

Section 4 Environmental Setting, Impacts, and Mitigation Measures

The proposed project, the San Gabriel River Corridor Master Plan (Master Plan), is an overall conceptual plan for the San Gabriel River corridor that focuses primarily on recreation, open space, and habitat enhancement opportunities and also addresses flood protection, water conservation, water quality, and water rights (See **Section 3 – Project Description**).

The following topics are discussed in this section:

- | | | | |
|-----|---------------------------------|------|-------------------------------|
| 4.1 | Air Quality | 4.7 | Land Use |
| 4.2 | Biological Resources | 4.8 | Noise |
| 4.3 | Cultural Resources | 4.9 | Public Services and Utilities |
| 4.4 | Geology and Soils | 4.10 | Recreation |
| 4.5 | Hazards and Hazardous Materials | 4.11 | Traffic and Transportation |
| 4.6 | Hydrology and Water Quality | | |

Unless otherwise noted, the thresholds of significance have been developed from the State CEQA Guidelines, Appendix G.

4.1 AIR QUALITY

4.1.1 Existing Setting

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The project is located within the South Coast Air Basin (SCAB), which is bounded by the Pacific Ocean on the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. This existing setting is geographically broader than most of the existing settings in the other sections of this Program EIR to take into account the physical environmental conditions regarding air quality.

4.1.1.1 Meteorology and Climate

The regional climate of the SCAB is classified as Mediterranean, characterized by warm summers and mild winters. The warmest month of the year is July, and the coldest is January. In downtown Los Angeles, the average daily minimum temperature for January is 48 degrees Fahrenheit (° F), and the average daily maximum temperature for July is 84° F. At Mount Wilson in the San Gabriel Mountains (5,850 feet above mean sea level), the average daily minimum temperature for January is 35° F, and the average daily maximum temperature for July is 80° F (LADPW, 2003a).

More than 90 percent of the rainfall in the SCAB occurs from November through April. The majority of precipitation is in the form of rain. Snowfall in the coastal plain and San Gabriel Valley is rare. Snowfall on the southern slopes of the San Gabriel Mountains occurs in winter but melts rapidly. Monthly and yearly precipitation are extremely variable. Average annual rainfall along the San Gabriel River corridor varies from approximately 28 inches in the San Gabriel Mountains, to 18 inches in the San Gabriel Valley, to approximately 14 inches on the coastal plain (LADPW, 2002).

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is moist on most days because of the presence of a marine layer. Humidity restricts visibility in the SCAB, in part since the conversion of sulfur dioxide to sulfates is heightened in air with high relative humidity, such as the marine layer. The annual average relative humidity is 71 percent along the coast, and 59 percent inland (SCAQMD, 2002a).

Due to the generally clear weather, about three-quarters of available sunshine is received in the SCAB, and the remaining one-quarter is absorbed by clouds (SCAQMD, 2002a). The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions that generate smog.

The direction and speed of the wind determine the horizontal dispersion and transport of air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with traveling storms moving through the region from the northwest. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is typified by a daytime onshore sea breeze and a nighttime

offshore drainage wind. Winds in the project area blow primarily from southeast to northwest by day and from northwest to the southeast by night, in response to this regional diurnal pattern.

The Los Angeles region is characterized by persistent temperature inversion in the atmospheric layers near the earth's surface, which limit the vertical mixing of air pollution. Normally, the temperature of the atmosphere decreases with altitude. However, when the temperature of the atmosphere increases with altitude, the phenomenon is termed an inversion. In the SCAB, there are two distinct temperature inversion structures. During the summer, warm, high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. A second inversion-type forms on clear, winter nights when cold air off of the mountains sinks to the valley floor while the air aloft over the valley remains warm. This process forms radiation inversions, which trap pollutants such as automobile exhaust near their source, as the pool of cold air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline (SCAQMD, 2002a).

4.1.1.2 Regulatory Setting

Air quality is described by comparing contaminant levels in ambient air samples to national and state standards. These standards are set by the U.S. EPA and the California Air Resources Board (CARB) at levels to protect public health and welfare with an adequate margin of safety. National Ambient Air Quality Standards (NAAQS) were first authorized by the federal Clean Air Act of 1970. California Ambient Air Quality Standards (CAAQS) were authorized by the state legislature in 1967. These standards are shown in **Table 4.1-1**.

NAAQS (federal) and CAAQS (state) have been established for the following pollutants which are termed “criteria air pollutants”: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter 10 microns in diameter or smaller (PM₁₀), particulate matter 2.5 microns in diameter or smaller (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). The CAAQS are more stringent than the federal standards for most criteria pollutants. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride. Hydrogen sulfide and vinyl chloride are not currently monitored in the SCAB because these contaminants are not seen as significant air quality problems.

**Table 4.1-1
National and California Ambient Air Quality Standards**

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O ₃)	1 Hour	0.12 ppm	0.09 ppm
	8 Hour	0.08 ppm	—
Carbon Monoxide (CO)	8 Hour	9 ppm	9.0 ppm
	1 Hour	35 ppm	20 ppm
Nitrogen Dioxide (NO ₂)	AAM	0.053 ppm	—
	1 Hour	—	0.25 ppm
Sulfur Dioxide (SO ₂)	AAM	0.03 ppm	—
	24 Hour	0.14 ppm	0.04 ppm
	1 Hour	—	0.25 ppm
Particulate Matter less than 10 microns in diameter (PM ₁₀)	24 Hour	150 µg/m ³	50 µg/m ³
	AAM	50 µg/m ³	20 µg/m ³
Particulate Matter less than 2.5 microns in diameter (PM _{2.5})	24 Hour	65 µg/m ³	—
	AAM	15 µg/m ³	12 µg/m ³
Sulfates	24 Hour	—	25 µg/m ³
Lead (Pb)	30 Day	—	1.5 µg/m ³
	Quarter	1.5 µg/m ³	—

Source: Federal Standards: EPA, 2003a. State Standards: CARB, 2003a.

AAM – annual arithmetic mean

The SCAB, including the project area, is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). It is the responsibility of the SCAQMD to ensure that state and federal ambient air quality standards are achieved and maintained within its jurisdiction, which includes SCAB, and the Riverside County portions of the Salton Sea and Mojave Desert Air Basins.

The SCAQMD is required by law to produce plans that show how air quality will be improved. The 1997 revisions to the Air Quality Management Plan (AQMP) prepared by the SCAQMD are designed to satisfy the planning requirements of both the federal and California Clean Air Acts. The AQMP outlines policies and measures to achieve federal and state standards for healthful air quality for all areas under SCAQMD's jurisdiction.

Regarding dust emissions during construction, SCAQMD Rule 403(d)(1) prohibits construction activities from generating visible dust in the atmosphere beyond the property line of the emission source. Rule 403(d)(2) requires construction activities conducted in the SCAB to use the applicable best available control measures (BACM) listed in Table 1 of Rule 403 to minimize fugitive dust emissions from each fugitive dust source type. In addition, large construction operations must comply with Rule 403(e). Large operations are defined as activities involving

greater than 50 acres of disturbed area or daily earth-moving or throughput volume of 5,000 cubic yards three times during the most recent 365-day period. Rule 403(e) requires large operations to notify SCAQMD and implement applicable dust suppression measures specified in Table 2 of Rule 403 at all times. When the applicable performance standards cannot be met through use of Table 2 measures, the applicable contingency control measures specified in Table 3 of Rule 403 must be implemented. Rule 403(e) also includes requirements to identify a dust control supervisor and maintain daily records to document the specific dust control actions taken.

4.1.1.3 Existing Air Quality

Due to its meteorological and climate characteristics, including light winds, abundant sunlight, and low vertical mixing, the Los Angeles region is conducive to the accumulation of air pollutants. SCAB is a non-attainment area for ozone (extreme), PM10 (serious), and CO (serious) (EPA, 2003b).

Ozone, a photochemical oxidant, is formed when reactive organic compounds and nitrogen oxides, both byproducts of the internal combustion engine, react in the presence of ultraviolet sunlight. High levels of ozone can cause respiratory problems.

