recognition of the potential to extend benefits beyond the borders of individual cities, create opportunities to leverage benefits, and maximize funding resources. This plan builds upon more than a decade of work and seeks to encourage broader participation in watershed planning. The concepts in this plan are intended to support and inform ongoing planning efforts, as well as provide a framework to plan future projects that are consistent with a regional vision to restore balance between human and natural systems in the watersheds.

The central element of this plan is a set of Guiding Principles intended to be used to plan and implement projects that will help restore balance to the watershed. More detailed plans at the subwatershed and local levels will be necessary to determine where specific improvements will occur. As a result, the

vision of the future articulated in this document may require decades to be realized. But if cities, communities, private groups, and agencies work and plan together, the watersheds will grow greener, waters will be enhanced, and a healthier balance between human and natural systems can be achieved.

This plan utilizes information gathered in a study conducted by the Leo J. Shapiro & Associates (LJS), which studied public perceptions of, and priorities for, open space planning. The maps in this plan are primarily derived from the Geographic Information Systems database developed by Forma Systems for the RMC.

This document is organized in three major sections: (1) Background, which provides the context for the plan; (2) Current Conditions, which provides a description of the watersheds; and (3) a Vision for the Future, which contains the Guiding Principles and discussions of strategies, opportunities, next steps and subsequent plans.

B. HISTORICAL CONTEXT

Over millions of years, the San Gabriel and Los Angeles Rivers emerged from the San Gabriel Mountains and meandered towards the Pacific Ocean. As the mountains rose, they captured more rainfall, and the power of the rivers increased. Because of the steep slopes and rocky soils in the mountains, the rivers carried large amounts of sand, gravel, and rocks. Much of the water in the rivers disappeared into the sand and replenished groundwater. Due to low surface flow most of the year, the rivers appeared as meandering streams within wide beds. But when winter rains arrived, these “streams” often jumped their banks, changed course, and flowed over the land.

With abundant groundwater and the ever-changing course of the rivers, the lands along the rivers were heavily vegetated with dense stands of native trees, roses, grapes, and shrubs. Wetlands, marshes, and springs dotted the landscape. Habitats were diverse and wildlife was plentiful. The abundant water, vegetation, and wildlife supported a significant population of indigenous peoples such as the Chumash and Tongva (Gabrielino).

The earliest Spanish explorers noted the dense vegetation and the presence of surface water. The confluence of the Arroyo Seco and the Los Angeles River was noted as especially verdant. Because water was available, the *Mission San Gabriel de Arcángelo* was founded in 1771, followed in 1781 by *El Pueblo de Nuestra Señora la Reina de los Angeles de Porciuncula* (which became the City of Los Angeles).

The arrival of settlers in the 18th Century began the first human-induced transformation of the double watershed. The dense vegetation surrounding the rivers was cleared to make way for farms and villages. The abundant water and favorable climate created ideal conditions for a variety of crops. Within a short time, the area became the center of agricultural production in Southern California. In little more than a century, the landscape along the rivers had changed significantly as floodplain became highly productive farmlands.



Los Angeles in 1871

From the beginning, water was diverted from the rivers for people, livestock, and crops. Before long, because so much water was diverted, the rivers no longer reached the ocean. Increased opportunities for trade—and a growing population—increased the demand for farmland and water, and the water on the surface of rivers became inadequate to meet demand. Wells were dug to reach groundwater, and groundwater levels slowly began to drop at some locations.

During this first transformation from wildlands to farmlands, proximity to the river was important. But easy access to water was coupled with danger when winter rains swelled the rivers or changed their course. The population lacked the knowledge and the means to control the rivers. Dikes and dams were often washed away by winter floods.

The arrival of the transcontinental railroads in 1876 provided access to distant markets, and agricultural production expanded greatly. The railroads also brought more people eager to share in the dream made possible by abundant sunshine, farmland, water, and business opportunities. Farmland was subdivided and homes built. The influx of people continued. Surface and groundwater sources were in high demand, and groundwater tables began to drop throughout the area. The plentiful wetlands and marshes began to disappear. Areas that were once dense with vegetation became dry grasslands. Occasional droughts became a major concern as residents, farmers, and businesses competed for the limited water supply.



San Gabriel in 1893

Because the population began to exceed available water resources, in 1913 the Los Angeles—Owens River Aqueduct was built, importing water from great distances. More and more farmland was subdivided and converted to commercial and residential uses. Once-distant farm communities began to grow towards each other. The once-vast open spaces began to disappear. Urban sprawl covered the lowlands and spread into the valleys and hillsides. The second transformation of the watershed, from farming communities to urban metropolis was just as swift as the first transformation.

During this second transformation, from farmland to urban metropolis, proximity to the river was less critical, but the danger from floods remained. Instead of crops and livestock, homes, businesses and lives were lost. A variety of measures were employed to keep the rivers in their channels (or the then-current channels), but natural forces always prevailed. After two significant floods in the 1930s, the federal government worked with the Los Angeles County Flood Control District to implement a

flood control plan with three major components: (1) channelize, straighten, and deepen the rivers; (2) install debris basins in foothills to protect against debris flows during storm events; and (3) construct dams in the mountains to impound storm runoff and permit controlled release of those waters. The Los Angeles River was encased in concrete for most of its length, and the San Gabriel River was surrounded by levees. The system protects lives and property from flooding and speeds discharge of floodwaters into the Pacific Ocean.



Los Angeles River south of Downtown

The potential for a third transformation of the watersheds has emerged in the past decade, beginning with visions of “restoring” the Los Angeles River and implementing watershed management strategies. Individuals, groups, agencies, communities, and cities have developed plans to expand natural spaces along the river, establish riverfront walks or bike paths, and restore public access. These concepts have been expanded to include the San Gabriel River, as well as tributaries of both rivers, and planning on these issues is ongoing. This plan is an outgrowth of those efforts, seeks to codify and extend upon those concepts, and provide a framework for future planning by expanding the concept of restoration from the rivers to the entire watershed.

C. PLANNING CONTEXT

During the first transformation of the watersheds, planning focused on meeting the demand for water: first with surface supplies, then groundwater. During the second transformation, once water was imported from distant sources, the focus shifted to protecting farms, homes, and businesses from flooding. To achieve a third transformation of the

watersheds, planning must focus on natural systems and open space.

A watershed is the area drained by a single river and its tributaries. Despite this clear spatial identity, watersheds are not the only natural planning boundary. Groundwater basins cross under watersheds, and forest ecosystems fold over ridgelines. Political and jurisdictional boundaries in the region add complexity. A sound ecological approach to planning must consider the relationships between human and natural systems, overlapping physical and biological systems, and social, economic, and political systems. And since imported water is an important element of Southern California’s water supply, management of the watersheds of the San Gabriel and Los Angeles Rivers will impact remote watersheds. Actions taken in the upper and middle portions of the watershed impact the downstream areas and oceans.

Planning at watershed and subwatershed scales necessarily involves consideration of the entire water cycle, both above and below the ground. This includes the intertwined concerns of flood protection, water resources, water quality, protection and enhancement of habitat, open space for passive and active recreation, and strategies to encourage sustainable future development.

Watershed planning makes clear the interconnections between our mountainous upstream reaches and our downstream cities and beaches.

To understand the context for this plan, it is useful to provide an historical overview of some relevant plans and planning concepts related to open space in the double watershed.

In 1911, Los Angeles City Park Commissioners proposed a river parkway (that was never built) between Griffith Park and Elysian Park that would have connected with the Arroyo Seco Parkway (that was built, but without many of its originally proposed features). Other plans or concepts for parks along the rivers were developed, but none were implemented prior to the start of the major flood control projects that began in the 1930s.

The most significant and far-reaching of the early open space plans in the double watershed was proposed in 1930, by the team of Olmsted Brothers and Harland Bartholomew and Associates, who

together had developed master plans for the Los Angeles County highway system and a state park system. The Olmsted-Bartholomew plan, entitled *Parks, Playgrounds and Beaches for the Los Angeles Region*, recommended a network of parkways to connect the mountains, rivers, parks, and beaches. Parkway along the river were intended to reduce the need for structural flood protection features. To remedy the deficit of park space (that existed in 1930), the plan proposed a total of 71,000 acres of parkland south of the San Gabriel Mountains. Unfortunately, due to timing (at the start of the Great Depression), cost (\$231 million at that time), and other issues, the Olmsted-Bartholomew plan was shelved and largely forgotten for many years. The centerpiece of that plan, a network of open spaces connected by parkways, remains the path not taken.



Los Angeles River west of Sepulveda Dam

The Santa Monica Mountains National Recreation Area was formed in 1977. The National Park Service worked with the State of California to create a Santa Monica Mountains Comprehensive Plan, which was adopted in 1979. This led to the formation of the Santa Monica Mountains Conservancy in order to acquire lands for the Santa Monica Mountains ecosystem.

In 1980, the U.S. Army Corps of Engineers commissioned a study on recreational potential of drainage facilities on the major tributaries of the Los Angeles and San Gabriel Rivers (*LACDA System Recreation Study*, U.S. Army Corps of Engineers and DMJM, 1980), which identified opportunities for trails, linear parks, riparian areas, nature study facilities, and other passive and active recreational opportunities. In 1983, the territorial jurisdiction of the SMMC was expanded to include portions of Ventura County and portions of the western Los

Angeles River watershed, and in 1990 the Rim of the Valley Trail Corridor Master Plan was adopted. In 1990, the Nature Conservancy published the *Critical Wildlife/Habitat Linkage Areas Between the Santa Susana Mountains, Simi Hills, and Santa Monica Mountains*, which identified the critical choke points for wildlife movement between those mountain ranges and the relationship to preservation of biodiversity.

In 1993, the California Coastal Conservancy completed a *Los Angeles River Park and Recreation Study* to explore beneficial uses of the river, including an assessment of the river's potential for recreation and wildlife enhancement. In 1994, the Los Angeles Regional Water Quality Control Board updated its *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*. This plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters.

In 1996, Los Angeles County adopted a Master Plan for the Los Angeles River, which "...provides for the optimization and enhancement of aesthetic, recreational, flood control and environmental values by creating a community resource, enriching the quality of life for residents and recognizing the river's primary purpose for flood control" (*Los Angeles River Master Plan*, Los Angeles County Department of Public Works, 1996). The plan incorporated substantial stakeholder input and recommended environmental restoration, new trails and connections to existing trails, tree plantings, signage, murals, and economic development opportunities. A follow-on project, the development of landscape standards and guidelines, is currently underway.

In 1997, the Cal Poly Pomona 606 Design Studio completed a plan titled: *Puente Hills Corridor: Greenspace Connectivity for Wildlife and People..* This report explored the recreational and habitat preservation planning issues for the Puente Hills from Whittier Narrows to the Cleveland National Forest.

In 2000, the California Coastal Conservancy documented current wetland resources in a report entitled *Wetlands of the Los Angeles River Watershed*, which identified ten sites that have potential for near-term restoration, including De Forest Park (Long Beach), Victoria Park (Torrance), Harbor

Park (San Pedro), Dominguez Gap (Long Beach), Hazard Park (Los Angeles), Taylor Yard (Los Angeles), Lower Arroyo Park (Pasadena), Cahuenga Spreading Grounds (Glendale), Sepulveda Basin (Van Nuys), and Upper Bull Creek (San Fernando).

Also in 2000, Cal Poly Pomona graduate students developed a plan for regional planning of urban wildlife movement networks in the San Gabriel Valley (*Reconnecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks*, California Polytechnic University, Pomona, 2000). Although the primary purpose was to delineate a planning process to connect wildlife habitats, the plan also identified specific opportunities for improvements along the edges of the San Gabriel River.



**Confluence of the Arroyo Seco
and the Los Angeles River**

The Southern California Studies Center of the University of Southern California published *Sprawl Hits the Wall* (2001), proposing a region-wide approach for a sustainable approach to development. The report recommends that the region grow “Smarter,” “Together,” “Greener,” and “More Civic Minded.”

Funded by the California Coastal Conservancy with support from the SMMC, the *Arroyo Seco Watershed Restoration Feasibility Study* (North East Trees and Arroyo Seco Foundation, June 2001) addresses flood and stream management, habitat restoration, water resources, and recreational opportunities along one of the main tributaries of the Los Angeles River. The goal is to restore the watercourse from its origins in the San Gabriel Mountains to its confluence with the Los Angeles River near Elysian Park.

The Los Angeles County Department of Public Works completed a *Los Angeles River Bikeway Study* (June 2001), to address how to overcome the physical obstacles that impede the course of the Los Angeles River bikeway from downtown Los Angeles, past Union Station, the Arroyo Seco, the Los Angeles River Center and into the west San Fernando Valley.

A consortium of groups and agencies, including the South Coast Wildlands Project, the Nature Conservancy of California, the California Wilderness Coalition, the Biological Resources Division of the U.S. Geological Survey, and the Center for Reproduction of Endangered Species of the Zoological Society of San Diego, jointly developed *Missing Linkages: Restoring Connectivity to the California Landscape* (August 2001). This report identified more than 300 existing and former wildlife corridors throughout California that are vital habitat linkages for species diversity. The report identifies several important wildlife linkages in the San Gabriel and Los Angeles watersheds.

Several other plans are currently underway, or are proposed to begin shortly, including:

■ **Los Angeles and San Gabriel Rivers Watershed Feasibility Study**

The U.S. Army Corps of Engineers and Los Angeles County Department of Public Works have collected Geographic Information Systems data on the watersheds. The goal of the study is to be able to identify potential opportunities related to improving recreation, land use and habitat management, water conservation, flood quality and flood management and to develop a framework for a future integrated basin management plan for the Los Angeles and San Gabriel River watersheds.

■ **San Gabriel River Master Plan**

In 1999, Los Angeles County began the development of a master plan for the San Gabriel River, from the County-controlled dams and reservoirs in the San Gabriel Mountains to the river’s outlet at the Pacific Ocean. The consensus-driven master plan process will identify project opportunities for recreation, open space, and habitat enhancements, maintenance of flood protection, preservation of natural resources, and maintenance of existing water

rights. Completion of the plan is scheduled for 2003.

■ **Forest Plan Update—Angeles, Cleveland, Los Padres, and San Bernardino National Forests**

The U.S. Forest Service is in the process of updating its management plan for the Southern California National Forests including the Angeles, Cleveland, Los Padres, and San Bernardino National Forests. The elements of the plan are wilderness areas, timber management, range allotments, recreational options, and land acquisition. Completion of the plan and the required environmental documentation is scheduled for December 2003.

■ **San Gabriel River and Rio Hondo Spreading Grounds Enhancements**

The Los Angeles County Department of Public Works is working with the City of Pico Rivera to provide public access, create recreation opportunities, and improve the appearance of the existing spreading grounds (used to recharge groundwater) along the San Gabriel and Rio Hondo Rivers. This plan is intended as a prototype for multi-objective projects in the region.

■ **Sun Valley Watershed Management Plan**

The Los Angeles County Department of Public Works is developing a plan to address chronic flooding in the Sun Valley subwatershed. The plan proposes to develop multi-objective solutions to flooding, increase groundwater recharge, reduce stormwater pollution, and provide recreational opportunities. The project is intended to attract multiple funding partners, educate and motivate the local community to embrace these solutions, and provide a model for future watershed management projects throughout Los Angeles County.

■ **Subwatershed Plans**

The State Water Resources Control Board has funded subwatershed plans for Compton Creek, Coyote Creek, Rio Hondo, and the Upper San Gabriel River (including Walnut and San Jose Creeks), which are anticipated to begin in late 2001. In addition, the second phase of the Arroyo Seco Watershed Restoration Feasibility Study, has been funded by the SMMC and the California Coastal Conservancy.

2. CURRENT CONDITIONS

The watersheds of the San Gabriel and Los Angeles Rivers cover 1,513 square miles, from the San Gabriel Mountains in the north to the Pacific Ocean at Long Beach (**Figure 2-1**). The two rivers arise from springs and creeks in the mountains surrounding the Los Angeles basin, flow across the San Gabriel and San Fernando Valleys, then flow nearly parallel across the coastal plain to the Pacific Ocean.

during the latter half of the twentieth century has had a considerable impact on natural resources, altering the hydrology in the watersheds and significantly reducing the extent of natural habitat and biotic communities.

The purpose of this section is to provide a primer for planning in the watersheds and an atlas of the

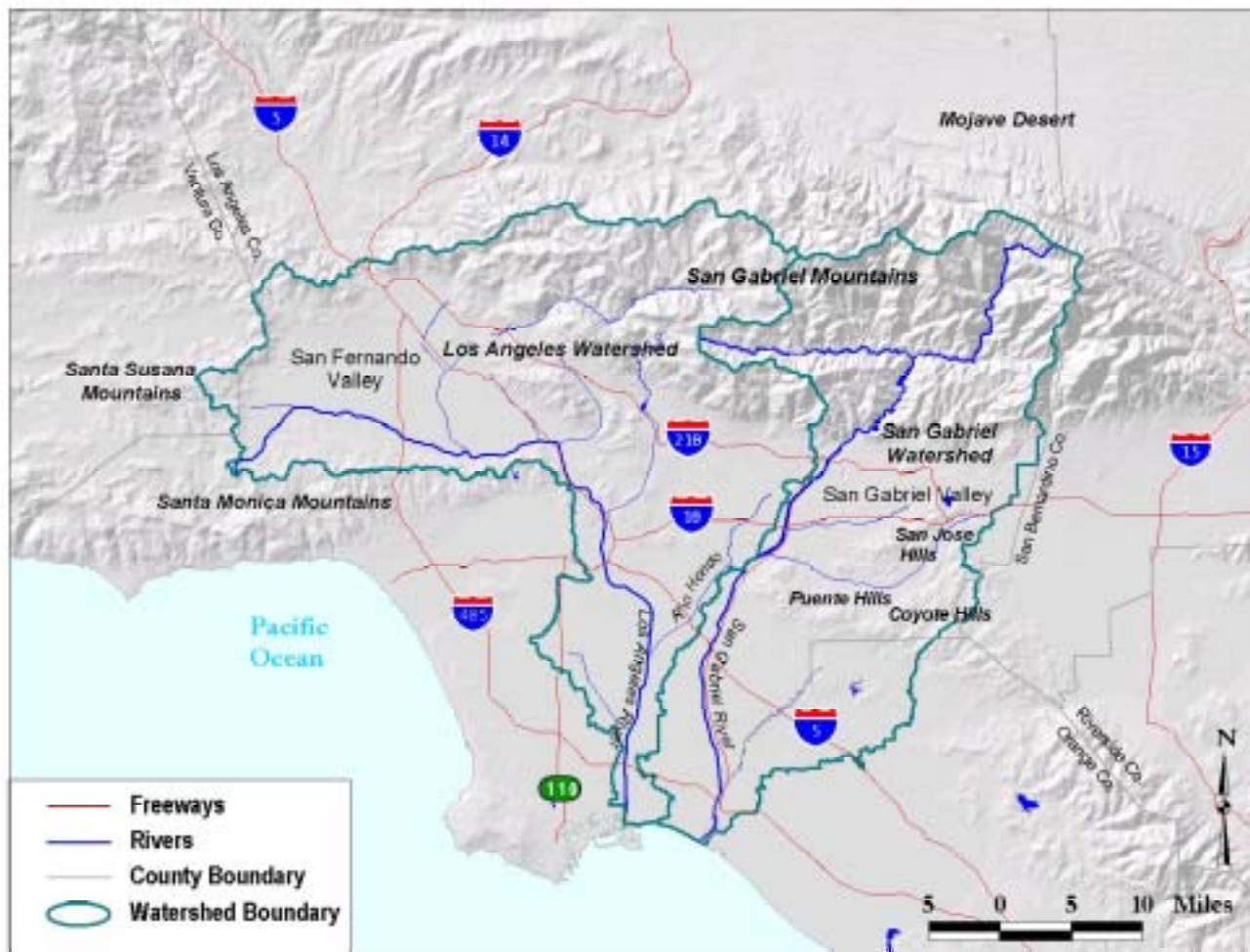


Figure 2-1. San Gabriel and Los Angeles Rivers Watersheds

The rivers have an engineered connection via the Rio Hondo, a major tributary of the Los Angeles River that flows, along with the San Gabriel, into the Whittier Narrows Dam and Reservoir.

The region within the watersheds is geographically diverse, particularly in terms of its topography, climate, land use, and habitat types. Urbanization

geography of the region: its physiography, climate, hydrology, water quality and quantity, recreation and open space, natural habitat and demographic characteristics.

A. PHYSICAL SETTING

1. Geology and Geomorphology

The mountains surrounding the San Gabriel-Los Angeles basins are part of the Transverse Ranges, which extend 350 miles east to west from the Eagle Mountains in San Bernardino County to the Pacific Ocean. To the north, the San Gabriel Mountains separate the basin from the Mojave Desert. To the west, the Santa Monica Mountains separate the watersheds from the Ventura basin. Topography in the watersheds ranges from sea level to over 10,000 feet in the San Gabriel Mountains. Most of the coastal plain is less than 1,000 feet in elevation. The foothills reach 3–4,000 feet before rising rapidly into the San Gabriels, to a height of 10,064 at Mt. San Antonio (Mt. Baldy). The grade of the mountain slopes averages 65–70 percent, some of the steepest slopes in the world.

Geology varies from Precambrian metamorphic rocks (1.7 billion years old) to alluvial deposits washed down from mountain canyons. The San Gabriel Mountains are young mountains, geologically speaking, and continue to rise at a rate of nearly three-quarters of an inch per year. Because of this instability, they are also eroding at a rapid rate. Alluvial deposits of sand, gravel, clay and silt in the coastal plain run thousands of feet thick in some areas, due in part to the erosive nature of the San Gabriel and Santa Monica Mountains.

The region is extensively faulted, with the San Andreas Fault bordering the north side of the San Gabriels and the Sierra Madre–Cucamonga fault zone on the south side. Throughout the basin are hundreds of lesser fault systems, such as the Newport-Inglewood fault that runs from Newport Beach to Beverly Hills via Long Beach and Signal Hill. The most notorious are those that have been the cause of major earthquakes during the past few decades, known not by name but by the region in which they struck: Sylmar in 1971, Whittier Narrows in 1987, and Northridge in 1994. The San Andreas Fault, which traverses California for 625 miles from the San Bernardino Mountains to Northern California, has not generated an earthquake in the Los Angeles area since the Tejon Ranch earthquake in 1857.

Fire is also an integral and necessary part of the natural environment and plays a role in shaping the landscape. Chaparral, the dominant natural vegetation type on slopes throughout the region, is extremely fire-prone. Brush fires leave the soil exposed and unprotected. These bare areas, in combination with steep slopes and erosive mountains, enable runoff from winter rains to suspend large quantities of coarse mineral debris, rocks, and vegetation and wash it downslope and into streams. These debris flows can erode the landscape, clog stream channels, damage structures, and injure inhabitants in the canyons and lower foothill areas.

2. Climate

The watersheds are within the Mediterranean climate zone, which extends from Central California to San Diego. Wet winters and long dry summers characterize this climate. The extent of this climate type is limited worldwide. Other than the central and south coast of California, it only occurs in coastal zones along the Mediterranean Sea, Western and Southern Australia, the Chilean coast and the Cape Town region of South Africa.

The geography of the Los Angeles region results in a great deal of spatial variation in the local climate. The abrupt rise of the mountains from the coast creates a barrier that traps moist ocean air against the southerly slopes and partially blocks the desert summer heat and winter cold from the interior northeast. The common perception of the region as desert is misleading. The coastal plain may be more appropriately termed “semi-arid,” and the mountains receive considerable snow and rainfall most years. Average daytime summer and winter temperatures range from 76/65F° on the coast, to 90/66F° in the interior valleys and 81/56F° in the mountains.

Summers are dry, with most precipitation falling in a few major storm events between November and March (**Figure 2-2**). Long-term annual rainfall averages vary from 12.2 inches along the coast, 15.5 inches in downtown Los Angeles to 27.5 inches in the mountains (**Figures 2-3 and 2-4**). For any given storm event, rainfall totals vary significantly by region. Moisture-laden air from the ocean moves up the mountain slopes, expanding and cooling as it rises. Cooler air can hold less moisture, thus produces more precipitation. On the lee side of the

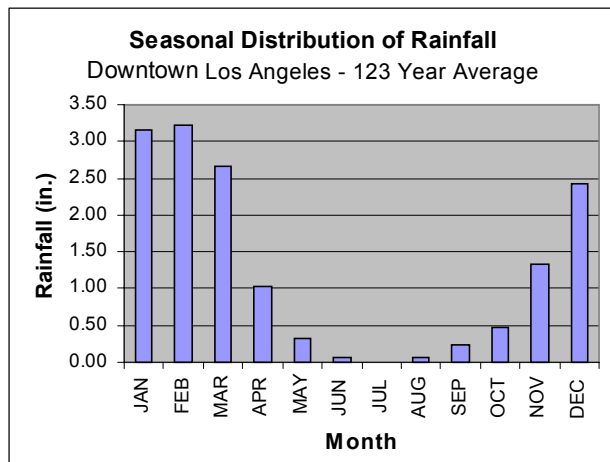


Figure 2-2. Seasonal Variation in Rainfall Amounts

Source: Western Regional Climate Center

mountains, descending air mass warms as it reaches the desert, releasing any remaining moisture through evaporation. A 24-hour storm that produces one inch of rain along the coast can generate 10–20 inches of rainfall in the mountains and just a trace in the desert. The maximum-recorded 24-hour rainfall in the watersheds was 34 inches in the mountains and 9 inches on the coastal plain.

Most winter storms come from the northwest, moving across Southern California into Arizona. The closer the center of the storm is, the more rain it will bring, with snow levels frequently reaching down to 5,000 feet. These are the typical storms that occur in the basin, bringing $\frac{3}{4}$ inch or less of rainfall. Storms from the south or southwest are less common, but may bring 3–6 inches of rain in the basin and 3–6 feet of snow above 6,000 feet. These storms tend to stall off the coast, which makes their arrival difficult to predict. Storms from the west are least common but last the longest, characterized by a series of rain events each bringing 1–2 inches of rain over a period of 36–48 hours. Summer rains are rare, but when they occur they are a result of tropical thunderstorms originating in the Gulf of Mexico or late summer hurricanes off the West Coast of Mexico.

Air pressure also plays a role in the local climate. In the late spring and early summer, a low-pressure area inland draws a moist marine layer in from the ocean, resulting in coastal fog and low clouds, which moderate temperatures in the basin. The difference in air pressure between the ocean and the desert

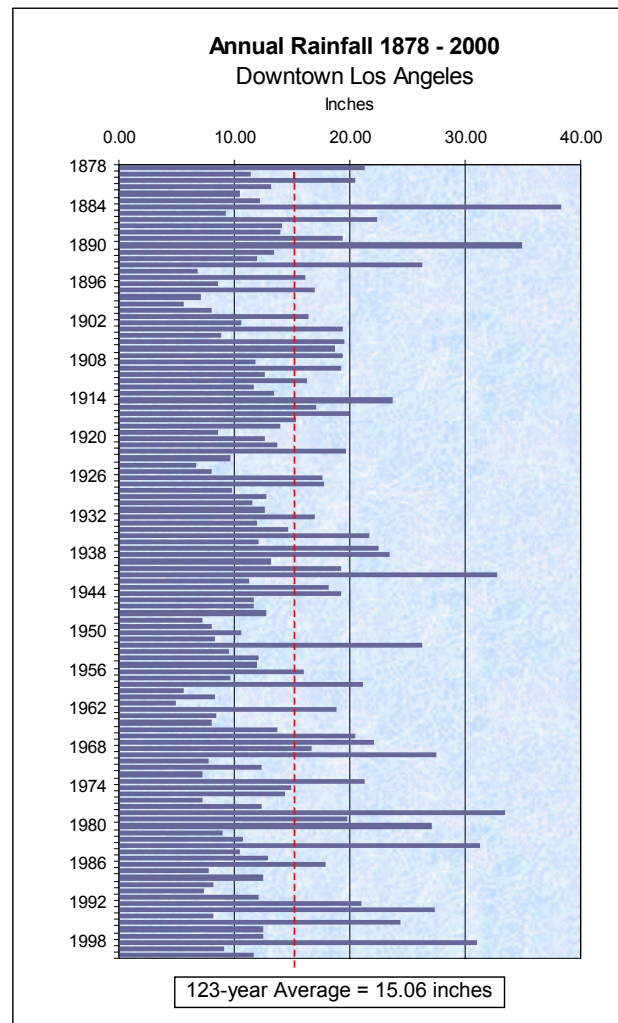


Figure 2-3. Long-term Variation in Rainfall Amounts

Source: Western Regional Climate Center

determines the extent of the marine layer. High-pressure systems off the coast also result in offshore breezes, as air moves from the ocean towards lower pressure areas in the basin.

B. WATERSHED HYDROLOGY

Most of the watersheds (93 percent) lie within Los Angeles County. The San Gabriel River flows from the San Gabriel Mountains, in the Angeles National Forest. Its tributaries drain portions of the Chino, San Jose, and Puente Hills. The Los Angeles River originates at the junction of Calabasas and Bell Creeks in the western San Fernando Valley, and is fed by other tributaries that drain the Santa Monica and Santa Susana Mountains, the Simi Hills, and the western San Gabriel Mountains. Coyote Creek, a tributary of the San Gabriel River, drains portions

of both Los Angeles and Orange Counties (Figure 2-5).

1. Surface Water

There are twenty major sub-watersheds, shown in Figure 2-5. The major tributaries of the San Gabriel River include the West Fork of the San Gabriel, Walnut Creek, San Jose Creek, and Coyote Creek. For the Los Angeles River, major tributaries include the Tujunga, Pacoima and Verdugo Washes, Arroyo Seco, Rio Hondo and Compton Creek.

There are nearly 2,000 stream miles in the watersheds, and one-quarter of those streams flow year-round.

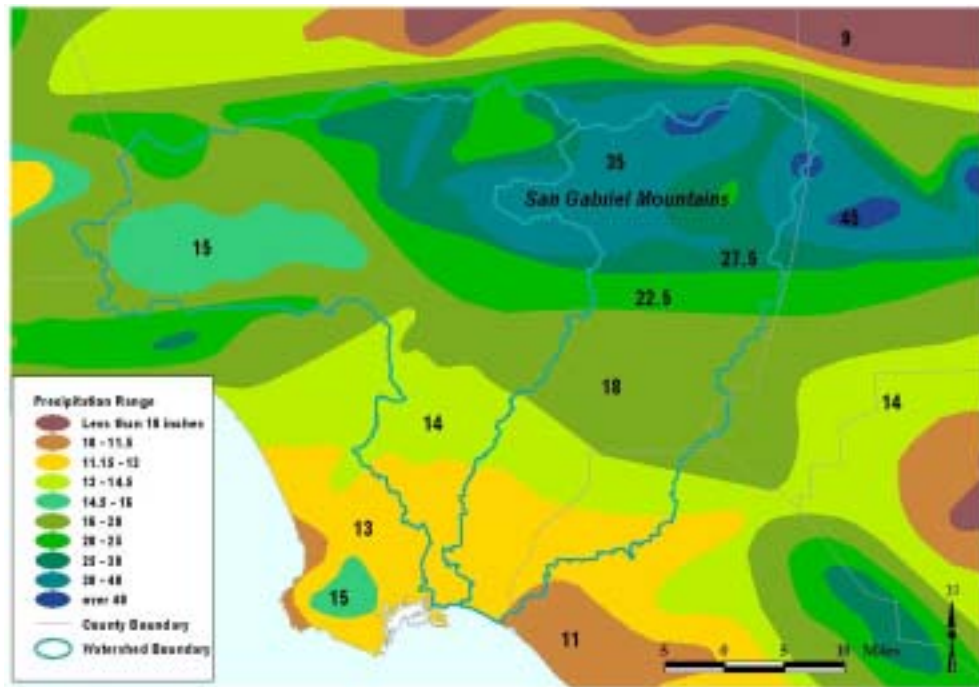


Figure 2-4. Spatial Variation of Average Precipitation in the Watersheds
Source: California Department of Fish & Game

■ Lakes and Reservoirs

The coastal plain at one time supported a number of shallow lakes and ponds fed by springs and by the rivers. Many of these lakes have disappeared as the rivers have been modified. A network of reservoirs has been constructed along the rivers and major tributaries, which are managed for water supply, flood protection, groundwater recharge and in some cases recreation. In total there are 92 lakes and reservoirs within the watersheds. Twenty of these are reservoirs operated by Los Angeles County or the Army Corps of Engineers (Figure 2-13).

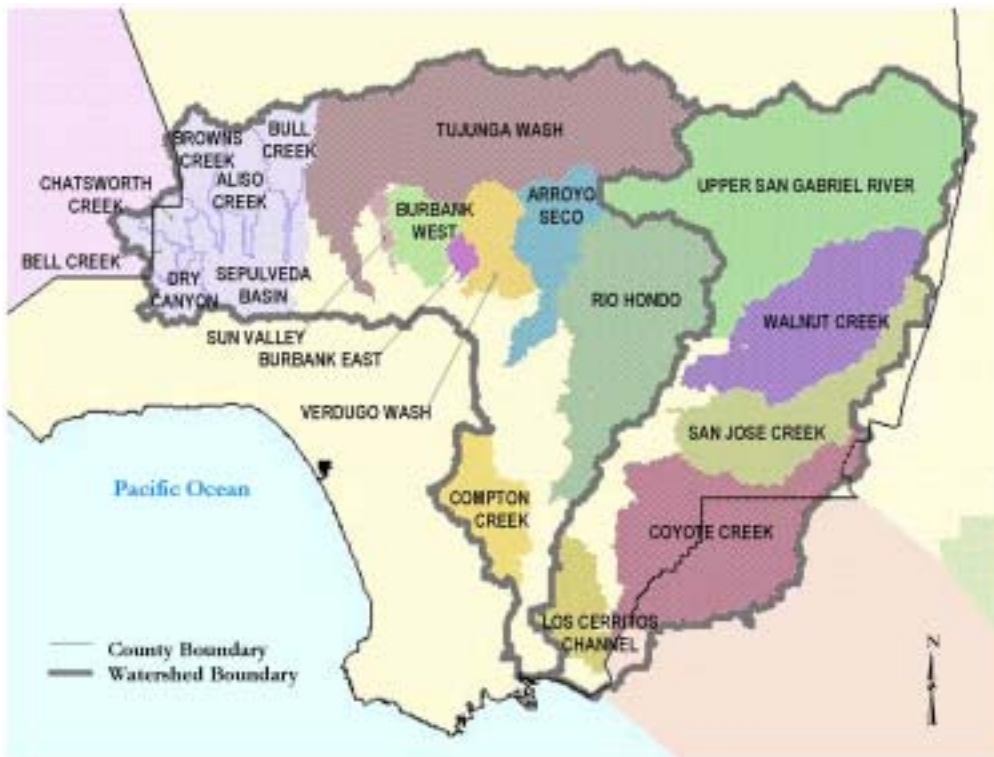


Figure 2-5. Major Sub-watersheds of the San Gabriel and Los Angeles Rivers
Adapted from L. A. County Department of Public Works

■ Wetlands

Historically, extensive wetlands existed throughout the San Gabriel and Los Angeles river basins, both fresh and saltwater. Marshes and ephemeral ponds occurred near the cities of Torrance and Long Beach, and along Compton Creek and other tributaries. Tidal marsh occurred along the coast near San Pedro and at the mouths of both rivers. The historical distribution of wetlands in Los Angeles and northern Orange County is shown in **Figure 2.6a**.

Nearly all of these historic wetland areas have been lost to urbanization, marinas, flood protection measures, or stream channelization. According to the Coastal Conservancy, within the Los Angeles River watershed overall, 100 percent of the original lower riverine and tidal marsh and 98 percent of all inland freshwater marsh and ephemeral ponds have been drained or filled. Some of these losses have been offset by constructed or restored wetlands, primarily behind flood management structures such

as the Sepulveda Basin, Santa Fe Dam, and Whittier Narrows Basin. The current distribution of wetlands in Southern California is shown on **Figure 2-6b**. The most substantial remaining historic wetland areas include:

- El Dorado wetlands near the confluence of Coyote Creek and the San Gabriel River
- Los Cerritos wetlands near the mouth of the San Gabriel River (Bixby Ranch and Hellman Ranch), which are degraded from oil drilling operations
- Lower Compton Creek where the channel bottom is unlined
- Saltwater marsh along the banks at the lowest reach of the Los Angeles River below Willow Street and the Golden Shores wetland near the river's mouth in Long Beach
- Pockets of freshwater marsh in Torrance
- Seal Beach National Wildlife Refuge wetlands at the Naval Weapons Station

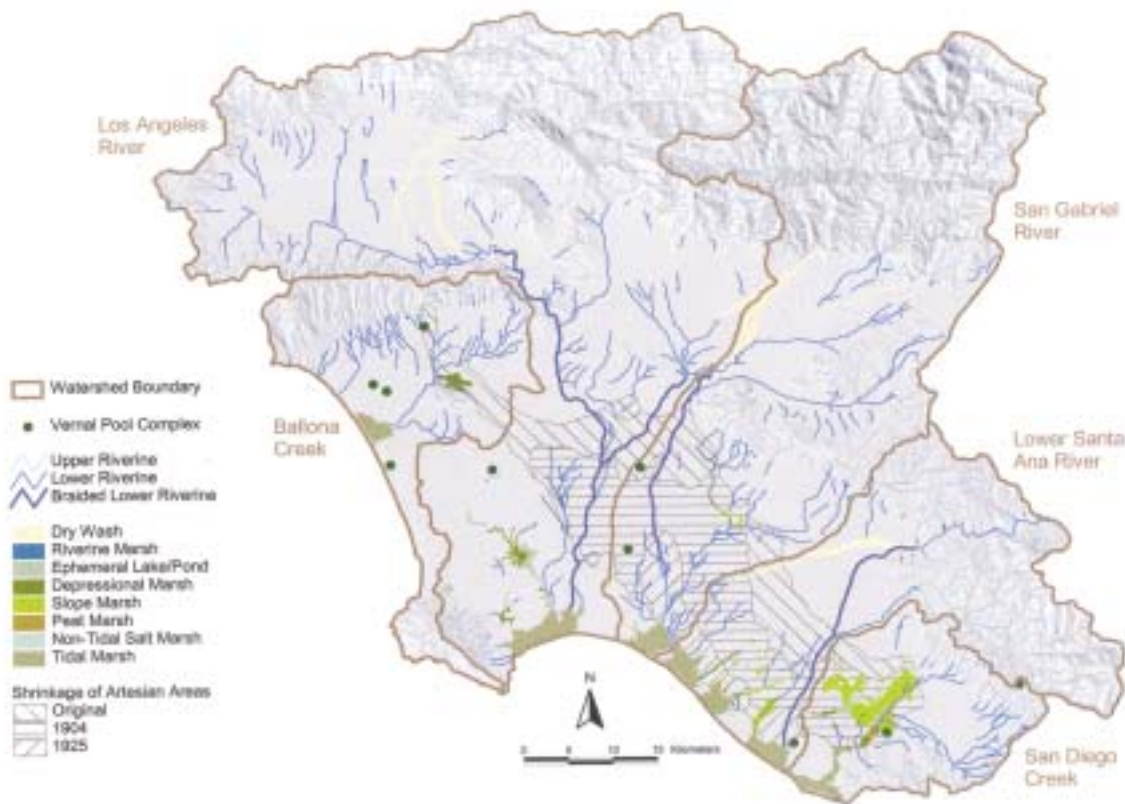


Figure 2-6a. Historical (Circa 1870) Distribution of Wetlands

Adapted from Rairdan, 1998

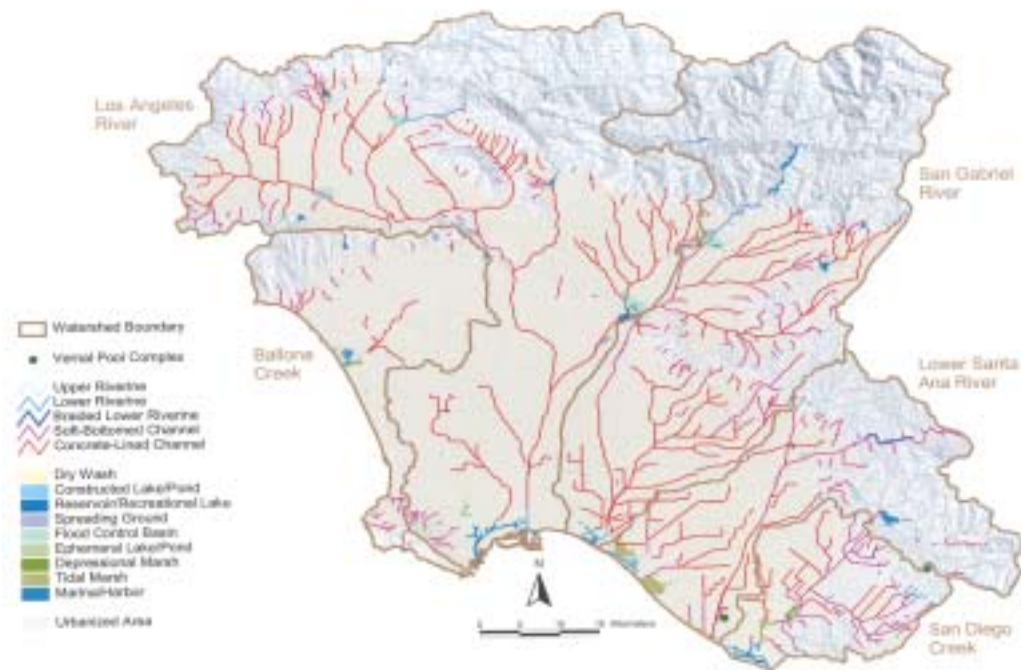


Figure 2-6b. Current Distribution of Wetlands

Adapted from Rairdan, 1998

2. Channel and Flow Conditions on the Major River Reaches

■ Historical Conditions

The flow of the San Gabriel and Los Angeles Rivers was historically dependent upon climate. The rivers derived their flow from snowmelt from the mountains, surface runoff from storms and contributions from springs and groundwater. The rivers were shallow with braided channels and wide floodplains. They frequently carved new channels in their floodplains during heavy winter storms and have altered their courses several times.

