chapter 3 The River Corridor Plan

CHAPTER 3

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Note: Figures 3-5, 3-53 and 3-67 courtesy of California State Polytechnic University, Graduate Department of Landscape Architecture 606 Studio project, "San Gabriel Confluence Park," sponsored by the Sierra Club Los Angeles Chapter, San Gabriel Valley Task Force.

chapter 3 The River Corridor Plan

3.1 PLAN OVERVIEW

The Master Plan for the San Gabriel River corridor provides a shared, comprehensive vision of the watershed, from the mountains to the ocean. It integrates the multiple goals of enhancing habitat, recreation and open space, while maintaining and enhancing flood protection, water supply and water quality. The Plan identifies priorities, provides guidance, and helps coordinate the over 130 independently sponsored enhancement projects that were identified by the 19 cities along the river, the County of Los Angeles and the many public agencies and community organizations that participated in developing the Master Plan.

The Master Plan reflects the stakeholders' consensus vision of what is possible. This chapter is the heart of the Master Plan, focusing on the concepts for enhancing the river and specific stakeholder projects. It is organized in the following way:

FUTURE VISION. This narrative statement is a portrayal of what the San Gabriel River might be like in coming decades, if the Master Plan is successfully implemented.

PLAN FRAMEWORK. The Plan framework is the guiding structure for realizing the vision and goals developed by the San Gabriel River Steering Committee.

PLAN ELEMENTS. The six Plan elements are Habitat, Recreation, Open Space, Flood Protection, Water Supply and Water Quality, and Economic Development. Each element includes a goal statement and a set of specific objectives and project performance criteria that support that goal.

RIVER ENHANCEMENT PROJECT CONCEPTS. The eight river enhancement concepts are designed to inspire cities, agencies and other stakeholders to create their own projects. They include: Trail Enhancements; Educational Centers; Bridges, Gateways and Connections; Parks and Open Space; Redevelopment and Reclamation; Habitat Enhancement; Water Quality and Water Supply; and Studies.

STAKEHOLDER PROJECTS. The 134 stakeholder projects—new projects and enhancements to existing projects—are presented in the context of the reach in which they are located:

- Reach 1 Headwaters: 7 projects
- Reach 2 San Gabriel Canyon: 8 projects
- Reach 3 Upper San Gabriel Valley: 30 projects
- Reach 4 Lower San Gabriel Valley: 31 projects
- Reach 5 Upper Coastal Plain: 18 projects
- Reach 6 Lower Coastal Plain: 23 projects
- Reach 7 Zone of Tidal Influence: 17 projects

RIVER CORRIDOR-WIDE PROJECTS, POLICIES, PROGRAMS AND DESIGN GUIDELINES. River corridor-wide initiatives will complement and link individual stakeholder projects and will address key issues such as public safety, vector control, maintenance, pollution control, and design image.

CONCEPT DESIGN STUDIES. The five Concept Design Studies are case studies of specific projects that simultaneously address multiple goals and objectives, providing valuable lessons for a multi-objective approach to river corridor planning and project design. They include:

- San Gabriel Canyon Spreading Grounds
- Woodland Duck Farm
- San Gabriel River Discovery Center at Whittier Narrows
- Lario Creek/Zone 1 Ditch
- El Dorado Regional Park

Figure 3-1. The San Gabriel River's natural character is evident as it flows south through the Angeles National Forest to the valley communities of Azusa and Duarte.

3.2 THE FUTURE SAN GABRIEL RIVER

Rediscovering and enhancing the San Gabriel River will be a long process, inspired by the shared vision of the communities of the San Gabriel River Watershed who are working together to make it a reality. The transformation will take time, but as projects are launched along the river, they will slowly but surely lead to dramatic changes. Twenty years from now, a future visitor to the San Gabriel River may find an entirely different place from what we see today...

Spring 2024

I love to take long, leisurely walks along the banks of the San Gabriel River. And, I'm not surprised to see so many others seeking out this green sanctuary that winds through the densely developed cities of the valley and the coastal plain. This is "the river that LA Rediscovered," as a newspaper headline recently put it. Now, the river and the many parks and open spaces lining its banks play a prominent part in the lives of all of us who live nearby. The river has become a very popular gathering place for people from Azusa to Seal Beach to walk, ride their bikes, take in the sights or simply relax and enjoy a bit of the outdoors. And it serves the region in many other ways: after adding just a little more water, life once again flourishes along the river.

From where I stand, near where San Jose Creek approaches the San Gabriel River, I can see children playing along one of the places where it is safe to touch the river and even get your toes wet. To my left, native Sycamore trees shading the bike path cool off the bicyclists who have just stopped for a drink of water and a well-deserved rest. It seems they've been biking to all the education centers that lie along the river. They've just come from the Discovery Center in Whittier Narrows and are heading north to the Peter Schabarum Nature Center by the Santa Fe Dam, and then on to the Forest Gateway Center in Azusa. They had started their journey near the coast at the Los Cerritos Wetlands Restoration Center, and along the way also paid a visit to Pio Pico State Historic Park.