PM10 consists of extremely small particles (10 microns or less in diameter) that can lodge in the lungs, contributing to respiratory problems. PM10 arises from sources such as road dust, diesel soot, combustion products, abrasion of tires and brakes, construction operations, and wind storms. It is also formed in the atmosphere from NO₂ and SO₂ reactions with ammonia.

PM2.5 refers to particulate matter that is 2.5 micrometers or smaller in size. Its sources include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel powered vehicles. PM2.5 is also formed by chemical reactions in the atmosphere from NO₂ and SO₂, and volatile organic compounds. The health effects of PM2.5 include premature death, respiratory disease, chronic bronchitis, and decreased lung function particularly in children and individuals with asthma. PM2.5 can also cause reduced visibility. The new EPA standards for PM2.5 were established in 1997, but were challenged in court until late 2001. EPA has not designated any attainment or non-attainment areas for PM2.5 at this time.

CO is a colorless and odorless gas which can, in high concentrations, cause physiological and pathological changes sometimes resulting in death by interfering with oxygen transport by the red blood cells. Primary sources of CO are the automobile and other types of motor vehicles.

SCAQMD monitors levels of various criteria pollutants at 33 monitoring stations. Of the 33 monitoring stations, the following stations are relevant to the air quality of the project area:

- South Coastal Los Angeles County – Long Beach (Station Number 72)
- South San Gabriel Valley – Pico Rivera (Station Number 85)
- East San Gabriel Valley 1 – Azusa (Station Number 60)

Table 4.1-2 summarizes air quality monitoring data obtained from the three relevant monitoring stations. Data are the most recent available - for the years 1998 through 2001 for ozone, CO, SO₂, NO₂, PM10, PM2.5, sulfate, and lead.

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**Table 4.1-2
Background Air Quality Data for the San Gabriel River Region (1998 - 2001)**

Pollutant	Number of Days Federal/State Standards Were Exceeded (Federal/State)											
	South Coastal Los Angeles County Long Beach (72)				South San Gabriel Valley Pico Rivera (85)				East San Gabriel Valley 1 Azusa (60)			
	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001
Carbon Monoxide (CO)	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Ozone (O ₃) ¹	0/2	1/3	0/3	0/0	10/31	0/6	2/11	1/7	19/43	2/24	11/32	9/36
Nitrogen Dioxide (NO ₂)	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Sulfur Dioxide (SO ₂)	0/0	0/0	0/0	0/0	--	--	--	--	--	--	--	--
Particulate Matter less than 10 microns in diameter (PM10) ²	0/6 (10.2)	0/13 (22)	0/12 (21)	0/10 (17)	--	--	--	--	0/16 (28.1)	0/35 (58)	0/24 (42)	0/22 (38)
Particulate Matter less than 2.5 microns in diameter (PM2.5) ³	--	1 (1)/*	4 (1.3)/*	1 (0.3)/*	--	2 (2)/*	4 (3.4)/*	3 (3.2)/*	--	3 (2)/*	5 (1.5)/*	4 (1.3)/*
Sulfate	**/0	**/0	**/1	**/0	**/0	**/1 (2)	**/0	**/0	**/0	**/0	**/0	**/0
Lead (Pb) ⁴	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	--	--	--	--

Source: 2000 and 2001 data from SCAQMD, 2000 and 2001, respectively. 1998 and 1999 data from SCAQMD, 2002b.

-- Pollutant not monitored.

* State standard for PM 2.5 did not exist during 1998-2001. The new state standard for PM 2.5 is expected to take effect in February 2003.

** No federal standard for sulfates exists.

1. Federal 1-hour standard considered.

2. PM10 samples were collected every 6 days; percentage of days exceeding standard shown in parenthesis.

3. PM2.5 samples collected every 3 days; percentage of days exceeding standard shown in parenthesis.

4. Lead federal standard is monthly average; state standard is quarterly average.

These data indicate that the region surrounding the project area, as represented by monitoring stations in Long Beach, Pico Rivera, and Azusa, is in compliance with both federal and state air quality standards for CO, NO₂, SO₂, and lead. The South Coastal Los Angeles County area exceeded state and federal standards for ozone on a limited basis, exceeded the state standard for PM₁₀ several days each year, exceeded the federal standard for PM_{2.5} on a limited basis each year, and exceeded the state sulfates standard once in four years. The South San Gabriel Valley area exceeded the federal and state ozone standard multiple times each year, exceeded the federal PM_{2.5} standard a few times each year, and exceeded the state sulfates standard once in four years. The East San Gabriel Valley 1 area exceeded the federal and state ozone standard numerous times each year, exceeded the state PM₁₀ standard numerous times each year, and exceeded the federal PM_{2.5} standard multiple times each year. Ozone and particulate matter exceedances occur more frequently in the inland areas than in the coastal areas.

4.1.2 Significance Criteria

The SCAQMD has developed CEQA significance criteria for project construction and operation. These criteria are published in the CEQA Air Quality Handbook (SCAQMD, 1993). The SCAQMD is preparing a new CEQA guidance document, the Air Quality Analysis Guidance Handbook, but it is not yet available for use. Therefore, the significance criteria for the proposed project are based on the existing CEQA Air Quality Handbook.

Table 4.1-3 and **Table 4.1-4** show the thresholds of significance for pollutant emissions for construction and operation, respectively, within SCAB as determined by SCAQMD (1993). If above these threshold levels, project emissions are deemed significant by SCAQMD.

Table 4.1-3
Construction Emission Thresholds for SCAB

Pollutant	Threshold Level of Emissions	
	Quarterly Basis (tons per quarter)	Daily Basis (pounds per day)
Nitrogen oxides (NO _x)	2.50	100
Reactive organic compounds (ROC)	2.50	75
PM ₁₀	6.75	150
Sulfur oxides (SO _x)	6.75	150
CO	24.75	550

Source: SCAQMD, 1993.

Table 4.1-4
Operation Emission Thresholds for SCAB

Pollutant	Threshold Level of Emissions (pounds per day)
Nitrogen oxides (NO _x)	55
Reactive organic compounds (ROC)	55
PM10	150
Sulfur oxides (SO _x)	150
CO	550

Source: SCAQMD, 1993.

The SCAQMD has also defined additional indicators of secondary air quality impacts (per Chapter 6 of 1993 SCAQMD CEQA Air Quality Handbook). These focus on projects that could:

- Interfere with attainment of the federal or state AAQS by either violating or contributing to an existing or projected air quality violation
- Result in population increases in excess of AQMP projections and in other than planned locations for the project's build-out-year
- Generate vehicle trips that cause a CO hotspot
- Create or be subjected to an objectionable odor that could impact sensitive receptors
- Accidentally release air toxics or acutely hazardous materials posing a threat to public health and safety
- Emit an air toxic contaminant regulated by SCAQMD rules or that is on a federal or state air toxics list
- Involve the burning of hazardous, medical, or municipal waste as waste-to-energy facilities
- Be occupied by sensitive receptors within a quarter mile of an existing facility that emits air toxics identified in SCAQMD Rule 1401 or near CO hot spots
- Emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million

4.1.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan

impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. As described below in **Table 4.1-5**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts related to air quality. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.1.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

SCAQMD has established significance thresholds for both construction and operational air emissions (see **Section 4.1.2**). Variables that affect air emissions include: site acreage, type of facilities proposed and associated construction equipment needs, construction phasing, operation and maintenance needs of the proposed facilities, and the number of visitors (e.g., to proposed parks). These variables cannot be specified at this time for each of the projects that may be approved pursuant to the Master Plan. However, it is anticipated that future projects developed in a manner consistent with the Master Plan would involve the construction of relatively minor facilities similar to those proposed for the Concept Design Studies (e.g., stormwater retention basins or constructed wetlands, trails, signage, etc.). Therefore, it is anticipated that implementation of most future projects developed in a manner consistent with the Master Plan would result in less-than-significant construction and operational air emissions, similar to the Concept Design Studies (see **Table 4.1-5**). As described in **Section 4.1.4**, each of the Concept Design Studies has a less than significant impact on air quality. Therefore, the overall impacts on air quality from adopting the Master Plan are considered less than significant. If significant air quality impacts are identified during second-tier CEQA analysis for each project undertaken pursuant to the Master Plan, site-specific analysis will be conducted, and mitigation measures will be defined and implemented by the specific lead agencies for each future project in the Master Plan study area. (See **Section 4.1.6** for mitigation measures that have been defined for the Concept Design Studies.)