During the late eighteenth and nineteenth centuries, ranching and agriculture dominated the San Gabriel and Los Angeles River basins. Flooding in the valleys and periodic droughts made permanent settlements difficult. The Los Angeles River was the sole source of water for the developing city of Los Angeles until the Los Angeles-Owens River Aqueduct was completed in 1913. Diversions from both rivers for agricultural irrigation and drinking water reduced their natural flow, although their propensity for winter flooding was unabated.

■ Existing Conditions

Until the 1930s, both the San Gabriel and Los Angeles Rivers and their tributaries were primarily natural bottom streams. Now, over seventy-five percent of the streams are concrete-lined channels, modified for flood protection purposes. Tributaries originating in the San Gabriel and Santa Monica Mountains or the local hills, such as the Arroyo Seco and Tujunga Wash, remain natural channels in their upper reaches but have been converted to concrete channels in their lower reaches. Upper Compton Creek is channelized, but the lower Creek still has a soft-bottom stream channel.



Upper Arroyo Seco

The upper San Gabriel River and its tributaries remain in a relatively pristine state. However, the river has been extensively modified in the middle and lower reaches for flood management. The lowest reach of the river is concrete-lined channel for approximately eight miles, with riprap banks and soft-bottom channel upstream of the concrete-lined channel and near the river's mouth where it is under tidal influence.

Channelization of the Los Angeles River was completed in 1954 for most of its 51-mile length. There are a few stretches where the high water table or other conditions required that the river bottom be left unpaved. These include the six-mile reach through Glendale Narrows near Griffith Park and one and a half miles through the Sepulveda Basin. The lowest 2.6 miles of the river, which are under tidal influence, are natural streambed with riprap-lined banks.

Flood protection efforts began along the San Gabriel River in 1932 with construction beginning on three dams in the upper reaches of the river. Cogswell Dam, on the West Fork, was completed in 1934. Morris Dam was completed in 1935 and San Gabriel Dam was completed in 1939. Two dams on the coastal plain, the Santa Fe Dam and the Whittier Narrows Dam, were completed in 1949 and 1957, respectively.

Urbanization has altered the natural flow and the runoff regime in the basin, increasing both the velocity and volume of water flowing through the rivers (**Figure 2-7**). Prior to 1960, the ratio of rainfall to runoff was approximately 4:1, meaning that 80 percent of the precipitation in the basin was either evaporated or infiltrated and 20 percent was converted to surface runoff. By 1990 that ratio had increased to 2:1. Now, approximately 50 percent of all precipitation is converted to surface runoff. (This is a very rough estimate, and does not account for flow increases as a result of wastewater discharges, or diversions from the rivers for groundwater recharge.)

■ Sources of Base Flow

In a few reaches of the rivers, the groundwater table is high and contributes to river flows seasonally. For the most part, base flow comes from snowmelt and headwaters streams in the San Gabriel Mountains, urban and agricultural runoff, and treated wastewater discharges. During the dry season, flow is dominated by treated wastewater discharges, particularly in the lower reaches of the rivers.

C. HABITAT

Because of its varied climate and topography, Southern California is biologically diverse. Within

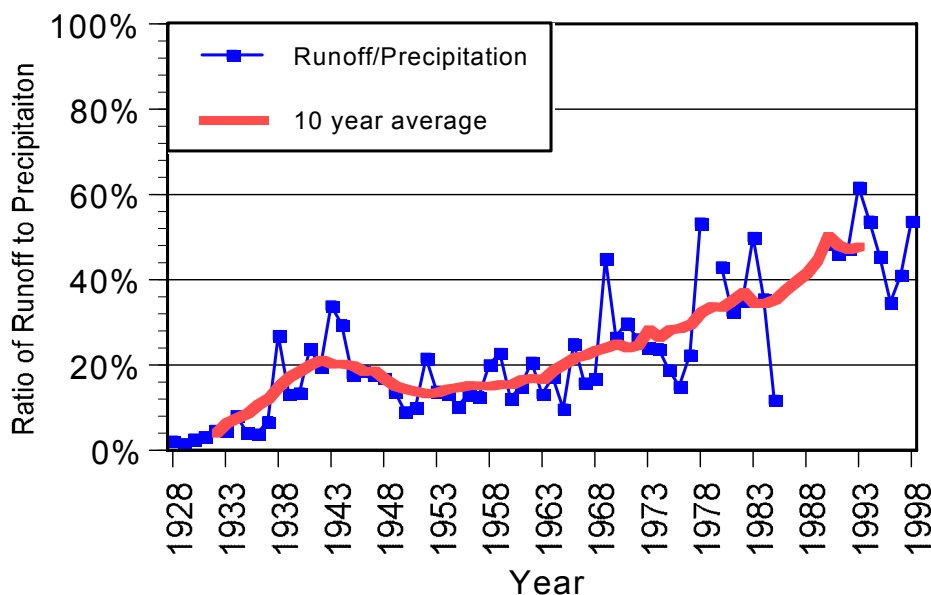


Figure 2-7. The Ratio of Annual Runoff in the Los Angeles River Measured at Firestone Blvd. to the Annual Precipitation at the Los Angeles Civic Center from 1928 to 1998

Source: Western Regional Climate Center and L.A. County Department of Public Works.
Reprinted from Dallman and Piechota 1999.

California, 25 percent of all known plant species in North America can be found, and Southern California supports half of all California's habitat types (Mayer and Laudenslayer 1988). The Mediterranean ecosystem type (which predominates adjacent to the coastal mountains in Southern California) exists on only 3 percent of the earth's land surface. World-wide, it is more threatened than the rainforest.

■ Historical Conditions

The major native vegetation communities in the region include chaparral, grasslands, coastal sage and alluvial scrub, oak woodland, oak savanna, riparian and conifer forest. Alluvial scrub and chaparral were the most widespread in the foothills and basin, and conifer forests dominated the higher elevations. Many mixed communities and locally unique habitats resulted from the topography and varying microclimates. These conditions allowed the development of unique species and subspecies of plants and animals, giving the region a rich biodiversity. Both the San Gabriel and Los Angeles rivers supported extensive riparian habitats containing marsh grasses, willow, cottonwood, mulefat and sycamore. The rivers provided steelhead trout habitat. The basin and surrounding hills also supported large predators, such as grizzly bear and mountain lion. Although the grizzly bear appears on the state flag and was once abundant throughout the state, the last known grizzly bear in California was killed in 1922.

■ Existing Conditions

The continued existence of native vegetation and plant communities in the watersheds is generally impacted by urban and suburban development. Native vegetation in much of the basin has been displaced by development, but large expanses of chaparral, oak woodland, California walnut woodland, and coastal sage scrub remain in the Santa Monica and San Gabriel Mountains and in the Verdugo Hills. Alluvial scrub is found in Big Tujunga Wash above Hansen Dam and above the Santa Fe Dam in the San Gabriel Valley. Grasslands occur in the undeveloped valleys and hillsides of northern Los Angeles County and in the Puente Hills. Conifers, primarily Big Cone Douglas Fir, White Fir, Lodgepole Pine, and Ponderosa Pines, are confined mostly to the Angeles National Forest in the San Gabriel Mountains.

Riparian corridors occur along streams in the San Gabriel Mountains and the upper and middle reaches of the San Gabriel River, including Walnut and San Jose Creeks, and upper Los Angeles River watershed, including the Santa Monica Mountains, Simi Hills, Verdugo Mountains and Santa Susana Mountains. Freshwater stream habitat also occurs in the upper San Gabriel River and streams in the San Gabriel foothills, Puente and Chino Hills, the Whittier Narrows, and the Glendale Narrows on the Los Angeles River. Wetlands occur in limited areas, mostly near the coast. The estuaries of both rivers provide habitat for fish and a variety of birds.

Urban development has also encroached upon wildlife habitat, displacing large mammal populations, particularly in the basin. The mountain and foothill areas still support important mammal species, including mountain lion, bobcat, black bear, bighorn sheep, gray fox, coyote, American badger, and mule deer. Some wildlife species, particularly deer, raccoon, and coyote, can be found in suburban areas, occasionally wandering into backyards, creating a potential for conflict between people, pets and wildlife. The rare encounters between humans and mountain lion or bear usually turn out to be deleterious to the animals. Ecosystem health depends upon preserving both large habitat blocs and linkages between those blocs, so that predator and prey species can survive in balance and so that undesirable interactions between wildlife and people are minimized.

■ The Effect of Exotic Species

Although the watersheds support approximately 450 species of birds, small populations of large mammals, and dozens of species of small mammals, reptiles and amphibians, agriculture and cattle grazing in the 19th century and urban development in the 20th century have significantly altered the native ecology. California's mild climate allowed the introduction of a wide range of exotic species.

Native plant species have been largely replaced in the basin by landscaping associated with urban and suburban development. In undeveloped areas, non-native plants such as arundo (*Arundo donax*), tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*), salt cedar (*Tamarix ramosissima*) and *Senecio mikanioides* are out-competing native species because they are not edible to wildlife or lack natural preda-

tors such as disease and insects. Arundo, a tall bamboo-like grass that is prolific and difficult to eradicate, is probably the most invasive exotic species. In riparian areas, it takes up large amounts of water, crowds out native plants, clogs streams, and disrupts the balance for aquatic species. Along the Whittier Narrows, arundo covers about 80% of the landscape.

The alteration of the basin landscape from grasslands to urban metropolis caused a decline in larger birds such as owls and raptors, which allowed some native species such as crows and mockingbirds to flourish. These in turn have crowded out many species of songbirds. Introduced species such as the European starling have also displaced some native species. In suburban areas, domestic cats and dogs have introduced disease and contributed to reduced populations of birds and small mammals as well. In riparian areas, introduced species of fish such as mosquito fish (*Gambusia sp.*), crayfish, and bullfrogs have impacted native populations of fish and amphibians.

■ High Quality Habitat Areas

The upper San Gabriel River basin and portions of the upper Los Angeles River watershed support high quality riparian habitat and oak woodland. Riparian areas in the Whittier Narrows reach of the San Gabriel River and along the soft-bottom portions of the Los Angeles River contain freshwater marsh communities and riparian forest, although non-native species are increasingly prevalent. Lower Compton Creek, above its confluence with the Los Angeles River, includes several miles of freshwater marsh. These riparian habitats support hundreds of species of birds, dozens of native plants, and a variety of mammals and reptiles. Native fish species vary. The upper San Gabriel River and the creeks in the mountains and foothills support trout and Arroyo Chub (*Gila orcutti*). The Santa Ana sucker (*Catostomus santaanae*) and Santa Ana speckled dace (*Rhinichthys osculus*) are found in the upper reaches of the San Gabriel River and Big Tujunga Creek.

In the foothills and throughout the basin, patches of natural or nearly natural habitat of varying size remain, supporting native species of plants and animals. These are most prevalent in regional parks, recreation areas and other protected areas, but there

are also significant natural areas that are not yet protected. The largest intact areas of wildlife habitat occur in the Angeles National Forest, the Santa Monica Mountains, Verdugo Mountains, San Rafael Hills, Simi Hills, Santa Susana Mountains, Santa Fe Dam floodplain, Sepulveda Basin, and Whittier Narrows recreation areas, and in the San Jose and Puente Hills.

2. Species Management

■ Threatened and Endangered Species

The Federal Endangered Species Act, passed in 1973, defined categories of “endangered” and “threatened” species and required all federal agencies to undertake programs for the conservation of endangered and threatened species, and prohibited agencies from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its “critical habitat.” The California Endangered Species Act (CESA) generally parallels the main provisions of the Federal Endangered Species Act, although limited to species or subspecies native to California. Under CESA the term “endangered species” is defined as a species of plant, fish, or wildlife that is “in serious danger of becoming extinct throughout all, or a significant portion of, its range.” In general, both the Federal and California laws are designed to identify and protect individual species that have already declined in number significantly.

Southern California has the second greatest number of endangered and threatened species nationwide, after Hawaii, and the majority of these species are not found outside of California. Within the watersheds, there are hundreds of endangered, threatened, and sensitive species, mostly plants (see Appendix G). Federal critical habitat designations for two animals, the threatened California gnatcatcher (*Poliioptila californica*) and the endangered arroyo toad (*Bufo microscaphus californicus*), fall within the watersheds (**Figure 2-8**).

The endangered steelhead trout (*Oncorhynchus mykiss*) once traversed the entire length of the Los Angeles and San Gabriel Rivers, and other coastal streams. Although the southern boundary of its range is officially designated as Malibu Creek, steelhead have recently been found in Topanga Creek (the next drainage east) and in San Mateo Creek in San Diego

County. The National Marine Fisheries Service, the federal agency in charge of the listing, recently proposed extending the boundary to include San Mateo Creek. This would not include the intervening streams unless steelhead were found to inhabit them. Steelhead are the only native Southern California species that travel the waters from the mountains to the sea and back. If conditions are appropriate for steelhead, they are generally appropriate for many other species as well.



Steelhead Trout Caught Below Glendale in 1940

■ Exotics Removal

Because arundo's extensive root system allows it to resprout rapidly, eradication programs have increased in recent years, utilizing mechanical removal methods, hand clearing, and herbicides. The Forest Service is the lead agency for "Team Arundo," an interagency group conducting arundo eradication efforts in Southern California. Los Angeles County, local conservancies, and conservation groups have also undertaken smaller-scale eradication programs throughout the watersheds. The key to permanent eradication is to start from the top of a watershed, since arundo cleared downstream will likely re-establish itself if there are occurrences upstream. However, significant progress has been made in removing the reed and restoring native vegetation along many stream reaches.



Arundo Removal

Several other invasive plant control programs are underway to manage lesser-known species. Alligator weed (*Alternanthera philoxeroides*) and water hyacinth (*Eichhornia crassipes*), for example, occur in streambeds throughout the Los Angeles County, affecting nearly 5,800 acres. Management efforts for alligator weed have been ongoing since 1956, and coverage of the weed is fairly low and under control. A program of biological control of water hyacinth using exotic natural enemies began in 1988. The coverage of water hyacinths is high and increasing. These programs are conducted jointly by the California Department of Food & Agriculture, the U.S. Army Corps of Engineers, and Los Angeles County Department of Agriculture.

Non-native plant species occurring in grasslands and disturbed land areas are numerous, and include klamathweed (*Hypericum perforatum*), puncturevine (*Tribulus terrestris*) and yellow starthistle (*Centaurea solstitialis*). The percentage of cover is low, but they occur throughout the county. Biological control programs for these species began in 1988, conducted by Los Angeles County Department of Agriculture and California Department of Food & Agriculture. Klamathweed and puncturevine are considered to be under control but coverage of yellow starthistle is increasing. All are monitored through periodic aerial surveys.

3. Habitat Management

■ Significant Ecological Areas

Habitats that support rare or sensitive species of plants and animals occur throughout the watersheds. In 1980 Los Angeles County designated certain habitats as Significant Ecological Areas

(SEAs) in the County's General Plan (**Figure 2-8**). These include the habitat of rare, endangered and threatened plant and animal species, biotic communities that are restricted in distribution, habitat that is important to the life cycle of a species or group of species, biotic resources that are of scientific interest, are important to game species habitat or fisheries, or are relatively undisturbed. Although SEAs are not off-limits to development, they do have some restrictions, and potential development requires additional environmental review in order to protect the identified sensitive resources. SEA boundaries have been proposed for revision and expansion in 2001.

■ Natural Community Conservation Planning

The State of California's Natural Community Conservation Planning program began in 1991, with an objective to conserve natural communities at the ecosystem scale while accommodating compatible

land uses. The program seeks to focus on the long-term stability of wildlife and plant communities.

The focus of the initial effort is the coastal sage scrub habitat of Southern California, home to the California gnatcatcher and approximately 100 other potentially threatened or endangered species. This much-fragmented habitat is scattered over more than 6,000 square miles in Southern California, including the southeastern corner of Los Angeles county and large areas of Orange County. Other habitats may warrant designation, delineation, and development of conservation plans, including riparian and valley oak woodland, both of which are found in the watersheds.

4. Habitat Linkages

Urban and suburban development not only reduces total habitat area, but also creates barriers to movement of wildlife between habitats, through

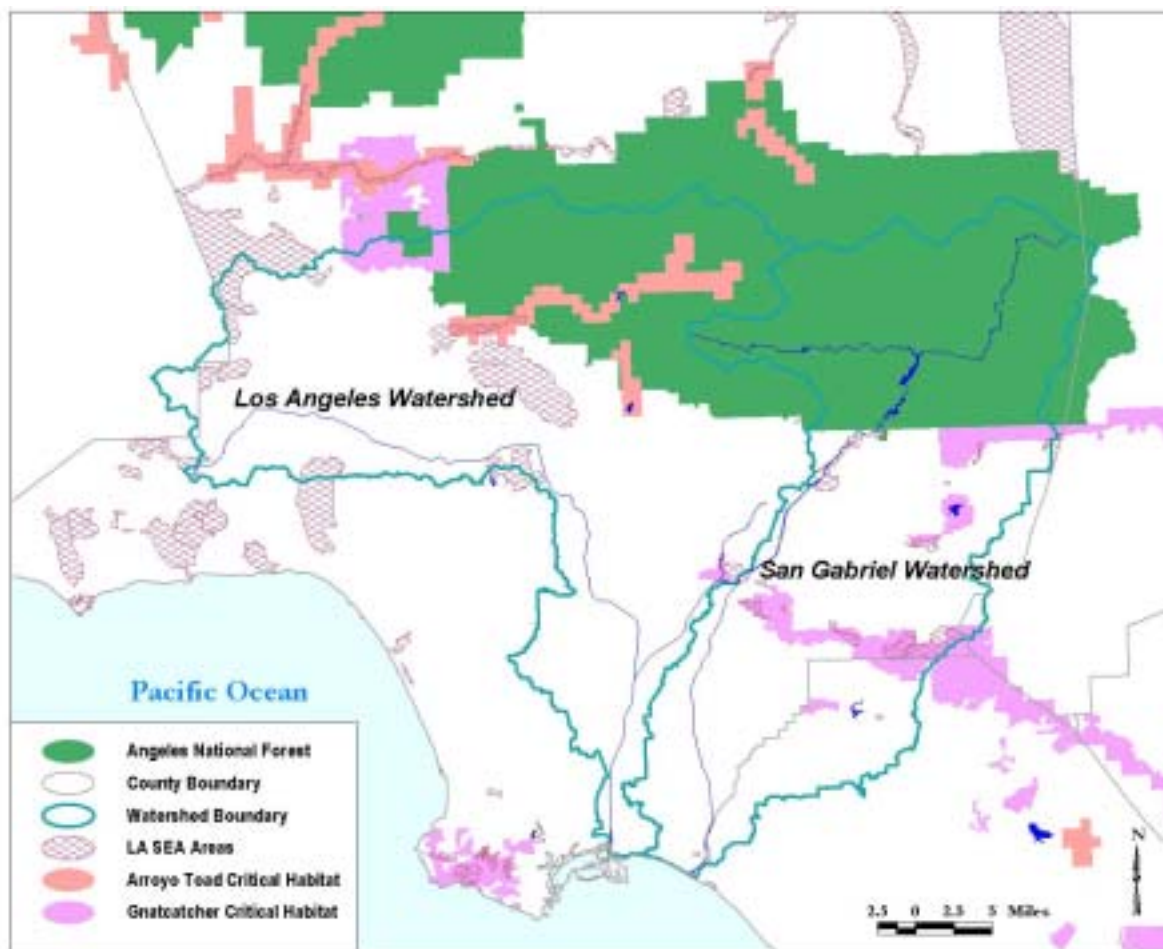


Figure 2-8. Significant Ecological Areas and Critical Habitat Designations

installation of freeways, dams, and backyard fences. Both loss of habitat and habitat fragmentation can reduce plant and animal populations and species diversity. As large habitat areas disappear, connections between patches of habitat become increasingly important to maintaining plant and animal populations.

■ Urban Ecological Integrity

Historically, urban design has focused on aesthetics and efficiency: how to get from place to place easily and safely. Because of this focus on human systems and the built environment, natural systems, including plant communities and wildlife habitat, have typically not been considered. In recent years, the concept of ecological integrity (e.g., maintaining the integrity of an environmental system, such as an ecosystem) has begun to be considered in urban design. Using case studies in wildlands, the field of conservation biology has established principles for maintaining biodiversity and ecological integrity that can be applied to urban and suburban settings with minimal modification. These principles include:

- *Species that are well distributed across their native range are less susceptible to extinction than species confined to small portions of their range.* Maintaining multiple populations of imperiled species maintains a natural range of genetic variability and reduces the chance that environmental variability will result in species extinction. For urban settings, this means that habitat protection must have some redundancy. Species associated with a particular habitat must be represented in many places across the urban landscape, both within and among metropolitan areas, so that extinction at one location does not eliminate the species entirely from the urban setting.
- *Large blocks of habitat, containing large populations, are better than small blocks with small populations.* All else being equal, larger populations are less susceptible to extinction. This is especially true when habitat patches are isolated from each other, which is typical in urban landscapes. Many species of forest and grassland birds, for example, are progressively more likely to be found as habitat area increases. Some species are present only in large blocks of habitat. This is recognized as species-area relationship: species richness increases as habitat area increases. Therefore, larger blocks of natural or semi-

natural habitat should be priorities for protection.

- *Blocks of habitat close together are better than blocks far apart.* Blocks of habitat close together may function as one larger, contiguous habitat block for those species that can move between areas. What constitutes “close together” depends on the species of concern. Habitats close together for birds might be inaccessible for animals incapable of crossing intervening barriers. For example, many small mammals, salamanders, and flightless invertebrates seldom or never cross roads.
- *Habitat in contiguous blocks is better than fragmented habitat.* Habitat fragmentation has been documented to have harmful effects in studies worldwide, although considerable regional variability exists. Natural and semi-natural habitats in urban landscapes are typically fragmented. Although the thresholds of fragmentation (where ecological integrity unravels) cannot be reliably determined, the less fragmentation, the better.
- *Interconnected blocks of habitat are better than isolated blocks.* Connectivity allows organisms to move between patches of habitat. A collection of small areas may be individually too small to maintain populations of some species. But if connected, those small areas may provide sufficient habitat for a species to maintain viable populations. The whole can be greater than the sum of its parts.

■ Urban Wildlife Connectivity

Wildlife corridors are currently a popular concept in conservation planning. However, without rigorous investigation of potential utility or consequences, linkages drawn on maps may have limited value in maintaining species diversity. Linkages and corridors must be defined in terms of functional connectivity: (1) providing for daily and seasonal movements of animals; (2) facilitating dispersal, gene flow, and rescue effects (for animals or plants); (3) allowing for range shifts of species (i.e., in response to climate change); and (4) maintaining flows of ecological processes (e.g., fire, wind, sediments, water).

Because small patches of natural and semi-natural habitat in urban areas are incapable of supporting populations of many species, maintaining connectivity is necessary to maintain a rich diversity of wildlife. Connectivity is generally species-specific and landscape-specific. What is a corridor to one species may be a barrier to another. Linkage planning efforts should focus on species that are particularly sensitive to habitat fragmentation. In order to plan effective corridors, additional research is needed about the mobility of species, and what constitutes potential barriers to their movements. The appropriate width of a corridor is highly variable and depends on the nature of the surrounding habitat, the characteristics of the species involved, the length of the corridor, and other factors. Creating effective underpasses or tunnels to allow animals to cross safely beneath or over roads poses the greatest challenge.

To gauge the success of habitat linkages, specific animal and plant species can serve as sensitive indicators of functional connectivity. A list of potential indicator species for the watersheds is provided in Appendix H.

Wildlife corridors may also constitute important habitats in their own right, particularly when they are located in riparian areas. In the arid West, riparian areas typically are the most species-rich habitats. Some 80% of vertebrate species in Arizona and New Mexico depend on riparian habitat for at least a portion of their life cycles (Johnson 1989 in G. Macintosh, ed. *Preserving Communities and Corridors*, Defenders of Wildlife). Maintaining intact riparian areas not only contributes to terrestrial ecological integrity, but may also increase aquatic biotic integrity. However, riparian protection alone may not improve stream communities.

In urban areas, most wildlife corridors will also be corridors for people. Urban greenways typically have trails and are used for recreation and other purposes, thus urban greenways must be designed with the needs of both people and wildlife in mind. A recent urban trail handbook (*Planning Trails with Wildlife in Mind*, 1998, Colorado State Parks and Hellmund Associates) includes some useful recommendations: route trails around edges of high-quality habitat patches; do not route trails continuously close to riparian areas; and balance competing wildlife and recreation needs across a landscape or

region rather than trying to accommodate all uses within specific areas. These recommendations underscore the need for biologists to be involved in the early stages of greenway planning and the trail development process.

■ Urban to Wildland Networks

Southern California is distinctive in having major urban centers directly adjacent to wildlands (e.g., the San Gabriel and Santa Monica Mountains, and the various foothills). In the long run, many wildlife species will persist in these urban areas only if there are connections to the surrounding rural and wildland landscapes. An appropriate hierarchy of connected habitat networks would include: (1) relatively small habitat patches and narrow corridors within the densest urban zone; (2) a network of larger habitat patches and wider corridors in suburban and rural areas, as well as in a few areas within the urban matrix (e.g., Puente Hills and Griffith Park); and (3) the wildland landscape (e.g., the national forests), with large habitat patches, low road density, and greater overall connectivity.

There are two potential problems with this “network of networks” design. One, corridors leading from the more developed zones of the network might funnel exotics and other opportunistic, invasive species into wildland areas. Roads and roadsides, for example, are frequent avenues for the invasion of these pests. Well-designed corridors, especially if wide, may provide habitat for predators of some animal species (e.g., feral cats, opossums). In addition, corridor bottlenecks could be used to trap those species and limit their spread.

A potentially more serious concern is for corridors connected to wildlands or rural areas to provide a route for large mammals (such as deer) into suburban and urban areas. Many residents like to see deer near their homes, but are unhappy when deer eat their gardens. Predators may also use corridors to follow their prey. This will require careful consideration of options and consequences, to achieve an appropriate balance between the need for species mobility and the need to minimize human and animal conflicts.

Identification of potential habitat linkages within the watersheds is provided in Chapter 3, A Vision for the Future.

D. OPEN SPACE AND RECREATION

1. Definition of “Open Space” and “Recreational” Land Use

Generally speaking, open space may be any land that is not developed for urban use. This may include natural areas set aside for species protection, lands used for agriculture or natural resource extraction, recreational areas, or areas unsuitable for development either due to a potential hazard (such as slide areas or floodplains) or due to other uses such as groundwater recharge or flood protection. In this document, open space implies areas that are in a reasonably natural state and that can serve as wildlife habitat in addition to public access for passive forms of recreation.

Recreational use may be designated active, passive, or both. Passive use refers to activities that are generally low impact such as hiking, fishing, picnicking, bird watching, or non-motorized boating. Active recreational use may include facilities designed for sports such as soccer or baseball, lakes for motorboats and jet skis, bicycle trails or equestrian trails.

2. Existing Open Space and Recreational Areas in the Watersheds

The San Gabriel and Los Angeles watersheds include a variety of areas devoted to recreation in some form, often in conjunction with the preservation of natural open space. These include the federal, state, joint powers authority lands, and an assortment of regional and local parks, nature centers, and preserves. Parks and open space are not evenly distributed throughout the region, and access for those without private transportation is beginning to be addressed by several agencies.

Table 1. Agencies Administering Open Space and Recreational Areas

Type	Agency
Federal	U.S. Forest Service
	U.S. Army Corps of Engineers
	Bureau of Land Management
	National Park Service
State	Department of Parks and Recreation
	Santa Monica Mountains Conservancy
Joint Powers Authorities	Mountains Recreation and Conservation Authority
	Puente Hills Native Habitat Preservation Authority
Counties	Parks and Recreation
	Department of Public Works
Cities	Parks and Recreation Departments, School Districts

■ Federal Lands

The Angeles National Forest is one of the most visited forests anywhere in the country, with an estimated thirty million visitors annually (Cook 2001). Within the watersheds, the forest accounts for 23 percent of the total land area. The Forest’s 691,539 total acres include 8,708 water surface acres in twenty-five lakes and reservoirs, 110 picnic areas and campgrounds, and 557 miles of hiking trails. There are also a number of special use areas in the Forest that occur within the watersheds, described in the table below.

Seal Beach National Wildlife Refuge, within the Seal Beach Naval Weapons Station, is managed by the U.S. Fish and Wildlife Service. The Refuge contains 911 acres of natural coastal habitat, including salt marsh and tidal wetlands. It is home to the California least tern (*Sterna antillarum browni*), a federally listed endangered bird, and many other seabirds. Public access is restricted to a wooden trail leading

Table 2. Special Designations within the Angeles National Forest

Name	Area	Designated	Purpose
San Gabriel Wilderness Area	36,118 acres	1968	Wilderness designation—no development or permanent structures
Sheep Mountain Wilderness Area	43,600 acres	1984	Wilderness designation—no development or permanent structures
San Dimas experimental forest (UNESCO Biosphere Reserve)	17,163 acres	1933	Research and pilot testing of integrated forest management techniques; access by permit only.
Fern Canyon Natural Research Area	1,360 acres	1972	No development or permanent structures; near pristine condition. Contained within San Dimas Experimental Forest

to an overlook of the area, and is open a limited number of days to reduce disturbance to the wildlife.

■ State and Regional Facilities

California Department of Parks and Recreation, the Santa Monica Mountains Conservancy, Los Angeles and Orange County parks departments and other agencies manage substantial land acreage devoted to open space reserves, nature centers, botanical gardens and recreation areas. The chart below lists some state and county facilities and large regional facilities that may be managed by cities or multiple jurisdictions. Golf courses and local city parks are not included as they are too numerous, although their total acreage watershed-wide is substantial.

3. Access along the River Fronts

In the canyons of the San Gabriel and Santa Monica Mountains and the local hills, there is ample access to streams for fishing, swimming, and picnicking. A

five and a half mile stretch of the West Fork of San Gabriel River is a “catch and release” area for native rainbow trout.

Within the urban core, access to the Los Angeles River is provided via pocket parks in the community of Elysian Valley. In addition, the City and County of Los Angeles are making progress on converting the maintenance road next to the river into a bike-way. The LARIO trail provides bicycle and equestrian access along the Rio Hondo and Lower Los Angeles River, as does the bicycle trail above the San Gabriel River channel. Concerns over public safety during periods of high stream flows or potential flash-flood conditions have left much of the urban rivers inaccessible or off-limits to the public. The potential for more riverside parks, walking trails and bike paths is increasing, as evidenced by the three-year old Bosque del Rio Hondo and new parks in Bell Gardens, Paramount and Maywood.

Table 3. Major Open Space and Recreational Facilities within the Watersheds

<i>Type</i>	<i>Name and Location</i>	<i>Acreage</i>	<i>Management</i>
Botanical Gardens	Arboretum of Los Angeles County, Arcadia	127	LA County
	Rancho Santa Ana Botanical Garden, Claremont	106	Private
	Descanso Gardens, La Canada	160	LA County
Parks and Recreation Areas	Frank G. Bonelli Regional Park, San Jose Hills	1,980	LA County
	Griffith Park, Los Angeles	3,481	City
	El Dorado Regional Park, Long Beach	520	City
	Elysian Park, Los Angeles	584	City
	Hahamonga Watershed Park, Pasadena	836	City
	Hansen Dam, Los Angeles	1,289	City, U.S. Army Corps
	Marshall Canyon County Park, Claremont	690	LA County
	Mulholland Gateway Park	1,200	SMMC
	Ralph B. Clark Regional Park, Fullerton/Buena Park	105	Orange County
	Santa Fe Dam Recreation Area	836	LA County
	Schabarum Regional Park, Puente Hills	500	LA County
	Sepulveda Dam Recreation Area	1,040	LA City /Army Corps
	Ted Craig Regional Park, Fullerton/Brea	124	Orange County
	Whittier Narrows Recreation Area	1,400	LA County
	Verdugo Mountains State Park	251	State Parks
		1,101	SMMC
Nature Centers and Wilderness Parks	Eaton Canyon Natural Area	184	LA County
	Claremont Hills Wilderness Area	1,220	City/LA County
	Deukmejian Wilderness Park	720	Glendale
	Eastern Rim-of-the-Valley Open Space	1,000	SMMC
	El Dorado Nature Center	130	Long Beach
	San Dimas Canyon Nature Center	1,000	LA County
	Simi Hills/Santa Susana Open Space	4,000	SMMC
Whittier Narrows Nature Center	419	LA County	

4. Trail Systems

Trails provide access for hiking, equestrian use and bicycling. There are hundreds of miles of trails of various types throughout the watersheds.

■ Types of Trails

In the Angeles National Forest, there are several trails that are part of the National Trails System, that was established in 1968. These include 176 miles of the Pacific Crest Trail and National Scenic trails, and 73 miles of National Recreation Trails, which provide for hiking and equestrian use. Trails in the Forest are open to mountain bikes as well, except for those in the National Trails System and those in the Wilderness areas. The Rails to Trails Conservancy, which converts unused railroad right-of-way to trails, has two trails in the region: Mt. Lowe Railroad Trail and the Duarte Bike Trail.

In the urban area, there are local and regional trails for bicycle commuting and recreation, walking, hiking and equestrian use. Approximately 500 miles of bike paths and bike lanes exist in Los Angeles County currently. Bikeways are under development along the Los Angeles River and Arroyo Seco. Bike trails run along the Lower Los Angeles River, Coyote Creek, the Rio Hondo, and along the San Gabriel River from the Pacific Ocean at Seal Beach to the foothills of the San Gabriel Mountains.

■ Trail Connectivity

Connectivity between cities and parks exists in some areas but there are many local trails that do not extend beyond jurisdictional borders. The five regional parks in the San Gabriel Valley—Bonelli, Whittier Narrows, Santa Fe Dam, Marshall Canyon, and Schabarum—are connected by a trail system. Bicyclists, hikers, and equestrians use this trail, maintained by Los Angeles County. In May 2001, the Metropolitan Transit Authority recommended \$21.6 million in funding over the next three years for thirteen bicycle trail projects that will expand and connect existing trails and add commuter bike lanes on city streets. The 28-mile LARIO trail, recently upgraded by Los Angeles County, provides connections to eight parks along the Rio Hondo and Los Angeles River.

The Rim of the Valley Trail encircles the upper Los Angeles River watershed and aims to connect the

Santa Monica and San Gabriel Mountains. The National Park Service has begun marking the Juan Bautista de Anza National Trail through the region, and markers and interpretive signs can now be seen along the Los Angeles River. The Griffith Park to El Pueblo Trail will lead visitors from the park to downtown. Additional study is needed to determine how best to further connect existing trails within the watersheds.

5. Designated Scenic Highways and Vistas

Scenic highways include the Mulholland Scenic Parkway in the eastern upper Los Angeles River watershed. Caltrans is actively working towards obtaining federal scenic byway status for the Arroyo Seco Parkway (Pasadena Freeway). Federal designation can potentially bring in planning and implementation funding for both sides of the parkway.

Vista points in the watersheds include Grand View in Elysian Park, which provides views to downtown, Montecito Heights, Mount Washington, Taylor Yard, the Los Angeles River, and the Arroyo Seco. Sites within the Kenneth Hahn County Park in the Baldwin Hills, and new adjacent areas recently purchased, provide 360-degree views including to the ocean and downtown. At the Top of Topanga, visitors can view the San Fernando Valley as well as central Los Angeles. From Mulholland Scenic Parkway, a number of places provide views of the Los Angeles River Watershed and smaller coastal watersheds. These include Hollywood Bowl Overlook, Universal City Overlook, Nancy Hoover Pohl Overlook, and Summit Overlook. Many of the turnouts along the Angeles Crest Highway and campgrounds within the Angeles National Forest also provide spectacular views.

E. WATER SUPPLY

1. Sources of Water

Early settlements in the watersheds relied on surface water from springs, rivers, creeks, and lakes for drinking water and irrigation. In the 1870s, groundwater became an important additional water source as well-drilling technology improved. Water needs of the population have exceeded the available local supply for nearly a century. The combination of population growth and extensive use of non-

native plants place demands on water supplies. Current sources of water for the basin include the following:

1. imported water from the Colorado River, the Owens Valley in Eastern California via the Los Angeles Aqueduct, and Northern California via the California Aqueduct;
2. local groundwater supplies;
3. recycled water from wastewater treatment facilities; and
4. surface water from local streams and the upper San Gabriel River.

While these supplies currently sustain a population of over seventeen million people in Southern California, they are subject to both seasonal and long-term variability depending upon climatic conditions throughout the source areas. During drought periods, there may be less water available for importation so groundwater use increases. During wet years, stormwater runoff and surplus imported water may be stored in reservoirs and groundwater basins for future needs. **Figure 2-9** depicts the average amount contributed to the region's water supply by each source. The percentage of groundwater and imported water varies from year to year, depending on hydrologic conditions. Groundwater contributes from 30 to 40 percent, while imported water may range from 56 to 66 percent of the total supply.