ILLUSTRATION COURTESY OF SIERRA CLUB, ANGELES CHAPTER

Figure 3-2. Local artist Nancy Romero depicted the future of a restored river for people, wildlife and the environment in her painting, "San Gabriel River Confluence Park: A Vision for the Future," commissioned by the Sierra Club.

Until today, I didn't realize that it has become a tradition to combine a trip along the river with visits to all the interpretive centers. This is just another indication of how our perception of the San Gabriel River has changed. Utility rights-of-way are now shared open spaces filled with parks, habitat and people, thanks to new technologies and design concepts that allow multiple uses to co-exist with utility

facilities. We now see the river and the lands adjacent to it as a single, integrated greenway linking all the communities along its path.

From what the bicyclists have been telling me, they have seen many of our natural friends, including some blue herons in the Whittier Narrows area. That used to be a very rare sight, but now it's commonplace. In fact, native wildlife, vegetation and fish are flourishing up and down the river in ways they've not done in decades, even though urban communities lie nearby. A major factor in this restoration is the habitat corridor running from the Puente Hills along the river up into the mountains. There's even a passageway around the Santa Fe Dam to complete the transit for wildlife that in the past couldn't get around that formidable structure.

Part of the habitat corridor is on the landscaped edges of some of the recently reclaimed gravel quarries that lie just to the north of where I now stand. Although many of the quarries are still a vital part of the local economy and will operate for at least two more decades, the first ones to be reclaimed are now an integral part of the new river greenway. A strong public-private partnership between the quarry operators and local cities led to new multi-use developments near the river. Many high-tech companies and other businesses have been drawn to these sites because they offer nearby housing and shops for employees, and provide unique amenities such as parks and natural landscapes with riverfront views.

And there are even more dramatic plans. In a few decades, when all the gravel quarries have ceased operations, we can restore more of the natural floodplain here. We've done that further up the river in Azusa and south at the El Dorado Regional Park in Long Beach. There were large areas of land adjacent to the river that could accommodate a system of setback levees to provide flood control on the natural flood plains. Flood control is, of course, always our main concern, as the massive dams and flood control channels still in place show. However, we have learned how to manage the flood control system to achieve other important benefits. For instance, all new structures and ongoing maintenance take into account the biological needs of wildlife, fish and native plants. You now see fishermen enjoying the results below Morris Dam and other popular fishing spots along the river, including Fish Canyon, where steelhead trout have returned.

Now that I have been walking along the river here for the past hour, I could use a drink of water myself. Fortunately, water is not a problem. We've greatly increased our ability to use water from the San Gabriel River and its tributaries, although we still rely to some extent on imported water. We're even better at capturing stormwater now, handling even the largest amounts of rainfall. And changes in land use practices, such as permeable pavements and expanded groundwater percolation throughout the entire San Gabriel River Watershed, have made it possible.

One of the most important improvements to the river today is clean water. Today, children play in the water without getting sick, unlike the days when trash, bacteria and other pollutants were at levels harmful enough for regular beach closures. Toxic plumes, which once contaminated parts of the groundwater basin, have been thoroughly cleaned up. And, numerous new treatment wetlands in parks and other open space areas along the river remove contaminants and improve water quality—further adding to the water supply. We have also learned how to monitor and maintain these new wetlands so they don't become mosquito breeding grounds. Through these and other water conservation methods, the greatly expanded local water supply has enabled us to add a modest amount of water back into the river —the key to its current transformation—and maintain all existing water rights.

Today, after 20 years of hard work, we can all enjoy the best of what the river has to offer us, while still protecting our homes from flood-waters and meeting our water supply needs. Although it will always be a work in progress, the San Gabriel River has definitely been rediscovered—it is now the common thread that draws people together for inspiration and renewal. I can't wait to see what happens during the next 20 years!

3.3 THE PLAN FRAMEWORK

The Master Plan framework emerged over a three-year period, based on many discussions among stakeholders on the San Gabriel River Master Plan Steering Committee. Its multilevel hierarchy serves as a structure for selecting and planning additional projects. The Plan Framework includes:

VISION STATEMENT. Describes an ideal future condition for the San Gabriel River that will result from successfully implementing the Master Plan.

GOALS. Describe the desired outcomes that must be achieved in order to progress toward the ideal future vision.

OBJECTIVES. Translate the vision and goals into specific, measurable actions and identify what must be done to accomplish the goals. Many objectives are time-specific but others are ongoing.

PROJECT PERFORMANCE CRITERIA. Provide a yardstick to measure progress. Specific projects and programs must meet one or more of the goals and objectives, as measured by the project performance criteria. The criteria act as a reference to assess whether proposed projects and strategies can achieve desired objectives. Criteria are listed by Plan Element on pages 3-6 through 3-11.