Table 4.1-5
Impacts on Air Quality from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Air Quality	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	Beneficial: Preservation of existing habitat areas would result in protection of currently undisturbed open space areas, which would have a beneficial impact on air quality by preventing pollutant emissions that would result from construction or operation of new residential, commercial, or industrial development.	Potentially significant for construction-related air emissions (especially dust); less than significant with mitigation
	Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on air resources (e.g., establishment of habitat area design standards and identification of indicator species).	
	Potentially Adverse: Habitat enhancement that involves active restoration in undeveloped areas (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) would result in air emissions, potentially from use of heavy equipment for earthwork. The Master Plan mitigation measures described in Section 4.1.5	Less than significant for operations-related air emissions

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Master Plan Elements	Impacts on Air Quality	Impact Summary
	<p>outline an approach to evaluation of construction air emissions and implementation of measures to reduce fugitive dust (via wetting exposed surfaces, cleaning construction vehicle tires, and street sweeping) and tail pipe emissions (via selection of low emission equipment, prohibition of excessive idling, and maintenance of equipment in proper tune).</p> <p>Operational activities associated with habitat enhancement (e.g., monitoring and maintenance activities or exotic species removal) could also result in less than significant tailpipe emissions from infrequent use of worker vehicles and equipment. Regarding dust emissions during maintenance activities, the Master Plan mitigation measure described in Section 4.1.5 requires implementation of dust control for operations and maintenance activities.</p>	
<p>Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses</p>	<p>Beneficial: Preservation of existing undisturbed open space areas for passive recreational uses would result in protection of currently undisturbed open space areas, which would have a beneficial impact on air quality by preventing pollutant emissions that would result from construction or operation of new residential, commercial, or industrial development.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on air quality (e.g., educating the public about catch and release fishing).</p> <p>Potentially Adverse: Construction of recreation related facilities (e.g., interpretive centers, trails and trail amenities, signs, and kiosks) would result in air pollutant emissions from use of heavy equipment for earthwork and worker vehicle trips for installation of facilities. The Master Plan mitigation measures described in Section 4.1.5 outline an approach to evaluation of construction air emissions and implementation of measures to reduce fugitive dust (via wetting exposed surfaces, cleaning construction vehicle tires, and street sweeping) and tail pipe emissions (via selection of low emission equipment, prohibition of excessive idling, and maintenance of equipment in proper tune).</p> <p>Operation of recreational facilities would result in less than significant tailpipe air pollutant emissions from vehicle trips (new park visitors and workers for operation and maintenance of facilities). With respect to air pollutant emissions associated with energy use for lighting in park buildings, the Master Plan mitigation measure described in Section 4.1.5 requires selection of energy efficient lighting features to reduce off-site power plant emissions. Regarding dust emissions during maintenance activities, the Master Plan mitigation measure described in Section 4.1.5 requires implementation of dust control for operations and maintenance activities.</p>	<p>Potentially significant for construction-related air emissions (especially dust); less than significant with mitigation</p> <p>Less than significant for operations-related air emissions</p>

Master Plan Elements	Impacts on Air Quality	Impact Summary
<p>Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.</p>	<p>Beneficial: Preservation of existing open space areas (e.g., through land acquisition or conservation easements) could result in protection of currently undisturbed open space areas, which would have a beneficial impact on air quality by preventing pollutant emissions that would result from construction or operation of new residential, commercial, or industrial development. Promoting fire safety and awareness as part of the cross-jurisdictional safety and maintenance program could prevent fires and therefore result in beneficial air quality impacts.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on air quality (e.g., public safety measures to prevent crime, identification of historical sites and cultural landscapes).</p> <p>Potentially Adverse: Use of existing open space areas for active recreational facilities and activities would result in air emissions from construction of facilities (e.g., parking and sports fields). The Master Plan mitigation measures described in Section 4.1.5 outline an approach to evaluation of construction air emissions and implementation of measures to reduce fugitive dust (via wetting exposed surfaces, cleaning construction vehicle tires, and street sweeping) and tail pipe emissions (via selection of low emission equipment, prohibition of excessive idling, and maintenance of equipment in proper tune).</p> <p>Operation of recreational facilities would result in less than significant tailpipe air pollutant emissions from vehicle trips (new park visitors and workers for operation and maintenance of facilities).</p>	<p>Potentially significant for construction-related air emissions (especially dust); less than significant with mitigation</p> <p>Less than significant for operations-related air emissions</p>
<p>Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.</p>	<p>Beneficial: Improving flood protection using natural processes (e.g., use of non-structural flood control) could have beneficial air quality impacts by minimizing the need for development of new structural flood control facilities (which would have greater air emissions during construction).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on air quality (e.g., ensures liability is not increased, coordination of maintenance of flood protection system with habitat needs).</p> <p>Potentially Adverse: Construction of new flood control facilities (e.g., stormwater detention areas) would result in air emissions from use of heavy equipment and worker vehicles. The Master Plan mitigation measures described in Section 4.1.5 outline an approach to evaluation of construction air emissions and implementation of measures to reduce fugitive dust (via wetting exposed surfaces, cleaning construction vehicle tires, and street sweeping) and tail pipe emissions (via selection of low emission equipment,</p>	<p>Potentially significant for construction-related air emissions (especially dust); less than significant with mitigation</p> <p>Less than significant for operations-related air emissions</p>

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Master Plan Elements	Impacts on Air Quality	Impact Summary
	<p>prohibition of excessive idling, and maintenance of equipment in proper tune).</p> <p>Operation of flood control facilities would result in less than significant air emissions (vehicle trips and equipment use by operations and maintenance crews and energy consumption for operation of pumps, etc.).</p>	
<p>Water Quality Element: 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.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on air quality (e.g., maintains conservation of local water).</p> <p>Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) would result in air pollutant emissions from use of heavy equipment and worker vehicles. The Master Plan mitigation measures described in Section 4.1.5 outline an approach to evaluation of construction air emissions and implementation of measures to reduce fugitive dust (via wetting exposed surfaces, cleaning construction vehicle tires, and street sweeping) and tail pipe emissions (via selection of low emission equipment, prohibition of excessive idling, and maintenance of equipment in proper tune).</p> <p>Operation of such facilities would result in less than significant air emissions (vehicle trips and equipment use by operations and maintenance crews and energy consumption for operation of pumps, etc.).</p>	<p>Potentially significant for construction-related air emissions (especially dust); less than significant with mitigation</p> <p>Less than significant for operations-related air emissions</p>
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on air quality (e.g., educates participating landowners about potential liability and protective measures).</p> <p>Potentially Adverse: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. Minor modifications of existing or new business development in the river corridor needed for consistency with Master Plan elements (e.g., trail connections and aesthetic features and compliance with design guidelines) are anticipated to have minimal or no impacts on air quality.</p>	<p>Less than significant</p>

4.1.4 Impacts of Implementing the Concept Design Studies

4.1.4.1 Construction Impacts

Implementation of the Master Plan components would require construction at various sites within the corridor. Development of specific components of the Master Plan would result in air

pollutant emissions from construction equipment, earth moving activities, construction workers' commutes and materials deliveries.

Air pollutant emissions from construction activities have been estimated for each Concept Design Study by MWH, EIR consultant to LADPW. Based on the descriptions and sizes of the proposed facilities, MWH staff experienced with construction management have estimated the parameters required for the calculation, including the amount of earthwork, types and number of construction equipment, duration of each phase of construction, and number of construction personnel required (see **Appendix C**). Since detailed construction plans have not been developed, the estimates were made assuming a "worst case" scenario in terms of air emissions (e.g., compressed construction schedule and maximum acreage of potential site disturbance). Sources of emission factors and equations used in the calculation are the CEQA Handbook (SCAQMD, 1993) for construction equipment tailpipe emissions and PM10 emissions from earth moving activities and EMFAC 2002 Emission Factors for on-road vehicles (SCAQMD, 2004a). (EMFAC, short for emission factor, is a computer model used to estimate pollutant emission rates of on-road vehicles.)