2. Groundwater

The coastal plain is composed primarily of deep layers of marine sediments and eroded sediments washed down from the surrounding mountains. In some areas these sediments are over 30,000 feet

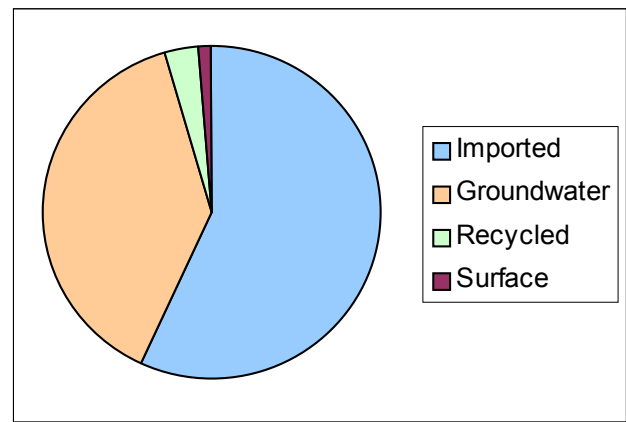


Figure 2-9. Sources of Water Supply

Source: Metropolitan Water District of Southern California (cited in Los Angeles & San Gabriel Rivers Watershed Council, in press)

thick. This geology has allowed for the storage of water in underground basins, or aquifers. Aquifers are not underground lakes, but places where the rock or soil is porous enough to trap significant amounts of water. There are eight major groundwater basins underlying the watersheds in the San Gabriel Valley, San Fernando Valley and the coastal plain (**Figure 2-10**). A cross section for the Los Angeles Coastal plain is illustrated in **Figure 2-11**. The contribution of groundwater basins to local water supply varies. The San Fernando basins represent 15–20 percent of the water supply for Burbank, Glendale, San Fernando, and Los Angeles, while the Raymond Basin provides 46 percent of the water supply for the City of Pasadena.

■ Recharge Programs

Water supply is increased through artificial or enhanced infiltration to replenish groundwater and compensate for the loss of natural permeability in the region. Surface water was “stored” in groundwater basins as early as 1895. Water is stored in facilities called spreading basins, in areas where soils

Table 4. Capacity of Local Groundwater Basins

<i>Geographic Regions and Underlying Groundwater Basins</i>	<i>Surface Area (acres)</i>	<i>Current Average Annual Yield (AF)*</i>	<i>Estimated Total Capacity (AF)</i>
Los Angeles Coastal Plain: Central and West Coast basins	288,000	281,835**	20,300,000
Orange County Coastal Plain Basin	224,000	350,000	1,000,000
Raymond Basin	25,000	35-40,000	250,000
San Fernando Valley: San Fernando, Verdugo and Sylmar basins	327,000	105,000	500,000
Main San Gabriel Basin	106,880	200,000	8,600,000

*AF = Acre-foot, approximately 326,000 gallons of water
 **Allowable under adjudication
 Source: Assoc. of Ground Water Agencies, 2000



Figure 2-10. Groundwater Basins Underlying the Watersheds

Adapted from San Gabriel Watermaster and Montgomery Watson Harza

are very permeable and groundwater aquifers are connected to the surface or accessible through wells.

A total of 3,361 acres of spreading grounds exist in Los Angeles County in 32 separate locations, the majority of which are operated by the Los Angeles

County Department of Public Works (LACDPW). Major facilities on the San Gabriel River include the San Gabriel Canyon spreading basin, Santa Fe Reservoir and the Montebello Forebay south of Whittier Narrows (Rio Hondo and San Gabriel spreading basins), and in unlined reaches of the

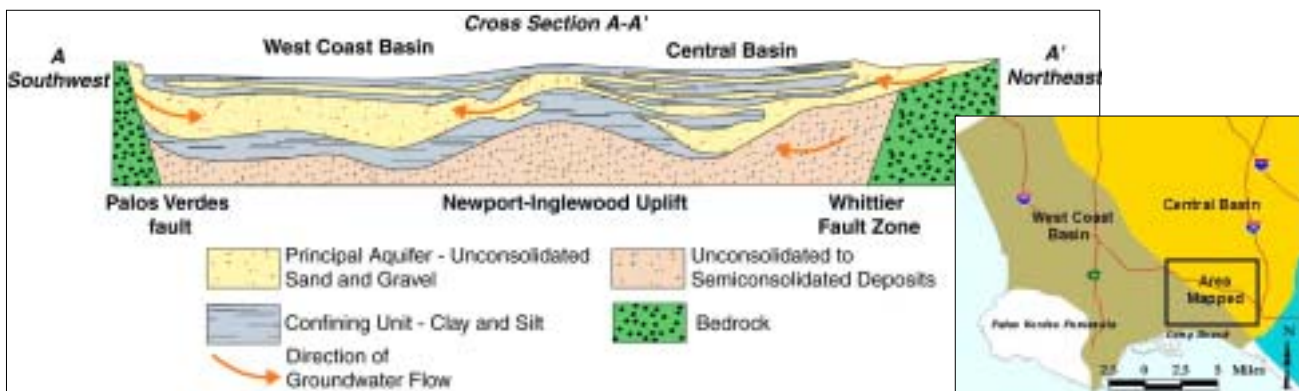


Figure 2-11. Cross-section of the Los Angeles Coastal Plain Groundwater Basin

Source: Association of Groundwater Agencies

river. Facilities in the Los Angeles River watershed include Pacoima and Tujunga Wash spreading basins, Hansen Dam in Sun Valley and Devil's Gate on the Arroyo Seco. In the 1998–99 water year, a total of 256,332 acre-feet of water were conserved through spreading grounds within the watersheds, as shown in Table 5.

groundwater levels in many parts of the basin still remain below sea level. The Water Replenishment District of Southern California (WRD) manages the basins. The WRD is responsible for maintaining adequate groundwater supplies, reducing seawater intrusion into aquifers, and protecting groundwater quality.

Table 5. Water Recharged During the 1999–2000 Water Year (Acre-feet)

<i>Location</i>	<i>Reclaimed</i>	<i>Imported</i>	<i>Runoff</i>	<i>Other*</i>	<i>Total</i>
San Gabriel Basin	0	50,953	76,792	5,055	132,800
SF Valley Basin	0	0	14,105		14,105
Coastal Plain	43,180	45,037	21,120		109,427
TOTAL	43,180	95,990	112,107	5,055	256,332

* Water owned by other local water agencies and stored in the San Gabriel Basin
Source: L.A. County Department of Public Works, Water Resources Division

■ Groundwater Management

The underlying groundwater basins are managed to ensure that water extraction from groundwater basins is in balance with water supply. Court decisions, called adjudications, have established the methods that water managers use in each basin. The court determines the groundwater rights of all the users who extract water, how much can be extracted, and appoints a manager or “watermaster.” The watermaster ensures that the basin is managed according to the adjudication and reports periodically to the court.

In 1955, the Central and West Basin Water Associations were formed to manage groundwater pumping in their respective basins. By the late 1950s, groundwater pumping in the Central and West Coast Basins had reduced groundwater levels to historic lows. Saltwater from the Pacific Ocean began to increase the salinity in groundwater in the West and Central coastal basins. Many wells had to be abandoned due to seawater intrusion. Since then, the LACDPW, WRD, and other agencies have operated facilities that inject fresh water into the groundwater basins to help keep intruding saltwater out. Saltwater barrier facilities are located along the coast at Manhattan Beach, between Huntington Beach and Newport Beach, and at the mouth of the San Gabriel River at the Los Angeles and Orange County boundary.

In 1961 the Central and West Coast Basins were adjudicated to limit groundwater pumping in the basin and explore alternative water sources. While this decision had the effect of decreasing pumping,

Groundwater pumping in the San Gabriel groundwater basin began to exceed recharge rates in the 1950s, leading to a lengthy legal battle that was settled in 1972. This settle-

ment established the San Gabriel River Watermaster to adjudicate water rights and manage groundwater resources in the Main San Gabriel Basin. The water resources of the groundwater basins in the Upper Los Angeles River Area (ULARA) are managed by an agreement made in 1973. This agreement balances the groundwater rights of the City of Los Angeles with the upstream cities of Glendale and Burbank. The ULARA Watermaster is responsible for managing groundwater supplies and protecting groundwater quality.

Because of groundwater extraction, seawater from the Pacific Ocean has increased the salinity in groundwater in the West and Central coastal basins. Many wells had to be abandoned in the 1940s due to seawater intrusion. Since the 1950s, the LACDPW and other agencies have operated facilities that inject fresh water into the groundwater basins to help keep intruding saltwater out. Saltwater barrier facilities are located along the coast at Manhattan Beach and at the mouth of the San Gabriel River at the Los Angeles and Orange County boundary.

3. Imported Water

Water is imported into Los Angeles County from the Owens Valley on the eastern slope of the Sierra Nevada, from Northern California and from the Colorado River.

Construction of the first Los Angeles Aqueduct from the Owens Valley began in 1908. Under the supervision of William Mulholland, this 233-mile aqueduct was constructed in five years. In 1940 the

aqueduct was extended 105 miles north to Mono Basin. A second aqueduct from Owens Valley was completed in 1970 to further increase capacity. Approximately 480,000 acre-feet of water are delivered to the City of Los Angeles each year. The amount the aqueduct delivers varies from year to year due to fluctuating precipitation in the Sierra Nevada. As a result of legal restrictions on water transfers to protect the source environment, future deliveries are expected to be reduced to an average of 321,000 acre-feet annually over the next twenty years.

The 242-mile Colorado River Aqueduct, completed in 1941 to deliver water to the Southern California coastal plain, has a capacity of 1.3 million acre-feet. Annually, California is allowed 4.4 million acre-feet of Colorado River water. California has traditionally received in excess of that amount when there is excess water available, in wet years or when other states drawing from the Colorado River do not use their full allotment. Future supplies from the Colorado River may be reduced due to competing demands. The Metropolitan Water District recently completed the Eastside Reservoir project, which created Diamond Valley Lake, to store 800,000 acre feet of Colorado River water.

The State Water Project (SWP) was created in 1960 to deliver water to regions of the state where resources are scarce. The SWP brings water 444 miles from the Sacramento-San Joaquin River Delta to Southern California via the California Aqueduct. The SWP has delivered up to 3.6 million acre-feet annually, although significantly less water is available during dry-year periods. One of the goals of the CALFED Bay-Delta Program is to improve water supply reliability for the Delta, therefore the potential for future increases in water supplies from the SWP for Southern California is uncertain.

4. Surface Water

While the rivers used to be the primary source of water for the basin, they now supply only a small percentage of the total. These local supplies have a very low cost in comparison to imported water, especially when the energy costs of transporting water are considered. Water from the upper San Gabriel River is stored in Cogswell, San Gabriel, and Morris Reservoirs. A portion is treated for municipal use with the balance used for groundwa-

ter recharge. The City of Pasadena obtains 40 percent of its municipal water supply indirectly from the Arroyo Seco and Millard Stream, by diverting a portion of the total flow into spreading basins adjacent to Devils Gate Reservoir.

5. Recycled Water

Recycled or reclaimed water is treated effluent from wastewater treatment facilities. This water is used primarily for irrigation, industry, injection into barrier wells to prevent saltwater intrusion, and groundwater recharge. Currently recycled water makes up only 3 percent of the annual water supply in the Los Angeles region, although its potential is far greater.

Conservation efforts over the past thirty years have kept total water demand from increasing in tandem with population. In the City of Los Angeles, population has increased over 35 percent since 1970, while water usage increased only 7 percent. However, competing interests for imported water and sustained population growth will continue to drive the need for increased water conservation and expanded use of recycled water.

F. WATER QUALITY

1. Responsibility for Managing Water Quality

Protection of water quality in California is primarily the responsibility of the State Water Resources Control Board (SWRCB) and, on a regional basis, the nine California Regional Water Quality Control Boards. The Porter-Cologne Water Quality Control Act (California Water Code) authorizes the State Board to adopt policies for all waters of the state and directs each Regional Board to prepare a Basin Plan to protect water quality. The water quality in the watersheds is primarily under the jurisdiction of the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB). The Santa Ana Regional Board has jurisdiction over a portion of the Coyote Creek subwatershed.

The California Department of Health Services also has responsibility to protect the quality of drinking water, in accord with California's Drinking Water Source Assessment and Protection Programs, in response to the 1995 reauthorization of the Federal Clean Water Act. The Water Replenishment Dis-

trict of Southern California (WRD) is also authorized under the California Water Code to engage in activities to protect groundwater in the Central and West Coast groundwater basins. The Main San Gabriel Watermaster and the ULARA Watermaster also have responsibility for water quality protection for their respective basins.

The Basin Plan for the Los Angeles Region was originally prepared in the 1970s and has been updated several times. The Santa Ana River Basin Plan was first adopted in 1975, with a major update in 1995. These plans address beneficial uses for surface waters in the region, as required by the Federal Clean Water Act, water quality objectives for protection of beneficial uses, and a plan for enhancing and maintaining water quality.

2. Beneficial Uses

State Board resolution 88-63 and LARWQCB resolution 89-03 state:

“All surface water bodies and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and will be so designated by the Regional Boards...[with certain exceptions which must be adopted by the Regional Board].” (LARWQCB 1994)

Surface waters include rivers, streams, lakes, reservoirs, and wetlands. Beneficial uses defined by the Los Angeles Regional Board for surface waters in the watersheds generally include swimmable, fishable, industrial, non-contact recreation and wildlife habitat. Water bodies not meeting the water quality standard for their designated beneficial use are to be listed as “impaired.” Beneficial uses defined by the LARWQCB for groundwater include municipal, industrial, agricultural, and aquacultural.

3. Water Quality Concerns

Because of the largely urban and industrial land uses throughout the watersheds, the surface and groundwater quality has been substantially degraded at many locations. The following section provides a brief description of the major water quality concerns for surface water and groundwater.

■ Surface Water

According to the Regional Board, “uncontrolled pollutants from non-point sources are believed to be the greatest threats to rivers and streams within the watershed” (LARWQCB 1994). Urban runoff and illegal dumping are considered to be major sources of pollution in the San Gabriel and Los Angeles River Watersheds. Point sources, such as sewage treatment plants and industrial operations discharging into the rivers, also contribute to pollutant loads. As required under §303(d) of the Federal Clean Water Act, specific surface water quality concerns have been identified for surface water bodies. California’s most recent 303(d) list was approved in 1998 and contains 509 water bodies designated as impaired. EPA 303(d) listed surface water constituents of concern for the watersheds are shown in the table below.

For waters on the 303(d) list, and where the US EPA administrator deems they are appropriate, the states are to develop Total Maximum Daily Loads or TMDLs. A TMDL defines the total amount of a particular pollutant that is acceptable in the water body consistent with its designated beneficial use. Federal regulations require that each TMDL account for all sources of the pollutants that caused the water to be listed, both contributions from point sources (federally permitted discharges) and contributions from non-point sources. Impaired reaches of the San Gabriel and Los Angeles Rivers and their major tributaries are illustrated in **Figure 2-12**.

Table 6. Pollutants of Concern in the Watersheds

<i>Drainage</i>	<i>Algae</i>	<i>Ammonia</i>	<i>Chlorpyrifos</i>	<i>Coliform</i>	<i>Cadmium</i>	<i>Copper</i>	<i>Lead</i>	<i>Selenium</i>	<i>Zinc</i>	<i>Odors</i>	<i>Oil</i>	<i>Pesticides</i>	<i>pH</i>	<i>Toxicity</i>	<i>Trash</i>	<i>Volatile organic compounds</i>
San Gabriel	x	x		x			x					x	x	x	x	
Los Angeles	x	x	x	x	x	x	x	x	x	x	x		x		x	X

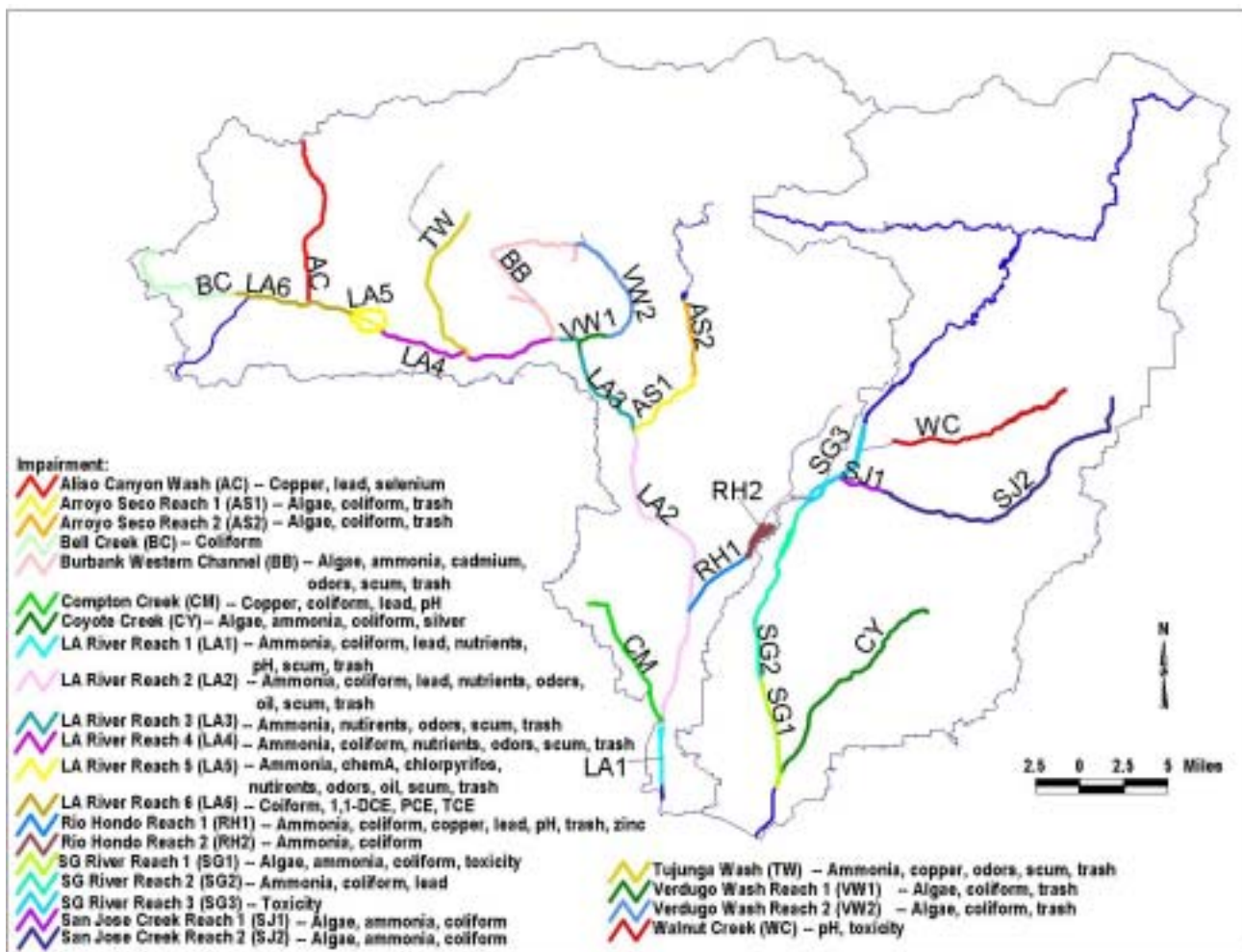


Figure 2-12. Impaired Reaches of the San Gabriel and Los Angeles Rivers and Tributaries

Source: Montgomery Watson Harza

■ **Groundwater**

As described earlier in this document, groundwater supplies most of the watersheds’ local potable water supply. Specific groundwater quality concerns include volatile organic compounds, perchlorate, hexavalent chromium, and NDMA from industrial activities and nitrates from agricultural and septic tanks and leach fields. Low levels of hexavalent chromium have been detected in San Fernando Valley drinking water wells and in Central Basin aquifers. The United States EPA has designated portions of the San Gabriel and San Fernando basins as Superfund sites, and has initiated cleanup operations. Other Superfund sites have been identified within the watersheds, such as the Jet Propulsion Laboratory in La Cañada Flintridge, Lockheed in the San Fernando Valley and the Pemaco site in Maywood. Some water supply wells have been taken out of production where contami-

nant levels exceed drinking water standards. Efforts of local cities, water companies, and water agencies, such as the San Gabriel Basin Water Quality Authority, have been instrumental in developing and implementing plans to clean up many of these sites.

4. Source Controls and Remediation Efforts Planned

The Regional Boards have adopted a variety of different strategies to address water quality concerns, depending on the nature of the water quality problem. These include control of point source pollutants, control of non-point source pollutants, and remediation.

As stated in the LARWQCB’s Basin Plan:

“All discharges, whether to land or water, are subject to the California Water Code (§13263) and will be issued WDRs [Waste

Discharge Requirements] by the Regional Board.” (LARWQCB 1994)

■ Control of Point Source Pollutants

Pollutants from point sources are transported to water bodies in controlled flows at well-defined locations. Examples of point sources include discharges from municipal and industrial wastewater treatment facilities. The primary mechanism for point source pollutant control is either through California’s Waste Discharge Permit requirements or through the Federal National Pollutant Discharge Elimination System (NPDES) Permit requirements.

■ Control of Non-point Source Pollutants

Pollutants from non-point sources are diffuse, both in terms of their origin and mode of transport to surface and ground waters. Non-point sources of pollution originate from activities generating surface runoff that mobilizes and transports contaminants into surface and ground waters. Sources of concern include lawn and garden chemicals transported by storm water or by water from lawn sprinklers; household and automotive care products dumped on streets and into storm drains; fertilizers, pesticides, and manure washed from agricultural fields by rain or irrigation waters; sediment that erodes from construction sites; and various pollutants resulting from atmospheric deposition.

Emphasis is placed on pollution prevention through careful management of resources, as opposed to “cleaning up” the waterbody after the fact. Through public outreach—an example of a non-regulatory program—residents are informed of threats to the quality of the waters in their communities and are encouraged to voluntarily implement Best Management Practices (BMPs) that will eliminate or reduce non-point sources of pollution. Local governments, including the Counties and individual cities are encouraged to develop and implement ordinances and public outreach programs that supplement this effort. This flexible approach can be an effective means of controlling pollutants from many non-point sources.

In addition to the general approach to non-point source pollution control, the Los Angeles Regional Board has adopted a TMDL for trash for the East Fork of the San Gabriel River and has proposed a draft TMDL for trash in the Los Angeles River.

The watersheds are also subject to a NPDES permit for stormwater runoff that is designed to protect the beneficial uses of water bodies in Los Angeles County by reducing pollutants in storm water. This permit was issued in 1990 by the Regional Water Quality Control Board and renewed in 1996. The permit covers 3,100 square miles in the Los Angeles basin and spans several watersheds, with the County of Los Angeles and 85 incorporated cities as the listed permittees. Orange County’s Environmental Resources department also administers a county-wide stormwater program of water quality protection initiatives backed by a 1997 water quality ordinance.

■ Remediation

The Regional Board oversees remediation of both ground and surface waters through the investigation of polluted groundwater and enforcement of corrective actions needed to restore water quality. These activities are managed through a variety of cleanup and remediation programs. These programs are designed to return polluted sites to productive use by identifying and eliminating the sources of pollutants, preventing the spread of pollution, and deploying various treatment methods to restore water quality.

G. FLOOD PROTECTION

Flood management in the watersheds is the responsibility of the Los Angeles Flood Control District whose responsibilities are now performed by the Los Angeles County Department of Public Works, Orange County Flood Control District, and the U.S. Army Corps of Engineers. The Los Angeles Flood Control District was formed in 1915 in response to a devastating flood in 1914. In 1936, federal legislation gave flood protection duties to the U.S. Army Corps of Engineers (Corps), and the two agencies have worked jointly in Los Angeles County since then.

Flood protection is designed to contain and control runoff in order to prevent flooding. The size of a flood that would occur without any runoff management is often expressed in terms of its expected frequency. The larger the flood, the less likely it is to occur in any given year. For example, the size of the flood that is likely to occur each year is referred to as a one-year flood. It has a 100 percent prob-

ability of occurring in any particular year. Large events, such as the 20-year flood or the 100-year flood, have a 5 percent chance or 1 percent chance, respectively, of occurring each year. These calculations are estimates based on the historical record of rainfall and flood events in the County. Steep canyons in the mountains and foothills, combined with channel design and impermeable surfaces in the urban basin, promote rapid runoff during storms. Flood flows, which follow winter storms, are characterized by high peak flows and short durations.

1. Flood Management System

■ Historical Conditions

The San Gabriel and Los Angeles Rivers were prone to winter flooding in their natural state. This was due to a number of factors: the intensity of winter storms, the unstable nature of the riverbeds, and erodability of the stream banks. While large floods were infrequent, the magnitude of their destruction

was sometimes devastating. In the early part of the twentieth century, damaging floods occurred in 1914, 1934, and 1938. The 1938 flood resulted in \$78 million in damages (\$889 million in current dollars) and the loss of 87 lives (Gumprecht 1999).

■ Existing Conditions

Flood management measures began in earnest in the 1920s. The present system, constructed by the Corps, was completed in 1970. The flood management system, the Los Angeles County Drainage Area (LACDA) system, consists of concrete river channels designed to expedite flow, dams and reservoirs to regulate flow, debris basins to capture sediment washed down from the mountains, and hundreds of miles of channels to direct flow into spreading basins and to the ocean. In excess of 100,000 acre-feet of local stormwater runoff is conserved in the spreading grounds annually. **Figure 2-13** illustrates the LA County flood management facilities in the watersheds, summarized in Table 7.

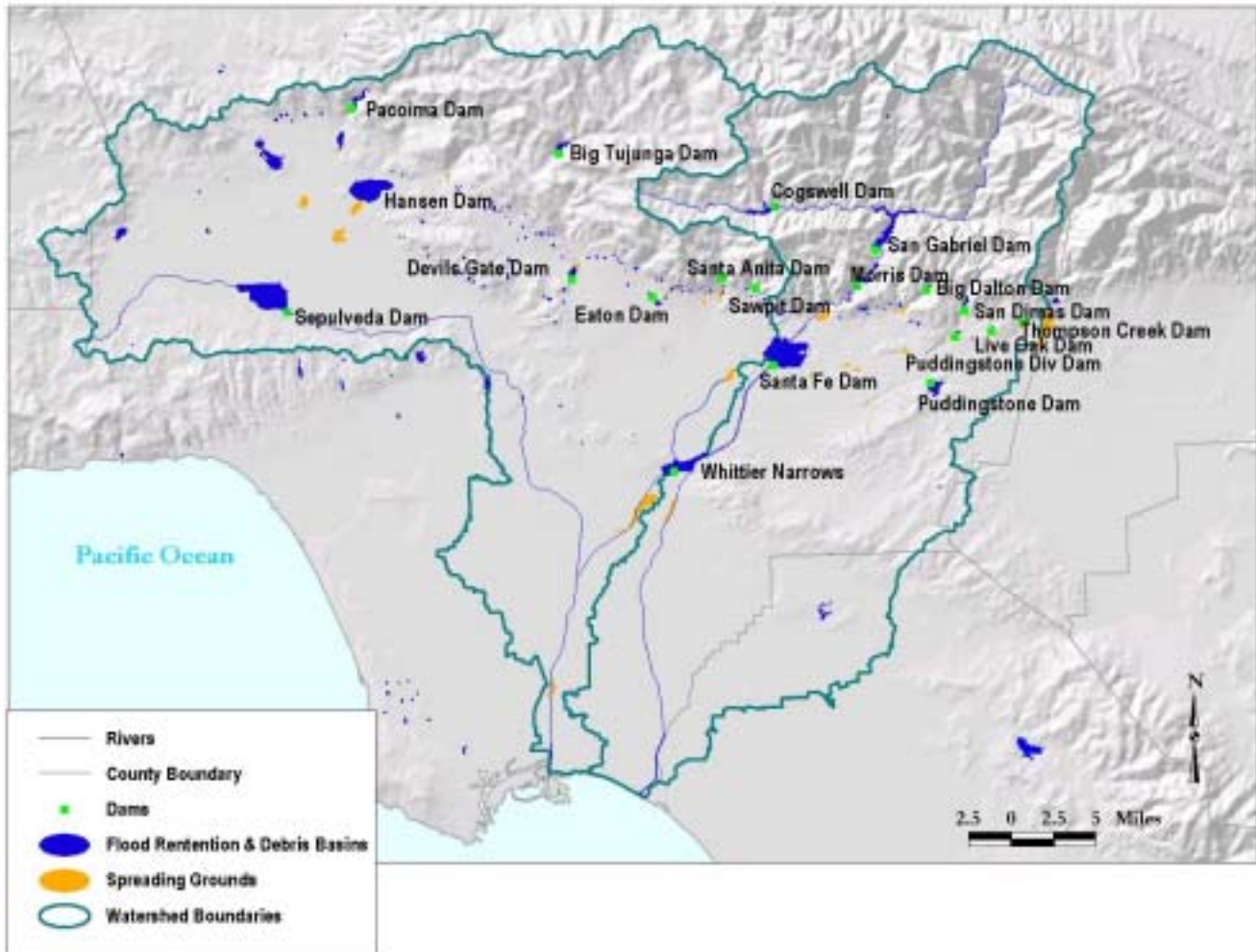


Figure 2-13. Los Angeles County Flood Management Facilities

Table 7. Los Angeles County Flood Management Facilities

Open channels	470 miles
Underground channels	2,400 miles
Flood management reservoirs	21
Rubber dams for diverting runoff	11
Groundwater recharge basins and soft-bottom channels	2,436 acres
Flood detention basins	5
Debris basins	116
Catch basins	75,000

The system developed by the U.S. Corps of Engineers was originally designed to provide flood protection for a 100-year flood. Flood events in the 1970s and 1980s indicated that perhaps the system did not have sufficient capacity. In 1991, a report prepared by the Army Corps indicated that the system was in fact not providing that level of protection, partially due to insufficient information available at the time of its design and partially due to the impacts of urbanization on runoff volumes. In some reaches along the lower mainstem of the rivers, LACDA only provided 25-year flood protection. Without further protection, damages from a 100-year flood were estimated to be as high as \$2.3 billion and could affect a population of 500,000 in fourteen communities. In response, the Army Corps and the County initiated modifications to the LACDA system, known as the LACDA Project, to increase its flood capacity in the lower reaches. This project consisted primarily of increasing the height of the channel walls and reinforcing levees along the lower Los Angeles River in Long Beach, the Rio Hondo, and Compton Creek. Originally estimated to take ten years and \$364 million to complete, the project is ahead of schedule due to increases in federal funding. It is expected to be completed by December 2001, at a cost of \$200 million.

Steep slopes with high erosion rates and high intensity storms can result in high flows full of debris such as sediment, boulders, and vegetation. For example, San Gabriel Canyon, in the upper San Gabriel basin, generates an average of 1.3 million cubic yards of sediment annually. This situation is aggravated in areas that have burned and lost their vegetative cover. Debris basins in the foothills at the mouth of canyons are designed to trap sediment and other material carried by runoff, and help to retain channel capacity further downstream. These debris basins must be periodically cleaned out to retain their storage capacity. Excavated sediments

are used as fill material, disposed in landfills, or delivered to approved sediment placement sites.

■ Role of Rivers in Flood Protection

The rivers are a major component of the flood protection systems. Flood flow is regulated with dams. The upstream tributaries of the San Gabriel River merge above the Santa Fe Dam (capacity of 32,109 acre-feet). The Whittier Narrows Dam (34,947 acre-feet) captures both the San Gabriel and Rio Hondo Rivers, but releases up to 36,500 cubic feet per second (cfs) of its flood flows into Rio Hondo diversion channel which connects to the Los Angeles River twelve miles above its outlet into the ocean. In large flood events some flow may be diverted into the San Gabriel River as well (up to 5000 cfs). The upper Los Angeles River flows into the Sepulveda Dam, a flood management facility operated by the Army Corps with a capacity of 22,493 acre-feet. Hansen Dam on the Tujunga Wash has a capacity of 25,441 acre-feet. Flood flows in the watersheds are also regulated by another 15 dams operated by the LACDPW.

2. Designated Flood Hazard Areas and “Unmet Drainage Needs”

The designated 100-year floodplain in the lower reaches of the Los Angeles River covers approximately 82 square miles, less than 6% of the two watersheds. Once the LACDA Project is completed, the extent of the hazard area will be reduced significantly and levels of protection increased to withstand a 133-year flood. There are still some small regions that are not provided with 100-year flood protection in the San Fernando Valley and below the confluence of the Arroyo Seco with the Los Angeles River.

The County tracks areas throughout the basin where flooding or drainage problems persist. Information is reported by the cities or through individual complaints, or directly to the County in unincorporated areas. Unmet drainage needs occur throughout the County but mostly in localized urban areas. If the situation requires a new drainage structure, the County will do a study to determine the best solution. The County is currently researching solutions

for chronic flooding in the Sun Valley sub-watershed that will utilize alternative approaches to construction of a flood conveyance channel, such as detention basins and more permeable land cover. The goal is to retain runoff within the watersheds and provide multiple benefits beyond flood management.

H. REGIONAL DEMOGRAPHICS

1. Political Boundaries and Entities

■ Counties and Cities

While the majority of the watersheds lie within Los Angeles County, the area crosses into Ventura County to the west, San Bernardino County to the east and Orange County to the southeast. Within the boundary of the RMC, there are 66 cities in Los Angeles and Orange Counties. There are eight cities within the SMMC boundary.

2. Land Use

Within the watersheds, approximately 26 percent of the land area is urbanized and 25 percent is parks or open space, although most of that is the National Forest. Less than 30 percent of the land area is undeveloped, including vacant urban land and areas that are too steep to develop. Land use patterns in the watersheds are illustrated in **Figure 2-14**.

3. Population

The population of Los Angeles County is 9,519,338 (U.S. Census 2000). If the County were a state, it would rank ninth in the United States for population. While growth rates in the County have slowed, they are still significant: 7.4 percent over the past decade, or more than 656,000 people. By 2010, the County is expected to grow to 10,868,900, another 14 percent. **Figure 2-15** illustrates population growth in Los Angeles County. The eleven Orange county cities within the watershed contribute a total population of 770,500 people, an increase of over 100,000 since 1990. Between 1990 and 2000, Orange

County's growth rate was twice that of Los Angeles County (US Census 2000).

Population is concentrated in the valleys and coastal plain (**Figure 2-16**), with lower densities along the foothills, mountains, and outlying areas. The average density in Los Angeles County is 2,345 persons per square mile, compared with an estimated 42 persons per square mile in 1900.

4. Economic Conditions

■ Regional Economies and Industry

The Los Angeles basin has a large industrial base and a diversified, growing economy. Top industries include professional services, manufacturing, wholesale trade, tourism, and entertainment. Defense-related employment has been declining since the mid-1980s, while professional services, tourism, and manufacturing in sectors such as apparel and aircraft have increased both in numbers of jobs and in productivity.

The cities in the southern portion of the watersheds, the "Gateway Cities," call themselves the "industrial heartland" of Los Angeles County (SCAG 2001). With a population of approximately two million, they represent one in seven jobs in Southern California. Home to the Port of Long Beach, the area's economy is primarily based on manufacturing technology, trade, and tourism.

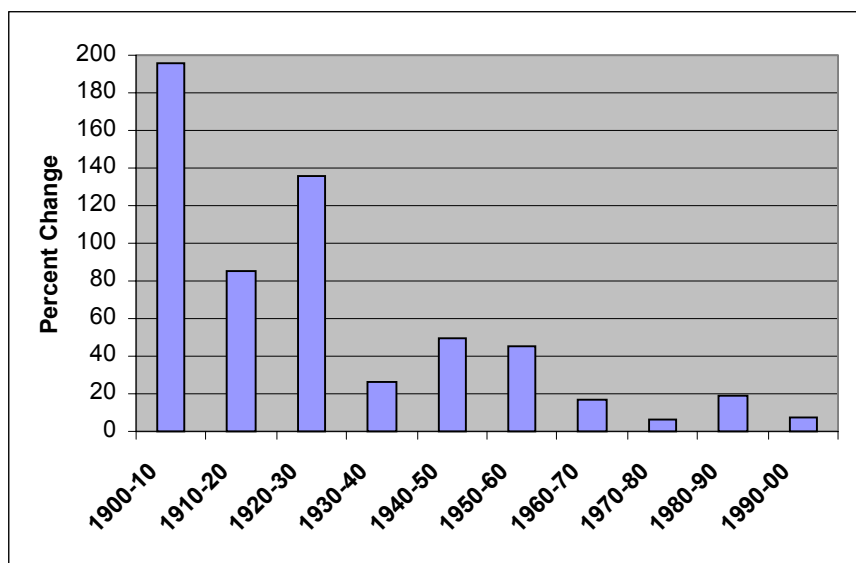


Figure 2-15. Los Angeles County Population Growth by Decade, 1900–2000

Source: Los Angeles Almanac

■ Median income

Median household income of residents within the area of the watersheds is \$47,413 annually, ranging from \$9,300 to well over \$500,000 (1990 Census, 2000 projections). The lowest average income is found in the urban core, in the southern Gateway cities and South Los Angeles. The wealthiest households are along the coast and in the foothill communities (Figure 2-17).