RIVER ENHANCEMENT CONCEPTS. Illustrate the types of multi-objective projects that can be replicated all along the river corridor, creating dramatic improvements and an enhanced identity for the river, and helping achieve the vision and goals of the Master Plan.

This Plan framework aligns the shared, long-term vision for the future of the San Gabriel River with the many independently-sponsored projects and programs that are designed to bring about that vision. The Plan Framework is shown on page 3-4.

3.3.1 Master Plan Vision

The San Gabriel River Master Plan Steering Committee developed the overall vision:

The San Gabriel River will be the corridor of an integrated watershed system while providing protection, benefit and enjoyment to the public.

3.3.2 Goals

Initially, the Master Plan responded to three major goals—habitat, recreation and open space—identified by the County of Los Angeles Board of Supervisors when it instructed the Department of Public Works to

SAN GABRIEL RIVER MASTER PLAN FRAMEWORK

COMMUNITY INPUT

Community Vision:
The San Gabriel River will be the corridor of an integrated watershed system while providing protection, benefit and enjoyment to the public.

PLAN ELEMENTS

GOALS	OBJECTIVES AND PROJECT PERFORMANCE CRITERIA (See Chapter 3 text for details on project performance criteria)				
Habitat (H) Preserve and enhance habitat systems through public education, connectivity and balance with other uses.	**H1:** Protect Existing High Quality Habitat and Ecologically Significant Areas (H1.1 H1.2 H1.3 H1.4 H1.5 H1.6 H1.7)	**H2:** Restore / Enhance Aquatic and Terrestrial Riparian and Upland Habitat (H2.1 H2.2 H2.3 H2.4 H2.5 H2.6 H2.7 H2.8 H2.9)	**H3:** Coordinate Efforts to Remove Invasive Species (H3.1 H3.2 H3.3 H3.4 H3.5)	**H4:** Maintain and Enhance Wildlife Corridors as Continuous Linkages (H4.1 H4.2 H4.3 H4.4 H4.5 H4.6 H4.7)	**H5:** Educate Private and Public Land Owners about the use of Appropriate Plants to Use for Landscaping (H5.1 H5.2)
Recreation (R) Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses.	**R1:** Improve Access to Recreation for all Communities (R1.1 R1.2 R1.3 R1.4)	**R2:** Connect Open Space and Recreation Areas with a Network of Trails (R2.1 R2.2 R2.3 R2.4 R2.5 R2.6 R2.7 R2.8 R2.9)	**R3:** Clearly Identified Recreation Destinations Adjacent to the Corridor as Part of the Riparian System (R3.1 R3.2)	**R4:** Coordinate Recreational Programming to Reinforce Other Goals and Objectives (R4.1 R4.2 R4.3 R4.4)	**R5:** Plan Facilities to Meet Multiple Objectives (R5.1 R5.2 R5.3 R5.4 R5.5 R5.6)
Open Space (O) Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose activities.	**O1:** Create, Expand and Improve Public Open Space Throughout the Region (O1.1 O1.2 O1.3 O1.4)	**O2:** Improve Access to Open Space and Recreation for all Commnities (O2.1 O2.2 O2.3 O2.4 O2.5 O2.6)	**O3:** Promote Stewardship of the landscape (O3.1 O3.2 O3.3 O3.4 O3.5)	**O4:** Develop a Cross-Jurisdictional Safety and Maintenance Program (O4.1 O4.2 O4.3 O4.4 O4.5)	
Flood Protection (FP) Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration of recreation, open space and habitat systems.	**FP1:** Maintain and Improve Flood Protection (FP1.1 FP1.2 FP1.3 FP1.4 FP1.5 FP1.6)	**FP2:** Improve Flood Protection Using Natural Processes (FP2.1 FP2.2 FP2.3 FP2.4 FP2.5 FP2.6)	**FP3:** Improve the Visual Aesthetics of Flood Control Elements (FP3.1 FP3.2)		
Water Quality Supply (WQ) Maintain existing water and other rights while enhancing water quality, water supply, groundwater recharge and water conservation through integration with recreation, open space and habitat systems.	**WQ1:** Improve Quality of Surface Water and Groundwater (WQ1.1 WQ1.2 WQ1.3 WQ1.4 WQ1.5 WQ1.6)	**WQ2:** Optimize Water Resources to Reduce Dependance on Imported Water (WQ2.1 WQ2.2 WQ2.3 WQ2.4)	**WQ3:** Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters, and Extend Open Space (WQ3.1 WQ3.2)		
Economic Development (ED) Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the San Gabriel River.	**ED1:** Connect Communities to the Waterways by Extended Greenways (LU1.1 LU1.2 LU1.3)	**ED2:** Implement design and development standards consistent with Master Plan goals (LU2.1 LU2.2)			

The Plan Framework helps organize current, proposed and future project development efforts and work scopes.