The results of the emissions calculations for the proposed Concept Design Studies are summarized in **Table 4.1-6**. For those project components with construction periods lasting longer than one quarter (i.e., three months or 65 work days), the results for the worst-case quarter are shown. For PM10, the emissions from the following construction-related activities have been added: earth moving (grading, excavation, and filling), construction workers' commutes, use of delivery and work trucks, and use of diesel-fueled construction equipment. For CO, ROC, NO_x, and SO_x, the emissions from the following construction activities were added: construction workers' commutes, use of delivery and work trucks, and construction equipment use. **Appendix C** contains the detailed data and assumptions used in preparing Table 4.1-6. **Tables C-1** through **C-5** in Appendix C present the calculated emissions for each Concept Design Study. **Tables C-6** through **C-9** present the emission factors and detailed assumptions (e.g., types and number of construction equipment/vehicles and duration of activity) used with the calculated emissions for the four categories of construction activities (earth moving, construction workers' commutes, use of delivery and work trucks, and construction equipment, respectively).

Table 4.1-6
Estimated Air Pollutant Emissions from Construction of Concept Design Studies

Concept Design Study	Pollutants														
	CO			ROC			NOx			SOx			PM10		
	tons/quarter	avg lbs/day	peak day (lbs/day)	tons/quarter	avg lbs/day	peak day (lbs/day)	tons/quarter	avg lbs/day	peak day (lbs/day)	tons/quarter	avg lbs/day	peak day (lbs/day)	tons/quarter	avg lbs/day	peak day (lbs/day)
SCAQMD Construction Emissions Thresholds for SCAB (from Table 4.1-3)	24.75	550		2.5	75		2.5	100		6.75	150		6.75	150	
San Gabriel Canyon Spreading Grounds	0.18	18	21	0.1	5	7	0.3	27	37	0.02	2	3	0.22	22	23
Woodland Duck Farm	1.53	77	68	0.6	31	33	1.1	55	78	0.13	6	7	0.47	23	26
San Gabriel River Discovery Center*	0.83	25	26	0.3	8	10	2.3	72	94	0.04	1	3	0.32	10	10
Lario Creek	0.32	20	26	0.1	7	10	0.4	23	38	0.03	2	3	0.23	14	15
El Dorado Regional Park	0.43	19	26	0.1	6	10	0.5	23	38	0.04	2	3	0.19	9	10

avg lbs/day: Average pounds per day

tons/quarter: Tons per quarter (one quarter = three months = 65 work days)

* Does not include SOx emissions from construction of the Discovery Center building (see Appendix C).

As shown in **Table 4.1-6**, construction of the Concept Design Studies would result in less-than-significant air emissions on a site-by-site basis. The construction periods of the proposed Concept Design Studies are not likely to overlap due to the relatively short duration involved at each site, varying project financing mechanisms and their effect on the planning and implementation schedules, and different time horizons for obtaining various permits and approvals.

4.1.4.2 Operation Impacts

Visitors to Recreational Facilities

All five Concept Design Studies include operation of recreational facilities, such as parks, which would result in air emissions from vehicle trips generated by visitors. Traffic generated by visitors to the proposed recreational facilities was estimated based on trip rates from the Institute of Transportation Engineers *Trip Generation* manual (1997) for the County Park land use category. For a project site that currently is not operated as a recreational facility (i.e., San Gabriel Canyon Spreading Grounds and Woodland Duck Farm), the average rate from the manual was used (2.28 vehicle trips per acre). For a project site where an existing park is already in place (i.e., El Dorado Park, Lario Creek, and San Gabriel River Discovery Center), it is assumed that the additional activities associated with the Concept Design Studies would generate traffic at 25 percent of the average rate for the County Park category (0.57 vehicle trips per acre).

Based on the above assumptions, the estimated daily vehicle trips generated as a result of operation of the proposed recreational facilities are:

- San Gabriel Canyon Spreading Grounds – 100 trips

- Woodland Duck Farm – 130 trips
- Lario Creek and San Gabriel River Discovery Center – 190 trips
- El Dorado Regional Park – 300 trips

Air emissions from the estimated vehicle trips by visitors to the proposed recreational facilities were calculated using the EMFAC 2002 Emission Factors for passenger vehicles (SCAQMD, 2004a; see Table C-7 in Appendix C for values). It was assumed that the length of each vehicle trip is 14 miles (round trip) on average (based on Table A9-5-D; SCAQMD, 1993). The results of the calculations (**Table 4.1-6**) show that the vehicle trips generated by visitors to the proposed recreational facilities would result in less-than-significant air emissions, both on a site-by-site basis and cumulatively for all five Concept Design Studies.

Table 4.1-7
Estimated Air Pollutant Emissions from Recreational Visitors
to the Concept Design Studies

Concept Design Study	Pollutants (pounds per day)				
	CO	ROC	NO _x	SO _x	PM10
SCAQMD Operation Emissions Thresholds for SCAB (from Table 4.1-4)	550	55	55	150	150
San Gabriel Canyon Spreading Grounds	25	3	3	0.01	0.11
Woodland Duck Farm	33	4	4	0.02	0.14
San Gabriel River Discovery Center	48	5	5	0.03	0.21
Lario Creek					
El Dorado Regional Park	76	8	8	0.04	0.33
Total	183	20	20	0.10	0.79

Facility Operation and Maintenance

Maintenance requirements of proposed facilities include: sediment removal from stormwater management facilities; vegetation management at wetlands or other water features (for vector control); trail maintenance; maintenance of landscaped areas; painting or repairing fences, maintenance of equipment such as pumps; and inspections. Each of these maintenance activities would require several personnel several times a year at each site, requiring minor vehicle and employee travel. Sediment removal from retention basins may require minor earthwork. Several projects require operation of pumps, which are expected to be electric-powered. These activities would result in minor vehicle and equipment tailpipe emissions. Dust emissions related to earthwork may occur, but sediment removal from project facilities would likely occur under moist conditions. Air emissions associated with maintenance of facilities and equipment operation for the Concept Design Studies are expected to be minimal, and would be less than significant even when cumulatively considered with the emissions from visitor vehicle trips described above.

4.1.4.3 Other Air Quality Impact Considerations

Consistency with an Air Quality Management Plan

The applicable air quality plan for the Master Plan area is the AQMP developed by SCAQMD. A project is deemed inconsistent with the applicable air quality plan if it would result in population and/or employment growth that exceeds growth estimated in the applicable air quality plan. The project does not include development of housing or employment centers, and would not induce population or significant employment growth. Construction and operation of the project will provide a limited number of both temporary and permanent jobs. Therefore, the project would not conflict with or obstruct the implementation of the applicable air quality plan.

Diesel Particulate Matter

In 1998, CARB identified diesel particulate matter, a component of diesel exhaust, as a toxic air contaminant. Diesel particulate matter typically consists of a carbon core with a coating of organic carbon compounds, or as sulfuric acid and ash, sulfuric acid aerosols, or sulfate particles associated with organic carbon (CARB, 2003b). Almost all of the diesel particle mass is in the range of 10 microns or less in diameter (i.e., PM₁₀), with approximately 94 percent being less than 2.5 microns in diameter (i.e., PM_{2.5}) (CARB, 2003b). Because of their small size, the particles are readily respirable and can effectively reach the lowest airways of the lung (CARB, 2003b). Exposure to diesel particulate matter has been found to result in an increased risk of cancer and non-cancer respiratory health effects (CARB, 2003b).

Significant impacts associated with exposure to diesel particulate emissions are not expected because construction is estimated to last on the order of months at each site. Additionally, future projects developed in a manner consistent with the Master Plan would be spread out geographically along the river corridor thereby reducing any potential additive effect from diesel emissions at multiple sites. Quantitative cancer risk analyses are based on exposure of 70 years for residential exposures and 46 years for occupational exposures; exposure to project-related emissions would be for a much shorter period of time (i.e. during the construction phase). Based on the short exposure period and small amount of emissions, toxic air contaminant emissions are expected to be less than significant during the construction phase.