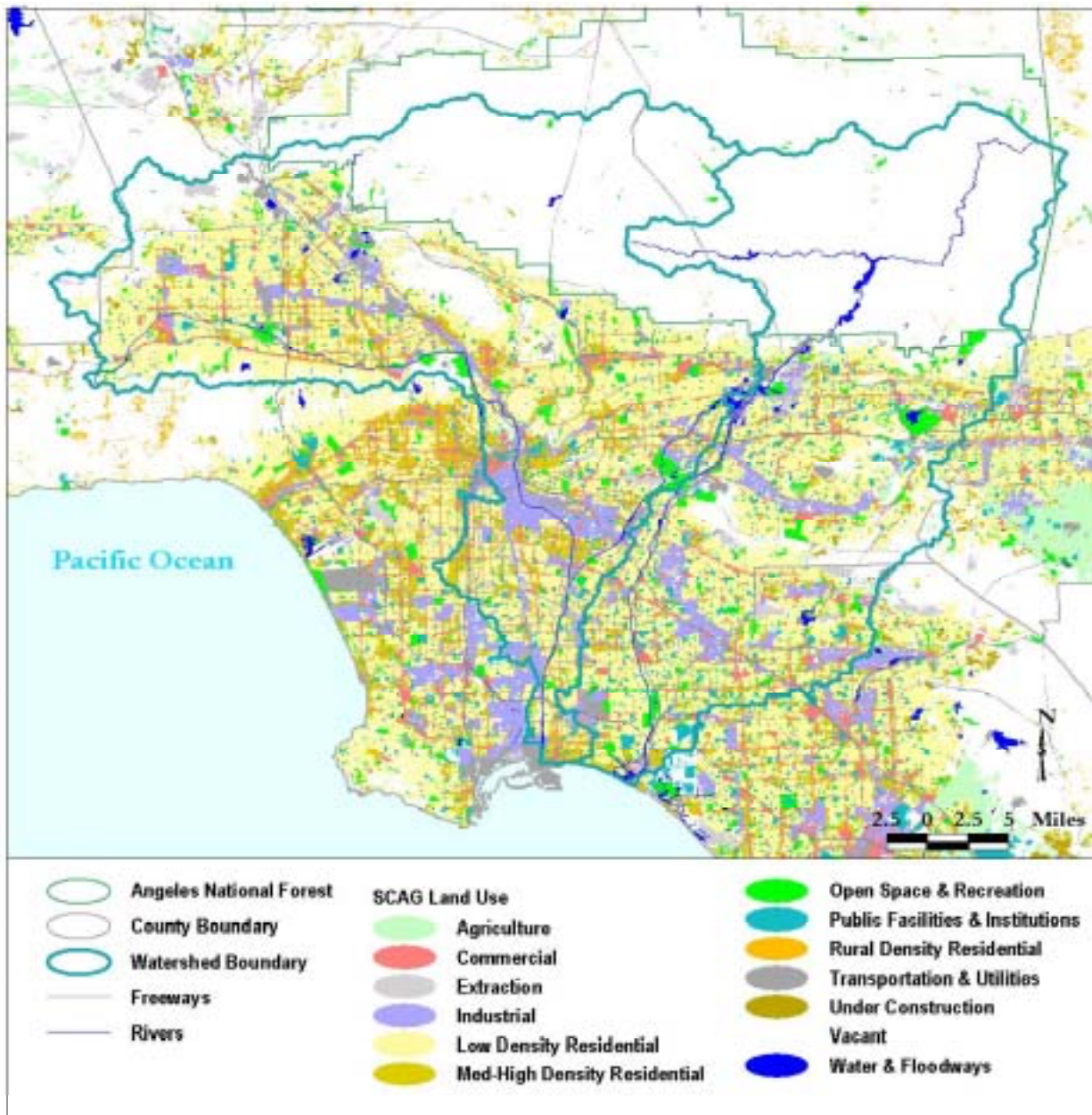


Figure 2-14. Land Use in the Watersheds
 Source: Southern California Association of Governments 1993

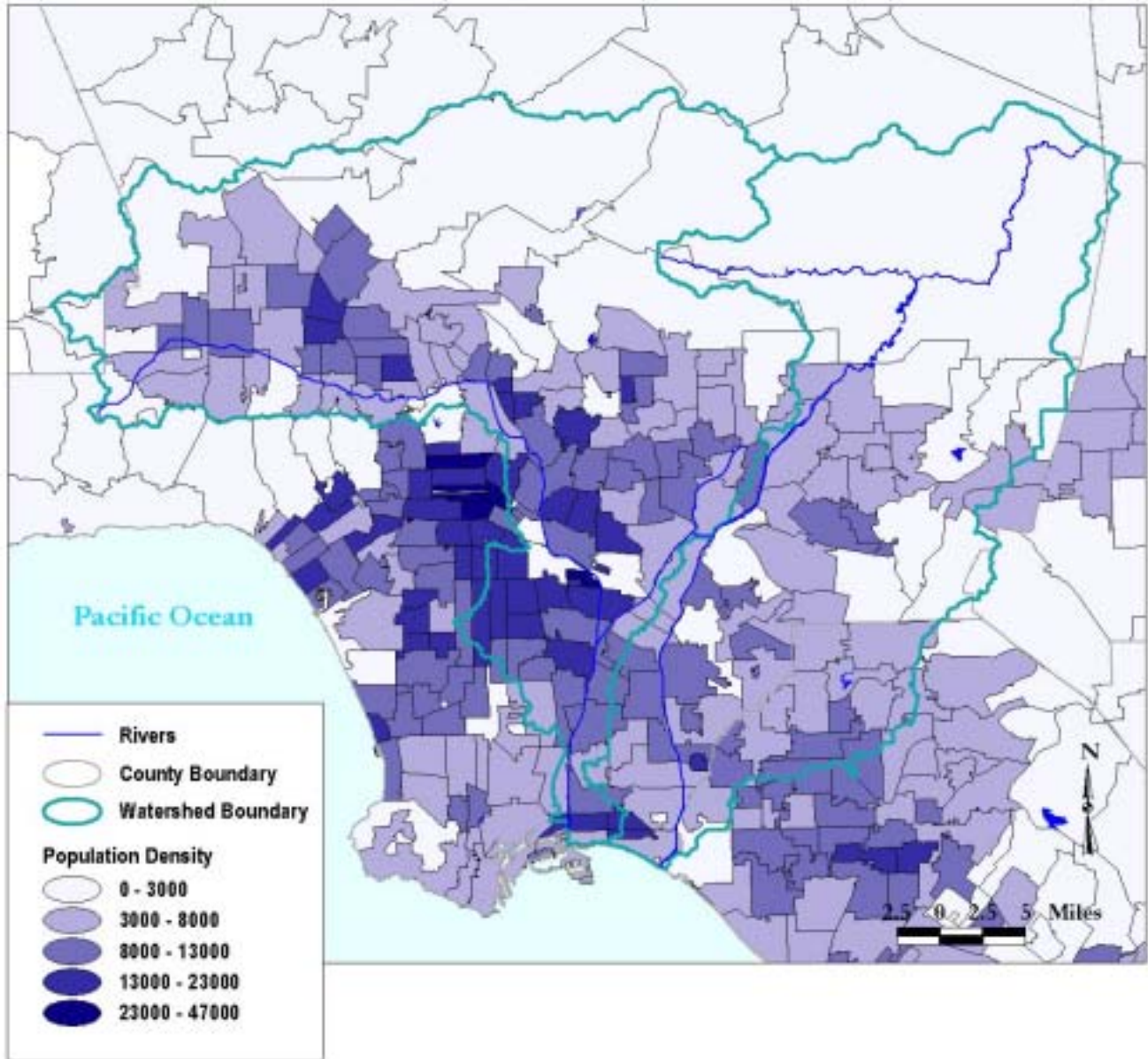


Figure 2-16. Population Density (Persons per Square Mile) by Zip Code

Source: US Census, 2000 Projected

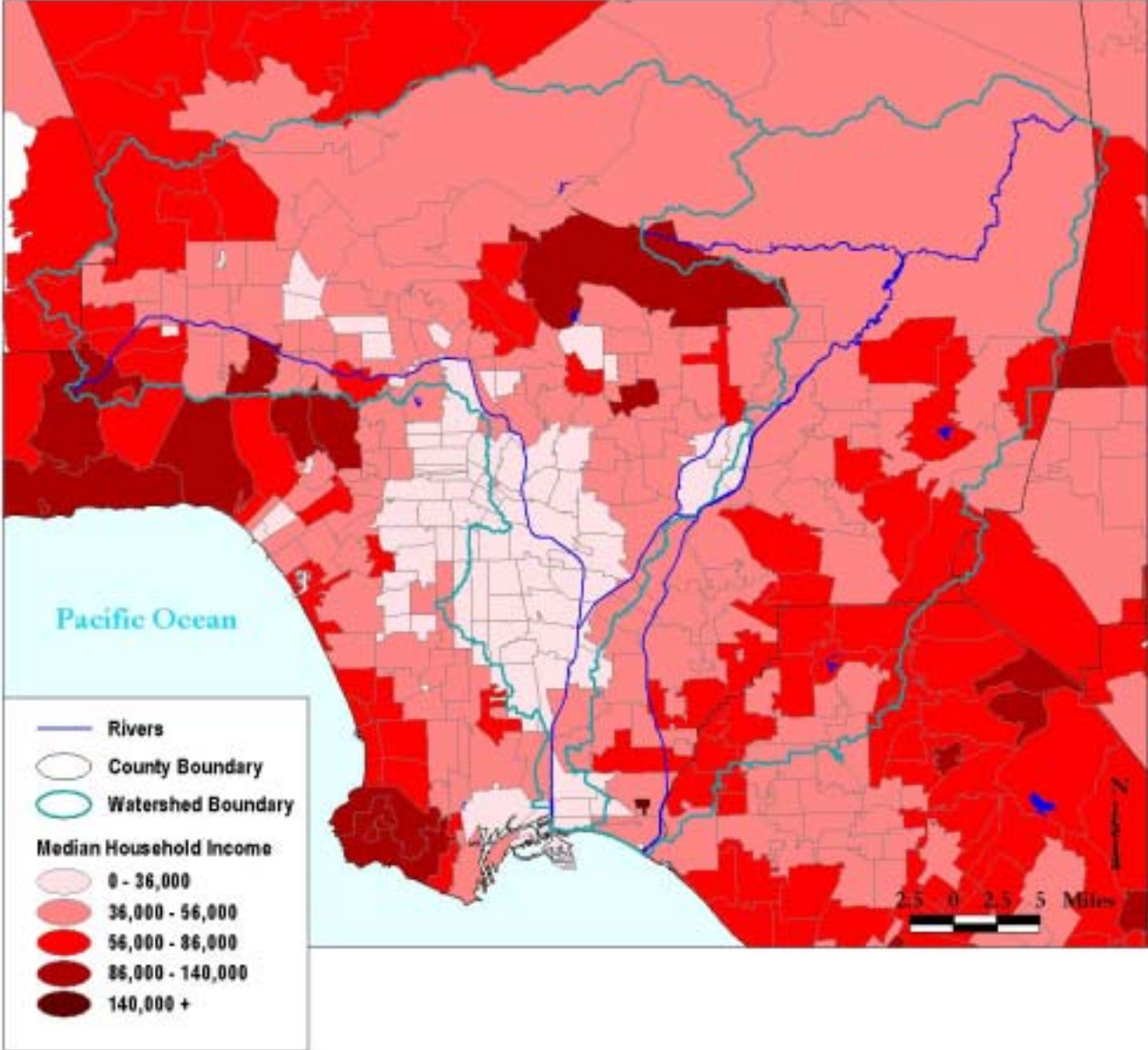


Figure 2-17. Median Household Income by Zip Code
Source: US Census, 2000 Projected

3. A VISION FOR THE FUTURE

A. VISION

The watersheds were first transformed from wildlands to farmlands. The second transformation converted farmlands to urban lands. The third transformation will create a network of livable, sustainable communities, connected by open spaces. The goal is to:

Restore balance between natural and human systems in the watersheds.

This requires that government and the public rethink the use of land and water, to better integrate human-made and natural systems. Planning must embrace multiple objectives. Economic and environmental benefits can be realized from sustainable development.

Southern California can grow greener with more open space. Open spaces can be connected with a network of trails and bike paths improving access for all residents. Habitat for wildlife can be preserved in the foothills and mountains, and restored along rivers and tributaries in urban areas. The rivers can be enhanced, surface and ground waters cleansed, local water supply improved, and dependence on imported water reduced. Flood protection can be maintained and improved.

By planning across jurisdictions and boundaries, this vision can become a reality. This vision is achievable, but not overnight. This vision is affordable, but not by “business as usual” methods. There can be a consensus for this vision, but only if citizens

are educated, involved, and allowed to choose the quality of life they prefer.

With science as a basis, this plan can be used as a framework for future planning at the subwatershed and local level. This plan is intended as a living document that will evolve over time, as priorities evolve and needs dictate, based on periodic assessment of progress. This plan is a tool to create a healthier environment, build consensus, to reach common ground.

B. GUIDING PRINCIPLES

To restore the watersheds, create an open space network, enhance waters and waterways, and improve coordination of planning throughout the region, plans and projects need consistent goals. The Guiding Principles represent an over-arching set of goals that can be used to guide future projects and enhance current open space planning in the watersheds. The Guiding Principles are intended to serve as a reference or a touchstone for all concerned with watershed planning. They set forth general directions without attempting to define responsibilities for implementation. They are guides, not directives. They imply a wide perspective and a long view. The Principles were developed through a consensus-building process involving state and county agencies, cities, environmental groups, local councils of government, and individuals having a stake in the evolution of the watersheds.

The Guiding Principles are intended to allow jurisdictions, communities, and groups to advance, promote, and enable the concepts below.

■ LAND: Grow a Greener Southern California

Create, Expand, and Improve Public Open Space Throughout the Region

- Establish priorities for land acquisition
- Coordinate targeted land acquisition with regional and local land use planning
- Establish a long-term land acquisition process, including protection for current uses
- Recycle brownfields with cooperation of EPA, DTSC, and other agencies
- Coordinate public lands management policies and procedures among jurisdictions

Improve Access to Open Space and Recreation for All Communities

- Accommodate active and passive recreational uses
- Incorporate passive and low-impact recreational facilities in habitat areas
- Accumulate and record the needs for active recreation facilities

- Evaluate access by population density, distance and time for different types of open space
- Open school sites for after-hours recreational use

Improve Habitat Quality, Quantity, and Connectivity

- Protect existing high-quality habitat and ecologically significant areas
- Restore and enhance aquatic and terrestrial riparian and upland habitat
- Coordinate regional efforts to remove invasive species
- Maintain and enhance wildlife corridors as continuous linkages
- Identify indicator species, develop standards and monitoring programs

Connect Open Space with a Network of Trails

- Develop continuous bike trail, equestrian, and public access systems along riverfronts and within the watershed
- Connect river trails to mountain trails, urban trails, local parks, open spaces, and beaches
- Connect open spaces to transit access points
- Provide for public safety and security along waterways and trails

Promote Stewardship of the Landscape

- Use drought-tolerant, native, and regionally-adapted plant materials
- Identify, preserve, and restore historic sites and cultural landscapes

Encourage Sustainable Growth to Balance Environmental, Social, and Economic Benefits

- Preserve major open spaces and limit urban sprawl
- Recycle urban riverfronts as frontage for new development
- Provide incentives and streamline regulations to promote watershed sustainability
- Encourage local government actions as examples of watershed sustainability
- Provide individuals and organizations with incentives to promote natural habitat

■ **WATER: Enhance Waters and Waterways**

Maintain and Improve Flood Protection

- Maintain or enhance existing flood protection at all phases of implementation
- Utilize nonstructural methods for flood management where feasible
- Reduce the volume and velocity of stormwater runoff where feasible
- Develop regional and subregional networks of stormwater detention areas where feasible
- Encourage new developments to detain stormwater onsite to mitigate runoff where feasible

Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters, and Extend Open Space

- Acquire land for flood management, wetlands, cleansing of water, and compatible uses
- Create a continuous network of parks along the waterways
- Develop recreational opportunities along waterways
- Connect communities to the waterways by extended greenways

Improve Quality of Surface Water and Groundwater

- Reduce dry weather urban runoff discharge into waterways and the ocean
- Coordinate local planning and opportunities for water quality improvements with the regional basin plan for water quality
- Support public/volunteer water quality monitoring programs
- Assist cities in implementing water quality regulatory requirements

Improve Flood Safety Through Restoration of River and Creek Ecosystems

- Restore the natural hydrologic functioning of subwatershed areas where feasible
- Naturalize low-flow streambeds/develop floodways for storm events where feasible
- Restore local streams to replace storm drains where feasible
- Maintain sufficient flow conditions to support riparian/riverine habitats
- Develop sediment management strategy

Optimize Water Resources to Reduce Dependence on Imported Water

- Expand groundwater recharge facilities to increase local water supplies
- Encourage onsite collection of stormwater for irrigation and percolation, where consistent with water quality goals and existing water rights
- Extend the distribution and range of uses for reclaimed water
- Expand water conservation programs
- Publish a subwatershed-level water budget and periodically monitor performance

■ PLANNING: Plan Together to Make it Happen

Coordinate Watershed Planning Across Jurisdictions and Boundaries

- Partner with all relevant agency officials, staff, and elected officials throughout the process
- Develop a coordinated regional approach to obtain federal, state, and local funding
- Plan at the subwatershed level; coordinate at the watershed level
- Encourage and facilitate public and private partnerships to implement projects
- Involve the residential, business, and professional communities in all aspects of planning

Encourage Multi-Objective Planning and Projects

- Integrate land use planning with flood management principles, water quality improvement objectives, and open space uses
- Develop demonstration open space projects with multiple watershed objectives
- Provide incentives in funding and public approvals for multiple-objective projects
- Employ comprehensive cost-benefit analysis to evaluate multiple-objective projects
- Analyze interdependence of land, water, materials, energy, economics, and ecosystems

Use Science as a Basis for Planning

- Base plans and projects on scientifically derived principles, practices, and priorities
- Incorporate review of key issues by an interdisciplinary science panel
- Develop benchmarks to assess watershed status by a regular monitoring process
- Utilize applied scientific research to guide public policy

Involve the Public Through Education and Outreach Programs

- Conduct public educational and outreach programs to promote watershed restoration
- Establish a process for project participation by stakeholder representatives and the public
- Present plans and programs in reader-friendly print and electronic versions
- Involve stakeholders and the public in project implementation and maintenance
- Recognize the significance and uniqueness of individual properties for watershed planning

Utilize the Plan in an On-going Management Process

- Secure approval of the plan by partner jurisdictions
- Assure CEQA compliance in approval of proposed projects
- Establish and periodically assess measurable objectives for all plan elements
- Establish a procedure and schedule for periodic plan review and updates

C. STRATEGIES

To grow greener, enhance waters and waterways, and plan together, the State Conservancies must develop and implement a range of strategies that translate the Guiding Principles into plans, from which individual projects can be identified, proposed, and developed.

1. Education

A high priority must be placed upon public education and outreach. Community leaders, property owners, industries, businesses, and individuals make day-to-day decisions that impact the watersheds. Restoration of the watershed will require changes in behavior, shifts in resource priorities, and decisions on how to balance environmental and economic needs. This requires local understanding of the key issues to allow the public to make informed choices.

State Conservancies and agencies will facilitate the exchange of information concerning the conditions of the watersheds, options for restoration and enhancement of natural resources, and encourage the broadest-based participation in the management and protection of the watershed. This will include development and implementation of a strategy for a watershed-wide public outreach, education, and interpretive programs.

■ Public Outreach

Because water drains from the mountains to the sea, trash thrown into a storm drain anywhere in the watersheds will end up at the beach. Discarded trash and careless human activities in the canyons and along the rivers also negatively impact our drinking water supply.



Storm Drain Stencil

Yet many residents do not understand these simple truths. Public education will make clear the linkages between the condition of the watershed and the health and well being of the population, wildlife, and the ocean.

Cleaning stormwater runoff improves water quality and could help to optimize water resources. Public service campaigns address non-point source pollution, and the reduction of trash, animal waste, organic matter, and other pollutants that wash into storm drains and then into the rivers and the ocean. Public involvement programs should also encourage residents to become involved in the cleanup of the rivers, and build upon existing programs, such as the use of volunteers in monitoring river water quality.

In addition to those issues most directly related to the condition of the watershed, outreach programs should also address broader environmental issues, including sustainability. At the simplest level, sustainability is the ability to meet current needs without compromising the ability of future generations to meet their own needs. This goal encompasses a range of concepts, such as recycling, energy, and water conservation, use of appropriate building materials, minimizing use of hazardous materials, appropriate transportation practices (such as carpooling and public transit); and the purchase of environmentally friendly products and packaging. If individuals, neighborhoods, cities, communities, and agencies reduce their impact on the environment, the benefits to the watersheds will be significant. Outreach efforts will recognize existing programs, such as the T.R.E.E.S. project, developed by Tree People and other examples of city policies and programs (e.g., the City of Santa Monica's Sustainable City Program, Cool Schools).

Outreach programs will inform the public about the connection between individual open spaces, such as community gardens and backyards, and the health and condition of the watersheds. Wildlife need more than just nature preserves to thrive. Backyards can provide essential resources for different kinds of wildlife, such as birds, butterflies, small mammals and other creatures. This could entail planting a few host plants for butterflies or creating a place that provides food, water, summer shade, winter refuge, perches, nesting sites, and hiding places for all kinds of wildlife. The public needs to understand which native plants provide the best habitat for wildlife species. The conservancies will work to publicize existing programs, such as the Backyard Wildlife Habitat program developed by the National Wildlife Foundation, Master Gardeners by University of California Cooperative Extension,

and work with such organizations to advance the potential to provide amenities for wildlife in backyards where appropriate.

■ Educational Programs

Continuing education to adults is important, but educating children who currently live in the watersheds is equally important, given that decades may be required to achieve the vision articulated in this plan. Today's children are the future stewards of the watersheds, and need to understand the importance of restoring balance.



Educating the Next Generation

Scientists, educators, groups, and interested individuals can create effective educational programs and products. These activities will focus on: meeting the needs of educators; forging long-term partnerships with education institutions and professionals; encouraging a wide range of educational activities; fostering full participation of groups currently underrepresented in natural resources education; and incorporating the latest communications, dissemination and display technologies into education programs.

Education programs for children will build upon the extensive network of existing resources, such as the California Plan for Environmental Education, the California Regional Environmental Educational Center—Los Angeles (CREEC-LA), Global Learning and Observations to Benefit the Environment (GLOBE), the Global Rivers Environmental Edu-

cation Network (GREEN), the EcoAcademy (of the Los Angeles Conservation Corps), the North American Association of Environmental Educators (NAAEE), the US EPA's Water Office Kid's Page, the Water Education for Teachers project.

Education programs for adults could include provision of amenities for wildlife, gardening techniques that minimize pesticide and herbicide use, natural methods of pest control, composting, organic gardening, or the planning and construction of stormwater drainage systems that promote groundwater infiltration.

The State Conservancies will encourage higher education institutions to conduct research and teaching related to the condition of the watersheds. Given the interrelationships between the physical and natural environment, this could include a variety of fields, including hydrology, biology, urban planning, civil engineering, transportation planning, atmospheric sciences, geography, education, sociology, chemical engineering, and public health. The State Conservancies will work with others such as the Los Angeles and San Gabriel Rivers Watershed Council towards establishing a clearinghouse of information that catalogs research on the watersheds, to facilitate the exchange of information and ideas.

■ Interpretive Opportunities

When people visit open space, parks, community gardens, historic sites, cultural resources, riverfront walks, bike paths, wetlands, or habitat preserves, opportunities to learn about what they see and experience should be available. This requires interpretive programs that translate information for a variety of audiences. The information presented could be scientific, environmental, cultural, or even artistic in nature. Within the watersheds, interpre-



Interpretive Signage

tive programs could include hands-on programs at nature centers and museums, docent-led nature walks, summer day-camps for families, tours of water resources or flood management facilities, bird-watching or wildlife viewing events, living history exhibits at cultural sites, or signage and informational materials at accessible locations in parks, along trails, or at wetlands or habitat preserves. These could be patterned after the El Dorado Nature Center, the Eaton Canyon Nature Center, and the Los Angeles River Visitor Center, among others.

The State Conservancies will assist existing nature centers to enhance and expand the existing programs and facilities and will work with partners in the creation of new interpretative facilities where appropriate and where needed.

2. Partnerships

Partnerships provide opportunities for agencies, cities, communities, and groups to work together for common goals. Cities can, and sometimes do, coordinate planning with adjacent jurisdictions. Agencies can work with cities and other agencies to coordinate studies and implement projects. Interest groups may band together to work on issues of common interest. Neighborhoods and associations can strive to identify consensus on broad goals. These all represent forms of partnerships, which increase the strength of individual voices, expand the influence of groups, and extend benefits beyond individual cities or jurisdictions.

Instead of a focus on single-purpose public projects, a consistent approach for multiple-objective planning is required. Just as the San Gabriel and Los Angeles Rivers are linked (via the engineered connection at the Rio Hondo) and therefore function as partners, restoration of the watersheds will require that agencies, cities, communities, neighborhoods, interest groups, and individuals work together and form partnerships to achieve a common purpose. For example, the Los Angeles and San Gabriel Rivers Watershed Council has been meeting monthly since 1996 to facilitate the formation of partnerships. The State Conservancies will support and expand such efforts.

Given the large number of agencies and cities with jurisdiction in the watersheds, and the diversity of

neighborhoods and interest groups, the range of interests and issues is very diverse. Instead of differences, it is possible to focus on common themes on which virtually everyone will concur: protect the environment, protect water quality, and provide more parks and open space. It is possible to work together to plan and develop multi-purpose projects that meet both local needs and agency mandates while also helping to restore balance to the watersheds.



Strength in Partnerships

A wide variety of agencies, individuals, groups, and entities have an opportunity to participate in partnerships and play a role in restoration of the watersheds. The following list is illustrative, and is not intended to be all-inclusive.

■ Federal

Elected Officials—Senators and Representatives

Agencies—Army Corps of Engineers, Bureau of Land Management, Bureau of Reclamation, Environmental Protection Agency, Fish and Wildlife Service, Geological Survey, Forest Service, National Park Service, Natural Resources Conservation Service

■ State

Elected Officials—Governor, Senators, and Assembly members

Departments and Agencies—Agriculture, Caltrans, Environmental Protection Agency, Fish and Game, Forestry and Fire Protection, Health Services, Integrated Waste Management Board, Parks and Recreation, Resources Agency, State Water Resources Control Board, Toxic Substances Control, University

of California Cooperative Extension, Water Resources, Wildlife Conservation Board

Conservancies—San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, Santa Monica Mountains Conservancy, Coastal Conservancy, Baldwin Hills Conservancy

■ Regional

Los Angeles County Metropolitan Transportation Authority, Metropolitan Water District, Orange County Transportation Authority, Sanitation Districts of Los Angeles County, South Coast Air Quality Management District, Southern California Association of Governments, and the Regional Water Quality Control Board

■ Joint Powers Authorities

Arroyo Verdugo Council of Governments, Baldwin Hills Regional Conservation Authority, Gateway City Council of Governments, Mountains Recreation and Conservation Authority, Orange County League of Cities, Puente Hills Landfill Native Habitat Preservation Authority, San Gabriel Valley Council of Governments, Whittier-Puente Hills Conservation Authority, Wildlife Corridor Conservation Authority

■ Los Angeles and Orange Counties

Elected Officials—County Supervisors

Departments—Agriculture, Public Works, Open Space District, Parks and Recreation, Regional Planning, Sanitation Districts, Community Development Commission, Beaches and Harbors, Watershed and Environmental Programs (O.C.)

■ Cities (listed below)

Elected Officials—City Council and Mayors

Boards/Commissions—Planning Commission and Parks Commission, for example

Department Heads—City Manager, Planning, Recreation and Parks, Public Works, Redevelopment

Los Angeles County: Alhambra, Arcadia, Artesia, Azusa, Baldwin Park, Bell, Bellflower, Bell Gardens, Bradbury, Burbank, Calabasas, Cerritos, Claremont, Commerce, Compton, Covina, Cudahy, Culver City, Diamond Bar,

Downey, Duarte, El Monte, Glendale, Glendora, Hawaiian Gardens, Hawthorne, Huntington Park, Industry, La Canada Flintridge, La Habra Heights, Lakewood, La Mirada, La Puente, La Verne, Lawndale, Long Beach, Los Angeles, Lynwood, Maywood, Monrovia, Montebello, Monterey Park, Norwalk, Paramount, Pasadena, Pico Rivera, Pomona, Rosemead, San Dimas, San Fernando, San Gabriel, San Marino, Santa Fe Springs, Sierra Madre, Signal Hill, South El Monte, South Gate, South Pasadena, Temple City, Vernon, Walnut, West Covina, and Whittier

Orange County: Anaheim, Brea, Buena Park, Cypress, Fullerton, La Habra, La Palma, Los Alamitos, Placentia, and Seal Beach

■ Unincorporated Cities

Other Entities: Non-profit organizations (trusts, foundations, conservancies, associations, societies, coalitions, alliances, councils); water agencies, districts, and associations; business and property owners; financial institutions; businesses and industry associations; Chambers of Commerce; educational institutions; civic organizations; and interested individuals

3. Funding

To restore the watersheds, additional financial resources will be needed. Traditionally, government has identified and funded acquisition of open space and other natural resource protection and conservation activities. Increasingly, cities, communities, residents, neighborhood groups, private groups, and environmental organizations identify open space and conservation opportunities and work to secure funding or find alternative solutions within and outside of the traditional governmental role.

Traditional funding sources for natural resource protection and acquisition of open space include federal, state, and local funds. Government agencies have a variety of grant programs, for water quality enhancement, wildlife protection, habitat restoration and enhancement, groundwater recharge, stormwater pollution planning, fisheries restoration, and watershed protection. Funds may also be available from state, county, and local city voter-approved bonds, such as Proposition 12 (The

Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act) and Proposition 13 (the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act) or assessment districts. The Los Angeles County Safe Neighborhood Parks Acts (Proposition A) of 1992 and 1996 have been responsible for most of the Los Angeles River greening and riverfront parks. These sources will likely be the primary source of funds for acquisition of lands and individual projects.



Additional Parks Will Require Additional Funds

In addition to securing funds from traditional sources, the State Conservancies will work to identify and create funding opportunities from private trusts. Trusts acquire land for transfer to a third party, when financing is organized. Private foundations should be a source of additional funding.

Funding for planning, management, and maintenance of open space, including historic and cultural sites, must also be addressed. Wherever feasible, plans for acquisition of open space should include a plan for securing the necessary funds for long-term maintenance of those spaces. Many existing facilities have suffered from inadequate maintenance and require funding to restore those facilities to acceptable conditions. To help with on-going maintenance and public services, expanded funding opportunities should be created.

Existing funding sources will not be overlooked. Currently, federal, state, and local agencies, and individual cities expend considerable resources to maintain existing parks, open space, trails, bike paths, and flood protection facilities. For example, optimization of existing water resources through improved water conservation and increased

groundwater recharge could reduce the need for imported water and result in cost savings that could be used to meet other water resource needs.

Compliance with current legislative mandates, such as those related to stormwater runoff quality, will require counties, cities, local agencies, and private landowners to expend resources to develop, implement, maintain, and monitor Standard Urban Storm Water Mitigation Plans. Additional resources will be needed to implement the recently adopted requirements to eliminate trash and other contaminants from the San Gabriel and Los Angeles Rivers. Caltrans plans to expend considerable sums to mitigate stormwater pollution from State highways. The State Conservancies will encourage discussion of how best to optimize the expenditure of resources to mitigate non-point stormwater runoff pollution to accomplish multiple objectives where feasible.

The State Conservancies will encourage and support efforts to secure additional funding from traditional sources, as well as private foundations and trusts. The State Conservancies will work to identify opportunities to optimize use of existing resources, such as sharing of information and knowledge, and work towards lowering the costs of maintenance (e.g., through joint purchasing cooperatives), education and interpretive programs for existing facilities (e.g., through sharing of information and materials). State Conservancies will work to assure that available funds are allocated equitably, to address upstream and downstream, urban, and suburban needs.

4. Multiple-Objective Planning

In recent years, while maintaining focus on their primary responsibilities and missions, a number of agencies in the watersheds have been engaged in the process of discussion and have contributed to the emerging vision of integrated watershed planning, and have incorporated multiple objectives into planning.

Several cities have also incorporated these concepts into planning, and worked with other cities, sometimes through their Council of Governments, to achieve goals that extend beyond the border of individual cities.

To restore the watersheds, a consistent approach to multiple objective planning is required, in which science-based planning and several socially desirable objectives are considered together. Where feasible, parks will provide habitat and flood protection features. Passive recreation in habitat areas may be compatible with resources protection when properly managed. Flood protection features will incorporate recreation features, such as bike paths, where public safety can be assured. By integrating multiple objectives into a single project, it may also be possible to combine several funding sources into a single project, and thereby optimize resources.



Pan Pacific Park

The various concepts that could be combined to achieve multiple objectives are reflected in the Guiding Principles. The State Conservancies will encourage the use of the Principles in the development of plans and projects, and work to fund demonstration projects that illustrate that multi-purpose projects are practical and functional. The State Conservancies will encourage cities to consider incorporation the relevant Guiding Principles into their next General Plan update, so that future projects within individual cities reflect the goals embodied in the Guiding Principles.

To assist agencies, cities, communities, and groups to understand priorities for the award of funds for open space projects, the RMC and SMMC have each developed criteria to rank projects that are eligible for funding administered by those agencies. These criteria have been reviewed and discussed with state and county agencies to ensure that they are in concurrence with agency missions and funding criteria. Basin ranking categories include:

- Urban Resource Value
- Watershed Resource Value
- Partner Resource Value
- Economic Value
- Access Value
- Scenic Resource Value
- Wildlife Resource Value
- Floristic Resource Value
- Archaeological or Historic Resource Value
- Trails Resource Value
- Recreational Resource Value

In addition to the above criteria, the RMC adds an additional criterion for Open Space Plan Value. The SMMC also adopted criteria for improvement projects. The criteria, and weighting factors within each category are included in Appendix G. The State Conservancies will work with funding agencies to encourage the use of the Guiding Principles, above the criteria, and cost-benefit models (that consider economic, social and environmental costs) to prioritize funding applications for projects. The State Conservancies will encourage cities, communities, agencies, and groups to begin to incorporate these concepts into project plans, and thereby meet the goal of multiple objective planning.

5. Management of Public Lands

Public lands will be managed for the benefit of the people and to preserve, protect, and enhance natural resource values, and where appropriate, provide for multiple objectives. Acquisition of open space should include a plan to identify responsibility for future management of the space and, where feasible, identify funds for that management.



Surplus LADWP Property Along San Gabriel River

This plan recognizes the importance and the need for both active and passive recreation. Active recreation generally is within the purview of local and county jurisdictions. These jurisdictions maintain departments that address recreation needs on a local level. Low impact recreation refers to uses that have relatively low impact on the land and include such uses as hiking, strolling, picnicking, sitting, and bird watching. These uses avoid impacts to the land by designating specific routes of travel or areas of usage that allows the surrounding open space to be preserved. A management program may incorporate areas of low impact activities to enhance the sense of place and preserve what makes a particular site important. These activities allow for self-education, exercise, and contemplation to be undertaken at a user's own pace.

In developing and managing an open space, it is critical that numerous issues be addressed. These issues include: access, circulation, security, maintenance, visitor amenities such as restrooms, water, trash pick-up, along with habitat protection and enhancement and interpretive education.



Legg Lake in Whittler Narrows

The State Conservancies will work with partners to identify potential mitigation banking sites (to restore or create off-site wetlands as compensation for destruction of wetlands) and assist in funding and acquisition of these lands and sites.

6. Monitoring and Assessment

This Plan sets forth a long-term vision for restoration of the watersheds, suggests strategies to achieve that vision, and identifies plans and opportunities to implement those strategies. Since restoration of the watersheds will require decades, periodic review and assessment of progress will be required, to deter-

mine whether strategies need to be revised, alternative plans pursued, or new concepts and objectives incorporated.

The State Conservancies will work to develop a joint assessment process for restoration of the watershed, and monitor progress towards meeting the goals described herein. Critical to this process will be maintenance and updating of the Geographic Information Systems database developed by RMC. At a minimum, the periodic assessment process shall occur at ten-year intervals, or more often if deemed practical. This process shall utilize quantifiable, science-based methods wherever feasible, and shall include stakeholder involvement in the design, implementation, and review of the assessments. The RMC has received comments and guidance to create a new park system. The State Conservancies recognizes the need to coordinate its responsibilities for maintenance and security and will work with other public park and open space managers in the region.

D. OPPORTUNITIES

To achieve the vision of the future for the watersheds, to encourage use of the Guiding Principles, and to implement the strategies described above, the State Conservancies will work with agencies, cities, communities, and groups to identify opportunities and encourage development of project-specific plans that take advantage of those opportunities. The following discussion highlights some important opportunities.

1. Land Acquisition, Connectivity, and Open Space

■ River Parkway

River parkways along the banks of the Los Angeles, San Gabriel, and Rio Hondo Rivers will provide the most visible and accessible element of the proposed open space network. As illustrated in **Figure 3-1**, the parkways will extend green ribbons of open space across the urbanized length of the watersheds, from the foothills and the San Gabriel Mountains to the Pacific Ocean.

Landscaped open spaces on both sides of the rivers would provide pocket parks, passive recreation, and natural areas for wildlife habitat. These landscaped spaces could cleanse runoff, promote groundwater



Figure 3-1. Proposed River Parkway

infiltration, and enhance flood protection by serving as buffers between the rivers and adjacent land uses. They could also galvanize a sense of community, provide a unifying theme throughout our diverse region, and enhance the economic value of adjacent land.

In various forms, river parkways were first suggested more than a century ago and reiterated in the Olmsted-Bartholomew plan in 1930. A number of existing plans address the enhancement of the edges of the rivers, including the *Los Angeles River Master Plan*, the *San Gabriel River Master Plan* (in progress) and the *Reconnecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks*, which addressed habitat restoration.

Elements of the riverfront parkway system already exist: bike and pedestrian trails line the length of the Rio Hondo and San Gabriel Rivers and parts of the Los Angeles River. Several major parks already

front the rivers: Santa Fe Dam Recreation Area, Whittier Narrows Recreation Area, Cerritos Regional Park, Debs Regional Park, Elysian Park, Griffith Park, Sepulveda Dam Recreation Area, and El Dorado Regional Park. Various cities have existing parks along one of the river main channels, including Bell Gardens, Bellflower, Burbank, Cerritos, City of Commerce, Downey, Duarte, El Monte, Lakewood, Los Angeles, Long Beach, Montebello, Paramount, Pico Rivera, Rosemead, Santa Fe Springs, Seal Beach, and South Gate. Many schools and recreational facilities currently front the river. These individual open spaces will be connected by parkways along the entire length of the rivers, creating valuable urban amenities.

Several of the “river” cities and communities are already embracing the river as an amenity for their residents. Azusa calls itself the “Canyon City” reflecting the watercourse of the San Gabriel River as it flows from the mountains. Duarte’s residents use the Puente Largo pedestrian bridge as a way to ac-

cess the native environment along the river. The Whittier Narrows Recreation Area provides natural open space and a river beach for the surrounding cities. Long Beach uses the San Gabriel River parks as a connective armature for the city's extensive bicycle network. The City of Maywood is creating a park on five former industrial sites along the Los Angeles River. The riverfront parks in the Elysian Valley and as proposed along the Arroyo Seco constitute small natural parks. By adding to this impressive network, a continuous parkway can be created.



Los Angeles River at Sepulveda Basin

Goal: A continuous ribbon of trails, open space, active and passive recreation areas, and wildlife habitat along the San Gabriel, Los Angeles, and Rio Hondo Rivers. The specific treatment of each segment of the greenway should be determined by the existing conditions of the parcel, the needs and desires of the local community and the opportunities for connection and linkages presented at that location.

Actions: The State Conservancies will work with each riverfront city, community, and relevant agencies to identify potential River Parkway projects, tailored to the needs and desires of each city. This will include a list of projects, identification of potential funding and partners and a work program to accomplish the acquisition and development of each project.

The State conservancies will work with Los Angeles County Department of Public Works and local governments to implement projects identified in the Los Angeles River Master Plan and will assist in

identification of projects for the in-progress San Gabriel River Master Plan.

The State Conservancies, in conjunction with the Resources Agency, will work individually and collectively with the cities, communities, local groups, and the appropriate Council of Governments along the rivers to identify individual projects that will qualify for Proposition 12 funding (by July 2002) and future fund sources.

■ Urban Lands

In the urbanized portions of the watersheds, competition for parcels of land is intense. Within the San Gabriel Valley, the San Fernando Valley, and the Los Angeles Basin, most parcels of land that become available were previously used for industrial or commercial purposes, or have been deemed surplus by public agencies. The size of parcels in urbanized areas will vary from individual lots in residential areas to large, former industrial sites or military facilities. When such parcels become available, they should be reviewed for their potential to serve as contributing elements in the developing network of open spaces.

The potential for individual parcels to be acquired and adapted as public open space that can provide recreation, wildlife habitat, mitigate flood hazard or allow infiltration of groundwater will depend upon the site of the parcel, the location of the parcel (e.g., proximity to rivers, tributaries, or other open space), and the costs of site clean-up (e.g., clearance of existing structures and/or remediation of any site contamination). The opportunity costs of acquisition must be considered in the review of any parcels, and be balanced against the value of the parcel as part of the evolving open space network.

Much of the frontage along the Los Angeles and San Gabriel Rivers has been developed as industrial property. At some locations, properties are abandoned, idled, or underused because of known or perceived environmental contamination from previous uses. Those properties, termed brownfields, pose a major challenge to the expansion of public open space along the rivers, because of their potential value as component of a river parkway, and the potentially high cost of the complete remediation of the site contamination that is required to accommodate public use.

For properties where acquisition and clean-up costs are prohibitive, those sites may be adapted for a variety of uses, including commercial, industrial, or retail. The potential future use will depend upon a variety of factors, including cost of acquisition, the extent of contamination, the zoning and general plan designation of the site, and the objectives of the cities and communities in which the site is located. To the extent feasible, the Guiding Principles should be used to guide future site planning (e.g., to maximize open space).



Existing Quarry in Irwindale

Large parcels of land that may become available over time include the gravel pits located in the upper San Gabriel River watershed, under-utilized or vacant industrial properties along both rivers, hillside properties that, due to geological or other natural conditions, preclude normal types of development, and flood plain lands. Powerline easements belonging to the City of Los Angeles Department of Water and Power and Southern California Edison may provide opportunities for open space uses. Throughout much of the length of the Los Angeles and Rio Hondo Rivers, powerline easements follow the river course. With the continuing evolution of rail operations, additional rail yards and linear rail rights-of-way may become available.

Examples of large parcels that have been converted to public use include the Whittier Narrows Nature Center, the Industry Hills Recreation complex (former landfill), Los Angeles River Center and Gardens (former corporate headquarters), and a park in Maywood (former industrial site). The Chinatown/Cornfield Yard area (a former rail yard) and

Taylor Yard (another former rail yard) may become state parks.