San Gabriel River Enhancement Projects

- **8 Project Concepts**
- **134 Stakeholder Projects**
- **5 Concept Design Studies**
- **Future Project Development Opportunities**

develop a Master Plan for the San Gabriel River. During the two-year information exchange and consensus-building process, the Steering Committee added two goals to acknowledge the vital role of the river and its management for flood protection and water conservation (the abbreviations in parentheses correspond with the Plan framework diagram):

- *Preserve and enhance habitat systems through public education, connectivity, and balance with other uses (H)*
- *Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance, and multi-purpose uses (R)*
- *Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses (O)*
- *Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space, and habitat systems (FP)*
- *Maintain existing water and other rights while enhancing water quality, water supply, groundwater recharge, and water conservation through the integration with recreation, open space, and habitat systems (WQ)*

An additional goal was added to fully embrace the long term needs of cities along the river that were identified later in the planning process:

- *Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river (ED)*

3.4 PLAN ELEMENTS

The Plan has six elements that correspond to the goals listed above. The Steering Committee developed multiple objectives that will help meet each goal, and performance criteria that help assess whether proposed projects will achieve the objectives.

3.4.1 Habitat Element (H)

The San Gabriel River can function as a major habitat corridor, connecting fragmented open space areas in Puente Hills and the San Gabriel Mountains. There are many opportunities to replace some of the estuaries, salt marshes, wetlands and riparian habitats that have been lost. For example, the Whittier Narrows area is a critical stopover point for birds on the Pacific Flyway.

Figure 3-3. The river is a de facto habitat corridor adjacent to existing housing development.

The Plan offers opportunities to preserve and restore habitat and wildlife:

- Greater habitat connectivity, enhancements and restoration are possible especially by re-establishing the Puente Hills to San Gabriel Mountains wildlife corridor, and long-term aquatic habitat. In the short term, projects such as the Habitat Passage around Santa Fe Dam provide a key linkage in habitat connectivity along San Gabriel River.
- New wetlands and riparian corridor restoration projects are possible such as the Hellman Ranch Wetlands Freshwater Marsh and Los Cerritos Wetlands Restoration projects will result in over 300 acres of wetland restoration in Seal Beach and Long Beach.
- Native vegetation and landscaping throughout the corridor can lower water use, increase shade and habitat through projects such as the San Jose Creek Habitat and Trail Enhancement Project. This project will increase available habitat through native plants on slopes above the creek.

(See Table, Habitat Element (H), page 3-6)

3.4.2 Recreation Element (R)

The river is already a tremendous regional resource; the mountain area alone has more than 50 hiking trails and a 37-mile bicycle trail running from the edge of the mountains down to the Pacific Coast. Yet, the river can offer many additional recreational opportunities: Horseback riding, bicycling, hiking, picnicking, fishing, swimming, off-road driving, shooting, field activities like soccer and baseball, and even gold panning can be made more accessible to many more residents. The Plan expands and enhances recreation, critical to the almost 4 million residents of the San Gabriel Valley. It includes:

- New and improved access points to the San Gabriel River Bike Trail, as well as other trails to and near the river. In Azusa, the Robert's and Fish Creek Trails can be made more accessible to hikers. In South El Monte, the Thienes Gateway will provide access to trails and a staging area for equestrians. Local schools such as Bellflower High and Cerritos College can benefit from improved bike trail linkages to the San Gabriel River Bike Trail.
- New and improved pedestrian, bicycle and equestrian trails, and bike connections to the Rio Hondo and Los Angeles River bike trails. Rails to trails projects provide communities such as Whittier and Bellflower with improved access to the river. Signage will enhance the usability of existing trails at spreading grounds in Pico Rivera and in Whittier Narrows.

Figure 3-4. The cool river water draws children to the Angeles National Forest.

HABITAT ELEMENT (H)