Odor

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include collection and treatment of stormwater runoff. Surface retention basins and other stormwater management facilities that have standing water for a period of time may create odors if improperly operated and maintained. Algae blooms and their eventual die-off can create objectionable odors. **Table 4.1-8** identifies types of facilities designed to temporarily or permanently retain stormwater, and describes their potential to create odor. It is anticipated that lakes and other water features at proposed parks would be managed (e.g., by aeration and circulation) to maintain the aesthetics and to control odor/algae. Since all types of stormwater management facilities have very low to low potential for creating odors, impacts are considered less than significant.

**Table 4.1-8
Potential for Creating Odor by Type of Facility**

Type of Facility	Potential for Creating Odor
Permanent lakes	Low Lakes proposed as part of new parks would be managed (by providing circulation, aeration, etc.) as necessary to maintain the aesthetics of the park.
Surface retention/infiltration basins	Low to Very Low Standing water may be present for several months after large storms; however, the potential for algae blooms is limited since water would be present mostly during the colder months. Recharge of reclaimed water could result in standing water year-round. Basins would be managed to minimize algae blooms as needed.
Wetlands	Very Low Water in the wetlands will not be stagnant because it will be continuously circulated (and therefore aerated) using pumps.
Shallow depressions for infiltrating stormwater (e.g., swales)	Very Low Stormwater is expected to completely infiltrate into the ground within several days of any storm event.

Emission of Toxic Air Contaminants. Aside from construction equipment and vehicle fuels, the Concept Design Studies do not involve use of hazardous materials that could result in release of carcinogenic or toxic air contaminants. No significant impacts would occur.

4.1.5 Master Plan Program Mitigation Measures

Future projects that involve use of heavy equipment and vehicles during construction will require an evaluation of the impacts of proposed actions on air quality as described in program Mitigation Measure MP-A1:

MP-A1 Evaluations of air quality impacts during project construction will be conducted as follows during site-specific environmental review of each future Master Plan project:

- Based on the site-specific project description, the following should be determined:
 - Acreage of site disturbance that would occur during excavation, grading, and/or filling
 - List of necessary construction equipment (number, type, hours of operation per day, and number of days in operation for each phase of construction)
 - Length of construction period
 - Number of construction workers and vehicles
- Based on the above information, and using the latest version of the SCAQMD CEQA Handbook, construction emissions will then be estimated and compared to the thresholds of significance (**Section 4.1.2**).

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3. If the estimated construction emissions exceed the SCAQMD threshold of significance for fugitive dust, then one or more of the following dust control measures will be implemented as applicable:
 - Clean dirt from construction vehicle tires and undercarriages when leaving the construction site and before entering local roadways.
 - During earth-moving activities, water the construction area as necessary, but at least twice per day.
 - Water temporary open storage piles once per hour or install temporary covers.
 - Water unpaved roadways three times per day or apply non-toxic soil stabilizers. (Note: Use of soil stabilizers near wetlands, streams, or other water features may be limited by regulatory agencies such as the U.S. Army Corps of Engineers and the California Department of Fish and Game.)
 - Limit construction vehicle speed on the project site to 15 miles per hour (mph) or less.
 - Cover dirt in trucks during on-road hauling.
 - Cease earth-moving activities on days when wind gusts exceed 25 mph or apply water to soil not more than 15 minutes prior to moving such soil.
 - Sweep streets near the construction area at the end of the day if visible soil material is present.
 - For applicable construction areas, establish a vegetative groundcover as soon as feasible after active operations have ceased. Groundcover will be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting.
 - Per SCAQMD Rule 403(e), large construction operations (greater than 50 acres of disturbed area or daily earth-moving or throughput volume of 5,000 cubic yards three times during the most recent 365-day period) will implement applicable dust suppression measures specified in Table 2 of Rule 403 at all times. When the applicable performance standards cannot be met through use of Table 2 measures, the applicable contingency control measures specified in Table 3 of Rule 403 will be implemented.
4. If the estimated construction emissions exceed the SCAQMD threshold of significance for CO, ROC, NO_x, SO_x, then one or more of the following measures will be implemented:
 - Prohibit all vehicles from idling in excess of 10 minutes, both on and off-site.
 - Maintain construction equipment in proper tune.
 - Encourage contractors to establish trip reduction plans. The goal of these plans will be to achieve a 1.5 average vehicle ridership (AVR) for construction employees.

To further reduce tailpipe emissions from construction equipment, implementation of the following optional measure will be considered at the time of construction of individual

projects. Aside from fugitive dust, the majority of construction emissions, particularly for NO_x, are generally associated with tailpipe emissions from diesel-fueled construction equipment. Using construction equipment with alternative fuel(s) can achieve high reduction efficiency for tailpipe emissions. The approximate NO_x emissions reduction rates of various alternative fuels are: 60 percent for compressed natural gas (CNG), 10 percent for emulsified diesel fuel, and 2 to 10 percent for biodiesel fuel (EPA, 2003c). However, use of construction equipment with alternative fuel(s), while effective, may not be applicable to all projects (i.e., limited equipment availability and high costs may make it infeasible to use a large fleet of construction equipment with alternative fuel(s)).

- Select construction equipment with low pollutant emissions and high energy efficiency. Factors to consider include model year and alternative fuels (e.g., compressed natural gas, biodiesel, emulsified diesel, methanol, propane, butane, and low sulfur diesel).

Future projects that involve vehicle trips or equipment operation during operation of the proposed facilities will require an evaluation of the impacts of proposed actions on air quality as described in program Mitigation Measure MP-A2:

MP-A2 Evaluations of air quality impacts during project operation will be conducted as follows during site-specific environmental review of each future Master Plan project:

1. Based on the site-specific project description, the number of vehicle trips that would be generated by operation of proposed facilities (e.g., ongoing maintenance activities and/or visitors to recreational or educational facilities) will be estimated, and air emissions associated with those vehicle trips will be determined. If project operation involves use of electricity (e.g., lighting for parks, education center or park buildings, pumps, etc.), air emissions associated with electricity consumption will be estimated.
2. Based on the above information, and using the latest version of the SCAQMD CEQA Handbook, operational emissions will be compared to the thresholds of significance (**Section 4.1.2**).
3. One or more of the following measures will be implemented as applicable to reduce air emissions:
 - Implement dust control if dry conditions and substantial area is disturbed for operations and maintenance activities that involve ground disturbance.
 - Select energy efficient lighting features or other building design considerations for proposed facilities (e.g., park buildings or interpretive centers) to minimize emissions associated with power generation.
 - Select low-emissions equipment and vehicles for operations and maintenance to reduce tailpipe emissions.
 - Implement an employee ride-share plan to reduce vehicle trips to the facility and associated tailpipe emissions.

4.1.6 Mitigation Measures for Concept Design Studies

Construction Impacts

Mitigation Measures CD-A1 through CD-A10 shall be implemented during construction of **all five Concept Design Studies** to further reduce PM10 emissions associated with earth moving activities. Typical fugitive-dust suppression techniques, such as those contained in these mitigation measures, can reduce dust generation by 60 to 90 percent if implemented consistently (Midwest Research Institute 1996, as cited in City of Glendale, 2002).

- CD-A1** Clean dirt from construction vehicle tires and undercarriages when leaving the construction site and before entering local roadways.
- CD-A2** During earth-moving activities, water the construction area as necessary, but at least twice per day.
- CD-A3** Water temporary open storage piles once per hour or install temporary covers.
- CD-A4** Water unpaved roadways three times per day or apply non-toxic soil stabilizers. (Note: Use of soil stabilizers near wetlands, streams, or other water features may be limited by regulatory agencies such as the U.S. Army Corps of Engineers and the California Department of Fish and Game.)
- CD-A5** Limit construction vehicle speed on the project site to 15 miles per hour (mph) or less.
- CD-A6** Cover dirt in trucks during on-road hauling.
- CD-A7** Cease earth-moving activities on days when wind gusts exceed 25 mph or apply water to soil not more than 15 minutes prior to moving such soil.
- CD-A8** Sweep streets near the construction area at the end of the day if visible soil material is present.
- CD-A9** For applicable construction areas, establish a vegetative groundcover as soon as feasible after active operations have ceased. Groundcover shall be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting.
- CD-A10** Per SCAQMD Rule 403(e), large construction operations (greater than 50 acres of disturbed area or daily earth-moving or throughput volume of 5,000 cubic yards three times during the most recent 365-day period) shall implement applicable dust suppression measures specified in Table 2 of Rule 403 at all times. When the applicable performance standards cannot be met through use of Table 2 measures, the applicable contingency control measures specified in Table 3 of Rule 403 shall be implemented.