Public agencies, including cities, counties, special districts, state government and institutions, and the federal government own a significant amount of land throughout the watershed, for use as maintenance yards, storage sites, and sites of office and other facilities. Some parcels of land may no longer be needed for their original purpose, may be declared surplus, and disposed of in the manner prescribed by law for each agency or jurisdiction. One example of public land that has been converted to public use is the Augustus F. Hawkins Natural Park, a former pipe storage yard for the Los Angeles Department of Water and Power.

A variety of lands may, over time, be considered “surplus” including major military facilities, such as the Seal Beach Naval Weapons Depot or local reserve training facilities. State agencies such as Caltrans own the lands under and around freeway interchanges and under river bridges. Cities and agencies own and maintain corporate or work yards, some of which have frontage along the rivers and tributaries.

Goal: Consider acquisition of parcels in urbanized areas to provide open space, passive recreation, habitat, water quality, and flood mitigation uses. Balance acquisition costs, including site clean up if necessary, with the value of providing additional open space at that location.



Maywood Riverfront Park

Actions: The State conservancies will work with individual cities to identify and evaluate parcels that may become available in the next 10 years. If deemed appropriate, the cities and the conservancies will work together to develop a purchase,

development, operation, and maintenance strategy for each identified parcel. Where appropriate, the conservancies will work with the State Department of Toxic Substances Control and other relevant agencies to identify opportunities and incentives to expedite and streamline remediation of brownfields. The conservancies will work with local, county, regional, state, and federal agencies and institutions to identify potential surplus government lands and develop a strategy and program for acquiring, operating, and managing those lands. The State Conservancies will work with willing municipalities and public agencies to develop a program that grants and defines the State Conservancies the right of first refusal for surplus governmental lands. The State Conservancies will work with local power distributors, railroads, legislators, agencies, and communities to gain ground access to the linear rights-of-way that crisscross the watersheds and would contribute to the goals of the plan.

■ Mountains, Foothills, and Hills

Development of the flatlands within the watershed began more than two centuries ago, and continues. Because of the limited remaining land, development has pushed into the foothills, and in some locations, into the San Gabriel, Santa Monica, and Santa Susana Mountains. Because large areas of the foothills and mountains remain undeveloped, preservation of special places must be pursued before critical opportunities are lost.



San Gabriel Mountains

The preservation of the ridge tops and hillsides ringing the Los Angeles basin was also a goal of the 1930 Olmsted-Bartholomew Plan. That plan spe-

cifically called for the creation of parkways along the rivers and large parks in the San Gabriel and Santa Monica Mountains, the Puente Hills, and the Whittier Narrows.

Much progress has been made towards the preservation of the area's hillside habitat and open space. For instance, the majority of the San Gabriel Mountains are within the Angeles National Forest, under the jurisdiction of the U.S. Forest Service.

Several non-profit, community-based land conservancies have been created along the south-facing foothill slopes of the San Gabriel Mountains to preserve undeveloped hillside lands. These conservancies utilize time-honored, locally based fundraising techniques and local support to acquire and protect important parcels of land so they may continue to be open space and habitat.

Significant portions of the Santa Monica Mountains, the Simi Hills, Verdugo Mountains and the Santa Susana Mountains have been preserved as park and open space by the Santa Monica Mountains Conservancy and the Mountains Recreation Conservation Authority, in coordination with the California Department of Parks and Recreation, the County of Los Angeles, the City of Los Angeles, and the National Park Service.

The Puente and Whittier Hills, Chino Hills, San Jose Hills, Verdugo Mountains, and the San Rafael Hills all have existing preserved open space. There are nature centers in the Puente Hills (Whittier Narrows Nature Center), the Verdugo Mountains, Eaton Canyon, Monrovia, and San Dimas Canyon Park in the San Gabriel Mountains. The Audubon Society is planning a nature center on the slopes of Debs Park along the Arroyo Seco.

The State Conservancies are working with and through the U.S. Forest Service, National Park Service, California Department of Parks and Recreation, the California Department of Fish and Game, Wildlife Conservation Board, Caltrans, Whittier/Puente Hills Conservation Authority, Wildlife Corridor Conservation Authority, Puente Hills Landfill Native Habitat Preservation Authority, and several land trusts on research studies and land acquisition and preservation programs.

Several major public open spaces are located in the hills and mountains. Besides the Angeles National

Forest in the San Gabriel Mountains, there are the Chino Hills State Park, Debs Regional Park, Deukmejian Regional Park, Elysian Park, Griffith Park, Industry Hills Recreation Center, Schabarum Regional Park, Frank G. Bonelli Regional County Park, Claremont Hills Regional Park, Glendora Wilderness Park, and Marshall Canyon County Park.

The potential for lands in the mountains, foothills, or hills to be acquired and adapted as public open space will depend upon the size of the parcel, the location of the parcel (e.g., proximity to rivers or other open space), and the potential costs of providing public access if appropriate.

Acquisition of land has been the traditional means of protecting land resources, but securing public funding for acquisition may be a lengthy process. Because the window of opportunity to acquire lands may be short, other options may need to be considered.

The most common form of open space acquisition is through the outright purchase of property. The standard purchase is a fee simple transaction where money is exchanged for property. Other alternatives include a lease with a future option to purchase or an installment purchase. Both options may allow for immediate occupancy and transfer of final payment(s) in the future. This may be an important consideration when available resources are low but can be secured in the future. Funding for outright purchases typically comes from local, state and federal grants and bonds and from grants or donations from private individuals and foundations.

The State Conservancies, in conjunction with agencies, cities, communities, and private groups, may be able to identify critical parcels of land that have value for open space, habitat, or water resources. If the owner is willing, it may be possible to secure a right of first refusal that can be exercised when the property is put on the market. It may also be possible to negotiate with the property owner to secure an agreement to donate or dedicate the property in the future. Property owners may have a valid reason (usually tax-related) to donate the property or sell it at a reduced rate, and may be willing if they know it will be used and maintained for the public good. Occasionally, land can be traded among owners, if multiple needs can be met simultaneously by trading parcels.

For some parcels, the owner may be unwilling to sell the property but may be willing to grant the right of use to another party. A conservation easement is a voluntary agreement that allows a landowner to limit the type or amount of development on their property (in exchange for a fee or other considerations) while retaining private ownership of the land. In California, agricultural lands are often protected by the use of a conservation easement. Lands with conservation easements may have limited public access and serve as visual open space. Funding for easements typically comes from state and federal grants and from grants and bonds and donations from private individuals and foundations.



Arroyo Seco

Goal: Acquisition of mountain and hillside open spaces that provide important wildlife habitat and open space values. The hillside open space network, in conjunction with the river network, should connect the San Gabriel Mountains with the Santa Ana Mountains, the Angeles National Forest with the Cleveland National Forest, and the Santa Monica Mountains with the Santa Susana Mountains.

Actions: The State Conservancies will work with the foothill communities of the San Gabriel Mountains, agencies, local land trusts, and the Councils of Government to establish a common strategy and comprehensive plan for the preservation of foothill open space. Figure 3-2 illustrates the areas of opportunity for the continued preservation of mountains, hills, and foothills.

The State Conservancies will work with the communities, local conservancies and groups, and the



Figure 3-2. Preservation Opportunities in the Mountains, Foothills, and Hills

Councils of Government surrounding and within the Whittier/Puente/Chino/San Jose Hills complex to establish a common strategy and comprehensive plan for the preservation of open space in this area.

The State Conservancies will also work with the communities surrounding the San Rafael Hills, the hills surrounding the Glendale Narrows, and the Verdugo Mountains to establish a common strategy and comprehensive plan for the preservation of open space in this area.

■ Tributaries

There are nearly 2,000 stream miles in the watersheds, and one-quarter of those streams flow year-round.

Similar to river parkways, open spaces along tributaries provide an opportunity to extend further green ribbons throughout the watersheds, connecting those communities not located directly on the

tributaries, and expanding the network of trails and bike paths.

As discussed in Chapter 2 and illustrated in **Figure 2-4**, there are eleven major sub-watersheds that create the San Gabriel and Los Angeles Rivers. The major tributaries of the San Gabriel River include the East and West Forks of the San Gabriel, Walnut Creek, San Jose Creek, and Coyote Creek. For the Los Angeles River, major tributaries include the Tujunga, Pacoima and Verdugo Washes, Arroyo Seco, Rio Hondo, and Compton Creek.

River tributaries can provide access to and from the river from all areas of the watersheds. From a circulation perspective, bike and pedestrian paths along the tributaries provide access to alternative transportation modes. From a natural systems perspective, tributary greenways allow for the reestablishment and protection of continuous natural corridors from hill and mountainous environments to coastal environments. From a flood protection perspective, the



Figure 3-3. Open Space Opportunities Along Tributaries

tributary parkways could create opportunities for development of smaller detention facilities that incrementally reduce the threat of flooding downstream. From a recreation perspective, they create local recreation and educational opportunities.

The idea that parks and open space are located along tributaries is prevalent throughout Southern California. Various cities already have public parks and public open space along tributaries, including Alhambra, Anaheim, Arcadia, Azusa, Baldwin Park, Brea, Calabasas, Cerritos, Claremont, Compton, Covina, Diamond Bar, Fullerton, Glendale, Glendora, Hawaiian Gardens, La Habra, La Mirada, La Verne, Lakewood, Long Beach, Los Angeles, Pasadena, Pomona, San Dimas, San Gabriel, Seal Beach, South Pasadena, Walnut, and West Covina.

The challenge is not only to create a continuous open space ribbon along the tributaries but also to increase regional access and create a closer relation-

ship among the existing parks and open spaces within these linear greenways. Large existing parks and open spaces along these tributaries include: Hahamonga Watershed Park, Lower Arroyo Seco Park, Debs Regional Park, Bosque del Rio Hondo, and Eaton Canyon Park.

Goal: All tributaries in urbanized areas of the watersheds are envisioned as open space ribbons that allow for pedestrian and bike paths, restoration of habitat, and provide opportunities for water quality improvement and flood protection. See **Figure 3-3**.

Actions: The State Conservancies will work individually and collectively within the communities, local groups, and the appropriate Councils of Government along each of the major tributaries to develop sub-watershed plans that will identify individual projects within each city.

■ Trails and Bike Paths

The linearity and length of the rivers make them perfect conduits for connecting the northern mountainous areas, the populous interior plains, and the coastal margins of the watersheds. The tributaries provide opportunities to create an extensive network of additional corridors that would extend throughout the urbanized areas of the watersheds. With connections to existing trails and bike paths along those natural corridors, a vast network of alternative transportation corridors will become a reality, creating inter- and intra-city commuter routes and providing connections to a range of recreational opportunities from mountain trails to beachfront promenades. The Rim-of-the-Valley Trail is an example of an opportunity to create regional connections to local trails.



San Gabriel River Trail

Large segments of riverfront bike paths are already in place. The LARIO trail currently follows the Los Angeles River from Long Beach to Maywood and the Rio Hondo from the Los Angeles River to the Santa Fe Dam. A San Gabriel River trail system runs from the mountains to the sea. A trail program for the entire Los Angeles River is depicted in the Los Angeles River Master Plan.

The dozen or so major tributaries create perpendicular linkages to the major spines and allow for a region-wide network of alternative transportation modes. Currently, trail segments are in place along the Coyote Creek, Thompson Creek, La Mirada Creek, and the Arroyo Seco. Existing power line rights-of-way may also provide opportunities to create and extend bike paths and trails along linear corridors.

Beyond the rivers and tributaries, bike paths exist in various locations throughout the watersheds. Caltrans has made development of additional bike paths a priority, and the Metropolitan Transit Authority's long-range transportation plan proposes to extend and expand the network with an additional 1,800 miles of bike paths. The Orange County Transportation Authority is currently updating the County's Strategic Bicycle Plan. Various cities have proposals to extend existing paths, or create new paths.

Goal: A comprehensive network of pedestrian, bike, and equestrian trails that uses existing corridors (such as rivers, tributaries, and power line rights-of-way) where available and new connections where needed.

Actions: The State Conservancies will work with the California Department of Transportation, regional transportation agencies, Councils of Government, cities and local agencies, communities, state legislators, and community groups such as the Los Angeles (and Orange County) Bicycle Coalition, to identify local and regional connections and develop funding strategies for acquisition or development of regional bike, pedestrian, and equestrian trail linkages.

■ Community Gardens

In the urban portions of the watersheds, community gardens provide gardening opportunities, in a communal setting, for those who do not otherwise have space for gardening. The patchwork of urban community gardens provides opportunities for passive recreation and attraction of wildlife (such as birds and butterflies), demonstrates the value of using open space, landscaping, and mulch-covered spaces to contain runoff and reduce water waste, provides opportunities to learn about how composting can reduce the volume of green waste deposited in landfills and how native plants can be incorporated into urban settings.

Many communities throughout Southern California have established community gardens for their residents, and including native plant demonstration gardens. A number of organizations assist communities in the development, organization, and operations of community gardens. The University of California Cooperative Extension has established

the Common Ground (no relation to this project) Gardening Program that makes gardening possible for residents of all ages. Common Ground is comprised of Master Gardeners (who present seasonal workshops), Master Food Preservers (to show how to store and preserve a garden's bounty) and the Gardening Angels school garden program (which works with teachers to provide hands-on gardening activities to complement curricula and create gardens on school grounds).



Tree Planting Along Los Angeles River

The Los Angeles Community Garden Council is an umbrella organization providing assistance to community gardens in Southern California. Together with the Los Angeles Conservation Corps, they established the Green Bank to provide opportunities for residents to participate in community gardens. Long Beach Organic helps turn vacant lots into beneficial green zones, maintained by local residents. This gives families interested in gardening an opportunity to work together, and to link their urban experience with the natural environment.

Goal: In the urbanized portions of the watersheds, create a network of community native plant gardens to provide opportunities for residents that do not have access to private land.

Actions: The State Conservancies will work with cities, educational organizations, and non-profit groups to increase funding opportunities to maintain, expand, and develop additional community gardens that incorporate native plant materials.

2. Public Access

■ Improve and Expand Existing Facilities

As the initial phase of this Plan, the RMC engaged the LJS Group to conduct a survey in the San Gabriel and Lower Los Angeles River watershed in which residents were asked to suggest priorities for RMC activities. One of the highest priorities was improvement of existing parks. Enhanced recreational facilities and increased security were specifically mentioned.

Over the years, for a variety of reasons, many parks in Southern California have not been adequately maintained. Local, state, and federal budgets have not kept pace with the need. Beyond addressing deferred maintenance needs, existing parks and open space could be redesigned to accommodate multiple uses serving a wider variety of users. Parks and open spaces located along river or tributary margins may provide opportunities for low-impact recreation, habitat, flood protection, education and interpretation, trails and connections, water quality and ground water recharge, as well as for active recreational uses.

Goal: Upgraded open space and other facilities that provide amenities commensurate with use and meet applicable standards.



El Dorado Park in Long Beach

Actions: The State Conservancies will work with cities, communities, counties, regional park districts, and local non-profit groups to identify opportunities for the enhancement of existing open spaces, cultural resources, and historic sites within their jurisdictions. The Conservancies will assist the cities

in identifying sources of funding, including park and open space bonds, and will advise cities, communities, counties, and park districts on how to best meet application requirements.

■ Create New Facilities

Some existing open space resources, cultural resources, and historic sites in the watershed may lack appropriate amenities that allow for maximum public benefit and use. This may include the need for adequate access and parking, interpretive facilities, maintenance and security features, or trails or bike path connections.

Goal: Open space facilities that provide an appropriate range of amenities to maximize public enjoyment of those facilities.

Actions: The State Conservancies will work with cities, communities, counties, and local non-profit groups to identify opportunities for the creation of new facilities, cultural resources, and historic sites within their jurisdictions.

3. Native Plants and Wildlife

■ Habitat and Linkages

Habitats that support rare or sensitive species of plants and animals occur throughout the watersheds. Los Angeles County has identified Significant Ecological Areas for various habitats within Los Angeles County. The US Fish and Wildlife Service has designated critical habitat for two animals, the threatened California gnatcatcher (*Poliptila californica*), and the endangered arroyo toad (*Bufo microscaphus californicus*). The State of California has delineated a Natural Community Conservation Planning area for the Southern California coastal sage scrub habitat that includes the southeastern corner of Los Angeles county and large areas of Orange County. As urban and suburban development continues to reduce and fragment open space throughout the watersheds, identification of habitat that warrants protection will become increasingly important.

Habitat fragmentation can reduce plant and animal populations and species diversity. Therefore, maintaining or establishing linkages between patches of habitat is important to maintain biodiversity and ecological integrity. Linkages and corridors must be

defined in terms of functional connectivity: daily and seasonal movements; dispersal, and gene flow; range shifts; and maintenance of ecological processes. To gauge the success of habitat linkages, specific animal and plant species can serve as sensitive indicators of functional connectivity. A list of potential indicator species for the watersheds is provided in Appendix H.



San Gabriel Mountains

A number of important wildlife corridors were identified in *Missing Linkages: Restoring Connectivity to the California Landscape* (2001). These linkages were subsequently evaluated (Noss 2001) in terms of how well the proposed corridors correspond to actual habitat conditions and patterns in the landscape, based on review of aerial photography and a flyover of the region.

Figure 3-4 indicates potential linkages in the watersheds, mostly as revised from the seven linkages identified by the numbers used in the *Missing Linkages* report (Nos. 21, 24, 27, 28, 29, 30, and 31), but with some possible new linkage zones also indicated. The linkages on the map are shown as broad zones within which connectivity might be achieved through linear wildlife corridors; through specific enhancement features, such as bridges or tunnels; through “stepping stone” habitat patches within the linkage zone (e.g., disconnected patches that provide mobility for birds and some animals); or through some combination of these approaches. Each linkage is designated as High, Moderate, or Low Priority based on existing data; although these preliminary rankings may change as more information becomes available. Additional study is necessary to delineate the specific habitat protec-

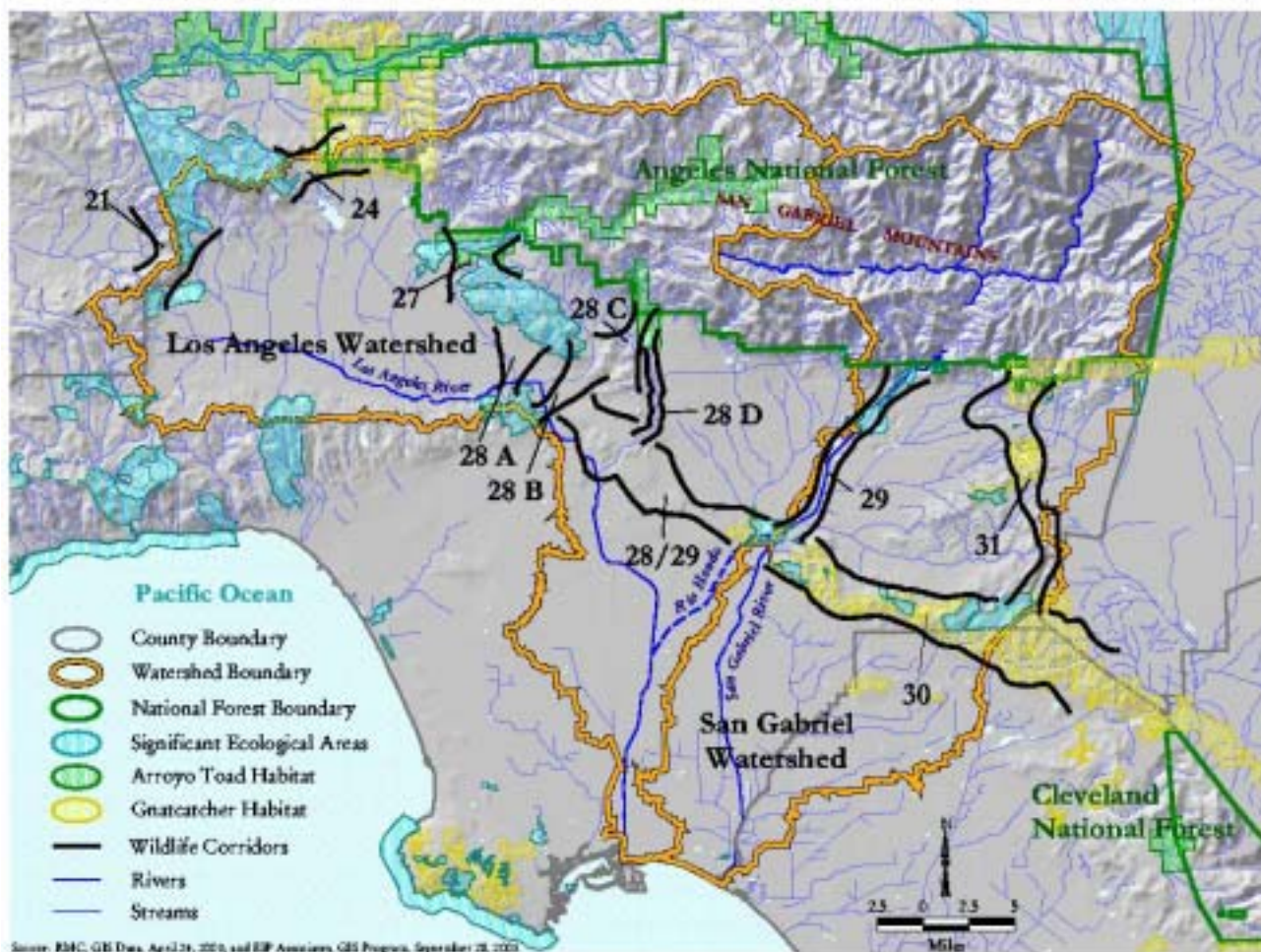


Figure 3-4. Habitat Linkages

Source: Dr. Reed Noss, California Dept. of Fish and Game

tion, restoration, and enhancement needs within these zones.

■ **Linkage #21: Santa Susana Pass—High Priority**

This proposed linkage is the easternmost of a series of linkages proposed by Missing Linkages, which would connect the Santa Susana Mountains with the Simi Hills (which, together, constitute a proposed Significant Ecological Area). The Simi Hills would, in turn, be connected by other linkages (outside the study region) to the Santa Monica Mountains, another proposed Significant Ecological Area. This location was designated by Missing Linkages as a Landscape Linkage and Connectivity Choke-Point. The south end of this proposed linkage, in the Simi Hills, is high-quality oak woodland that is being reduced by development. Maintaining a connection to the west of the south end of the linkage will be important. To the north, the Porter Ranch development is spreading westward and could soon

jeopardize the viability of this linkage. Wildlife use of this linkage should be documented as soon as possible.

■ **Linkage #24: I-5–Newhall Pass—High Priority**

Missing Linkages identifies this as a Landscape Linkage and Connectivity Choke-Point. This linkage would connect the Santa Susana Mountains with the San Gabriel Mountains, specifically linking two proposed Significant Ecological Areas: Santa Susana Mountains/Simi Hills and Santa Clara River. Two roads, SR 14 and I-5 both pass through this area, with interchanges. A highway tunnel or high bridge would be necessary to make this a secure linkage.

■ **Linkage #27: Angeles–Verdugo Mountains—Moderate Priority**

This linkage would connect the Verdugo Mountains to the San Gabriel Mountains in Angeles National Forest. Missing Linkages describes this as a Missing

Link, because the existing connection is tenuous at best. There is some undeveloped private land and islands of public land. Highway 210 crosses the Big Tujunga Wash here, but an underpass is needed for wildlife movement, accompanied by a secure corridor south to the Verdugo Hills.

■ **Linkage #28: Griffith Park–Verdugo Hills—Low to Moderate Priority**

This linkage is correctly identified as a Missing Link. Furthermore, as drawn in Missing Linkages, the proposed linkage passes through a wide (2-3 mile) swath of highly developed land. Verdugo Wash, upon which the linkage appears to be centered, is a possible path, but needs revegetation. “Development removal,” as recommended on the Linkage Description Log, is probably not likely. Judging from aerial photographs, and as indicated on the map overlay, connections to the east and west of the previously identified linkage might be more viable, but are still tenuous at present. To the east of this linkage zone, the Arroyo Seco may offer a superior alternative.

■ **Linkage #28/29: Verdugo–San Gabriel Stepping Stones—Low Priority**

Although not identified by Missing Linkages, aerial photography shows a patchwork of potential stepping stone habitats between the San Gabriel River (in the vicinity of the Puente Hills) northwest to the Arroyo Seco and, tenuously, to the Verdugo Wash. These stepping stones, largely occupying hills, might be used for travel by birds, and some of the more mobile terrestrial mammals (e.g., coyote) and could also be the basis for a trail system.

■ **Linkage #29: San Gabriel River—Moderate to High Priority**

The San Gabriel River, identified as a Missing Link by Missing Linkages, nevertheless has considerable potential for restoration, as noted on the Linkage Description Form. Habitat for the least Bell’s vireo and other focal species still exists in several areas. Restoration of native riparian vegetation along the river would greatly enhance habitat availability for the vireo and other native species. Gravel mines along the river are ending their leases and provide good opportunities for restoration. The San Gabriel River in this area, if adequately restored, would

functionally link two proposed Significant Ecological Areas: Puente Hills and San Gabriel Canyon.

■ **Linkage #30: Puente Chino Hills—Moderate to High Priority**

Although identified as a Connectivity Choke-Point by Missing Linkages, this could also be a Landscape Linkage. Considerable undeveloped habitat remains in the Puente Hills, which are proposed as a Significant Ecological Area. The Puente Hills could be linked to the San Gabriel Mountains (including the San Gabriel Canyon Significant Ecological Area) through the San Gabriel River corridor. Although this connection may currently be tenuous, it could be a very important linkage.

■ **Linkage #31: Puente–San Jose–San Gabriels—Moderate Priority**

As drawn in Missing Linkages, this linkage crosses widely developed areas. An alternative linkage zone may be more feasible to the east, because of a higher density of stepping stone habitats, which might be used by birds, and mobile mammals (e.g., coyote). Importantly, it would link three proposed Significant Ecological Areas: Puente Hills, East San Gabriel Valley, and San Dimas Canyon/San Antonio Wash.

In addition to the linkages shown on Figure 3-4, the Los Angeles River has considerable potential for restoration along much of its course, and if pursued aggressively, the river and its riparian zone could someday constitute a viable linkage and important habitat.

Goal: Preserve important terrestrial, avian, and aquatic habitats, and protect native plants and wildlife in the watersheds.

Preserve or establish habitat linkages and/or corridors in the Santa Susana Pass, Newhall Pass, Angeles National Forest to the Verdugo Mountains, Griffith Park to the Verdugo Mountains, the Verdugo Mountains and San Gabriel “Stepping Stones,” the San Gabriel River, the Puente & Chino Hills, the Puente Hills to San Jose Hills and the San Gabriel Mountains, and the Los Angeles River.

Actions: The State Conservancies will work with federal, state, and local agencies and private groups to pursue: 1) detailed study and monitoring of potential habitat linkages in the watersheds; 2)

comprehensive mapping of potential conservation sites; 3) ranking of potential sites according to their conservation value and vulnerability; 4) analyses of aquatic and wetland habitats and species, which have generally received less study than terrestrial habitats and species.

■ Wetlands

Before the arrival of settlers in the 1700s, the rivers and tributaries, combined with abundant groundwater, created an extensive network of wetlands throughout the watersheds. The vast majority of these wetlands were lost, but some wetlands do still exist. In its *Wetlands of the Los Angeles River Watershed*, the California Coastal Conservancy documented current wetland resources in the watershed and identified 10 sites that have potential for near-term restoration. These sites were chosen because they “represent a range of wetland and riparian habitats that historically occurred in the watershed and are distributed with the overall objective of improving the geographic balance of such habitat types and promoting greater regional biodiversity.”



Riparian Habitat Along Los Angeles River

These sites are located at De Forest Park (Long Beach), Victoria Park (Torrance), Harbor Park (San Pedro), Dominguez Gap (Long Beach), Hazard Park (Los Angeles), Taylor Yard (Los Angeles), Lower Arroyo Park (Pasadena), Cahuenga Spreading Grounds (Glendale), Sepulveda Basin (Van Nuys), and Upper Bull Creek (San Fernando).

For the upper San Gabriel River in the San Gabriel Valley, *Reconnecting the San Gabriel Valley* has proposed a series of actions to create a wildlife corridor along the San Gabriel River. This network includes wetland creation throughout the wildlife corridor.

Although not as detailed as the Coastal Conservancy work on the Los Angeles River, this study presents a long term, multi-objective, and accomplishable vision for this reach of the river.

For the Los Angeles River, the authors of *Wetlands of the Los Angeles River Watershed* state that “many other—in most cases more extensive—restoration opportunities exist or could be created...through such landscape-scale efforts as restoring former hydrologic regimes, more effective stormwater management practices, and non-structural solutions to flood control”. Examples of long-term restoration opportunities include the creation of large-scale, off-channel wetlands and riparian habitats in auxiliary flood ways and utility corridors adjacent to the major tributaries and mainstem channel of the Los Angeles River. These long-term restoration opportunities are also applicable for the San Gabriel River. These opportunities can capitalize on the potential for wetlands to serve as natural filters that trap sediments and contaminants and improve water quality.

Goal: Restore and expand wetlands wherever feasible in the watersheds, and incorporate those wetlands as elements of natural systems, to treat urban run-off, improve water quality, and provide wildlife habitat.

Actions: The State Conservancies will work with appropriate agencies to create a mitigation bank for the restoration and establishment of wetlands within the watersheds. This mitigation bank will provide mitigation for the loss of jurisdictional wetlands and other waters of the United States, as defined by Section 404 of the federal Clean Water Act. The Wildlife Conservation Board and the California Coastal Conservancy are currently working to acquire and restore the Los Cerritos wetlands in Long Beach and Seal Beach. The Resources Agency, the SMMC, and the RMC will utilize available funds (including Propositions 12 and 13) to fund projects that restore riparian and wetland habitats along the rivers and tributaries. The State Conservancies will develop partnerships with agencies and land groups to enhance, create, rehabilitate, manage, and monitor these wetlands.

■ Private and Common Lands

Residents and individuals can play a part in watershed protection and enhancement activities. According to the LJS survey, referred to earlier in this report, many of those surveyed reported that their own backyards were their favorite open spaces. Many of the survey respondents also wanted more information on how to care for their own land. More than 50% were interested in information that makes it more attractive and useful for wildlife such as birds and butterflies and how to absorb, retain and use more of the water that naturally falls or flows over their land.

Watershed restoration can begin in backyards. While a backyard cannot take the place of a large wilderness area or nature preserve, it can play host to the wildlife typically found within our urban areas. A backyard (or front yard) can provide food, water, shelter, and space.



Suburban Backyard

A backyard, when considered as part of the vast neighborhood network in the watershed, can contribute greatly to the health of a watershed. Organizations such as the National Wildlife Federation, the Natural Resources Conservation Service, the National Association of Conservation Districts, and the American Gardening Association provide educational programs on backyard landscaping. The California Native Plant Society provides guidance on incorporation of native plants into private gardens. Tree People have demonstration programs on gardening design, tree planting, and ways to incorporate sustainability concepts into home and garden design. The Los Angeles County Department of Public Works maintains the Smart

Gardening website to provide information on gardening, composting, building healthy soil, and integrated pest management.

In addition to privately owned spaces, businesses, organizations and institutions own large parcels of land that could provide opportunities for open space. These include hospitals, corporations, and educational institutions, including school districts. These entities should be encouraged to adopt programs and policies which introduce landscaped open space into large expanses of concrete and asphalt where feasible, to provide amenities for employees, visitors and students.

Goal: An informed public that understands how private lands, including backyards, comprise open space in urban and suburban settings to provide passive recreation for residents and amenities for beneficial wildlife. Business, industries, school districts, and institutions that value open space as amenities for employees, patients, students, visitors, and as habitat.

Actions: The State Conservancies will work with local agencies and environmental organizations to provide educational support for use of native and regionally adapted plants in landscaping. The Conservancies will work with area businesses to develop incentive programs (e.g., such as sale of native plants at reduced prices) to encourage residents to utilize native plant materials.

4. Water Resources

■ Flood Protection

The variability of flood flows in the Los Angeles and San Gabriel Rivers led to the extensive network of constructed flood protection facilities, including reservoirs, debris basins, and concrete channels. The system has been largely successful in protecting lives and property and speeding the discharge of floodwaters into the Pacific Ocean. Maintenance of adequate flood protection for all residents of the watershed will remain a vital priority.

Alternative means of achieving flood protection have been suggested for many years, including the use of non-structural methods, such as using open spaces to reduce runoff velocity and encourage groundwater infiltration. The introduction of such features must not compromise the basic functional-

ity of the system, and therefore may have limited application at some locations. The Los Angeles Regional Water Quality Control Board recently adopted requirements for development, implementation and monitoring of Standard Urban Stormwater Mitigation Programs for certain types of new developments and redevelopments, which will require treatment or retention of stormwater. As model programs for retention and treatment of portions of stormwater runoff are developed, retrofit of existing facilities may become practical and feasible.



Cogswell Dam

In the upper watershed, open space projects may have the opportunity to retain runoff so as to actually decrease the amount of water in the rivers during peak flows. If stormwater is retained on site, there is an opportunity to use the retention facility as a recreation and or open space amenity during the dry months. Centralized retention facilities serving several parcels provide larger facilities that accommodate more uses.

Goal: Utilize a range of flood protection methods, including non-structural; maintain and enhance flood protection, while utilizing open spaces and landscaped areas to filter, cleanse and retain stormwater and enhance groundwater infiltration.

Actions: The State Conservancies will participate in flood protection planning activities with the Departments of Public Works in Los Angeles and Orange County, and the U.S. Army Corps of Engineers and encourage incorporation of non-structural flood protection measures as part of comprehensive flood protection programs.

■ Surface Water

Since adoption of the federal Clean Water Act, water quality in the rivers and tributaries has improved significantly, although many reaches of the rivers are still identified as having impaired water quality. A variety of problems remain to be addressed to assure that surface water quality meets applicable standards. The most notable of these problems is urban runoff, including stormwater runoff.

Los Angeles and Orange Counties have been granted permits for municipal separate storm drain systems, which cover the discharge of floodwaters into the regional drainage network, and then into the Pacific Ocean. The Los Angeles permittees have filed a Report of Waste Discharge (dated February 1, 2001), and applied for renewal of the waste discharge requirements and a NPDES permit. The LARWQCB is expected to adopt a new permit for those discharges later this year. As a result, most storm drain systems in the urbanized areas of the watersheds are covered by NPDES requirements, which requires development, implementation, and monitoring of Stormwater Pollution Prevention Programs. A major component of those programs is the use of Best Management Practices (BMPs) during planning, construction, operation and maintenance of facilities.



Los Angeles River

In addition, the Los Angeles Regional Water Quality Control Board recently adopted requirements for implementation and monitoring of Standard Urban Stormwater Mitigation Plans for certain types of new developments. Model programs for retention and treatment of stormwater runoff will be developed as a result of these requirements, and those model programs are to be adopted by cities, which

will review plans for new development and determine compliance with the model programs.

Beyond BMPs applicable to existing and future development, public education and outreach will be critical to reducing urban stormwater pollution. Cities and both counties have existing outreach programs, to eliminate the misuse of storm drains as trash receptacles, create an understanding of the connection between animal and yard waste and the quality of water in the rivers and at the beaches, and underscore the need for personal commitment to improve the quality of stormwater runoff. For example, the City of Los Angeles has an exemplary stormwater program, has trained thousands of city employees for BMPs, and maintains a website for public outreach and education.

Goal: Improve stormwater runoff quality to assure protection of surface and ground water. Encourage infiltration of urban runoff into groundwater where feasible and without having a negative impact on groundwater quality, to extend the water supply, thereby reducing reliance on imported water.

Actions: The State Conservancies will work with the LARWQCB, the counties, and relevant local agencies to encourage development of model programs related to urban stormwater runoff mitigation and encourage agencies and cities to adopt and implement those programs. The State Conservancies will encourage expansions of existing urban stormwater runoff education and outreach programs.

■ Groundwater

In the early stages of development of the watersheds, groundwater played an important role as the source of the majority of water for farms, homes, and businesses. Regionally, over-pumping of groundwater aquifers declined as imported water became available. Today, the continued and even increased infiltration of surface water into our underground aquifers is essential to the water supply. Poor quality of groundwater, or contamination from prior land uses, limits or precludes use of groundwater for domestic purposes. Enhancing groundwater infiltration could expand the availability of this valuable resource, and reduce reliance on imported water.

Los Angeles County Department of Public Works (LACDPW) undertakes substantial groundwater

recharge throughout Los Angeles County. LACDPW operates 27 water-spreading areas where water infiltrates to replenish the County's underground water supply (LACDA Study, 1994). Over 250,000 acre-feet of water runoff was conserved in the 1999-2000 water year. The conserved water percolates into the ground water and is pumped for use by the residents of the watersheds.



Tujunga Wash

The Los Angeles County Department of Public Works is undertaking a demonstration project along the San Gabriel and Rio Hondo Rivers in the City of Pico Rivera. The project is a multi-purpose, multi-phase plan to allow public access to the open space provided by the spreading grounds. Planned elements include perimeter landscaping, wildlife habitat, and public access to the spreading grounds. This partnership between Public Works and the City of Pico Rivera is model of cooperation and enlightened multi-use policies.

The City of Los Angeles Department of Water and Power is planning a spreading ground/ habitat/education/passive recreation area at the Headworks Spreading Grounds along the Los Angeles River, north of Griffith Park.

The City of Long Beach, with other stakeholders such as County Public Works and the Water Replenishment District of Southern California are working to develop a multi-use approach to expansion and improvement to the Dominguez Gap Spreading Grounds in the northern part of Long Beach.

Goal: Expand and enhance groundwater infiltration and recharge wherever possible, and when consistent with water quality goals.

Actions: The Conservancies will work with LACDPW and the Los Angeles Regional Water Quality Control Board, water districts, communities, and cities to develop and fund projects that protect and enhance groundwater quality and enhance groundwater recharge.

■ Private and Common Lands

Watershed restoration can begin in backyards. While a backyard cannot take the place of a groundwater recharge basin or stormwater detention facility, it can be designed to detain stormwater and promote groundwater infiltration. The Tree People's TREES demonstration project involved retrofit of a single-family home in South Central to capture, cleanse, and store rainwater that falls onto the property. The water is then reused for landscaping on the site. This project demonstrates how sustainable watershed management—stormwater capture, water conservation, and groundwater recharge—can be implemented on a typical urban lot. In addition, large parcels owned by businesses, organizations and institutions provide opportunities to retrofit these open spaces to detain stormwater and promote groundwater infiltration.



Stormwater Retention Structure at the TREES Demonstration Site

Goal: An informed public that understands how private and common lands, including backyards, provide opportunities to retain stormwater and promote groundwater infiltration.

Actions: The State Conservancies will work with local agencies, cities, communities, and environmental organizations to encourage residents, businesses, and organizations to promote stormwater detention and groundwater infiltration.

E. NEXT STEPS

To restore balance to the watershed, multi-objective plans and projects for open space, habitat, and water resources should incorporate the Guiding Principles articulated in this plan. This includes ongoing (or pending) subwatershed plans, the (in progress) San Gabriel River Master Plan, and future plans for parks, open space, and bike trails in individual cities and communities. The State Conservancies will encourage cities and local agencies to consider incorporation of the concepts embodied in the Guiding Principles into current and future plans, to advance the goal of restoring balance to the watersheds.

The State Conservancies will encourage cities to consider incorporation of the relevant Guiding Principles into their next General Plan update, so that future projects within individual cities reflect the concepts embodied in the Guiding Principles.

Because this plan discusses, but does not propose specific projects, following adoption of this plan, the RMC and SMMC will develop and propose projects consistent with the goals of the plan. The conservancies will also evaluate funding applications for projects submitted by cities, communities, agencies, and local groups, using the project evaluation criteria included in Appendix F.