GOAL: Preserve and enhance habitat systems through public education, connectivity and balance with other uses.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
H1 **Protect existing high quality habitat and ecologically significant areas**	H1.1 Supports Habitat conservation H1.2 Protects threatened and endangered species' habitats, significant ecological areas and significant natural areas H1.3 Enhances specific species that have experienced decline H1.4 Protects habitats from incompatible adjacent uses H1.5 Identifies indicator species and develops standards and monitoring systems H1.6 Balances wildlife and human uses/recreation H1.7 Controls litter and dumping
H2 **Restore/enhance aquatic and terrestrial riparian and upland habitat**	H2.1 Ensures sufficient flow conditions to support riparian river habitats, aquatic species and fisheries H2.2 Uses reclaimed water for irrigation H2.3 Incorporates habitat areas into development on private and public lands and requires mitigation efforts for impacts to existing habitats H2.4 Protects native vegetation and encourages native plant restoration H2.5 Restores and enhances habitats without compromising flood protection, groundwater recharge or public health H2.6 Reconciles habitat enhancement with water quality issues (i.e., some enhancement may cause increased coliform levels) H2.7 Increases acreage of coastal wetland habitats H2.8 Incorporates monitoring and maintenance procedures into restoration plans H2.9 Supports planting levees with native riparian vegetation wherever possible without compromising flood control capabilities and without encouraging vector breeding H2.10 Encourages development of new habitats without compromising essential public services including groundwater recharge, flood protection, or electrical power transmission by offering legal and operational safeguards such as memoranda of understanding that allow access for regular maintenance and emergency operations.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
H3 **Coordinate efforts to remove invasive species**	H3.1 Prohibits planting of listed invasive/exotic plant species in parks, recreation, open space or habitat areas H3.2 Encourages use of native plants in parklands or river corridor and adjacent areas H3.3 Removes invasive species and prevents their spread or migration upstream H3.4 Utilizes Best Management Practices for management of habitat areas H3.5 Mediates issues between stock and native fish
H4 **Maintain and enhance wildlife corridors as continuous linkages**	H4.1 Reduces habitat fragmentation by establishing wildlife corridors and nodes H4.2 Minimizes the effects of barriers and choke points that create impediments to wildlife movement H4.3 Utilizes ecologically responsible methods to maintain or reduce populations of wildlife meso-predators (raccoon, feral cats, opossum, skunk) and rodents that may transmit vector-borne diseases and discourages wildlife encroachment into surrounding urban areas H4.4 Maintains or increases the population of prey species (amphibians, reptiles, small mammals and birds) H4.5 Establishes habitat area design standards to meet the tolerances of the most sensitive species that might possibly use a corridor H4.6 Discourages urban development in floodplain and habitat areas H4.7 Enhances connections between remaining wildlife populations so genetic exchange between populations can resume (between Puente Hills, San Jose Hills, Sante Fe Dam floodplain, Whittier Narrows Recreational Area, Cleveland National Forest)
H5 **Educate private and public land owners about the use of appropriate plants to use for landscaping**	H5.1 Forms business partnerships to encourage residents to use native plants and materials that reflect the river/watershed identity while providing habitat value H5.2 Provides guidelines to coordinate habitat preservation efforts between agencies, jurisdictions, and private lands

RECREATION ELEMENT (R)

GOAL: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
R1 **Improve access to recreation for all communities.**	R1.1 Provides active and passive recreation opportunities R1.2 Serves to improve the aesthetic quality of the corridor, the viewshed, and adjacent communities R1.3 Establishes interpretive centers at key nodes along the river system to provide a link between environmental education, recreation, habitat and open space R1.4 Provides educational and interpretative elements that combine art and science for fun, expressive and meaningful exhibits about habitats and landscape processes
R2 **Connect open space and recreation areas with a network of trails.**	R2.1 Provides continuous bike trail, equestrian and public access along riverfronts R2.2 Establishes design standards for trails to safely accommodate multiple users of all ages and abilities R2.3 Includes shade, river access, rest areas, maps/signs, mile markers, landmarks, lighting, emergency call boxes and other amenities for trail users R2.4 Provides for public safety and security along waterways and trails R2.5 Allows trail users to experience a positive sense of the adjacent community's identity as they travel along the river corridor R2.6 Provides a comprehensive network that connects river trails to mountain trails, urban trails, local dams, and beaches R2.7 Connects recreational areas to transit access points R2.8 Provides trails that are designed for low maintenance R2.9 Provides access for routine maintenance and emergency use R2.10 Maximizes access to the river and its related facilities for people with disabilities

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
R3 **Clearly identify recreation destinations adjacent to the corridor as part of the riparian system**	R3.1 Provides site signage and design details to orient visitors throughout the river corridor R3.2 Provides interpretive opportunities with recreational facilities, including informative signage (explaining topics such as natural history, historic landscapes, fire, habitat, stewardship, pollution, hydrology, water supply, etc.)
R4 **Coordinate recreational programming to reinforce other goals and objectives**	R4.1 Provides diverse recreational opportunities (horseback riding, environmental education, fishing, nature walks, clean-up activities, etc.) and engages individuals, interest groups, school groups and families with the River R4.2 Provides programming, site design and signage to increase public awareness about riparian systems and engender stewardship R4.3 Encourages Parks and Recreation Departments to incorporate community gardens and pocket parks, demonstration and restoration projects R4.4 Educates the public about the benefits of catch and release fishing
R5 **Plan facilities to meet multiple objectives**	R5.1 Provides habitat where possible and minimizes impacts to adjacent sensitive areas; serves as a wildlife corridor where appropriate R5.2 Optimizes water flow and sediment removal activities for fish habitat to support fishing activities R5.3 Optimizes water flow and maintenance activities for wildlife habitat to support environmental education activities R5.4 Provides for groundwater infiltration where possible to meet water quality goals R5.5 Provides site design, planting, lighting and maintenance to support habitat goals/objectives R5.6 Provides a corridor-wide perspective to minimize use conflicts and mitigate negative impacts

- New parks and recreation areas, created through land acquisition and land use conversions in Santa Fe Springs, Downey, Bellflower and Azusa.
- Environmental education centers and interpretive sites in Azusa at the new Forest Gateway Interpretive Center, San Gabriel River Discovery Center at Whittier Narrows, Rio San Gabriel Interpretive Trail in Downey, and the Hellman Ranch Wetlands in Seal Beach.