Mitigation Measures CD-A11, CD-A12, and CD-A13 shall be implemented during construction of **all five Concept Design Studies** to reduce tailpipe emissions (including CO, ROC, NO_x, SO_x, and PM10) from worker commutes, use of delivery and work trucks, and use of construction equipment.

CD-A11 Prohibit all vehicles from idling in excess of 10 minutes, both on and off-site.

CD-A12 Maintain construction equipment in proper tune.

CD-A13 Encourage contractors to establish trip reduction plans. The goal of these plans will be to achieve a 1.5 average vehicle ridership (AVR) for construction employees.

To further reduce tailpipe emissions from construction equipment, implementation of optional Mitigation Measure CD-A14 shall be considered at the time of construction of individual projects. The majority of the construction emissions, particularly for NO_x, are associated with tailpipe emissions from diesel-fueled construction equipment. Using construction equipment with alternative fuel(s) can achieve high reduction efficiency for tailpipe emissions. The approximate NO_x emissions reduction rates of various alternative fuels are: 60 percent for compressed natural gas (CNG), 10 percent for emulsified diesel fuel, and 2 to 10 percent for biodiesel fuel (EPA, 2003c). However, use of construction equipment with alternative fuel(s), while effective, may not be applicable to all projects (i.e., limited equipment availability and high costs may make it infeasible to use a large fleet of construction equipment with alternative fuel(s)).

CD-A14 Select construction equipment with low pollutant emissions and high energy efficiency. Factors to consider include model year and alternative fuels (e.g., compressed natural gas, biodiesel, emulsified diesel, methanol, propane, butane, and low sulfur diesel).

Operation Impacts

The following measures shall be implemented to further reduce air emissions from operation of proposed facilities for **all five Concept Design Studies**:

CD-A15 Implement dust control if dry conditions and substantial area is disturbed for operations and maintenance activities that involve ground disturbance

CD-A16 Select energy efficient lighting features or other building design considerations for proposed facilities (e.g., park buildings or interpretive centers) to minimize emissions associated with power generation.

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4.2 BIOLOGICAL RESOURCES

4.2.1 Methodology and Approach

Biological resources in the project area were evaluated by BonTerra Consulting, Costa Mesa, California. Relevant literature was reviewed prior to the initiation of field surveys to determine the special status plants, wildlife, and habitats known or with the potential to occur in the vicinity of the Concept Design Study sites. The following literature sources were reviewed:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b).
- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles.
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps.
- County of Los Angeles, Department of Regional Planning. *Los Angeles County Significant Ecological Areas Study*. 1976.
- County of Los Angeles, Department of Public Works. *1998/1999 Biological Resources Assessment and Monitoring Report for the San Gabriel River Sediment Management Plan Project*. Chambers Group. 1999.
- County of Los Angeles, Department of Public Works. Biological Resources Monitoring, Earth Bottom Channel Program, Pre- and Post-Clearing Channel Maintenance Monitoring Reports. BonTerra Consulting. Unpublished file documentation addressing earth bottom channels within the San Gabriel, Santa Clara and Los Angeles Rivers. 1999, 2000, 2001, 2002, 2003, 2004.
- County of Los Angeles, Department of Public Works. *San Gabriel River Valley Boulevard Rubber Dams No. 2 and No. 3 Project, Biological Technical Report*. BonTerra Consulting. August 2002.
- County of Los Angeles, Department of Public Works. *Los Angeles County Channels, Focused Survey Results*. BonTerra Consulting. September 2002.
- County of Los Angeles, Department of Public Works. *Los Angeles County Channels, 2003 Focused Survey Results*. BonTerra Consulting. September 2003.
- County of Los Angeles, Department of Public Works. *Zone 1 Ditch, Biological Technical Report*. BonTerra Consulting. May 2003.
- County of Los Angeles, Department of Public Works. *Biological Assessment for San Gabriel River Valley Boulevard Rubber Dams No. 2 and No. 3 Project*. BonTerra Consulting. December 2003.

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- County of Los Angeles, Department of Public Works. *Riparian Habitat Mitigation Program, San Gabriel River Rubber Dams No. 2 and No. 3*. BonTerra Consulting. April 2004.
- Haglund, T. R. and J. N. Baskin. Fish Population and Gravel Studies during Cogswell Reservoir Sediment Removal - Phase 2, 1994 Status Report. Report to Los Angeles County Department of Public Works. pp. 1-28 plus appendices 1-4. 1995.
- U.S. Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, San Gabriel Canyon Sediment Management Plan*, Los Angeles County, California. 1997.
- U.S. Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, Santa Fe and Whittier Narrows Dams Water Conservation and Supply Study*, Los Angeles County, California. 1998.

Each of these studies is incorporated by reference into the Program EIR, and was used to develop the existing conditions description provided in **Section 4.2.2** below. In addition, reconnaissance level field surveys of each Concept Design Study site were conducted on June 20 and 23, 2003. Plant species were identified in the field or collected for later identification. During the surveys, each habitat type was evaluated for its potential to support common species known or expected to occur in the region. Active searches for reptiles and amphibians were accomplished by systematic surveys through appropriate habitat, including lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic signs (e.g., scat, footprints, scratch-outs, dust bowls, burrows, and trails). During the surveys, the project sites were also evaluated for their potential to support special status plant and wildlife species that are known or are expected to occur in the region. No focused plant or wildlife surveys were conducted during these site visits.

4.2.2 Existing Conditions

The Master Plan geographically spans 58 river miles of the San Gabriel River in southern California. The project area extends from the headwaters of the West Fork San Gabriel River in the Angeles National Forest south to its terminus at the Pacific Ocean between Long Beach in Los Angeles County and Seal Beach in Orange County. The project area is located within the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quadrangles.

The descriptions of existing conditions provided below are based upon review of published and unpublished literature and data and the results of reconnaissance-level field surveys of each of the Concept Design Study sites noted in Section 4.2.1 above. Included in this review were data collected by BonTerra Consulting during its annual field surveys of San Gabriel River reaches from 1999 to 2004 extending from areas just above Santa Fe Dam to Telegraph Road, encompassing the Upper San Gabriel Valley and Lower San Gabriel Valley reaches described in

the Master Plan. These surveys are conducted annually in these areas in August (pre-clearing) and in October and November (post-clearing) prior to vegetation clearing.

4.2.2.1 Master Plan Study Area

The Master Plan divides the San Gabriel River into seven reaches: Headwaters, San Gabriel Canyon, Upper San Gabriel Valley, Lower San Gabriel Valley, Upper Coastal Plain, Lower Coastal Plain, and Zone of Tidal Influence (see Section 3.2.2).

Headwaters

Data sources that were used to describe the biological resources in this entire reach are listed below:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b);
- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles;
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps;
- County of Los Angeles, Department of Public Works. 1998/1999 Biological Resources Assessment and Monitoring Report for the San Gabriel River Sediment Management Plan Project. Chambers Group. 1999;
- Haglund, T. R. and J. N. Baskin. Fish Population and Gravel Studies during Cogswell Reservoir Sediment Removal - Phase 2, 1994 Status Report. Report to Los Angeles County Department of Public Works. pp. 1-28 plus appendices 1-4. 1995;
- U.S. Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, San Gabriel Canyon Sediment Management Plan*, Los Angeles County, California. 1997

Of the seven reaches, the Headwaters is generally the least altered, as it is within Angeles National Forest property of the San Gabriel Mountains. The Headwaters reach extends from Cogswell Dam on the San Gabriel River West Fork downstream to its confluence with the San Gabriel River East Fork. The setting for this reach is undisturbed, high quality chaparral, riparian, and woodland habitats. General land uses along the Headwaters reach include flood control, recreation, and natural open space.