1. San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

Because the RMC is relatively new, it is still developing detailed plans and programs. The concepts embodied in this plan are intended to guide the activities of the RMC for both the short- and long-term, as described below

■ Short-Term (One to Three Years)

The RMC will work with individual cities, communities, and agencies to identify projects that are consistent with the plan, and to develop and implement a list of projects for current funding opportunities (including Proposition 12). The initial

focus will be on projects that are located along the rivers and tributaries, including: (1) acquisition of individual parcels; (2) installation of trails, bike paths and passive recreation space, (3) creation of parks; (4) development of community gardens (with the assistance of the UC Cooperative Extension Community Gardens Program), and (5) improvement or expansion of existing facilities.

The RMC will also develop a master list of projects that will be reviewed as future funding sources are identified or become available (including future bond issues). The project evaluation criteria used by the RMC may be adjusted for individual funding sources to better match projects with funding sources.

The RMC will develop project evaluation software, which will allow individual projects to be quickly and easily ranked (using the project evaluation criteria in Appendix E), and linked to available information in the RMC GIS database.

The RMC will work with the Tree People, the County of Los Angeles, CALFED, the Los Angeles and San Gabriel Rivers Watershed Council, and others to support and implement watershed-related educational programs.

The RMC will seek funds to develop a restoration strategy for quarry pits along the San Gabriel River to restore native vegetation, protect and enhance groundwater, and incorporate recreation where feasible and consistent with water quality goals.



Upper San Gabriel River

Additionally, to fully develop some of the concepts described in this plan, the RMC will undertake a second phase of this open space plan process, to

develop, within three years of the adoption of this plan, the following subsequent plans:

Rivers Parkway Plan: To create a continuous ribbon of open space along the San Gabriel River, the lower Los Angeles River and the Rio Hondo, a Rivers Parkway Plan should be developed. A proposed study by the National Park Service to create a National Recreation Area along the rivers could inform this process. Partners in the development of the Rivers Parkway Plan may include the National Park Service, the U.S. Forest Service, the California State Parks and Recreation Department, the Los Angeles County Department of Public Works, the Los Angeles County Parks and Recreation Department, and each riverfront city. The Rivers Parkway Plan shall outline a prioritized list of projects, identify potential funding, and include a work program to accomplish the acquisition and development of each project. This will include projects designated in the Los Angeles River Master Plan and the in-progress San Gabriel River Master Plan.

Tributary Plans: To extend the network of open space, trails and bike paths along tributaries, the RMC will encourage the relevant agencies engaged in subwatershed plans to address open space, habitat and passive recreation along the major tributaries of the rivers, including the Compton Creek, Coyote Creek, Rio Hondo, and the Upper San Gabriel River (including Walnut and San Jose Creeks). Potential partners in this process include the Los Angeles Regional Water Quality Control Board, the Los Angeles County Department of Public Works, the Los Angeles County Parks and Recreation Department, Orange County Watershed and Environmental Programs, the U.S. Army Corps of Engineers, the San Gabriel Regional Mountains Conservancy the Los Angeles and San Gabriel Rivers Watershed Council, the San Gabriel Valley Council of Governments, the tributary-fronting cities and stakeholders involved in subwatershed plans.

Trails and Bike Paths Plan: To establish a comprehensive network of trails and bike paths, existing plans need to be reviewed to determine whether those plans should be revised to incorporate trails and paths along the river tributaries. Gaps in existing trails and bike paths must be identified and addressed. Potential partners in this effort include: Caltrans, the Metropolitan Transit Authority, the

Orange County Transportation Authority, the California Department of Parks and Recreation, the Los Angeles County Parks and Recreation Department, individual cities and communities, and advocacy groups such as the Los Angeles (and Orange County) Bicycle Coalitions.

The State Conservancies will work with the State Department of Transportation, regional transportation agencies, Councils of Government, cities and local agencies, communities, state and legislators, and community groups, to identify local and regional connections and develop funding strategies for acquisition or development of pedestrian and equestrian trail linkages.

Mountains, Foothills and Hills Plan(s): To identify parcels and areas of land within the mountains, foothills, hills that should be preserved and protected, comprehensive plan(s) are needed to identify priorities, funding and implementation strategies. Potential partners include: the foothill communities of the San Gabriel Mountains, and the San Gabriel Valley Council of Governments; the communities; local conservancies, agencies, and groups; and the Councils of Government surrounding and encompassing the Whittier/Puente/Chino/San Jose Hills complex; and the communities surrounding the Glendale Narrows and the Verdugo Mountains.

Habitat Conservation Plan: To preserve critical habitat, preserve, and establish habitat linkages and/or corridors, and to preserve, restore, and create wetlands, a comprehensive habitat plan for the watersheds is needed. This would include (1) detailed study and monitoring of potential habitat linkages in the watersheds; (2) comprehensive mapping of potential conservation sites; (3) ranking of potential sites according to their conservation value and vulnerability; and (4) analyses of aquatic and wetland habitats and species, which have generally received less study than terrestrial habitats and species. Potential partners in these efforts include the U.S. Forest Service, U.S. Fish and Wildlife Service, the California Department of Fish and Game, the Wildlife Conservation Board, the California Coastal Conservancy, the Puente Hills Landfill Native Habitat Preservation Authority, the Wildlife Corridor Conservation Authority, counties, cities, and habitat and resource conservation organizations.

The RMC will also retain a conservation resource biologist to conduct a second phase of analysis and research of habitat linkages and corridors in the watersheds, to identify problems and opportunities related to species conservation in urban settings and provide for input from local experts.

The RMC will also look for partners to fund vegetation mapping for the watersheds. Vegetation mapping would improve understanding existing habitats and the extent of fragmentation, inform planning, and development of strategies for protection of habitats and the establishment and preservation of habitat linkages and corridors.

Historic and Cultural Landscape Survey: In order to preserve our rich cultural and agricultural heritage, the RMC, in conjunction with university, professional, civic, and community organizations, State Parks, the National Park Service, and local agencies, will work to create a comprehensive survey of historic and cultural landscapes throughout the watersheds.

Monitoring and Assessment Plan: The RMC, with partners, will work to develop an assessment process for restoration of the watersheds, and monitor progress towards meeting the goals described herein. Critical to this process will be maintenance and updating of the Geographic Information Systems database developed by the RMC. At a minimum, the periodic assessment process shall occur at ten-year intervals, or more often if deemed practical. This process shall utilize quantifiable methods wherever feasible and input from a technical advisory committee, and shall include stakeholder involvement in the design, implementation, and review of the assessments.

A timeline reflecting the development of these plans is included as **Figure 3-5**.

■ Long-Term (Twenty to Fifty Years)

The following are the long-term goals of the RMC:

- To create, expand, and improve public open space, the RMC will work with the federal government, the state legislature, the counties, cities, and non-profit groups to identify funding to provide five acres of park space per 1,000 residents. This will include a strategy for land acquisition

Open Space Planning Timeline



Figure 3-5. Open Space Planning Timeline

and preservation to create parkways along the rivers and tributaries.

- To improve habitat quality, quantity, and connectivity, the RMC will work with resource conservation agencies and other appropriate partners to plan and implement a hierarchy of habitat networks that will connect small habitat patches and narrow corridors within the densest urban areas, larger habitat patches and wider corridors in suburban and rural areas, and extensive open spaces in the mountains and the national forests.
- To build a regional systems of trails, bike paths, equestrian trails, and public access systems the RMC will work with federal, state, regional and local agencies, the counties, cities, and advocacy groups to develop a comprehensive network that

will connect river trails to mountain trails, urban trails to centers of commerce, and parks and significant open spaces to the beaches.

2. Santa Monica Mountains Conservancy

Because the SMMC has been established for more than 20 years, it already has a variety of plans and programs related to acquisition and preservation of open space, establishment of parks, installation of trails, restoration of habitat, and other resource conservation activities. The SMMC will use the concepts in this plan to develop and implement a Watershed Work Program.

3. Other Agencies and Cities

California Resources Agency: Implement development of the California Continuing Resource

Investment Strategy Project (CCRISP), to create an analytical tool to help prioritize areas that contain natural resources that are important to biodiversity, working landscapes, watersheds, natural recreational lands, and urban open space.

California Parks and Recreation: Implement the Urban Strategy for the Los Angeles area to acquire, develop and operate parks, provide interpretative, educational, and recreational programs and events; and to plan, coordinate and provide technical assistance for park and recreation opportunities.

California Coastal Commission: Develop wetland restoration projects and protect coastal resources.

California Fish and Game: Develop habitat and conservation projects.

Wildlife Conservation Board: Facilitate land acquisitions and public access funding.

Caltrans: Develop bikeway and restoration projects.

State and Regional Water Quality Boards: Coordinate local planning for, and implementation of, water quality improvements with the Los Angeles and Santa Ana Regional Water Quality Control Boards and other interested parties.



Arroyo Seco

US Forest Service: Complete the Forest Plan Update that includes the Angeles National Forest.

US Army Corps of Engineers: Continue wetland restoration and flood protection projects.

US National Park Service: Prepare a River Parkways Study and continue work on the De Anza Trail.

Los Angeles County Department of Public Works: Complete the San Gabriel River Master Plan and continue to work with partners to implement projects consistent with the Los Angeles River Master Plan. Continue to work with partners on river-related project within the Los Angeles and San Gabriel River Watersheds.

Orange County Office of the Chief Executive: Undertake the Coyote Creek Watershed Plan (in conjunction with the U.S. Army Corps of Engineers) and implement watershed-related projects.

Cities: Identify projects and consider incorporating the Guiding Principles into the next update of their general plans.

Approval of individual projects will require consideration of potential environmental effects, in accord with the California Environmental Quality Act (CEQA) (Public Resources Code, §§21000–21178) and the CEQA Guidelines (California Code of Regulations, Title 4, Chapter 14, §§15000–15387). The lead agency responsible for approving or implementing the proposed project will be responsible for determining the appropriate level of environmental review.

This plan is intended as a living document that will evolve over time, as priorities evolve and needs dictate, based on periodic assessment of progress. As subwatershed, river, and city open space plans are developed, those plans will be appended to this document, to extend and expand upon this plan.

APPENDIX A

Photo Credits

Cover

San Gabriel Mountains: Courtesy of San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy

Los Angeles River (at Long Beach): Courtesy of Trust for Public Land, Tom Lamb, 1996

Ranger: Courtesy of Trust for Public Land, Cheryl Himmelstein, 1996

Beach: Courtesy of EIP Associates, 2001

Executive Summary

Los Angeles Satellite Image: Spaceshots, 1989

Los Angeles River at Elysian Park: Courtesy of Trust for Public Land, Tom Lamb, 1996

Bosque del Rio Hondo: Courtesy of Trust for Public Land, Lamb Studio, 1997

San Gabriel Mountains: Courtesy of Arthur Golding

Pan Pacific Park: Courtesy of EIP Associates

Arroyo Seco: Courtesy of Arthur Golding

Simi Hills: Courtesy of Trust for Public Land, Tom Lamb, 1996

Ranger: Courtesy of Trust for Public Land, Cheryl Himmelstein, 1996

Headwaters of the Los Angeles River: Courtesy Trust for Public Land, Tom Lamb, 1996

Conceptual River Parkways: Courtesy of Montgomery Watson Harza, adapted from Spaceshots (1989)

Urban Riverfront Parcel (in Maywood): Courtesy of EIP Associates, 2001

Whittier Hills Trail: Courtesy of Trust for Public Land, Tony Haig

Upper San Gabriel River Trail: Courtesy of Dan Slater, 2000-2001

Rio Hondo & Los Angeles River Confluence: Courtesy of Trust for Public Land, Tom Lamb, 1996

Legg Lake: Courtesy of Dan Slater, 2000-2001

Great Blue Heron: Courtesy of Dan Slater, 2000-2001

Trail Above Monrovia: Courtesy of Trust for Public Land

Los Angeles River: Courtesy of Arthur Golding

Chapter 1—Background

Los Angeles in 1873: Courtesy of Nevada Historical Society

San Gabriel in 1893: Courtesy of Historic Urban Plans

Los Angeles River south of Downtown: Courtesy of Trust for Public Land, Tom Lamb, 1996

Los Angeles River west of Sepulveda Dam: Courtesy of Trust for Public Land, Tom Lamb, 1996

Confluence of Arroyo Seco and Los Angeles River: Courtesy of Trust for Public Land, Tom Lamb, 1996

Chapter 2—Current Conditions

Upper Arroyo Seco: Courtesy of David Van Norman

Steelhead Trout caught by Leonard G. Hogue in January 1940: Courtesy of James N. Hogue

Arundo Removal near Whittier Narrows: Courtesy of Dan Horan

Chapter 3—A Vision for the Future

No Dumping Stencil: Courtesy of Heal the Bay

Ranger: Courtesy of Trust for Public Land, Cheryl Himmelstein, 1996

Interpretive Signage: Courtesy of Trust for Public Land

Children with Earth Ball: Courtesy of Tree People, Melinda F. Kelley

(Golden Gate) Park: Courtesy of EIP Associates

Pan Pacific Park: Courtesy of EIP Associates

Surplus LADWP Property: Courtesy of EIP Associates, 2001

Legg Lake: Courtesy of Dan Slater, 2000-2001

Los Angeles River at Sepulveda Basin: Courtesy of Trust for Public Land, Tom Lamb, 1996

Maywood Riverfront Park: Courtesy of EIP Associates, 2001

Existing Quarry in Irwindale: Courtesy of Arthur Golding

San Gabriel Mountains (Mountains, Hills, & Foothills): Courtesy of Arthur Golding

Arroyo Seco: Courtesy of Arthur Golding

San Gabriel River Trail: Courtesy of Trust for Public Land, Tom Lamb, 1996

Tree Planting Along Los Angeles River: Courtesy of Trust for Public Land, Tony Haig, 1997

El Dorado Park in Long Beach: Courtesy of Dan Slater, 2000-2001

San Gabriel Mountains (Habitat and Linkages): Courtesy of Arthur Golding

Riparian Habitat Along Los Angeles River: Courtesy of Trust for Public Land, Tom Lamb, 1997

Suburban Backyard: Courtesy of San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy

Cogswell Dam: Courtesy of Dan Slater, 2000-2001

(Bridge over) Los Angeles River: Courtesy of Trust for Public Land, Tom Lamb, 1996

Tujunga Wash: Courtesy of Trust for Public Land

Stormwater Retention Structure: Courtesy of Tree People

Upper San Gabriel River Canyon: Courtesy of Trust for Public Land, J. Danza

Arroyo Seco: Courtesy of Arthur Golding

APPENDIX B

Acronyms

BMPs	Best Management Practices
CREEC-LA	California Regional Environmental Educational Center—Los Angeles
CEQA	California Environmental Quality Act
EPA	United States Environmental Protection Agency
DTSC	Department of Toxic Substances Control
GIS	Geographic Information Systems
GLOBE	Global Learning and Observations to Benefit the Environment
GREEN	Global Rivers Environmental Education Network
LACDA	Los Angeles County Drainage Area
LACDPW	Los Angeles County Department of Public Works
LARWQCB	Los Angeles Regional Water Quality Control Board
MRCA	Mountains Recreation Conservation Authority
NAAEE	North American Association of Environmental Educators
NPDES	National Pollutant Discharge Elimination System
RMC	Lower Los Angeles and San Gabriel Rivers and Mountains Conservancy
SEAs	Significant Ecological Areas
SMMC	Santa Monica Mountains Conservancy
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load
TPL	Trust for Public Lands
TREES	Trans-agency Resources for Economic and Environmental Sustainability
ULARA	Upper Los Angeles River Area
WDR	Waste Discharge Requirements
WET	Water Education for Teachers

APPENDIX C

Glossary of Useful Terms

(Derived from the *Second Nature* report prepared by Tree People, and *Stormwater: Asset Not Liability*, by Dallman and Piechota)

50-year storm—The L.A. County Department of Public Works capital flood hydrology is based on design storm derived from 50-year return frequency, based on historical weather data in the Los Angeles region. This design event occurs over a four-day period, with the maximum rainfall falling on the fourth day.

133-year storm—The storm intensity used by the Army Corps of Engineers for calculating flood likelihood. Presumably a storm of this intensity occurs once every 133 years on average.

Aeration—A process whereby air voids are introduced into soil for improved fertility and water holding capability.

Base flow of streams—Water slowly percolates underground and then spreads laterally until it reaches the surface (not pumped up) becoming part of the natural flow in rivers and streams, its base flow. This seeping ground water is what maintains the flow in a river due to the return flow of groundwater.

Bio-remediate—Bio-remediation uses biological processes to repair pollution damage. For example, a grass swale can bio-remediate much of the pollution caused by automobile use by holding heavy metals in the soil at harmless concentrations as well as by the action of soil bacteria, which gradually breaks down hydrocarbon waste such as crankcase oil.

Beneficial uses—historical, existing or potential uses of a body of water. The Regional Water Quality Control Boards designate uses for individual bodies of water, with the intent of preserving or restoring those uses. There are 24 beneficial uses designations in California, including wildlife habitat, industrial processes, agricultural supply, and ground water recharge.

Catchment planter—A planting bed that has been specially designed to hold and absorb storm flows from adjacent areas, usually from parking lots.

Cistern—Storage tank built either above or below ground or on a roof to store water for later use: for irrigation, fire fighting, and in some countries, for drinking and bathing.

Compost—Decaying vegetation. Can be used as ground cover or mulch, and as fertilizer.

Design storm—The size of a storm, defined by duration, intensity, and amount of precipitation, that storm drain systems are designed to accommodate. As development paves over the land, increasing the volume of runoff, the design capacity of built storm drains can become inadequate.

Detention basin—Temporary storage to reduce the peak flow, but not the total volume of storm water during a storm.

Debris basin—Facility constructed to contain debris flows (water, rocks, mud, sediment vegetation and other debris) that occur during major storm events, particularly in areas that have been subject to wildfires.

Drainage chimney—Holes drilled into the ground sufficiently deep to allow rainwater to quickly flow back into the ground. Also known as a dry well.

Drainage flow deflector—A ridge and/or a depression in a flat paved surface for the purpose of re-directing sheet flow into a channel, thus changing the destination of storm water.

Dry flow—The continuous flow in a storm drain system that occurs even during extended periods without rain.

Dry well—A constructed well designed to receive water for groundwater recharge.

Evapotranspiration—The loss of water from the soil both by evaporation and by transpiration from the plants growing thereon.

Filter medium—Any item or substance that is used for filtering impurities. Soil, sand, and mulch are used as a filter media.

First-flush rain—In the Los Angeles area, many months can pass between one rainstorm and the next. During this time, pollution and grime build up on all of the city’s outdoor surfaces, and in particular, on its streets. When the next rainstorm finally comes, it washes the accumulated grime and pollution off of the streets and into the underground storm drain system. This is the “first flush rain.” As you might expect, it carries a very large amount of suspended and dissolved pollutants.

Flood plain—The lands next to rivers and streams that flood naturally during large storm events. The flood plain’s function is to store sediment and flood flows.

Grass filter strips—A grassy edge or swale that filters storm water in the root layer before percolating the water into the soil below or discharging the water overland.

Graywater—Water drained from household sinks, washers, tubs, and showers—that is, all water not coming from toilets. This water carries relatively few suspended or dissolved solids. Consequently, it can often be used for such purposes as landscape irrigation.

Green filter islands—A grassy or planted landscaped island, usually in a parking lot, that filters storm water in the root layer before percolating the water into the soil below or discharging the water overland.

Green link—Green links connect various locations via generously planted “park- like” linear corridors.

Groundwater—The water that collects and is stored underground into basins defined by the underlying geology. The level of groundwater or “water table” varies according to the type of soil and underlying geologic formations, and from season to season. In rare instances, and on particular sites, the groundwater table comes up to the surface. This results in standing water on the surface of the ground. More often, the groundwater table is located many feet below the surface.

Groundwater mounding—In certain instances, where stormwater is returned to the soil in one location at a faster rate than in adjacent locations, groundwater mounding can occur. This means that the water table (where the soil is saturated) can be higher under a recharge basin than in adjacent locations. Occasionally this can create problems. Often it is benign.

Groundwater recharge—Surface water that filters into the ground and reaches underground reservoirs, providing replenishment and/or increased storage for groundwater basins. This occurs naturally during and after rainstorms, in creek beds with flowing water, or can be accomplished purposefully by directing storm water into specially prepared recharge areas for infiltration.

Heat gain—Heat can slowly build up in an object over time. This is called heat gain. In a building, heat gain is most often the consequence of many hours of sunshine striking and warming the exterior walls and roof.

Heat island effect—Many urban areas lack shade trees. In these areas the sun strikes pavement and rooftops, heating them to very high temperatures. These surfaces re-radiate heat back into the air, raising air

temperatures by five or more degrees. Urban areas that contain dense tree canopy avoid the heat island effect because trees absorb virtually all of the sun's energy without radiating heat back into the air.

High crowns—Virtually all roads and parking areas have some kind of crown, or high point, to insure that water flows off promptly. Usually this high point is a ridge along the center line of the road or parking bay. This ridge is ordinarily only a few inches higher than the edges. “High crown” suggests a condition where this crown is made artificially higher to allow the road or bay to hold more water than it otherwise could.

Holding pond—A depression where rainwater is directed and held temporarily. Holding ponds function to slow the rate at which water is discharged from a site to the rate more typical of undeveloped natural sites.

Humus layer—The top layer of soil where there is the most organic activity, fibrous root material, and recycling detritus from the plants above.

Hundred-year storm—There is a 1 in 100 chance of a storm of this magnitude happening in any one year. Flood flow rates from hundred year storms are recalculated over time due to changes in the landscape (e.g., increased urbanization).

Hydrology—The occurrence, distribution, movement, and properties of water above and below the earth's surface. The natural hydrology of an area may be significantly altered by catastrophic events (earthquakes, landslides) and by human development (agriculture, urbanization).

Impervious or impermeable—A surface that does not allow the passage of water and thus potentially facilitates the generation of runoff.

Infiltration—The process by which water moves downward through the earth's surface, replenishing soil moisture and groundwater basins. The ability of the soil to infiltrate water depends on many factors, including the nature of the surface cover, and soil characteristics such as texture and depth.

Infiltration zone—An area particularly well suited and/or altered for directing storm water back into the soil.

Mulch—Organic material placed on the ground, sometimes many inches thick, used as a ground cover to cool the soil, discourage weeds and erosion, aid in the infiltration of water, minimize the heat island effect of the city, and reduce the costs of green waste disposal.

Natural flood plain—Every river or stream naturally overflows its low flow or non-storm capacity channel during major storm events. Flood plains consist of those areas that would naturally flood during major storms. Their function is to disperse sediments and to infiltrate water underground.

Percolation—The act of water soaking into the ground. This term is used most frequently in conjunction with spreading grounds, where water is purposefully allowed to percolate through the soil to the groundwater.

Percolation basin—An above ground storage place—retention basin—built so as to encourage the percolation of water contained therein underground.

Percolation rate—The rate at which water filters into the soil. Some soil types, such as sand, have a very high percolation rate; other soils types, such as clay, have a very slow percolation rate.

Permeable pavement—Permeable pavement is honeycombed with voids, or air pockets. These voids allow water to migrate down through the pavement into the soil below.

Pervious or permeable surfaces—Surfaces that allow water or other liquids to penetrate and potentially reach the ground (depending on the thickness of the surface, how porous it is, and the amount of water).

Porosity—A measure of the ability of water to pass through a material, which is dependent upon how much empty space occurs between the particles that make up the substance. For example, sand is much more porous than clay.

Potable water—Water that is fit to drink.

Precipitation—Rain, hail or snow that falls from the atmosphere.

Recharge areas—Certain zones in the landscape can accept water back into the soil at higher than average rates. Such areas are often referred to as recharge areas.

Residential density—The number of family units to be found on an average acre of land in a residential area is referred to as its density. These densities range from low (1-2 units per acre) to high (40 + units per acre).

Retention basin or infiltration basin—Stores water with the purpose of reducing the volume of runoff by capturing precipitation and surface runoff for recharge to groundwater. These basins do not return captured runoff to storm water channels.

Return period—The average recurrence of a storm of a particular size and duration.

Riparian habitat—Habitat next to rivers or streams and dependent on the additional moisture in the river. Its function is to provide food and shelter for many creatures, to reduce the volume and velocity of runoff, and increase infiltration.

Riparian retention and treatment area—A retention or recharge area where plants native to rivers or lakes are installed to consume and clean the water therein.

Riprap—A rock lining used to stabilize sloping stream banks.

River corridor—Includes the river, the flood plain, the riparian trees, and plants that grow in the high groundwater and most soils along the way.

Runoff—Stormwater that flows off of one surface or site onto another.

Sheet flow—Stormwater that flows in even sheets across a flat surface, such as a parking lot.

Spreading grounds—A land area specifically designed to be flooded so that the water will percolate or soak into the ground, recharging the ground water.

Stormwater—Refers to all rainwater that hits the surface of the ground. Stormwater either percolates back into the soil or flows on the surface to the nearest storm drain inlet, stream, or other wetland area.

Subsoil—the soil layer below the “topsoil” layer.

Subsurface—Below the surface of the ground.

Sustainability—The ability to meet current needs without compromising the ability of future generations to do the same. Also, the goal of securing life, liberty, and social well-being within the means of nature.

Swale—A v-shaped depression in the land, usually lined with grass, designed as a channel for moving storm water from one place to another.

Velocity of flow—How quickly the stormwater flows over the surface or through the storm drain system to the ocean. Velocity is determined by the design of the conveyance system: how wide, how smooth or rough, and the slope of the conveyance.

Water conservation—Means different things in different contexts. Usually, it means using less (consumer or farmer or landscape) due to hardware or management strategies. In the storm water management context, it means storing water in retention basins or behind a dam for infiltration to the ground water, making the water available as an addition to the drinking water supply.

Watershed—A region or area bound peripherally by a divide or ridge, all of which drains to a particular watercourse or body of water. Most urban sites are now mini-watersheds, with the property line constituting the “ridge” and the storm drain system located in the street constituting the “watercourse” to which it discharges.

APPENDIX D

References

CHAPTER 1—Background

- California Coastal Conservancy, *Wetlands of the Los Angeles River, Profiles and Restoration Opportunities*, Coastal Conservancy, 2000
- Hise, Greg, William Deverell, Laurie Olin, *Eden by Design: The 1930 Olmstead-Bartholomew Regional Plan for the Los Angeles Region*, University of California Press, 2000
- Gumprecht, Blake, *The Los Angeles River: Its Life, Death and Possible Rebirth*, Baltimore, MD: John Hopkins University Press, 1999
- Los Angeles County Department of Public Works, *Los Angeles River Bikeway, Report for the Los Angeles County Board of Supervisors*, June 2001
- Olmsted Brothers and Bartholomew Associates, *Parks, Playgrounds and Beaches for the Los Angeles Region*, report submitted to the Citizens' Committee on Parks, Playgrounds and Beaches, 1930
- Shapiro, Erik A. and Leo J. Shapiro, *Making More Open Space – Making Space More Open in the Los Angeles River and San Gabriel River Watershed*, LJS Group and Leo J. Shapiro & Associates, April 6, 2001

CHAPTER 2—Current Conditions

- Aldrich, John H. and Meadows, Myra, *Southland Weather Handbook* Los Angeles: Brewster Publications, 1966
- Association of Groundwater Agencies, *Groundwater and Surface Water in Southern California: A Guide to Conjunctive Use* Montgomery Watson, Pasadena, California, 2000
- Blomquist, W., *Dividing the Waters*, San Francisco: ICS Press, 1992
- Brown, J., Delgado, D., Stevens, J. and Sung, K., *Reconnecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks*. Pomona: California State Polytechnical University, Department of Landscape Architecture, June 2000
- California Coastal Conservancy, *Wetlands of the Los Angeles River Watershed: Profiles and Restoration Opportunities*, May 2000
- California Regional Water Quality Control Board, Central Valley Region, *A Compilation of Water Quality Goals*, August 2000
- California Regional Water Quality Control Board, Los Angeles Region, *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*, adopted June 1994
- _____, *Los Angeles River Watershed Water Quality Characterization*, April, 1998
- _____, Resolution No. 98-018, *Amendment to the Water Quality Control Plan to Incorporate Changes in Beneficial Use Designations for Selected Waters*, November 1998
- _____, *Standard Urban Storm Water Mitigation Plan for Los Angeles County and Cities in Los Angeles County*, March 8, 2000
- _____, *State of the Watershed – Report on Surface Water Quality, The San Gabriel River Watershed*, June 2000

- _____, *Watershed Management Initiative Chapter*, December 2000
- _____, *Total Trash Total Maximum Daily Loads for the Los Angeles River Watershed*, January 25, 2001
- Central and West Basin Water Replenishment District, *Annual Survey Report on Ground Water Replenishment*, Bookman-Edmonston Engineering, Glendale, California, 1991
- Cook, Jody, Angeles Forest Supervisor, presentation at Los Angeles and San Gabriel Rivers Watershed Council conference *Habitat: Past, Present and Future*, May 2001
- Dallman, Suzanne and Piechota, Tom, *Stormwater: Asset Not Liability*, Los Angeles and San Gabriel Rivers Watershed Council, 1999.
- Gumprecht, Blake, *The Los Angeles River: Its Life, Death and Possible Rebirth*, Baltimore, MD: John Hopkins University Press, 1999
- Kreissman, Bern, *California: An Environmental Atlas and Guide*, Davis, CA: Bear Klaw Press, 1991
- Los Angeles and San Gabriel Rivers Watershed Council, *Water Supply and Management in the Los Angeles Area*, Draft, September 2001
- Mayer, Kenneth E. and Laudenslayer, William F., editors, *A Guide to the Wildlife Habitats of California*, Sacramento: State of California, 1988
- McPhee, John, *The Control of Nature*, New York: Farrar Straus Giroux, 1991
- Orme, Antony R. and Brown, Amalie Jo, *The Transverse Ranges and the San Andreas Fault System*, Los Angeles: International Conference of Historical Geographers, 1979
- PCR Services Corporation, Frank Hovore & Associates and FORMA Systems, *Los Angeles County Significant Ecological Area Update Study 2000*, report prepared for the Los Angeles County Department of Regional Planning, November 2000
- Rairdan, Charles *Regional Restoration Goals in the Greater Los Angeles Drainage Area: A Landscape-Level Comparison of Recent Historic and Current Conditions Using Geographic Information Systems*. Ph.D. Dissertation, University of California, Los Angeles, 1998.
- San Gabriel Valley Water Association, *Water Issues*, Monrovia, California, Winter 1992
- San Gabriel River Watermaster, *Thirty-Fourth Annual Report of the San Gabriel River Watermaster for 1996-1997*, February 28, 1998
- Sanitation Districts of Los Angeles County, Los Angeles County Department of Public Works, and Water Replenishment District of Southern California, *Montebello Forebay Groundwater Recharge Engineering Report*, November 1997
- Shuit, Douglas P, "County Bike Lanes Going on Fast Track," *Los Angeles Times*, May 27, 2001
- Southern California Association of Governments, *Regional Comprehensive Plan and Guide*, 1996
- Stephenson, John R. and Calcarone, Gena M, *Southern California Mountains and Foothills Assessment: Habitat and Species Conservation Issues*, Albany, CA: USDA Forest Service, Pacific Southwest Research Station, 1999
- Strahler A. H. and Strahler A. N, *Modern Physical Geography*, Fourth Edition, New York: John Wiley & Sons, 1992

U.S. Army Corps of Engineers, Los Angeles District, *Los Angeles County Drainage Area Review: Final Feasibility Study Interim Report and Environmental Impact Statement*, January 1992

■ Websites

Angeles National Forest—<http://www.r5.fs.fed.us/angeles/>

California Noxious Weed Control Projects Inventory—<http://endeavor.des.ucdavis.edu/weeds/>

California Wetlands Information System—
http://ceres.ca.gov/wetlands/geo_info/so_cal/los_angeles_river.html

EPA Surf Your Watershed—<http://www.epa.gov/surf3>

EPA Impaired Water Bodies—http://www.epa.gov/iwi/303d/18070105_303d.html, and
http://www.epa.gov/iwi/303d/18070106_303d.html

Los Angeles Almanac—<http://www.losangelesalmanac.com/>

Los Angeles County Department of Public Works Hydrologic Annual Reports—
<http://dpw.co.la.ca.us/wrd/report/index.cfm>

Los Angeles Department of Water and Power—<http://www5.dwp.ci.la.ca.us/water/supply/facts/index.htm>

Metropolitan Water District—
<http://www.mwd.dst.ca.us/Docs/WaterReliability/Water4SoCal/waterforsocal.htm>

Orange County Environmental Management—<http://www.oc.ca.gov/pfrd/envres/stormwater/index.htm>

State Water Resources Control Board—<http://www.swrcb.ca.gov/>

Los Angeles Regional Water Quality Control Board—<http://www.swrcb.ca.gov/rwqcb4>

US Census Bureau, 2000 Census—<http://www.census.gov>

Western Regional Climate Data Center—<http://www.wrcc.dri.edu/summary/climsmca.html>

CHAPTER 3—A Vision for the Future

■ Guiding Principles

City of Huntington Beach, *Environmental Checklist Form Per CEQA Guidelines, Appendix G, as Amended*, January 1, 2000

City of Long Beach, *Long Beach 2010 Strategic Plan*, 2000

City of Santa Monica, *Santa Monica Sustainable City Program*, 1994

Condon, Patrick and Moriarty, Stacy, Eds, *Second Nature: adapting LA's Landscape for Sustainable Living*, TreePeople, 1999

Dallman, Suzanne and Piechota, Tom, *Stormwater: Asset Not Liability*, Los Angeles and San Gabriel Rivers Watershed Council, 1999

Drennan, Michael, *A Summary of Guiding Principles for Successful Watershed Management Programs*, Montgomery Watson, 1998

- Los Angeles and San Gabriel Rivers Watershed Council, *Draft Scope of Work for a Los Angeles River Watershed Management Feasibility Study* (Later known as the Corps/County 3-Year Watercourse Study), 1996
- Los Angeles and San Gabriel Rivers Watershed Council, *Long Term Watershed Goals, Five-Year Strategic Plan*, 1997
- Los Angeles and San Gabriel Rivers Watershed Council, *Los Angeles - San Gabriel Watershed Vision: 2025*, 1998
- Los Angeles County Department of Regional Planning, *Los Angeles County Significant Ecological Area Update Study 2000*, November, 2000
- Los Angeles County Departments of Public Works, Parks and Recreation and Regional Planning, *Los Angeles River Master Plan*, 1996
- Regional Water Quality Control Board, Los Angeles Region, *Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*, 1994
- Lynch, Kevin, *Good City Form*, MIT Press 1981
- Mountains Recreation and Conservation Authority, *Guiding Principles* (Outline), *Request for Qualifications*, San Gabriel & Los Angeles Rivers Guiding Principles and Open Space Plan, 2001
- National Research Council Committee on Watershed Management, *New Strategies for America's Watersheds*, National Academy Press, 1999
- North East Trees and Arroyo Seco Foundation, *Arroyo Seco Watershed Restoration Feasibility Study: Goals and Objectives*, 2001
- PCR Services Corporation, *Executive Summary of the Proposed Los Angeles County Significant Ecological Areas*, 2000
- San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, *Conservancy Mission, Purposes, and Requirements*, 2001
- Santa Ana Watershed Project Authority, *SAWPA's Plan for Clean Reliable Water for the Santa Ana River Watershed*, 2000
- Santa Monica Mountains Conservancy, *Santa Monica Mountains Conservancy Strategic Plan: Mission Statement*, 1997
- Schueler, Thomas, *Crafting Better Urban Watershed Protection Plans*, Center for Watershed Protection, 1996
- Southern California Studies Center, *Sprawl Hits the Wall*, University of Southern California, 2001
- State of California, *California Public Resources Code, Section 32600 et seq* (Enabling Legislation, Rivers and Mountains Conservancy), 2000

■ Strategies, Opportunities, and Next Steps

- Brown, J., Delgado, D., Stevens, J. and Sung, K., *Reconnecting the San Gabriel Valley: A Planned Approach for the Creation of Interconnected Urban Wildlife Corridor Networks*. Pomona: California State Polytechnical University, Department of Landscape Architecture, June 2000
- California Coastal Conservancy, *Wetlands of the Los Angeles River Watershed: Profiles and Restoration Opportunities*, May 2000
- California Department of Toxic Substances Control, *Brownfields Initiatives Fact Sheet*, March 1998
- California Integrated Waste Management Board, California Materials Exchange, Creative Reuse, *The Green Bank, Good for the Air, Neighborhoods, and the Landfill*, Fall 2000

- California State Water Resources Control Board, Nonpoint Source Pollution Control Program, *Opportunity, Responsibility, Accountability*, January 2001
- _____, *Water Quality Planning and Nonpoint Source Pollution Control Programs, Request for Proposals*, March 2001
- California Regional Water Quality Control Board, Los Angeles Region, *Draft Trash Total Maximum Daily Loads for the Los Angeles River Watershed*, January 22, 2001
- California Wilderness Coalition, *California Wildlands Project: A Vision for Wild California, Draft South Coast Regional Report*, Undated
- California Wilderness Coalition and The Nature Conservancy of California, *Missing Linkages, Restoring Connectivity to the California Landscape*, November, 2, 2000
- CALFED Bay-Delta Program, *Annual Report*, 2000
- _____, *Watershed Program Plan, Final Program EIS/EIR Technical Appendix*, July 2000
- Delorme Mapping Company, *Southern and Central California Atlas and Gazetteer*, 1990.
- Environmental Law Institute, *A Guidebook for Brownfield Property Owners*, 1999
- Forma Systems, *Open Space Plan, Phase One: Information Gathering, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy*, Final Report, March 23, 2001
- Los Angeles City, Department of Public Works, Bureau of Sanitation, Stormwater Program, *Development Best Management Practices Handbook, Part B, Planning Activities*, February 15, 2001
- Los Angeles County Department of Public Works, *Los Angeles River Master Plan*, 1996
- Los Angeles and San Gabriel Rivers Watershed Council, *Beneficial Uses of the Los Angeles and San Gabriel Rivers*, 2001
- National Wildlife Federation, *Paving Paradise, Sprawl's Impact on Wildlife and Wild Places in California, A Smart Growth and Wildlife Campaign California White Paper*, February 2001
- Noss, Reed, *Task 2: Assessment of the Feasibility of Wildlife Corridors, List of Species to be Addressed, Recommendations of Habitat Enhancement Opportunities for Migratory Birds and for Additional Information to be Collected, and Map of Corridor Opportunities. Report to the Los Angeles and San Gabriel Rivers Watershed Council*, September 3, 2001
- Olmsted Brothers and Bartholomew Associates, *Parks, Playgrounds and Beaches for the Los Angeles Region*, report submitted to the Citizens' Committee on Parks, Playgrounds and Beaches, 1930
- Pasadena Star-News, San Gabriel Valley Tribune and the Whittier Daily News, *The San Gabriel, a River on the Edge*, A Special Report by the Pasadena Star-News, August 27, 2000.
- Pollack, Daniel, *Natural Community Conservation Planning, The Origins of an Ambitious Program to Protect Ecosystems*, March, 2001
- _____, *The Future of Habitat Conservation? The NCCP Experience in Southern California*, June, 2001
- Shapiro, Erik A. and Leo. J. Shapiro, *Making More Open Space – Making Space More Open in the Los Angeles River and San Gabriel River Watershed*, LJS Group and Leo J. Shapiro & Associates, April 6, 2001
- Thomas Brothers Mapping, *The Thomas Guide 2001 – Los Angeles and Orange Counties*, 2001
- United States Environmental Protection Agency, *San Gabriel Valley Superfund Sites Update*, July 1999

_____, *Promoting Environmental Justice Through Pollution Prevention*, September 2000

_____, *Our Built and Natural Environments. A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality*, September 2000

United States National Park Service, Rivers, Trails and Conservation Assistance, *Economic Impact of Protecting Rivers, Trails and Greenway Corridors*, 1995

■ Education-Related Websites

California Environmental Education—<http://ceres.ca.gov/education/>

California Regional Environmental Educational Center—Los Angeles—<http://www.creec.org/region11/>

Global Learning and Observations to Benefit the Environment—
<http://www.centerx.gseis.ucla.edu/globe/index.htm>

Global Rivers Environmental Education Network—<http://www.igc.org/green/resources.html>

EcoAcademy (of the Los Angeles Conservation Corps)—<http://www.ecoacademy.org/>

National Wildlife Federation's backyard habitat program—<http://www.nwf.org/habitats/index.html>

North American Association of Environmental Educators—<http://www.naaee.org/>

Tree People—<http://www.treepeople.org/trees/>

US EPA's Water Office Kid's Page—<http://www.epa.gov/ow/kids/watered2.html>

Water Education for Teachers project—<http://www.water-ed.org/projectwet.asp>

■ Websites (used in preparation of the plan)

California Biodiversity Council—<http://ceres.ca.gov/biodiv/>

California Department of Fish and Game—<http://www.dfg.ca.gov/>

California Department of Forestry and Fire Protection—<http://www.fire.ca.gov/>

California Department of Parks and Recreation—<http://parks.ca.gov/homepage/default.asp>

California Department of Toxic Substances Control—<http://www.dtsc.ca.gov/index.html>

California Department of Transportation—<http://www.dot.ca.gov/>

California Department of Water Resources—<http://www.dwr.water.ca.gov/>

California Environmental Resources Evaluation System—<http://ceres.ca.gov/index.html>

California Land Use Planning Information Network—<http://ceres.ca.gov/planning/>

California Native Plant Society—<http://www.cnps.org/>

California North Coast Watershed Assessment Program—<http://www.ncwatershed.ca.gov/>

California Ocean and Coastal Environmental Access Network (Cal Ocean) —<http://ceres.ca.gov/ocean/>

California Regional Water Quality Control Board, Los Angeles Region—
<http://www.swrcb.ca.gov/~rwqcb4/index.html>

California Resources Agency—<http://ceres.ca.gov/cra/>

California State Coastal Conservancy—<http://www.coastalconservancy.ca.gov/>

California Watershed Information Technical System—<http://ceres.ca.gov/watershed/>

California Wetlands Information System—<http://ceres.ca.gov/wetlands/>

California Wildlife Conservation Board—<http://www.dfg.ca.gov/wcb/index.html>

Facility City, “Growing Smart”—http://facilitycity.com/fc_exp_01_05_cover.asp

Gateway Cities Council of Governments—<http://www.gatewaycog.org/>

Hacienda Hills Open Space Research Studies—<http://ceres.ca.gov/hacinat.htm>

League of California Cities, Orange County Division—<http://www.occities.org/>

Know Your Watershed, Purdue University Conservation Information Technology Center—
<http://www.ctic.purdue.edu/KYW/>

Los Angeles and San Gabriel Rivers Watershed Council—<http://www.lasgriverswatershed.org/>

Los Angeles City Stormwater Program—www.lastormwater.org

Los Angeles County Department of Parks and Recreation—<http://parks.co.la.ca.us/>

Los Angeles County Department of Public Works, Watershed Management Division—
<http://dpw.co.la.ca.us/wmd/>

Orange County Watershed Management Programs—<http://www.oc.ca.gov/pfrd/envres/watershed/>

San Gabriel Mountains Regional Conservancy—<http://www.sgmrc.org/conserva.htm>

San Gabriel River Master Plan—http://dwp.co.la.ca.us/pln/sgrmp/files/m11151999.cfm?cal_id=138

San Gabriel River Trail—<http://www.nearfield.com/~dan/sports/bike/sg/index.htm>

San Gabriel Valley Council of Governments—<http://www.sgvkog.org/>

Santa Ana Regional Water Quality Control Board—<http://www.swrcb.ca.gov/rwqcb8/>

Santa Monica Mountains Conservancy—<http://www.smmc.ca.gov/>

Save the Whittier Hills 2000—<http://www.geocities.com/whittierhills/history.html>

United States Army Corps of Engineers, Los Angeles Region—<http://www.spl.usace.army.mil/>

United States Forest Service, Angeles National Forest—<http://www.r5.fs.fed.us/angeles/>

United States National Park Service—<http://www.nps.gov/>

The Wildlands Conservancy—<http://www.wildlandsconservancy.org/>

APPENDIX E

RMC Project Authority

Attorney General's Office Opinion
Draft Approval Resolution

LOS ANGELES, CA 90013

Public: (213) 897-2000
Telephone: (213) 897-2706
Facsimile: (213) 897-2801
E-Mail: terry.fujimoto@doj.ca.gov

July 1, 2001

Mary A. Angle
Executive Director
San Gabriel and Lower Los Angeles River
and Mountains Conservancy
900 South Fremont Avenue, 11th Floor
P.O. Box 1460
Alhambra, CA 91802-1460

RE: Request for Informal Advice re Open Space Plan

Dear Executive Officer Angle:

In a letter dated April 13, 2001, you requested that the Office of the Attorney General provide informal advice regarding the impact of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy's ("RMC") adoption of a San Gabriel and Lower Los Angeles Parkway and Open Space Plan ("OSP"). (Pub. Resources Code, § 32604 (d).) The purpose of this letter is to provide that informal advice.