(See Table, Recreation Element (R), page 3-7)

3.4.3 Open Space Element (O)

The San Gabriel River is a "living" river, with wide-open spaces, greenery, running water, and the sounds of birds and other wildlife. The Plan includes projects that enhance and reserve open space for future generations:

- Enhancements to existing open space areas within Southern California Edison and Los Angeles Department of Water and Power utility easements. Some improvements are already being made by the Cities of Baldwin Park and Lakewood.
- The open space surrounding reservoirs and spreading grounds can be enhanced selectively for use by the community. The San Gabriel and Rio Hondo Coastal Basin Spreading Grounds in Pico Rivera are currently accessible to the public. Proposed studies also reflect an interest in making the San Gabriel and Morris Dam Reservoirs available for recreational purposes. Care must be taken to maintain public safety and avoid liability as public access is improved at these facilities.
- New habitat areas within the San Gabriel River; it is itself a long, contiguous stretch of open space. Habitat will be created in new open space projects that take place in utility easements, land reclamation projects and numerous smaller projects.
- Gravel quarries, rails-to-trails railroad easements, and old commercial and industrial lands. These areas can be converted and reclaimed over time, yielding additional open space.

(See Table, Open Space Element (O), below)

OPEN SPACE ELEMENT (O)

GOAL: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
O1 **Create, expand and improve public open space throughout the region**	O1.1 Establishes priorities for land acquisition, coordinating targeted land acquisitions with land use planning O1.2 Recycles brownfields with agency collaboration O1.3 Coordinates land management policies and procedures among jurisdictions O1.4 Includes restored native habitats within open space
O2 **Improve access to open space and recreation for all communities**	O2.1 Provides for active and passive recreational uses O2.2 Incorporates passive/low impact recreational uses and stormwater re-capture O2.3 Evaluates access by population density, distance and time for each type of open space. O2.4 Meets site design standards for special user needs O2.5 Improves the aesthetic quality of the corridor, the viewshed, and adjacent communities O2.6 Includes adequate parking, access via public transportation, and facilities for buses
O3 **Promote stewardship of the landscape**	O3.1 Utilizes drought tolerant and native plant materials O3.2 Uses Best Management Practices that support habitat and water quality goals O3.3 Identifies historical sites and cultural landscapes O3.4 Supports community gardens and water-wise and native plant gardens O3.5 Uses conservation easements to provide incentives to expand open space
O4 **Develop a cross-jurisdictional safety and maintenance program**	O4.1 Establishes public safety measures to reduce crime in the river corridor O4.2 Encourages connections with groups that sponsor volunteer clean-up activities O4.3 Promotes fire safety and awareness O4.4 Reduces debris flows O4.5 Reduces habitat and recreational conflicts O4.6 Reduce vector breeding potential and encourages public education of vector-borne diseases and precautions

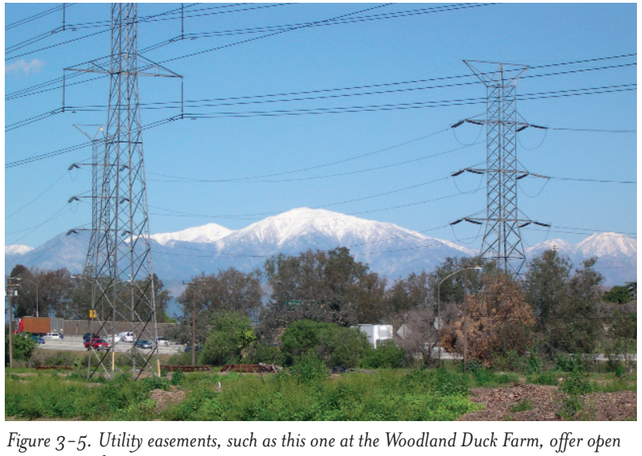

Figure 3-5. Utility easements, such as this one at the Woodland Duck Farm, offer open space area enhancement opportunities.

3.4.4 Flood Protection Element (FP)

The Plan maintains and enhances all existing flood protection elements in two ways. First, all projects, even those that primarily achieve other Plan goals, must maintain existing flood protection at all times. Second, projects should improve flood protection whenever feasible.

Within Reach 4, the river has 5,000 to 30,000 cfs in excess capacity for a 100-year flood event. The vegetation in the reach that is regularly mowed down could be allowed to grow and provide significant habitat. Two short stretches in Pico Rivera and Long Beach are under-capacity for a 100-year storm. These areas present opportunities to develop flood protection measures using natural processes in adjacent open spaces, or further upstream. Feasibility studies may lead to identification of opportunities for pushing out levees for floodplain restoration and increased capacity, thus improving flood protection through natural processes.