A great diversity in wildlife species is expected to occur in the vicinity of the Headwaters reach. Common reptiles expected to occur include, but are not limited to, the following species: side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), and western rattlesnake (*Crotalus viridis*). Resident bird species expected to occur in the vicinity include the

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Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), western scrub-jay (*Aphelocoma californica*), bushtit (*Psaltiriparus minimus*), northern mockingbird (*Mimus polyglottos*), and California towhee (*Pipilo crissalis*). Birds of prey (raptors) expected to occur in the Headwaters vicinity include the sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*). Mammals expected to occur in the vicinity include California desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), common raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*).

Both native and non-native fish are expected to occur in the vicinity of the Headwaters reach. The native fish expected to occur include the arroyo chub (*Gila orcutti*), and Santa Ana sucker (*Catostomus santaanae*), all special status species; other native fish include the Santa Ana speckled dace (*Rhinichthys osculus*). Introduced freshwater fish may include the channel catfish (*Ictalurus punctatus*), common carp (*Cyprinus carpio*), red shiner (*Cyprinella lutrensis*), fathead minnow (*Pimephales promelas*), rainbow trout (*Oncorhynchus mykiss*), rainwater killifish (*Lucania parva*), and western mosquitofish (*Gambusia affinis*).

Several amphibian species are expected to occur in the vicinity of the Headwaters reach. These species include the western toad (*Bufo boreas*), Pacific treefrog (*Hyla regilla*), black-bellied slender salamander (*Batrachoseps nigriventris*), California treefrog (*Hyla cadaverina*), and bullfrog (*Rana catesbeiana*).

Invertebrate species are not listed (for any reach) due to the great diversity of dominant species expected to occur throughout the study area.

Special status wildlife species in this reach would include wildlife associated with riparian or coastal sage scrub habitats.

San Gabriel Canyon

Data sources that were used to describe the biological resources in this entire reach are listed below:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b).
- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles.
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps.
- County of Los Angeles, Department of Public Works. 1998/1999 *Biological Resources Assessment and Monitoring Report for the San Gabriel River Sediment Management Plan Project*. Chambers Group. 1999.

- Haglund, T. R. and J. N. Baskin. Fish Population and Gravel Studies during Cogswell Reservoir Sediment Removal - Phase 2, 1994 Status Report. Report to Los Angeles County Department of Public Works. pp. 1-28 plus appendices 1-4. 1995.
- U.S. Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, San Gabriel Canyon Sediment Management Plan*, Los Angeles County, California. 1997.
- United States Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, Santa Fe and Whittier Narrows Dams Water Conservation and Supply Study*, Los Angeles County, California. 1998.
- United States Department of Agriculture, Forest Service, Angeles National Forest. *Southern California Land Management Plans, Draft Environmental Impact Statement (DEIS)*. May 2004.

The San Gabriel Canyon reach is also within or surrounded by the Angeles National Forest property of the San Gabriel Mountains. This reach extends from the confluence of the San Gabriel River West Fork and the San Gabriel River East Fork downstream to Morris Dam. High quality chaparral, riparian, and woodland habitats are present in this reach, as is some development, which has diminished the quality of some of the habitats. Land uses include flood control, recreation, development, and natural open space.

Wildlife expected to occur in the vicinity of the San Gabriel Canyon reach include, but are not limited to, the following species: side-blotched lizard, western fence lizard, and western rattlesnake. Resident bird species expected to occur in the vicinity include Anna's hummingbird, black phoebe, western scrub-jay, bushtit, northern mockingbird, and California towhee. Birds of prey (raptors) expected to occur in the San Gabriel Canyon reach include the sharp-shinned hawk, Cooper's hawk, red-shouldered hawk, red-tailed hawk, and turkey vulture. Mammals expected to occur in the vicinity include California desert cottontail, California ground squirrel, coyote, common raccoon, and striped skunk.

Both native and non-native fish are expected to occur in the vicinity of the San Gabriel Canyon reach. The native fish expected to occur include the arroyo chub, which is a special status species; other native fish include the Santa Ana speckled dace. Introduced freshwater fish may include the channel catfish, common carp, red shiner, fathead minnow, rainbow trout, rainwater killifish, and western mosquitofish.

Several amphibian species are expected to occur in the vicinity of the San Gabriel Canyon reach. These species include the western toad, Pacific treefrog, black-bellied slender salamander, California treefrog, and bullfrog.

Special status wildlife species at this reach would include wildlife associated with riparian or coastal sage scrub habitats.

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Upper San Gabriel Valley

Data sources that were used to describe the biological resources in this entire reach are listed below:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b).
- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles.
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps.
- County of Los Angeles, Department of Public Works. Biological Resources Monitoring, Earth Bottom Channel Program, Pre- and Post-Clearing Channel Maintenance Monitoring Reports. 1999-2004. BonTerra Consulting. Unpublished file documentation.
- County of Los Angeles, Department of Public Works. 1998/1999 Biological Resources Assessment and Monitoring Report for the San Gabriel River Sediment Management Plan Project. 1999.
- County of Los Angeles, Department of Regional Planning. *Los Angeles County Significant Ecological Areas Study*. 1976.
- United States Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, Santa Fe and Whittier Narrows Dams Water Conservation and Supply Study*, Los Angeles County, California. 1998.

The Upper San Gabriel Valley reach passes through unincorporated areas of Los Angeles County. Channelization of the San Gabriel River begins in this reach. This reach contains Santa Fe Dam and Reservoir and is designated as a Significant Ecological Area (San Gabriel Canyon SEA No. 22). The SEA designation is due to extensive alluvial fan sage scrub, lowland riparian, and freshwater marsh habitats in the flood control basin (County of Los Angeles, 1976). Development within SEAs is severely limited. Specific environmental studies must be performed to assess the potential for damage or destruction of an SEA prior to approval of any plans for development in an area identified with an SEA overlay. The intent of the SEA designation is to ensure the continued viability of the biota contained within the SEA. Vegetation in this reach is of moderate to high quality alluvial sage scrub and riparian habitats. General land uses in this reach include flood control, water conservation, recreation, and development.

Wildlife species expected to occur in the vicinity of the Upper San Gabriel Valley reach include western fence lizard, black phoebe, American crow (*Corvus brachyrhynchos*), bushtit, northern mockingbird, European starling (*Sturnus vulgaris*), red-tailed hawk, turkey vulture, California desert cottontail, California ground squirrel, common raccoon, and striped skunk.

Both native and non-native fish are expected to occur in the vicinity of the Upper San Gabriel Valley reach. The native fish expected to occur include the arroyo chub which is a special status species; other native fish include the Santa Ana speckled dace. Non-native fish expected to occur in the vicinity of the Upper San Gabriel Valley reach include the channel catfish, common carp, red shiner, fathead minnow, rainbow trout, rainwater killifish, and western mosquitofish.

Several amphibian species are expected to occur in the vicinity of the Upper San Gabriel Valley reach. These species include the western toad, Pacific treefrog, black-bellied slender salamander, California treefrog, and bullfrog.

Special status wildlife species in this reach would include wildlife associated with riparian or alluvial sage scrub habitats.

Lower San Gabriel Valley

Data sources that were used to describe the biological resources in this entire reach are listed below:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b).
- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles.
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps.
- County of Los Angeles, Department of Public Works. Biological Resources Monitoring, Earth Bottom Channel Program, Pre- and Post-Clearing Channel Maintenance Monitoring Reports. BonTerra Consulting. Unpublished file documentation addressing earth bottom channels within the San Gabriel, Santa Clara and Los Angeles Rivers. 1999, 2000, 2001, 2002, 2003, 2004.
- County of Los Angeles, Department of Public Works. *San Gabriel River Valley Boulevard Rubber Dams No. 2 and No. 3 Project, Biological Technical Report*. BonTerra Consulting. August 2002.
- County of Los Angeles, Department of Public Works. *Los Angeles County Channels, Focused Survey Results*. BonTerra Consulting. September 2002.
- County of Los Angeles, Department of Public Works. *Los Angeles County Channels, 2003 Focused Survey Results*. BonTerra Consulting. September 2003.
- County of Los Angeles, Department of Public Works. *Zone 1 Ditch, Biological Technical Report*. BonTerra Consulting. May 2003.