ISSUES PRESENTED

Specifically, you asked the following two questions: first, you inquired whether it is necessary to comply with the provisions of the California Environmental Quality Act ("CEQA") in the process of developing and adopting the OSP. Second, you asked our office to evaluate the effect of the adoption of the OSP, on the region, individual cities and affected landowners. In particular, you inquire whether approval of the OSP will require the member cities to amend their general plans to conform to the OSP, and/or give the RMC regulatory or governing authority over its member cities or over any ordinance, general or specific plan enacted by any local jurisdiction within its territory.

SUMMARY OF CONCLUSIONS

1. As discussed below, while we conclude that the RMC must comply with CEQA in adopting the OSP, CEQA does not require the preparation of an environmental impact report or a negative declaration. Under CEQA, an agency must first determine whether the proposed activity is exempt or not a project within the meaning of CEQA. If it is determined that the action is exempt or a "non-project," no further review under CEQA is necessary. The OSP, as proposed, is not a "project" within the meaning of CEQA and therefore is not subject to further environmental review. We caution that implementation or amendment of the OSP may require additional review under CEQA including preparation of an environmental impact report.

2. The legislation establishing the RMC was enacted in response to the interest of the member cities in creating a multi-jurisdictional agency that would be authorized to acquire land,

and conduct watershed management, flood control, and recreational projects within the lower Los Angeles River and its tributaries, the San Gabriel River watershed and the San Gabriel Mountains. The cities, however, expressed concern that the new state agency not be empowered to usurp regulatory or governing control from the local entities. The legislation addresses that concern. First, the RMC does not possess the power of eminent domain. (See Public Res. Code, §§ 32612 (b), 32613 (b).) Second, the RMC has no regulatory or governing authority over any ordinance, general plan or other laws adopted by the local jurisdictions within its territory. (See Pub. Resources Code, § 32613 (b).) Finally, we note that there is no explicit requirement in the legislation that the member cities amend their general or regional plans to conform to the OSP. Certainly, if the Legislature had intended to impose such a significant requirement upon the affected cities it would have made it explicit, particularly where such a requirement is inconsistent with the principal directive that local entities retain authority over their own general and specific plans. Therefore, it is our view that adoption of the OSP will not require the individual cities or regional agencies to amend or alter their general or regional plans. Nor will the OSP give the RMC governing authority over its member cities or over any land use regulation or ordinance enacted by any local jurisdiction within its territory.

THE RMC AND APPROVAL OF THE OPEN SPACE PLAN

In 1999, the Legislature enacted the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act (Act), which added Division 22.8 to the Public Resources Code, beginning with section 32600. The Act created the RMC and specified that its principal purposes are to “acquire and manage public lands within the Lower Los Angeles River and San Gabriel River watersheds, and to provide open space, low impact recreational and educational uses, water conservation, water shed improvement, wildlife and habitat restoration and protection, and watershed improvement within the territory,” and to provide for public enjoyment in these watersheds and the San Gabriel Mountains. (Pub. Resources Code, § 32602 (a) and (d).)

Under Public Resources Code section 32604(d), the RMC “shall” prepare an OSP which must be approved by a “majority of the cities representing a majority of the population, the Board of Supervisors of Los Angeles County and by the Central Basin Water Association and the San Gabriel Valley Watermaster.” The plan “shall include, but not be limited to,” the following:

“(1) A determination of the policies and priorities for the conservation of the San Gabriel River and its watershed, the Lower Los Angeles River, and the San Gabriel Mountains, in accordance with the purposes of the conservancy as set forth in section 32602.

“(2) A plan for incorporating, as relevant, the principles and planning work contained within the Los Angeles River Master Plan prepared by the County of Los Angeles.

“(3) An identification of underused existing public open spaces and recommendations for providing better public use and enjoyment in areas identified in the plan.

“(4) An identification of, and a priority program for implementing, those additional low-impact recreational and open space needs, including additional or upgraded facilities and parks that may be necessary or desirable.” (*Ibid.*)

Although the OSP, as set forth in section 32604 subsection (d), subdivisions (1-4), is conceived principally as a planning document, it does not have to be limited in scope to that function alone. The Legislature, by including the phrase, “**but not be limited to**,” intended that the RMC have the discretion to determine the scope of the plan and its level of specificity, consistent with the “purposes set forth in Section 32602.” (See Pub. Resources Code, §32604(a).) For example, section 32612 (c), provides that the RMC, prior to entering into an agreement to acquire an interest in real property, must notify the affected local agency if “such a project” was not included in the OSP.¹ This provision contemplates that the RMC has the authority to include project specific elements in the OSP.

Counsel for the Gateway Council of Governments, however, citing sections 32612 (c) and 32614 (c), has expressed concern that the RMC may be required to adopt a project specific open space plan, or at a minimum, include project specific elements in the plan such as the identification of parcels for acquisition. This requirement is not reflected in the Act. There is nothing in section 32604(d) that requires the RMC to prepare a project specific OSP, or to include project specific elements in the plan. Rather, the focus is on the adoption of general “policies and priorities” and the identification of underused existing public open space and recommendations for providing better public use. . .” (*ibid.*) The only mandatory elements of the OSP are those that are set forth in section 30604 subsection (d), subdivisions one through four. All other elements, as discussed above, are subject to the discretion of the RMC. This understanding of the RMC’s authority is implicit in sections 32612 (c) and 32614 (c). These sections specifically provide that the RMC may proceed with future projects, subject to notice requirements, even if they are not mentioned in the OSP. They do not require the RMC to adopt a project specific OSP.

Here, the RMC, in consultation with the public entities that must approve the OSP, is in the process of preparing the OSP. The stated purpose of the plan, as proposed, is “to provide a comprehensive framework for watershed and open space planning within the RMC’s jurisdiction.” (See OSP In Progress Draft, p. 1.) It is intended to serve as a “basis for future detailed planning at subwatershed levels as well as to guide the policies and programs of the RMC.” (*ibid.*) Given the practical and inherent difficulties of developing a plan involving over 60 different jurisdictions, the OSP, initially, will establish a set of general guiding principles, identify existing resources and land use management within the RMC’s jurisdiction, and address potential projects types consistent with the purposes and objectives of the RMC. The OSP will not target specific expenditure of funds, identify specific parcels for acquisition or commit the agency to follow a course of action with respect to any particular aspect of the OSP. In short, the RMC Board and Executive Officer envision the OSP as a long-range planning guide.²

THE OSP AND CEQA PROCESS

The initial issue you have raised is whether it is necessary to comply with the provisions of CEQA in the development and adoption of the OSP. The short answer is yes. However, as noted above, compliance with CEQA does not necessarily compel the preparation of an envi-

¹Public Resources Code, section 32614 (c), includes an identical notice requirement with respect to leases, rentals, sales, exchanges or other transfers of real property or interest by the RMC to qualified public agencies or non-profit entities.

²Our understanding regarding the nature and scope of the proposed OSP is based on representations made by the Executive Officer and the consultant retained by the RMC to prepare the OSP. To the extent the final OSP differs from the In Progress Draft it may be necessary to revise our informal advice.

ronmental impact report (EIR) or negative declaration. Under CEQA, an agency must first determine whether the proposed activity is exempt or not a project within the meaning of CEQA. If it is determined that the action is exempt or a “non-project,” no further review under CEQA is necessary. It is our view that the OSP, as proposed, is not a “project” within the meaning of CEQA, and therefore is not subject to further environmental review. In addition, the OSP, as proposed, is exempt from the need to prepare an environmental impact report.

Under CEQA, state agencies must prepare an environmental impact report on any “project” they propose to carry out or approve that may have a significant effect on the environment. (Pub. Resources Code, § 21100.) A “project” is defined as the “whole of an action which has a potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.” (Pub. Resources Code, § 21065; CEQA Guidelines, §15378.³)

Not all governmental activities, however, are “projects” within the meaning of CEQA. CEQA specifically excludes from the definition of a “project” continuing administrative activities such as personnel-related actions, the purchase of supplies, as well as general policy and procedure making, except as related to specific development projects or implementation activities. (CEQA Guidelines, §15378 (b).)

The courts in exploring the definition of “project” have focused on whether the state action is a “necessary step in a chain of events which would culminate in physical impact on the environment.” (Fullerton Joint Union High School District v. State Board of Education (1982) 32 Cal.3d 779, 795.) For example, in Kaufman & Broad-South Bay v. Morgan Hill Unified School District (1992) 9 Cal.App.3d 464, the Court of Appeal concluded that the establishment of a Mello-Roos district for the purposes of raising revenue for future school construction was not a “project” within the meaning of CEQA because such action did not “commit the District to any definite action . . . dictate how funds will be spent, or in any way narrow the field of options and alternatives available to the District.” (*Id.* at 476; also see Bozung v. Local Agency Formation Commission (1975) 13 Cal.3d 263.)

Certain start-up activities, although “projects” within the meaning of CEQA, may be exempt from additional CEQA review. (See CEQA Guidelines, §§15260–15285 and 15300–15329.) For example, a project involving only feasibility or planning studies for possible future actions which the agency had not approved, adopted or funded, does not require the preparation of an environmental impact report or negative declaration. (CEQA Guidelines, § 15262.)⁴

Additionally, the broad definition of project is tempered by the requirement that CEQA applies only to those activities which may have a “significant effect on the environment.” (*Id.* at section 15061(b)(3).) Thus, even if a “project” does not fit into an exemption, it may nonetheless not be subject to further CEQA review, including the preparation of an environmental impact report, if it can be shown with certainty that there is no possibility that the activity in question will have a significant effect on the environment. “Significant effect” is defined under CEQA as a “substantial, or potentially substantial adverse change” in the environment. (CEQA Guidelines, § 15382.)

³All references to “CEQA Guidelines” refer to title 14 of the California Code of Regulations, section 15000 et seq.

⁴This section “does not apply to the adoption of a plan that will have a legally binding effect on later activities.” (See CEQA Guidelines, § 15262.)

Here, the OSP, as proposed, will contain general principles, goals and policies with respect to watershed and open space planning for the watershed areas of the San Gabriel and lower Los Angeles Rivers. These general criteria are intended to assist the RMC and member cities in setting priorities and guiding the review of future proposals to acquire, to develop and to manage lands in the RMC's territory. Essentially, it is an interim policy document. (See OSP In Progress Draft, p. 1 ["The plan is intended to serve as a basis for more detailed planning . . ."].) The OSP does not target the specific expenditure of funds, identify specific parcels for acquisition, commit the agency to follow a definite course of action with respect to any particular aspect of the OSP, nor is it intended to have a legally binding effect on later activities. As such, the document constitutes "general policy and procedure making" and is, therefore, not a project under CEQA. (See CEQA Guidelines, § 15378(b)(2); also see Northwood Homes, Inc. v. Moraga (1989) 216 Cal.App.3d 1197 [held, guidelines implementing open space ordinance adopted by initiative is not a "project" but is a "continuing administrative activity such as general policy and procedure making which is expressly excluded from definition of project under CEQA."].) This is in contrast to a "general plan" which identifies specific land uses and has a legally binding effect on later activities. (See CEQA Guidelines, §§ 15262 [see Office of Planning and Research (OPR) "Discussion"]; 15378 (a)(1).) General plans, unlike the open space plan required of the RMC, are expressly defined as "project[s]" under CEQA. (Ibid.)⁵

Further, we conclude that the OSP, as proposed, is exempt under section 15262 of the CEQA Guidelines, which provides that a project involving only feasibility or planning studies for possible future action does not require the preparation of an environmental impact report or negative declaration. Finally, because the OSP is only a planning guide, it can reasonably be argued that it falls under the "common sense" exemption which applies "where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment." (CEQA Guidelines, § 15061 (b) (3).)

Our conclusion that the adoption of the OSP will not, by itself, have a significant effect on the environment is consistent with the large number of categorical exemptions in the CEQA Guidelines for projects that preserve natural resources, open space or parks. (See e.g., CEQA Guidelines, §§ 15307 [actions to protect natural resources], 15308 [actions protecting the environment], 15313 [acquisition of land for wildlife conservation purposes], 15316 [transfer of ownership in order to create a park], and 15325 [transfers of ownership to preserve open space].) Even if these sections are not specifically applicable to the OSP, the existence of these exemptions, which will likely apply to many of the future activities contemplated by the RMC, supports the conclusion that the mere adoption of an open space plan will not have a significant effect on the environment.

We caution that while the OSP, as proposed, is not subject to further CEQA review, activities related to implementation of the plan or future revisions of the OSP may require the preparation of an environmental impact report. Such activities include but are not limited to, adoption of a specific facilities construction plan, site improvement projects, rehabilitation of degraded areas, identification of specific projects to be considered and acted on by the RMC, and/or designation of specific parcels for acquisition. (See Pub. Resources Code, §32614 (g).) As set forth above, any activity which commits the RMC to any definite course of action and is

⁵Similarly, the OSP also meets the definition of a "non-project" under section 15378 (b)(5) of the CEQA Guidelines, which provides that "organizational or administrative activities of governments which are . . . not physical changes in the environment" are not "projects" for purposes of triggering CEQA review.

an essential step culminating in action which may affect the environment will require additional review under CEQA. (Kaufman & Broad, supra, 9 Cal.App.4th at 474-476.) The OSP, as proposed, however, is not such an action.

Procedurally, the RMC, as the lead agency⁶ under CEQA, should it adopt the OSP, must make specific findings that the OSP is not a “project” within the meaning of CEQA and identify the legal basis for its determination (i.e., CEQA Guidelines, §§15061 (b)(3), 15378(b)(2) & (5). Should the RMC also conclude that the OSP is exempt, it must also adopt findings that the OSP is exempt under CEQA Guidelines, section 15262, and file a Notice of Exemption with the Office of Planning and Research.

THE IMPACT OF THE OSP ON THE RMC’S MEMBER CITIES

You have also asked us to evaluate the effect of the adoption of the OSP on the region, individual cities and affected landowners. Specifically, you have asked whether approval of the OSP will give the RMC regulatory or governing authority over its member cities or over any ordinance, general or specific plan enacted by any local jurisdiction within its territory, or whether the member cities, by approving the OSP, are surrendering any regulatory authority or power that they currently possess. In addressing this issue we must look to the legislation creating the RMC.

The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act (“Act”) (e.g., Pub. Resources Code, § 32660 et seq.), was introduced and enacted, in part, in response to the interest of the Gateway Cities Council of Governments (COG) (27 cities including Long Beach and Downey) and the San Gabriel Valley COG (another 29 cities). These groups supported the creation of a multi-jurisdictional agency authorized to acquire land, and conduct watershed management, flood control, and recreational projects within the lower Los Angeles River and San Gabriel River watersheds. (See bill analysis, AB 1355 (Stats. 1999, ch. 788), April 19, 1999, p. 3.)

The authors of the legislation envisioned that the RMC and member cities would be equal partners in the planning, development and management of the watershed areas. (Id.) The member cities, although in principle in favor of the creation of the RMC, wanted assurances that the new state agency would not be empowered with eminent domain authority and that the cities would retain control over their own land use regulations, ordinances, general and regional plans.

To that end, the Act places restrictions on the powers and rights of the RMC in deference to the authority of the member cities. For example, section 32620 of the Act, provides that “[n]othing in this division shall be interpreted to grant the [RMC] board any regulatory or governing authority over any ordinance or regulatory measure adopted by a city, county, or special district that pertains to land use, water rights or environmental quality.” The general directive that local entities shall retain control over land use and water matters is reiterated in other provisions of the Act. In section 32613 (b), the RMC is expressly “subject to all laws, regulations, and general and specific plans of the legislative body of any city in which the conservancy proposes to take action.” In section 32621, the RMC is prohibited from interfering or engaging in activities which conflict with the powers and duties of any local entity responsible for water management. Similarly, in exercising its right of first refusal for surplus public agency property located within

⁶The “lead agency” is the public agency which has the principal responsibility for carrying out or approving a project. (CEQA Guidelines, § 15367.)

its jurisdiction, the RMC must “conform to all relevant general and specific plans and zoning regulations of local agencies within the territory of the conservancy.” (Pub. Resources Code, §32612(b).)

Further, neither the RMC nor the State Public Works Board is authorized to exercise the power of eminent domain pursuant to the Act. (Pub. Resources Code, §32612 (a); also see section 32613(b) [“(T)he conservancy may not levy a tax, exercise the power of eminent domain or regulate land use except on lands its owns, manages or controls”].)

Finally, the RMC is required to provide notification before it takes an action that might have an impact on a member city. For example, prior to engaging in activities that are not included in the OSP, the RMC must provide written notice to the legislative body of the affected local agency. (Pub. Resources Code, §32614(c).) Similarly, when the RMC proposes any action that may affect any water right or delivery system, it must provide written notice to every water association in the jurisdiction of the RMC. (Pub. Resources Code, §32621(b).)

In short, the Act contemplates that notwithstanding approval of the OSP by the member cities, local entities will still retain existing control over local land use and water management issues. In light of the above, we do not believe that the member cities can be compelled to amend their general plans to conform to the OSP, nor do we believe that member approval of the OSP will “trigger” RMC control over local land use and water management matters. An interpretation to the contrary would render virtually the entire Act null and void. Statutes are to be given a reasonable and common sense interpretation consistent with the apparent legislative purpose. (Dyna-Med v. Fair Employment & Housing Commission (1987) 43 Cal.3d 1379, 1392.) Here, of course, it was the intent of the Legislature that the member cities retain existing regulatory control over local land use and water issues. Therefore, we conclude that, notwithstanding approval of the OSP, the powers of the RMC are limited to those expressly set forth in the Act.⁷

Finally, we note that there is no explicit requirement in the legislation that the member cities amend their general or regional plans to conform to the OSP or that the member cities by approving the OSP, cede control over local land use issues. Certainly, if the Legislature had intended to require the member cities to amend their general plans it would have directly addressed that issue in the Act, particularly where such a requirement is inconsistent with the Act’s principal directive that local entities retain authority over their own general and specific plans. (See Dyna-Med, supra, 43 Cal.3d at 1392.) In the absence of ambiguity in the statute and lack of extrinsic sources to the contrary, the “plain meaning” of the statute governs. (Ibid.)

CONCLUSION

In summary, because the OSP, as proposed, is a “general policy making” document, CEQA does not compel the preparation of an environment impact report. We note that subse-

⁷ The RMC has also asked that we address the effect of the adoption of the OSP on adjacent landowners within the RMC’s jurisdiction. Because the OSP is only a long-range planning guide, it should have no legally significant impact on adjacent landowners. Further, the RMC does not have eminent domain authority so there is no threat of condemnation. (Pub. Resources Code, §§32612(a) and 32613(b).) Finally, we note that under the Act, the overall “objective” of the land acquisition program “shall be to assist in accomplishing land transactions that are mutually beneficial to the landowner and the conservancy . . .” (Pub. Resources Code, § 32612 (a).) Thus, to the extent there is any impact on the adjacent landowner it is likely to be a favorable one.

quent activities related to the implementation or amendment of the OSP may require further CEQA review including the preparation of a negative declaration or an environmental impact report. Finally, it is our view that approval of the OSP by a majority of the cities representing a majority of the population within the RMC's jurisdiction will not require the member cities to amend their general plans to conform to the OSP or trigger state control of local regulatory and governing authority. It was the intent of the Legislature in creating the RMC, that the cities would retain their existing control over local land use and water management concerns. Please let us know if you have any questions or comments about this letter.

Sincerely,

TERRY T. FUJIMOTO
Deputy Attorney General

For BILL LOCKYER
Attorney General

cc: Magret Kim
Richard M. Frank
J. Matthew Rodriguez
John A. Saurenman

CITY OF _____
 RESOLUTION NO. _____
 RESOLUTION APPROVING THE SAN GABRIEL AND LOWER
 LOS ANGELES PARKWAY AND OPEN SPACE PLAN

WHEREAS, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act (the "ACT"), Public Resources Code, Division 22.8, commencing at § 32600 (Stats. 1998, Ch. 788 (AB 1355)), created the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (the "RMC") for the purpose of acquiring and managing public lands within the Lower Los Angeles River and San Gabriel River watersheds, and to provide open-space, low impact recreational and educational uses, water conservation, watershed improvement, wildlife and habitat restoration and protection, and water quality within the territory;

WHEREAS, the territory of the RMC extends across the city boundaries of over sixty cities, as set forth in section 32603 (c)(2)(A), as well as the unincorporated areas of Los Angeles County and Orange County adjacent to the San Gabriel River and its tributaries, the lower Los Angeles River and its tributaries, the San Gabriel Mountains, the Foothill Mountains, the Puente Hills, and the San Jose Hills area including but not limited to, East Los Angeles;

WHEREAS, the RMC was created, in part, in response to the interest of the Gateway Cities Council of Governments (COG) and the San Gabriel Valley COG, and other local public entities, in creating a multi-jurisdictional agency that would be authorized to acquire land, and conduct watershed management, flood control, and recreational projects within the Lower Los Angeles River and San Gabriel River watersheds;

WHEREAS, the RMC board is composed of voting members who represent the County of Los Angeles, the Gateway Cities Council of Governments and the San Gabriel Valley Council of Governments, Orange County Division of the League of California Cities, San Gabriel Valley Water Association, Central Basin Water Association, as well as state agencies including, the Resources Agency, the Environmental Protection Agency and Department of Finance;

WHEREAS, it was intent of the State Legislature in creating the RMC, that the RMC and member cities would be equal partners in the planning, development and management of mountain and watershed areas within the RMC's territory, and to that end, the Legislature provides in the ACT that member cities shall retain control over their own land use regulations, ordinances, general and regional plans;

WHEREAS, under the ACT, the RMC shall be subject to all laws, regulations, and general and specific plans of the legislative body of any city in which the RMC proposes to take action;

WHEREAS, nothing in the ACT shall be interpreted to grant the RMC any regulatory or governing authority over any ordinance or regulatory measure adopted by a city, county or special district that pertains to land use, water rights, or environmental quality;

WHEREAS, section 32604 (d) of the Public Resources Code directs the RMC to prepare a San Gabriel and Lower Los Angeles Parkway and Open Space Plan (the "OSP") to be approved by a majority of the cities representing a majority of the population, the Board of Supervisors of Los Angeles County, and by the Central Basis Water Association and San Gabriel Water Wa-
 termaster;

WHEREAS, the RMC, in consultation with representatives of the Gateway COG, San Gabriel COG, the County of Los Angeles, Orange County, the San Gabriel Water Association and Central Basis Water Association, has prepared a draft OSP;

WHEREAS, the RMC has conducted public meetings for public review and for receipt of public comments on the draft OSP;

WHEREAS, on or about _____, 2001, the RMC Board, at the conclusion of its public meeting and review of all the documentary and oral evidence related to the OSP, adopted the draft OSP and made the following findings; (1) that the OSP complies with all applicable requirements of law; (2) that the OSP is consistent with the purposes of the RMC as set forth in section 32602 of the Public Resources Code; (3) that the OSP contains all the required elements set forth in section 32604 (d) (1-4); (4) that the OSP is not a “project” within the meaning of the California Environmental Quality Act (“CEQA”) (e.g., CEQA Guidelines, §15378(b)(2)); (5) that, alternatively, the OSP, as an activity involving only feasibility or planning studies for future actions, is exempt from the environmental impact report requirements of CEQA review; and (6) that the OSP is a long range planning guide or interim policy document and does not commit the RMC to follow a definite course of action with respect to any particular aspect of the OSP, nor is it intended to have a legally binding effect on later activities.

WHEREAS, following adoption of the OSP by the RMC Board, the OSP was referred to the member cities for their review and approval pursuant to section 32604(d) of the Public Resources Code;

WHEREAS, the City has conducted public meetings for public review and for receipt of public comments relating to the OSP;

WHEREAS, City Staff has reviewed the OSP, public comments as well as documentary evidence relating to the OSP;

NOW, THEREFORE, BE IT RESOLVED, THAT THE CITY OF _____ HEREBY:

1. FINDS that the OSP complies with the requirements of section 32604(d) of the Public Resources Code and includes all the mandatory elements set forth in section 32604(d)(1–4) of the Public Resources Code;
2. FINDS that the OSP is not a “project” within the meaning of the California Environmental Quality Act (“CEQA”) (e.g., CEQA Guidelines, §15378(b)(2));
3. FINDS that approval of the OSP by the City will not require the City to modify, amend, or revise in any way its specific or general plan, ordinances or regulations, or effect in any way the City’s regulatory or governing authority over land use or water rights and management issues within its jurisdiction;
4. FINDS that approval by the City of the OSP does not constitute agreement with the policies, principles and statements set forth in the OSP,
5. FINDS that approval by the City of the OSP does not constitute a waiver of the City’s regulatory or governing authority over land use, water rights or environments issues within its jurisdiction or territory;

- 6. FINDS that approval by the City of the OSP does not constitute adoption or incorporation of the OSP as part of the general plan, specific plan or any ordinance, law or regulation of this City;
- 7. FINDS that the OSP is an interim policy document or long range planning guide, that it does not commit the RMC or the City to follow a definite course of action with respect to any aspect of the OSP, and that it is not intended to have a legally binding effect on later activities of the RMC or the City;
- 8. FINDS that the OSP is, in principle, consistent with the general and specific plan and with ordinances, laws and regulations that pertain to land use, water rights, or environmental quality of this City;
- 9. APPROVES the San Gabriel and Lower Los Angeles Parkway and Open Space Plan (OSP), in accordance with section 32604 (d) of the Public Resources Code.

--End of Resolution--

I HEREBY CERTIFY that the foregoing resolution was adopted at a regular meeting of the City Council for the City of _____, held on the ___ day of _____, 2001.

DATED:

Mayor of the City of _____

ATTEST: _____
City Attorney

APPENDIX F

Project Evaluation Criteria

State of California
The Resources Agency
SAN GABRIEL & LOWER LOS ANGELES
RIVERS AND MOUNTAINS CONSERVANCY

PROJECT
EVALUATION CRITERIA

April 6, 2001

SAN GABRIEL & LOWER LOS ANGELES
RIVERS AND MOUNTAINS CONSERVANCY
PROJECT EVALUATION CRITERIA

Select only one criterion that best fits the attributes of the site for each value. The rating number assigned to the criterion is then multiplied by the weight assigned to the value. The scores for each value can be compared and evaluated in total, by grouping, or individually.

OPEN SPACE PLAN VALUE WEIGHT

CRITERION RATING

- The site is specifically referred to as a project in the Open Space Plan. 4
- The site meets the criteria for inclusion in the Open Space Plan. 2
- The site does not meet the criteria as outlined in the Open Space Plan. 0

URBAN RESOURCE VALUE WEIGHT

CRITERION RATING

- The site has natural geologic contours and/or vegetation and is surrounded by urban development. 4
- The site contributes to an existing or proposed park, natural area, corridor or greenway in an urbanized area. 4
- The site is located in an under-served or park-poor community. 3
- The site provides linkage to open space in an adjacent urban area. 2
- The site is located in an industrialized area. 1
- The site is not located in an urban setting. 0

WATERSHED RESOURCE VALUE WEIGHT

CRITERION RATING

- The site is located within a county-designated ecologically sensitive watershed or significant ecological area. 4
- The site contains natural riparian habitat. 4
- The site would enhance flood control measures if developed for open space use. 4
- The site would provide quality storm water runoff. 4
- The site contributes to the persistence of ecosystem processes which may pose a hazard to life and property if the site were developed. 3
- The site contains groundwater recharge capabilities. 3
- The site supports substantial upland vegetative cover in a watercourse. 3
- The site has the potential for hazard-reduction/mitigation credits if preserved verses developed. 3

- | | |
|--|---|
| • The site has opportunities for non-point source water pollution reduction. | 2 |
| • The site provides access to an existing or planned watershed resource. | 1 |
| • The site has no watershed resource value. | 0 |

TRAIL RESOURCE VALUE	WEIGHT
----------------------	--------

CRITERION	RATING
-----------	--------

- | | |
|---|---|
| • The site is identified as the path of a major existing or planned trail. | 4 |
| • The site would provide connection within and/or between communities and major existing or planned trails. | 4 |
| • The site would provide urban walkways. | 3 |
| • The site would provide amenities that would enhance public use of a trail. | 3 |
| • The site would accommodate a new trail into an inaccessible area. | 2 |
| • The site would provide a scenic buffer for an existing or planned trail. | 1 |
| • The site would not support a trail or walkway. | 0 |

RECREATIONAL RESOURCE VALUE	WEIGHT
-----------------------------	--------

CRITERION	RATING
-----------	--------

- | | |
|--|---|
| • The site contains a suitable area for a recreational facility – educational center, picnic area, useable open space, campground, or interpretive center. | 4 |
| • The site could provide an access point, parking, &/or interpretive display for an adjacent protected area or overlook. | 3 |
| • The site could support recreational development ancillary to the primary value of an adjacent protected area. | 2 |
| • The site could provide additional access to an adjacent protected area. | 1 |
| • The site can not support recreational use due to configuration or potential natural or cultural resource degradation. | 0 |

WILDLIFE RESOURCE VALUE	WEIGHT
-------------------------	--------

CRITERION	RATING
-----------	--------

- | | |
|--|---|
| • The site is used by state or federally-listed fauna species. | 4 |
| • The site contributes to the connection of existing protected core areas by serving as a habitat linkage or movement corridor for wildlife. | 4 |
| • The site contains fresh water habitat and/or a perennial natural water source. | 4 |
| • The site is used by fauna that are candidate(s) for state or federal listing. | 3 |
| • The site increases the effective size of a protected area. | 3 |
| • The site largely contains undisturbed habitat with moderate to high species diversity. | 3 |

- | | |
|--|---|
| • The habitat is degraded but conditions are suitable for regeneration or restoration. | 2 |
| • The habitat is unsuitable for candidate or listed species but provides a buffer between protected sites & incompatible uses. | 1 |
| • The site is degraded & habitat restoration is not economically justifiable. | 0 |

<u>FLORISTIC RESOURCE VALUE</u>	<u>WEIGHT</u>
---------------------------------	---------------

CRITERION	RATING
-----------	--------

- | | |
|--|---|
| • The site contains a state or federally-listed flora species or habitat. | 4 |
| • The site largely contains undisturbed communities with moderate to high species diversity. | 4 |
| • The site contains a flora species that is candidate for state or federally listing. | 3 |
| • The habitat is degraded but conditions are suitable for regeneration or restoration of native species & communities. | 2 |
| • The habitat is unsuitable for sensitive species but provides a buffer between protected lands & incompatible uses. | 1 |
| • The site is degraded & habitat restoration is not economically justifiable. | 0 |

<u>ARCHAEOLOGICAL OR HISTORIC RESOURCE VALUE</u>	<u>WEIGHT</u>
--	---------------

CRITERION	RATING
-----------	--------

- | | |
|---|---|
| • The site contains a registered archaeological or historical resource of national or statewide significance. | 4 |
| • The site contains a registered archaeological or historical resource of regional significance. | 3 |
| • The site contains a registered archaeological or historical resource of local significance. | 2 |
| • The site contains an archaeological or historic resource that is damaged. | 1 |
| • It is unknown if the site contains archaeological or historic resources. | 0 |

<u>ACCESS VALUE</u>	<u>WEIGHT</u>
---------------------	---------------

CRITERION	RATING
-----------	--------

- | | |
|--|---|
| • The site would be easily accessible by the public with full right-of-way. | 4 |
| • The site is located in a residential area with limited signage opportunities. | 3 |
| • The site is within walking distance from public transportation. | 3 |
| • The site has features making it easily accessible to people with limited mobility or other disabilities. | 3 |
| • The site would be accessible via an adjacent protected area. | 2 |
| • The site has adequate space for on site parking or available street parking, but is located in an area where neighborhood conflicts may arise. | 1 |

- The site is constrained from public access by lack of right-of-way. 1
- A public right-of-way for the site is currently unobtainable. 0

SCENIC RESOURCE VALUE **WEIGHT**

CRITERION **RATING**

- The site is part of an area of exceptional scenic value and/or has been so identified in a government agency plan. 4
- The site contains a significant overlook of the surrounding area. 3
- The site contains unique scenic natural resources such as waterfalls, wildflower displays, geologic formations, vistas of scenic grandeur. 3
- The site contains viewshed of an open space area, river or public use area. 2
- The site contains scenic resources that are representative of the area. 1
- The site is obscured from view of the general public and does not have overlook value. 0

PARTNER RESOURCE VALUE **WEIGHT**

- The site is of significance to one or more partner government agencies and/or non-government organization's that have funds available for the acquisition. 4
- The site is of significance to a partner agency that would undertake ownership and/or management responsibilities. 3
- Acquisition of the site would assist a government agency to fulfill its master land protection or recreation plan but matching funds are not available. 2
- The site is of significance to a local citizen group but does not fulfill a governing agency land protection or recreation plan. 1
- The site is of no current or known significance to a partner. 0

ECONOMIC VALUE **WEIGHT**

CRITERION **RATING**

- Funding has been specifically allocated by a government entity. 4
- Development threat of the site is imminent that would preclude future park use and the site is available for sale. 4
- Site holds potential to clean up an identified brownfield 4
- The site is available under bargain or opportunity sale conditions. 3
- The owner of the site is willing to sell at appraised value to the government. 3
- The site is subject to substantial, but less than imminent, threat of development, with unmitigable impacts. 2
- The owner of the site is willing to sell but at an inflated value. 1
- The owner of the site is currently an unwilling seller. 0

CONCEPTUAL AREA PROTECTION PLAN

A Program Area can span across several geographic regions, but projects within an area share a similar goal. Program Areas allow the Conservancy to evaluate properties and/or projects in relation to existing protected areas and programs, comparing both with the projected biological and recreational needs of the area. Borders of these programs bleed into each other and may overlap in some areas. Connectivity is necessary when looking at the entire region that is included in the Conservancy's mission.

A Program Area Structure serves as a planning tool for the region to protect large blocks of habitat and provide for appropriate recreational needs. The criteria used for evaluation is a set format, but will eventually be applied with different weights depending on the projected biological and recreational needs of each Program Area. A Program Area Structure is a long-term planning instrument with properties grouped in three tiers according to funding priority.