(See Table, Flood Protection Element (FP), below)

Figure 3-6. The low-flow channel moves water during the dry season.

FLOOD PROTECTION ELEMENT (FP)

GOAL: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration of recreation, open space and habitat systems.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
FP1 **Maintain and improve flood protection**	FP1.1 Maintains existing flood protection at all times FP1.2 Reduces volume and velocity of stormwater runoff where feasible FP1.3 Maintains current or lower Water Surface Elevation (WSE) design standards FP1.4 Maintains or reduces floodwater velocity FP1.5 Develops networks of stormwater detention areas FP1.6 Ensures liability is not increased
FP2 **Improve flood protection using natural processes**	FP2.1 Utilizes non-structural flood control where feasible FP2.2 Identifies opportunities for use of naturalized low-flow streambeds FP2.3 Restores local streams FP2.4 Coordinates maintenance of the flood protection system with habitat needs FP2.5 Recycles sediments from sluicing and maintenance operations FP2.6 Reduces the amount of precipitation that is converted to urban runoff (decreases the acreage of impermeable surfaces)
FP3 **Improve the visual aesthetics of flood control elements**	FP3.1 Fosters multi-purpose flood control infrastructure to accommodate recreation, trails and habitat FP3.2 Establishes visual design standards for flood control devices

Figure 3-7. The Rio Hondo Spreading Grounds is one of the San Gabriel River's most productive recharge facilities.

3.4.5 Water Supply and Water Quality Element (WQ)

Residents of the San Gabriel Valley receive water supplies from local rainfall, reclaimed sources, and imported sources (from Northern and Eastern California and from Colorado). Every drop of water flowing in the San Gabriel River is appropriated to a water rights holder. Surface water rights are owned by two entities: the San Gabriel River Water Committee and the San Gabriel Valley Protective Association. The water is then distributed for direct use, or in the case of the Protective Association, it is used to recharge the underground aquifer on behalf of water producers in the San Gabriel River system. The San Gabriel River Watermaster manages groundwater resources in the Main San Gabriel Basin, including administering all adjudicated water rights. The Central Basin Watermaster and West Coast Basin Watermaster have the same roles for those groundwater basins located to the south. Water rights also establish the relationship between surface and groundwater flow from the upper portion of the river above Whittier Narrows to the lower portion of the river, ensuring that the Central and West Coast Basins receive their entitled share of waters within the supply system of the San Gabriel River Watershed.

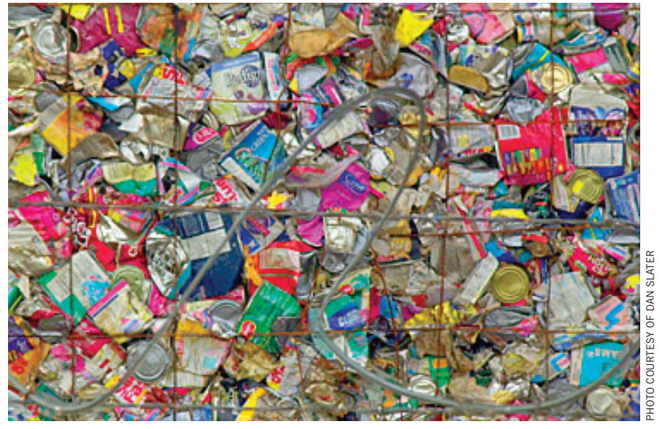

PHOTO COURTESY OF DAN SLATER

Figure 3-8. Trash is a serious problem in the river.

WATER SUPPLY AND WATER QUALITY ELEMENT (WQ)

GOAL: Maintain existing water and other rights while enhancing water quality, water supply, groundwater recharge and water conservation through integration with recreation, open space and habitat systems.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
WQ1 **Improve quality of surface water and groundwater**	WQ1.1 Reduces dry weather urban runoff discharge into waterways WQ1.2 Expands and enhances groundwater infiltration and recharge WQ1.3 Uses on-site opportunities to reduce impermeable surfaces and increase infiltration WQ1.4 Assists cities in meeting water quality requirements for Total Maximum Daily Load (TMDLs) and National Pollution Discharge Elimination System (NPDES) WQ1.5 Employs phyto-remediation to treat water
WQ2 **Optimize water resources to reduce dependence on imported water**	WQ2.1 Expands groundwater recharge facilities to increase water supplies WQ2.2 Extends the distribution and range of uses of reclaimed water WQ2.3 Encourages onsite collection of stormwater for irrigation and percolation, where consistent with water rights WQ2.4 Maintains conservation of local water
WQ3 **Establish riverfront greenways to cleanse water, hold floodwaters, and extend open space**	WQ3.1 Utilizes open spaces and landscaped areas to filter and cleanse runoff. WQ3.2 Prevents reduction of water conservation facilities

Master Plan projects must be designed to protect and enhance the existing water supply and water rights. Projects at the local spreading grounds in Azusa, Irwindale and Pico Rivera maintain existing water rights and groundwater recharge. Several water supply opportunities are also included, such as additional recharge opportunities.

Meeting water quality objectives is integrated into the Plan. Implementing Total Maximum Daily Loads (TMDLs, a water quality measurement) is a high priority for municipal stakeholders, and the Master Plan proposes projects to directly address this issue, including treatment wetlands in Irwindale, at the Duck Farm (see Section 3.8.2) and in Long Beach. Other measures include sediment management, a trash boom on Coyote Creek and urban runoff diversion in Seal Beach. The Plan describes Beneficial Uses, as well as 303(d) listed constituents or pollutants to the river and its major tributaries. The Plan also encourages projects that address water quality treatment solutions.

(See Table, Water Supply and Water Quality Element (WQ), page 3-10)

3.4.6 Economic Development

Reconnecting communities to the San Gabriel River by making it a more accessible, visually appealing, and environmentally friendly place can be a principal element in the economic development plans of cities located along the river corridor. The Plan supports and complements economic use of the river that meets environmental goals. Reclaiming old industrial lands, gravel quarries and vacant lots can provide land for mixed-use projects that combine housing, business and industry, commercial developments, parks, habitat areas, and urban river frontage. Although gravel quarries are still active, closure plans such as the one for Hanson Quarry include open space and parkland, as well as industrial and commercial developments. The result will be more opportunities for "riverfront" communities to embrace, rather than fence off the river. Revitalizing the river as a living "greenway" will increase its value for recreation, habitat and people and enhance the value of adjacent properties.

(See Table, Economic Development Element (ED), below)

Figure 3-9. New businesses along the river can capitalize on proximity to the river through the application of quality design and development standards.

ECONOMIC DEVELOPMENT ELEMENT (ED)

GOAL: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the San Gabriel River.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA	OBJECTIVES	PROJECT PERFORMANCE CRITERIA
ED1 **Connect communities to the waterways by extended greenways**	ED1.1 Creates new access points ED1.2 Develops trails to and along the waterways ED1.3 Promotes development of public spaces	ED2 **Implement design and development standards consistent with Master Plan goals.**	ED2.1 Provides incentives to participating adjacent landowners ED2.2 Educates participating landowners about potential liability and protective measures

3.5 RIVER ENHANCEMENT CONCEPTS

The eight river enhancement concepts, defined by type of physical improvement, are designed to inspire cities, agencies and other stakeholders to create their own projects. Projects based on these concepts can be designed to serve multiple plan elements. Replicating these projects all along the river will create dramatic improvements and an enhanced identity for the river as a whole.

3.5.1 Trail Enhancements

Trail enhancements will create a cohesive, identifiable and comfortable regional trail network, using the river as a framework. As individual projects are completed, they will link to the river and create an enhanced "sense of place" for community residents. Elements in this trail design framework include:

- Signage
- Fencing
- Landscaping (Native plants and trees, stones and boulders as appropriate)
- Trail Surfacing
- Lighting
- Site Amenities
- Gateways

(See Figure 3-10.)

Figure 3-10. Trail enhancements help create an identity for the river.

3.5.2 Educational Centers

Educational centers will inform and educate visitors about the river and its environs—ideal for school and youth groups, as well as casual visitors. A network of centers along the river creates a multifaceted chain of living museum experiences. Each will have a unique program and purpose, depending on location and the local environment. Ecologically designed, these centers touch the river as lightly as possible, incorporating environmentally friendly building materials and the native landscape palette. Centers accommodate both large and small groups, indoors and outdoors. Interpretive elements throughout the landscape also enhance the visitor experience. (See Figure 3-11.)

3.5.3 Bridges, Gateways and Connections

Cohesive design of elements such as bridges, trails and other access points, help create "Gateways" that reconnect the river with residential areas and commercial districts. Gateways provide easily recognized points of access, enhance the river's visibility and identity, and symbolically link it to the communities it flows through. (See Figure 3-12.)

3.5.4 Parks and Open Space

Open space in many forms—parks, playgrounds, greenways, and natural areas—provide residents of the densely developed communities along the San Gabriel River with easily accessible opportunities to enjoy the pleasures of a more natural, varied landscape. New and improved recreational and park facilities along the river carefully balance active recreational uses such as sports fields and playgrounds, with more passive uses that are habitat-friendly. Additional recreation is critically needed for many of the communities along the river corridor. Recreational programming ensures that these uses remain compatible with other functions of the river and builds a larger constituency of groups and individuals who are aware of the importance of the river in their community. (See Figure 3-13.)

Figure 3-11. Educational Centers will draw school groups and visitors.

Figure 3-12. Gateways and bridges signal a river entrance.