TABLE 1
SAN GABRIEL & LOWER LOS ANGELES
RIVERS AND MOUNTAINS CONSERVANCY
LISTING OF PROGRAM AREAS

1. Greenways along the San Gabriel and Los Angeles Rivers
2. Conservation of Lands in the Foothills of the San Gabriel Mountains
3. Conservation of Lands in the San Jose, Puente, and Chino Hills
4. Connected Urban Trails System
5. Parks for "park poor" Urban Areas
6. Community Programs (i.e. Education, Community Gardens, etc.)
7. Renovation of Existing Parks

SANTA MONICA MOUNTAINS CONSERVANCY PROJECT EVALUATION CRITERIA		
<i>Wildlife Resource Value</i>		
	CRITERION	<u>RATING</u>
WR1	The site lies wholly within a large block of undisturbed core habitat.	4
WR2	The site is used by state or federally-listed animal species.	4
WR3	The site directly contributes to the connection of two core habitat areas by serving as a habitat linkage or movement corridor for wildlife.	4
WR4	The site contains important fresh water habitat and/or a perennial natural water source.	4
WR5	The site directly contributes to the connection of two substantially-sized (but not core) habitat areas.	3
WR6	The site is used by an animal that is a candidate for state or federal listing	3
WR7	The site directly abuts and increases the effective size of a protected habitat area.	3
WR8	The site contains largely undisturbed habitat with a substantial section of riparian habitat.	3
WR9	The site contains largely undisturbed habitat but without a substantial section of riparian habitat.	2
WR10	The site is known to be used by state-designated sensitive animal species.	2
WR11	The site supplies habitat for only the most human-tolerant native species.	1
WR12	The site is severely degraded and habitat restoration is not feasible or economically justifiable.	0
<i>Floristic Resource Value</i>		
	CRITERION	<u>RATING</u>
FR1	The site contains a state or federally-listed plant species.	4
FR2	The site contains a high percent (>25%) cover of full canopy forest and/or oak woodland.	4
FR3	The site contains 10-25% cover of full canopy forest and/or oak woodland.	3
FR4	The site contains a plant species that is a candidate for state or federally listing.	3
FR5	The site largely contains largely undisturbed communities with moderate to high species diversity.	3
FR6	The site contains a plant community that is rare or unusual in the region.	3
FR7	The site contains either a state or cnps-designated sensitive plant species.	2
FR8	The site contains largely undisturbed plant communities with low species diversity.	2
FR9	The habitat is partially degraded but conditions are suitable for natural regeneration or restoration.	1
FR10	The site provides virtually no habitat for native species.	0

<i>Trail Resource Value</i>	
CRITERION	<u>RATING</u>
TR1 The site contains a significant, irreplaceable link in a major existing or planned trail. (i.e., “irreplaceable” means topography or other considerations would not permit realignment onto another parcel).	4
TR2 The site contains a portion of a less-than-major existing or planned trail.	3
TR3 The site contains a trailhead location with adequate parking for a major existing or planned trail.	3
TR4 The site provides critical viewshed within a major trail corridor.	3
TR5 The site could accommodate a new trail or provide a connection from a populated area or an accessible trailhead to an existing trail.	2
TR6 The site contains easy, level trail opportunities through scenic and natural areas that are accessible to trail users of many ages and physical conditions.	2
TR7 The site contains a trailhead location with adequate parking only for a less-than-major existing or planned trail.	2
TR8 The site does not provide critical viewshed within a major trail corridor, but does offer substantial scenic buffer for an existing or planned trail.	2
TR9 The site provides urban walkways.	1
TR10 The site would not support a trail or walkway.	0
<i>Scenic Resource Value</i>	
CRITERION	<u>RATING</u>
SR1 The site is part of an area of exceptional scenic value or has been so identified in an official planning document (e.g., a county area plan, NPS plan, scenic highway element).	4
SR2 The site contains critical viewshed of a major public park/public use area or from a designated primary scenic roadway.	4
SR3 The site contains unique scenic elements; e.g. waterfalls; spectacular wildflower displays; geologic formations; vistas of scenic grandeur.	3
SR4 The site contains important, but less than critical, viewshed of a major park/public use area.	3
SR5 The site contains important viewshed but not to a major public use area or park.	2
SR6 The site provides a significant (accessible) viewpoint or overlook of surrounding areas.	2
SR7 The site contains natural terrain with just average scenic qualities.	1
SR8 The site contains no natural terrain or little or no scenic value.	0
<i>Other Recreational Resource Value</i>	
CRITERION	<u>RATING</u>
ORR1 The site contains a suitable area for a planned major recreational facility—campground, picnic area, or interpretive center; with road access.	4
ORR2 The site provides area just for a smaller-scale recreational facility.	3

ORR3	The site contains moderate potential for development of parkland access or other recreational facilities.	2
ORR4	The site provides buffer for any non-trail related recreational facility.	1
ORR5	The site provides additional parking potential for an existing or potential recreation facility	1
ORR6	The site cannot support any recreational use because of physical constraints or potential natural or cultural resource degradation.	0
<i>Archaeological or Historic Resource Value</i>		
	CRITERION	<u>RATING</u>
AHR1	The site contains a registered archaeological or historic resource of national or statewide significance.	4
AHR2	The site contains a registered federal or state historic resource.	3
AHR3	The site contains a registered archaeological resource of regional significance.	3
AHR4	The site contains a registered archaeological or historic resource of local importance.	2
AHR5	The site is directly adjacent to a known historic or archaeologically significant site, and may be reasonably expected to have significant resources but is presently not surveyed.	2
AHR6	The site is a local community landmark.	1
AHR7	The site contains an archaeological or historic resource of limited importance.	1
AHR8	The site contains no known archaeological or historic resources, with minimal potential for same.	0
<i>Urban Resource Value</i>		
	CRITERION	<u>RATING</u>
UR1	The site provides a significant contribution to an existing or proposed natural corridor or greenway.	4
UR2	The site contains substantial-sized or representative sample of a native plant community surrounded by dense urban development and/or disadvantaged populations.	4
UR3	The site provides a moderate contribution to an existing or proposed natural corridor or greenway.	3
UR4	The site is located in an extremely park-poor community.	3
UR5	The site provides a minor component of an existing or proposed natural corridor or greenway.	2
UR6	The site contains a less-than-substantial-sized or representative sample of a native plant community surrounded by dense urban development and/or disadvantaged populations.	2
UR7	The site contains substantial potential for restoration of natural vegetation.	2
UR8	The site contains limited potential for restoration of natural vegetation.	1
UR9	The site has opportunities for active recreation.	1
UR10	The site is not proximate to dense urban development.	0
UR11	The site has expected environmental contamination problems.	-1

<i>Watershed Resource Value</i>		
CRITERION		<u>RATING</u>
WSR1	Over two-thirds of the site is located within a county-designated ecologically sensitive watershed or significant ecological area.	4
WSR2	The majority of the site is part of a watershed draining directly into an ecologically sensitive part of a state or federal park.	4
WSR3	The site supports substantial upland vegetative cover in a predominately natural watershed.	3
WSR4	At least one fourth of the site is located within a designated ecologically-sensitive watershed or significant ecological area.	3
WSR5	The site contains a substantial area (greater than 0.5 acre) of riparian or wetland habitat that integrates with a block of upland habitat.	3
WSR6	The site provides a location for a substantial-sized (>0.2 acre) or environmentally-significant riparian or wetland restoration project.	2
WSR7	The site contains good riparian or wetland habitat, >0.2 acre, but which is poorly integrated with upland habitat.	2
WSR8	The site contains between 0.05 to 0.19 acres of good riparian or wetland habitat but which is poorly integrated with upland habitat.	1
WSR9	The site provides a location for a less than substantial-sized (<0.2 acres) riparian or wetland restoration project.	1
WSR10	The site has little or no riparian habitat, watershed protection, or restoration value.	0
<i>Access Value</i>		
CRITERION		<u>RATING</u>
A1	The site is easily accessible from urban communities and provides adequate parking.	4
A2	The site is within walking distance from public transportation.	4
A3	The site has features making it easily accessible to people with limited mobility or other disabilities.	4
A4	The site has good potential for improving or developing substantial ADA accessibility.	3
A5	The site has adequate space for onsite parking or available street parking that will not conflict with neighborhood needs or sentiment.	2
A6	The site has adequate space for on site parking or available street parking, but is located in an area where neighborhood conflicts may arise.	1
A7	The site has good public access, but with limited ada potential.	1
A8	Access is not feasible except through additional acquisitions or easements.	0
<i>Partnership Value</i>		
CRITERION		<u>RATING</u>
P1	The site is of great significance to one or more partner government agencies	4

	and/or non-profit organizations with substantial matching funding.	
P2	Acquisition of the site would fulfill a large component of a government agency master land protection or recreation plan.	3
P3	A partner agency would undertake ownership or management responsibilities.	2
P4	The site is of significance to a local citizen group but does not fulfill a publically-adopted land protection or recreation plan.	1
P5	The site is of no current or known significance to a partner.	0
<i>Economic Opportunity Value</i>		
	CRITERION	<u>RATING</u>
EO1	The site is available under extraordinary bargain or opportunity sale conditions.	4
EO2	The site is subject to imminent threat of development, with unmitigable impacts, that would preclude future park use.	4
EO3	Funding has been specifically allocated in the State Budget as a line item or legislative intent.	4
EO4	The site is subject to substantial, but less than imminent, threat of development, with unmitigable impacts.	3
EO5	The site is available under less than extraordinary bargain or opportunity sale conditions.	2
EO6	Current appraisal has been done or is under review by Department of General Services.	1
EO7	The owner of the site is a known willing seller.	1
EO8	The owner of the site is currently an unwilling seller.	0

SANTA MONICA MOUNTAINS CONSERVANCY

PARK IMPROVEMENT AND DEVELOPMENT PROJECTS EVALUATION CRITERIA

Adopted May 14, 2001

The Park Improvement and Development Projects Evaluation Criteria have been developed for the assessment of projects nominated for the Conservancy's Workprogram 2000 to provide park improvement, trails, historical restoration, habitat restoration, interpretive programs, and planning for park enhancement projects. Land Acquisition Evaluation Criteria were previously adopted by the Santa Monica Mountains Conservancy for evaluation of properties nominated for purchase, with the Workprogram for Land Acquisition adopted by the Conservancy on September 28, 2000. Both evaluation processes provide guidelines for the Conservancy in its review of current projects and potential new projects. The Conservancy explicitly reserves the right to amend its Workprogram at any time to reflect the overall objective to protect, maintain, and enhance regional habitat and linkages, trail linkages; urban, river, and open space park projects.

GOAL TO ENCOURAGE REGIONALLY SIGNIFICANT PARK AND TRAIL PROJECTS

Through the Improvement Projects Evaluation Criteria, the Conservancy seeks to encourage regionally significant park, trail, and restoration projects. Projects are scored accordingly, and typically a project with the highest numeric scores in the largest number of Values categories, will rank above a project scoring high in only one or two categories. However, in project rankings, the Conservancy Board can apply a multiplier weight to the numeric score of a particular value or set of values, such as Urban Park Value, to provide geographic balance. Or, after all scores are totaled, the board may review a subset of projects (*e.g.* all urban projects or all river projects) and assign a subset priority ranking within those categories. A deciding weight for all projects will also be the degree to which Conservancy funds stimulate outside participation in funding a project.

Conservancy and MRCA Projects

The Santa Monica Mountains Conservancy and Mountains Recreation and Conservation Authority have a primary responsibility for funding improvements on SMMC/MRCA owned or managed parklands in fulfillment of the Conservancy's mission. Therefore, the first priorities for funding are *Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority projects that are required by or which manifestly enhance the Santa Monica Mountains Conservancy's statutory mission to provide resource protection, safety, access, visitor services, and educational interpretation.* These include the following categories:

SMMC/MRCA Lands Resource Protection Projects: Projects which facilitate protection of wildlife, habitat, and historical/archaeological resources on agency-managed parklands, including habitat restoration projects in urban or rural parks.

SMMC/MRCA Lands Vegetation Management and Fire Safety: Projects which facilitate fire safety and any required fuel modification zones on Conservancy and/or MRCA owned or managed parklands.

SMMC/MRCA Visitor-Serving Projects: Projects which provide for enhanced visitation, urban accessibility, and safety to SMMC/MRCA owned or managed parks (including signage, restrooms, parking, trail building or repairs, etc.). This includes new projects to implement statutory requirements to provide better accessibility under the Americans with Disabilities Act (ADA).

SMMC/MRCA Education and Interpretation Projects: Projects which are required to achieve or expand the outreach mission of the agency and which provide interpretive programs and materials to substantially enhance knowledge, appreciation, and enjoyment of the natural environment, open space, parklands, and rivers.

PARK IMPROVEMENT AND DEVELOPMENT PROJECTS CRITERIA FOR NOMINATED PROJECTS:

PUBLIC RECREATION VALUE (other than trails)

- PR1:** The project implements a major component of an existing plan (such as the Rim of the Valley Trail Corridor Master Plan, county or city plans) related to a major recreational public use facility (*e.g.*, nature park, campground, picnic area, visitor center, or educational interpretive center). 4
- PR2:** The project provides improvements to a park site that currently serves, or is expected to serve, a visitor base in a regional or greater geographic area. 4
- PR3:** The project adds visitor-serving amenities and public safety improvements to public parkland (*e.g.*, signage, restrooms, lighting, etc.). 3
- PR 4:** The project provides a high quality access point or parking area for adjacent open space or parkland. 2

ACCESSIBILITY VALUE

- A1:** The project improvements exceed legal standards for accessibility. 4

ENVIRONMENTAL EDUCATION/INTERPRETATION VALUE

- EE1:** The project provides educational/interpretive displays that will significantly enhance appreciation and enjoyment of a resource. 4
- EE2:** The project will provide park information materials and educational/interpretive information, available to a large number of visitors of all ages. 3
- EE3:** The project provides informational materials but to more limited audience. 2

NATURAL RESOURCES ENHANCEMENT VALUE

- NR1:** The project substantially restores riparian or wetland habitat (>0.2 acres). 4
- NR2:** The project improves or supports regeneration of important native vegetative cover on slopes near a stream or river, which if substantially disturbed may contribute to flood, erosion, creek sedimentation, or reduced groundwater recharge. 4
- NR3:** The project significantly enhances the potential for wildlife movement in an identified movement corridor chokepoint. 4
- NR4:** The project substantially restores a site by removal of exotic species and reestablishment of native species. 3
- NR5:** The project provides substantial tree planting of appropriate native species. 2

NR6: The site provides a small scale (0.05 to 0.19 acres) riparian or wetland restoration project.	2
<i>TRAIL PROJECT RESOURCE VALUE</i>	
TP1: The project builds a significant link in a major regional trail.	4
TP2: The project repairs a critical link on an existing major regional trail.	4
TP3: The project builds an important trailhead with parking for a major regional trail.	3
TP4: The project builds a new trail or repairs a trail which provides a connection from a populated area or trailhead to an existing trail.	3
TP5: The project builds or improves trail accessibility for trail users of a wide range of ability levels and physical conditions.	3
TP6: The project provides or enhances trail conditions for multi-use by equestrians, mountain bicyclists, and hikers.	2
TP7: The project provides or enhances a riverfront walking and bikeway trail.	2
<i>SCENIC AND AESTHETIC VALUE</i>	
SA1: The project provides aesthetic features (<i>e.g.</i> , outstanding design, art elements) to a park project that greatly enhance the park and visitor experience.	4
SA2: The project provides park or trail improvements located in an especially scenic area.	2
SA3: The project provides a vista point or scenic overlook over a significant viewshed.	2
<i>HISTORIC /CULTURAL RESTORATION VALUE</i>	
HC1: The project restores or enhances a federal or state-designated or eligible historic site, such as a National Register of Historic Places.	4
HC2: The restoration project provides a significant and unique aspect to public parkland (historical interest, cultural appreciation, educational interest).	4
HC3: The project restores or enhances a designated local community historic resource.	3
HC4: The historic/cultural restoration project is an integrated component of a larger park improvement project.	2
<i>URBAN PARK VALUE</i>	
UP1: The project will improve or significantly enhance open space parkland in a densely urban and/or park-poor community.	5
UP2: The project substantially improves a park site by eliminating or significantly remediating environmental contamination, such as that from urban runoff or onsite conditions	4

UP3: The project enhances or restores a substantial -sized (>2.0 acres) sample of a native ecosystem/plant community surrounded by an otherwise natural-resource-deficient urban area. 4

UP4: The project restores natural vegetation in smaller sized (<1.9 acres) park location in an otherwise natural-resource- deficient urban area. 3

SUSTAINABILITY VALUE

S1: Project provides substantial energy conservation measures and/or innovative power generation. 3

S2: Project provides state of the art design for wastewater and/or other innovative and substantial water conservation techniques 3

S3: Project provides innovative use of recycled materials in construction. 2

S4: The project reduces runoff and increases percolation on site with use of permeable surfaces. 2

PARTNERSHIP/ECONOMIC OPPORTUNITY VALUE

PEO1: The project is significant to one or more partner government agencies and/or non-government organizations with funds available. 4

PEO2: Funding has been specifically allocated in the State Budget as a line item or legislative intent. 4

PEO3: Completion of the project would assist a government agency in fulfilling its master land protection or recreation plan. 3

PEO4: The project provides a plan or feasibility study that enhances cooperative land protection and recreation important to two or more governmental agencies or non-governmental organizations. 3

PEO5: A partner agency would provide maintenance of the improvements. 3

MATCHING FUNDS WEIGHTING

Scores for improvement projects that are matched with other funding sources can be given an extra weighted value:

Funding match on a one to one basis: Multiply total score X 2

Funding match on a two to one basis: Multiply total score X 3

APPENDIX G

Threatened and Endangered Species

Threatened and Endangered Species and Species of Concern Los Angeles County—Plants

Common Name	Scientific Name	Federal Status	State Status
Alkali Mariposa Lily	<i>Calochortus striatus</i>	Species of concern	None
Aphanisma	<i>Aphanisma blitoides</i>	Species of concern	None
Ballona Cinquefoil	<i>Potentilla multijuga</i>	Species of concern	None
Beach Spectaclepod	<i>Dithyrea maritime</i>	Species of concern	Threatened
Big Bear Valley Woollypod	<i>Astragalus leucolobus</i>	Species of concern	None
Blair's Stephanomeria	<i>Stephanomeria blairii</i>	Species of concern	None
Blochman's Dudleya	<i>Dudleya blochmaniae</i> ssp <i>blochmaniae</i>	Species of concern	None
Braunton's Milk-Vetch	<i>Astragalus brauntonii</i>	Endangered	None
Bright Green Dudleya	<i>Dudleya virens</i>	Species of concern	None
California Dissanthelium	<i>Dissanthelium californicum</i>	Species of concern	None
California Orcutt Grass	<i>Orcuttia californica</i>	Endangered	Endangered
Catalina Island Mountain-Mahogany	<i>Cercocarpus traskiae</i>	Endangered	Endangered
Coulter's Goldfields	<i>Lasthenia glabrata</i> ssp <i>coulteri</i>	Species of concern	None
Davidson's Bush Mallow	<i>Malacothamnus davidsonii</i>	Species of concern	None
Desert Cymopterus	<i>Cymopterus deserticola</i>	Species of concern	None
Guadalupe Island Lupine	<i>Lupinus guadalupensis</i>	Species of concern	None
Hall's Monardella	<i>Monardella macrantha</i> ssp <i>hallii</i>	None	None
Intermediate Mariposa Lily	<i>Calochortus weedii</i> var <i>intermedius</i>	Species of concern	None
Island Rush-Rose	<i>Helianthemum greenei</i>	Threatened	None
Island Snapdragon	<i>Galvezia speciosa</i>	Species of concern	None
Island Tree Poppy	<i>Dendromecon harfordii</i> var <i>rhamnoides</i>	Species of concern	None
Johnston's Buckwheat	<i>Eriogonum microthecum</i> var <i>johnstonii</i>	Species of concern	None
Lemon Lily	<i>Lilium parryi</i>	Species of concern	None
Los Angeles Sunflower	<i>Helianthus nuttallii</i> ssp <i>parishii</i>	Species of concern	None
Lyon's Pentachaeta	<i>Pentachaeta lyonii</i>	Endangered	Endangered
Many-Flowered Phacelia	<i>Phacelia floribunda</i>	Species of concern	None
Many-Stemmed Dudleya	<i>Dudleya multicaulis</i>	Species of concern	None
Marcrescent Dudleya	<i>Dudleya cymosa</i> ssp <i>marcescens</i>	Threatened	Rare
Mason's Neststraw	<i>Stylocline masonii</i>	Species of concern	None
Mexican Flannelbush	<i>Fremontodendron mexicanum</i>	Endangered	Rare
Mt. Gleason Indian Paintbrush	<i>Castilleja gleasonii</i>	Species of concern	Rare
Nevin's Barberry	<i>Berberis nevinii</i>	Endangered	Endangered
Nevin's Woolly Sunflower	<i>Eriophyllum nevinii</i>	Species of concern	None
Palmer's Grapplinghook	<i>Harpagonella palmeri</i>	Species of concern	None
Palmer's Mariposa Lily	<i>Calochortus palmeri</i> var <i>palmeri</i>	Species of concern	None
Parish's Brittlebush	<i>Atriplex parishii</i>	Species of concern	None
Parish's Gooseberry	<i>Ribes divaricatum</i> var <i>parishii</i>	Species of concern	None
Parry's Spineflower	<i>Chorizanthe parryi</i> var <i>parryi</i>	Species of concern	None
Peirson's Morning-Glory	<i>Calystegia peirsonii</i>	Species of concern	None
Plummer's Mariposa Lily	<i>Calochortus plummerae</i>	Species of concern	None
Rock Creek Broomrape	<i>Orobanche valida</i> ssp <i>valida</i>	Species of concern	None

**Threatened and Endangered Species and Species of Concern
Los Angeles County—Plants**

Common Name	Scientific Name	Federal Status	State Status
Salt Marsh Bird's-Beak	<i>Cordylanthus maritimus</i> ssp <i>maritimus</i>	Endangered	Endangered
San Antonio Milk-Vetch	<i>Astragalus lentiginosus</i> var <i>antonius</i>	Species of concern	None
San Clemente Island Bed-straw	<i>Galium catalinense</i> ssp <i>acrispum</i>	Species of concern	Endangered
San Clemente Island Bird's-Foot Trefoil	<i>Lotus argophyllus</i> var <i>adsurgens</i>	Species of concern	Endangered
San Clemente Island Brodiaea	<i>Brodiaea kinkiensis</i>	Species of concern	None
San Clemente Island Buckwheat	<i>Eriogonum giganteum</i> var <i>formosum</i>	Species of concern	None
San Clemente Island Bush Mallow	<i>Malacothamnus clementinus</i>	Endangered	Endangered
San Clemente Island Evening-Primrose	<i>Camissonia guadalupensis</i> ssp <i>clementina</i>	Species of concern	None
San Clemente Island Hazardia	<i>Hazardia cana</i>	Species of concern	None
San Clemente Island Indian Paintbrush	<i>Castilleja grisea</i>	Endangered	Endangered
San Clemente Island Larkspur	<i>Delphinium variegatum</i> ssp <i>kinkiense</i>	Endangered	Endangered
San Clemente Island Lotus	<i>Lotus dendroideus</i> var <i>traskiae</i>	Endangered	Endangered
San Clemente Island Milk-Vetch	<i>Astragalus nevinii</i>	Species of concern	None
San Clemente Island Triteleia	<i>Triteleia clementina</i>	Species of concern	None
San Clemente Island Woodland Star	<i>Lithophragma maximum</i>	Endangered	Endangered
San Fernando Valley Spineflower	<i>Chorizanthe parryi</i> var <i>Fernandina</i>	Species of concern	None
San Gabriel Bedstraw	<i>Galium grande</i>	Species of concern	None
San Gabriel Linanthus	<i>Linanthus concinnus</i>	Species of concern	None
San Gabriel Manzanita	<i>Arctostaphylos gabrielensis</i>	Species of concern	None
San Gabriel Mountains Dudleya	<i>Dudleya densiflora</i>	Species of concern	None
San Gabriel River Dudleya	<i>Dudleya cymosa</i> ssp <i>crebrifolia</i>	Species of concern	None
San Nicolas Island Lomatium	<i>Lomatium insulare</i>	Species of concern	None
Santa Barbara Morning-Glory	<i>Calystegia sepium</i> ssp <i>binghamiae</i>	None	None
Santa Catalina Figwort	<i>Scrophularia villosa</i>	Species of concern	None
Santa Catalina Island Ironwood	<i>Lyonothamnus floribundus</i> ssp <i>floribundus</i>	Species of concern	None
Santa Catalina Island Manzanita	<i>Arctostaphylos catalinae</i>	Species of concern	None
Santa Catalina Island Monkeyflower	<i>Mimulus traskiae</i>	Species of concern	None
Santa Cruz Island Ironwood	<i>Lyonothamnus floribundus</i> ssp <i>aspleniifolius</i>	Species of concern	None
Santa Cruz Island Rock Cress	<i>Sibara filifolia</i>	Endangered	None
Santa Monica Mountains Dudleya	<i>Dudleya cymosa</i> ssp <i>ovatifolia</i>	Threatened	None
Santa Susana Tarplant	<i>Hemizonia minthornii</i>	Species of concern	Rare
Scalloped Moonwort	<i>Botrychium crenulatum</i>	Species of concern	None

**Threatened and Endangered Species and Species of Concern
Los Angeles County—Plants**

Common Name	Scientific Name	Federal Status	State Status
Short-Joint Beavertail	<i>Opuntia basilaris</i> var <i>brachyclada</i>	Species of concern	None
Short-Lobed Broom-Rape	<i>Orobanche parishii</i> ssp <i>brachyloba</i>	Species of concern	None
Slender Mariposa Lily	<i>Calochortus clavatus</i> var <i>gracilis</i>	Species of concern	None
Slender-Horned Spineflower	<i>Dodecahema leptoceras</i>	Endangered	Endangered
South Coast Saltscale	<i>Atriplex pacifica</i>	Species of concern	None
Southern Island Mallow	<i>Lavatera assurgentiflora</i> ssp <i>glabra</i>	Species of concern	None
Southern Tarplant	<i>Hemizonia parryi</i> ssp <i>australis</i>	Species of concern	None
Spreading Navarretia	<i>Navarretia fossalis</i>	Threatened	None
Thorne's Royal Larkspur	<i>Delphinium variegatum</i> ssp <i>thornei</i>	Species of concern	None
Thread-Leaved Brodiaea	<i>Brodiaea filifolia</i>	Threatened	Endangered
Trask's Cryptantha	<i>Cryptantha traskiae</i>	Species of concern	None
Ventura Marsh Milk-Vetch	<i>Astragalus pycnostachyus</i> var <i>lanosissimus</i>	Species of Concern	Candidate

**Threatened and Endangered Species and Species of Concern
Los Angeles County—Animals**

Common Name	Scientific Name	Federal Status	State Status
Snails and Slugs			
Catalina Mountainsnail	<i>Radiocentrum</i> (=oreohelix) <i>avalonense</i>	Species of concern	None
Mimic Tryonia (=California Brackishwater Snail)	<i>Tryonia imitator</i>	Species of concern	None
San Clemente Island snail	<i>Micrarionta gabbi</i>	Species of concern	None
Grasshoppers, Katydid, and Crickets			
Santa Monica Shieldback Katydid	<i>Neduba longipennis</i>	Species of concern	None
Beetles			
Dorothy's El Segundo Dune Weevil	<i>Trigonoscuta dorothea dorothea</i>	Species of concern	None
Globose Dune Beetle	<i>Coelus globosus</i>	Species of concern	None
Lange's El Segundo Dune Weevil	<i>Onychobaris langei</i>	Species of concern	None
Sandy Beach Tiger Beetle	<i>Cicindela hirticollis gravida</i>	Species of concern	None
Butterflies and Moths			
El Segundo Blue Butterfly	<i>Euphilotes battoides allyni</i>	Endangered	None
Henne's Eucosman Moth	<i>Eucosma hennei</i>	Species of concern	None
Palos Verdes Blue Butterfly	<i>Glaucopsyche lygdamus palosverdesensis</i>	Endangered	None
Wandering (=Saltmarsh) Skipper	<i>Panoquina errans</i>	Species of concern	None
Fish			
Arroyo Chub	<i>Gila orcutti</i>	Species of concern	None
Mohave Tui Chub	<i>Gila bicolor mohavensis</i>	Endangered	Endangered
Santa Ana Sucker	<i>Catostomus santaanae</i>	Proposed Threatened	None
Southern Steelhead	<i>Oncorhynchus mykiss irideus</i>	Endangered	None
Tidewater Goby	<i>Eucyclogobius newberryi</i>	Endangered	None
Unarmored Threespine Stickleback	<i>Gasterosteus aculeatus williamsoni</i>	Endangered	Endangered

**Threatened and Endangered Species and Species of Concern
Los Angeles County—Animals**

<i>Common Name</i>	<i>Scientific Name</i>	<i>Federal Status</i>	<i>State Status</i>
Amphibians			
Arroyo Toad	<i>Bufo microscaphus californicus</i>	Endangered	None
California Red-Legged Frog	<i>Rana aurora draytonii</i>	Threatened	None
Mountain Yellow-Legged Frog	<i>Rana muscosa</i>	Species of concern	None
Western Spadefoot	<i>Scaphiopus hammondi</i>	Species of concern	None
Reptiles			
California Horned Lizard	<i>Phrynosoma coronatum frontale</i>	Species of concern	None
Coastal Western Whiptail	<i>Cnemidophorus tigris multicutatus</i>	Species of concern	None
Desert Tortoise	<i>Xerobates agassizii</i>	Threatened	Threatened
Island Night Lizard	<i>Xantusia riversiana</i>	Threatened	None
Orange-Throated Whiptail	<i>Cnemidophorus hyperythrus</i>	Species of concern	None
San Diego Horned Lizard	<i>Phrynosoma coronatum blainvillei</i>	Species of concern	None
San Diego Mountain Kingsnake	<i>Lampropeltis zonata pulchra</i>	Species of concern	None
Silvery Legless Lizard	<i>Anniella pulchra pulchra</i>	Species of concern	None
Southwestern Pond Turtle	<i>Clemmys marmorata pallida</i>	Species of concern	None
Two-Striped Garter Snake	<i>Thamnophis hammondi</i>	Species of concern	None
Birds			
Belding's Savannah Sparrow	<i>Passerculus sandwichensis beldingi</i>	Species of concern	Endangered
Burrowing Owl	<i>Athene cunicularia (burrow sites)</i>	Species of concern	None
California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	Species of concern	Threatened
California Condor	<i>Gymnogyps californianus</i>	Endangered	Endangered
California Gnatcatcher	<i>Polioptila californica</i>	Threatened	None
California Least Tern	<i>Sterna antillarum browni (nesting colony)</i>	Endangered	Endangered
Least Bell's Vireo	<i>Vireo bellii pusillus (nesting)</i>	Endangered	Endangered
San Clemente Loggerhead Shrike	<i>Lanius ludovicianus mearnsi</i>	Endangered	None
San Clemente Sage Sparrow	<i>Amphispiza belli clementeae</i>	Threatened	None
Swainson's Hawk	<i>Buteo swainsoni (nesting)</i>	None	Threatened
Tricolored Blackbird	<i>Agelaius tricolor (nesting colony)</i>	Species of concern	None
Western Snowy Plover	<i>Charadrius alexandrinus nivosus (nesting)</i>	Threatened	None
Western Yellow-Billed Cuckoo	<i>Coccyzus americanus occidentalis (nesting)</i>	None	Endangered
Mammals			
Island Fox	<i>Urocyon littoralis</i>	Species of concern	Threatened
Mohave Ground Squirrel	<i>Spermophilus mohavensis</i>	Species of concern	Threatened
Pacific Pocket Mouse	<i>Perognathus longimembris pacificus</i>	Endangered	None
San Diego Desert Woodrat	<i>Neotoma lepida intermedia</i>	Species of concern	None
San Joaquin Pocket Mouse	<i>Perognathus inornatus inornatus</i>	Species of concern	None
Santa Catalina Shrew	<i>Sorex ornatus willetti</i>	Species of concern	None
Tehachapi Pocket Mouse	<i>Perognathus alticola inexpectatus</i>	Species of concern	None

**Threatened and Endangered Species and Species of Concern
Los Angeles County—Animals**

<i>Common Name</i>	<i>Scientific Name</i>	<i>Federal Status</i>	<i>State Status</i>
<p>Source: California Dept. of Fish & Game and Los Angeles Almanac</p> <p>The only known populations of Unarmored Threespine Stickleback, a fish, are in the Santa Clara River's drainage to the Los Angeles River and in San Diego County.</p> <p>The Palos Verdes Blue Butterfly, originally found only in Palos Verdes Peninsula, was thought extinct until it was rediscovered in San Pedro in 1994.</p> <p>The El Segundo Blue Butterfly is found only on two acres on a Chevron Oil Refinery and at the western end of LAX.</p> <p>The Gray Whale migrates along the west coasts of Mexico, the U.S., and Canada. It is federally protected.</p>			

APPENDIX H

Potential Indicator Species

To gauge the success of habitat linkages, it is possible to identify species that can serve as sensitive indicators of functional connectivity. Using the approach of Noss (1991; pp. 227-246 in K. Kohm, ed. *Balancing on the Brink of Extinction*, Island Press) and Caro and O'Doherty (1999; *Conservation Biology* 13:805-814) species can be described with the following categories:

- 1) *Umbrellas*—species whose habitat area and quality requirements encapsulate the needs of an array of other species.
- 2) *Flagships*—charismatic species that attract the attention and imagination of the general public.
- 3) *Ecosystem Health Indicators*—species sensitive to and indicative of anthropogenic disturbances to ecological functions.
- 4) *Population Health Indicators*—predators whose population health provides a measure of the health of populations of their prey and of associated ecological functions.
- 5) *Keystone Species*—species whose impact on the ecosystem is large and disproportionately large for their abundance.

Using these categories, the following species have been identified¹ as useful indicators for conservation planning at the landscape and regional scales within the watersheds:

- 1) Steelhead (wild rainbow trout): Flagship and umbrella; encompasses requirements for Pacific lamprey and for lower elevation fish species.
- 2) Unarmored three-spine stickleback: Umbrella; encompasses requirements for lower elevation arroyo chub, Santa Ana sucker, and Santa Ana speckled dace.
- 3) Arroyo toad: Ecosystem health indicator for “fluctuating hydrological, geological, and ecological processes operating in riparian ecosystems and adjacent uplands” (USFWS 1999, Arroyo Toad Recovery Plan).
- 4) California red-legged frog: Ecosystem health indicator for riparian habitats and adjacent aquatic and upland systems.
- 5) Southwestern pond turtle: Ecosystem health indicator for upper watershed tributaries.
- 6) Yellow warbler: Umbrella species for high quality riparian habitat, shaped by natural fluvial processes.
- 7) Least Bell’s vireo: Ecosystem health indicator and possible umbrella species for riparian habitats with well-developed overstories, understories, and low densities of aquatic and herbaceous cover (USFWS 2000, Biological Opinion on the Effects of Ongoing Forest Activities that May Affect Listed Riparian Species on the Cleveland National Forest, the Los Padres National Forest, the San Bernardino National Forest, and Angeles National Forest in Southern California).
- 8) Southwestern willow flycatcher: Ecosystem health indicator of riparian habitat with dense growths of willows, *Baccharis*, arrowweed, buttonbush, or other plants of similar structure. Although overlapping, significant differences in habitat requirements with least Bell’s vireo are probable (USFWS 2000, *Ibid.*).
- 9) Arboreal salamander: Umbrella for high quality oak, walnut, and sycamore woodland habitats, including connectivity to riparian areas.

¹ Noss, Reed, *Task 2: Assessment of the Feasibility of Wildlife Corridors, List of Species to be Addressed, Recommendations of Habitat Enhancement Opportunities for Migratory Birds and for Additional Information to be Collected, and Map of Corridor Opportunities. Report to the Los Angeles and San Gabriel Rivers Watershed Council*, September 3, 2001

- 10) Oak titmouse: Umbrella for woodlands that may be somewhat fragmented, but still offer significant habitat value for species less affected by loss of terrestrial connectivity.
- 11) Coast horned lizard: Ecosystem health indicator for certain aspects of alluvial fan and coastal sage scrubs.
- 12) Lesser nighthawk: Umbrella for certain aspects of alluvial fan sage scrub, especially areal extent.
- 13) Plummer's mariposa lily: Ecosystem health indicator and tentative flagship for alluvial fan sage scrub and chaparral.
- 14) Cactus wren: Flagship for alluvial fan and coastal sage scrub with stands of *Opuntia* cactus.
- 15) Greater roadrunner: Flagship for coastal and alluvial fan sage scrub and grassland habitat connectivity.
- 16) California gnatcatcher: Tentative umbrella for restoration of coastal sage scrub quantity, quality, and connectivity.
- 17) Grasshopper sparrow: Umbrella for grassland habitats.
- 18) California quail: Flagship for upland habitat connectivity.
- 19) Great blue heron: Flagship and potential ecosystem health indicator for mature forest (riparian and otherwise, for rookeries) and aquatic habitats.
- 20) Bobcat: Population health indicator for prey species; flagship and potential umbrella for landscape-scale connectivity.
- 21) Gray fox: Population health indicator for prey species; flagship and potential umbrella for landscape-scale connectivity.
- 22) Coyote: Population health indicator for prey species; flagship and potential umbrella for landscape-scale connectivity; documented keystone species for controlling opportunistic mesopredators (e.g., feral cat, raccoon, opossum, gray fox) and thereby increasing songbird nesting success (see Crooks and Soulé 1999, *Nature* 400:563-566).
- 23) Black bear: Flagship and potential umbrella for landscape-scale connectivity; possible ecosystem health indicator for forests.
- 24) Mountain lion: Population health indicator for prey species and possible keystone species; flagship and umbrella for regional-scale connectivity.

It may not be possible, given foreseeable funding scenarios, to conduct detailed population censuses, habitat modeling, and population viability modeling for all 24 of these species. Nevertheless, some level of effort should be devoted to determining the distribution and population trends of these species and opportunities for more intensive research should be seized whenever possible.

In addition, a comprehensive conservation strategy for the study region should protect sites occupied by species ranked as critically imperiled globally (G1) or imperiled globally (G2) by The Nature Conservancy and the Association for Biodiversity Information. Examples of G1 species in the study region are Munz's onion (*Allium munzii*), slender-horned spineflower (*Dodecabema leptoceras*), Laguna beach dudleya (*Dudleya stolonifera*), Lyon's pentachaeta (*Pentachaeta lyonii*), and Lange's El Segundo dune weevil (*Onychobaris langei*).

The occurrences of these and other imperiled species are mapped in California by the California Natural Diversity Data Base. These are local-scale species (Poiani et al. 2000, *Ibid.*) and many of their habitats are isolated; hence, they would be neglected by a conservation plan focused largely on riparian networks or wild-life corridors. Importantly, because these species are mostly narrow endemics, their global survival depends on conservation actions taken in the watersheds. In addition, many narrowly restricted G1 and G2 plant communities—for example, walnut forest and valley needlegrass grassland—occur in the watersheds and require protection.

Common Ground
from the Mountains to the Sea

October 2001

ERRATA

Page ii, opposite Contents:

Additional copies of this report are available. Please contact:

Mary A. Angle, Executive Officer
Rivers and Mountains Conservancy
900 South Fremont Avenue
Annex, Second Floor
Alhambra, CA 91802

Tel: (626) 458-4315
Fax: (626) 458-7353
Web: www.rmc.ca.gov

Page 35, Replace 3rd paragraph under Groundwater Management:

Groundwater pumping in the San Gabriel Valley Groundwater basin began to exceed recharge rates in the 1950's, leading to a lengthy legal battle that was settled in 1965 by entry of the Court Judgement in a lawsuit filed on May 12, 1959 by parties in the Central Basin immediately downstream from the Whittier Narrows on the San Gabriel River (Lower Area). That Judgement is administered by a three-person Watermaster (the San Gabriel River Watermaster) which accounts for all water passing through Whittier Narrows each year and for credit and debit obligations.

Another lawsuit was filed on January 2, 1968, seeking the adjudication of all water rights in the Main San Gabriel Basin. Those rights are mainly groundwater rights, although surface water rights in the Basin were included. That Judgement was entered on January 4, 1973. It is administered by a nine-person watermaster comprised of six water-producer members and three public water district representatives. It is the Main San Gabriel Basin Watermaster which administers the rights to take and use Main San Gabriel Basin water accounted for annually.

The water resources of the groundwater basins in the Upper Los Angeles River Area (ULARA) are managed by an agreement made in 1973. This agreement balances the groundwater rights of the City of Los Angeles with the upstream cities of Glendale and Burbank. The ULARA Watermaster is responsible for managing groundwater supplies and protecting groundwater quality.