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- County of Los Angeles, Department of Public Works. *Biological Assessment for San Gabriel River Valley Boulevard Rubber Dams No. 2 and No. 3 Project*. BonTerra Consulting. December 2003.
- County of Los Angeles, Department of Public Works. *Riparian Habitat Mitigation Program, San Gabriel River Rubber Dams No. 2 and No. 3*. BonTerra Consulting. April 2004.
- United States Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, Santa Fe and Whittier Narrows Dams Water Conservation and Supply Study*, Los Angeles County, California. 1998.

The Lower San Gabriel Valley reach contains the Whittier Narrows Dam and Reservoir at its downstream end and Santa Fe Dam at its upstream end. Although this reach is channelized throughout with concrete banks, it has a soft (mud) bottom. This reach is also designated as a Significant Ecological Area (Whittier Narrows Dam Recreation Area SEA No. 42). Vegetation in this reach is generally of moderate quality, but there are some areas of high quality riparian habitat. There is also some low to medium quality alluvial sage scrub habitat in this reach. General land uses in this reach include flood control, water conservation, recreation, and development.

Wildlife species expected to occur in the vicinity of the Lower San Gabriel Valley reach include side-blotched lizard, western fence lizard, Anna's hummingbird, black phoebe, bushtit, northern mockingbird, Cooper's hawk, red-shouldered hawk, red-tailed hawk, turkey vulture, California desert cottontail, California ground squirrel, coyote, common raccoon, and striped skunk.

Non-native fish are expected to occur in the vicinity of the Lower San Gabriel Valley reach. These species include the channel catfish, common carp, red shiner, fathead minnow, rainwater killifish, and western mosquitofish.

Several amphibian species are expected to occur in the vicinity of the Lower San Gabriel Valley reach. These species include the western toad, Pacific treefrog, black-bellied slender salamander, California treefrog, and bullfrog.

Special status wildlife species in this reach would include wildlife associated with riparian or alluvial sage scrub habitats.

Upper Coastal Plain

Data sources that were used to describe the biological resources in this entire reach are listed below:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b).

- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles.
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps.
- County of Los Angeles, Department of Public Works. Biological Resources Monitoring, Earth Bottom Channel Program, Pre- and Post-Clearing Channel Maintenance Monitoring Reports. BonTerra Consulting. Unpublished file documentation addressing earth bottom channels within the San Gabriel, Santa Clara and Los Angeles Rivers. 1999, 2000, 2001, 2002, 2003, 2004.
- County of Los Angeles, Department of Public Works. *Los Angeles County Channels, Focused Survey Results*. BonTerra Consulting. September 2002.
- County of Los Angeles, Department of Public Works. *Los Angeles County Channels, 2003 Focused Survey Results*. BonTerra Consulting. September 2003.
- United States Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, Santa Fe and Whittier Narrows Dams Water Conservation and Supply Study*, Los Angeles County, California. 1998.

The Upper Coastal Plain reach extends from Whittier Narrows Dam to where the San Gabriel River crosses Firestone Boulevard in Norwalk. The reach passes through urbanized areas of Los Angeles County. This reach is completely channelized, although it still has a soft bottom. The habitats are ruderal, riparian scrub and woodland, with the quality usually low to moderate, but there is some high quality habitat present just downstream of the Whittier Narrows Dam. Land uses in this reach are flood control, recreation, and development.

Wildlife species expected to occur in the vicinity of the Upper Coastal Plain reach include side-blotched lizard, western fence lizard, Anna's hummingbird, black phoebe, bushtit, northern mockingbird, Cooper's hawk, red-shouldered hawk, red-tailed hawk, turkey vulture, California desert cottontail, California ground squirrel, coyote, common raccoon, and striped skunk.

Non-native fish are expected to occur in the vicinity of the Upper Coastal Plain reach. These species include the channel catfish, common carp, red shiner, fathead minnow, rainwater killifish, and western mosquitofish.

Several amphibian species are expected to occur in the vicinity of the Upper Coastal Plain reach. These species include the western toad, Pacific treefrog, black-bellied slender salamander, California treefrog, and bullfrog.

Special status wildlife species in this reach would include wildlife associated with riparian scrub habitats.

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Lower Coastal Plain

Data sources that were used to describe the biological resources in this entire reach are listed below:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b).
- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles.
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps.
- United States Army Corps of Engineers, Los Angeles District and Los Angeles County Department of Public Works. *Final Environmental Impact Statement and Environmental Impact Report, Santa Fe and Whittier Narrows Dams Water Conservation and Supply Study*, Los Angeles County, California. 1998.

The Lower Coastal Plain reach is located in urbanized areas of Los Angeles and Orange counties. This reach is fully channelized with a concrete bottom and has little to no vegetation present; this urbanized condition limits its viability as habitat for wildlife resources. Vegetation present outside the river levee consists of ornamental and ruderal vegetation. General land uses in this reach are flood control, recreation, and development.

Wildlife species expected to occur in the vicinity of the Lower Coastal Plain reach include western fence lizard, black phoebe, American crow, bushtit, northern mockingbird, and European starling, red-tailed hawk, Virginia opossum (*Didelphis virginiana*), California ground squirrel, and common raccoon.

Non-native fish are expected to occur in the vicinity of the Lower Coastal Plain reach. These species include the common carp, red shiner, fathead minnow, rainwater killifish, and western mosquitofish.

Several amphibian species are expected to occur in the vicinity of the Lower Coastal Plain reach. These species include the western toad, California treefrog, and bullfrog.

No special status wildlife species are expected to occur in this reach.

Zone of Tidal Influence

Data sources that were used to describe the biological resources in this entire reach are listed below:

- Special status species lists published by the U.S. Fish and Wildlife Service (USFWS, 1999) and California Department of Fish and Game (CDFG, 2003a and 2003b).

- CDFG Natural Diversity Database (CNDDDB) (CDFG, 2002 and 2003) for Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach U.S. Geological Survey (USGS) 7.5 minute quadrangles.
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2002 and 2003) for the Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach USGS quad maps.

The Zone of Tidal Influence reach is the last 3.5 miles of the San Gabriel River before its terminus at the Pacific Ocean. This reach once again has a soft bottom that begins at the confluence of the Coyote Creek Channel and the San Gabriel River and extends to the Pacific Ocean. Ocean water and river water mix in a natural estuary before the river meets the Pacific Ocean. Vegetation types in this reach are generally low to moderate in quality and consist of freshwater marsh, some riparian scrub, and salt marsh. General land uses in this reach are flood control, recreation and development.

Wildlife expected to occur in the vicinity of the Zone of Tidal Influence reach include, but are not limited to, the following species: side-blotched lizard, western fence lizard, great blue heron (*Ardea herodias*), great egret (*Ardea albus*), snowy egret (*Egretta thula*), marbled godwit (*Limosa fedoa*), western gull (*Larus occidentalis*), American crow, bushtit, northern mockingbird, red-tailed hawk, California desert cottontail, California ground squirrel, common raccoon, and striped skunk.

Non-native fish are expected to occur in the vicinity of the Zone of Tidal Influence reach. These species include the channel catfish, common carp, red shiner, fathead minnow, rainwater killifish, and western mosquitofish.

One amphibian species expected to occur in the vicinity of the Zone of Tidal Influence reach includes the bullfrog.

Special status wildlife species in this reach would include wildlife associated with fresh water marsh, riparian scrub, and salt marsh.

4.2.2.2 Wildlife Movement

Wildlife corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson, 1967; Soule, 1987; Harris and Gallagher, 1989; Bennett, 1990).

Corridors mitigate the effects of this fragmentation by: (1) allowing animals to move between remaining vegetation types, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human

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disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move in their home ranges in search of food, water, mates, and other needs (Noss, 1983; Farhig and Merriam, 1985; Simberloff and Cox, 1987; Harris and Gallagher, 1989).

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). A number of terms have been used in various wildlife movement studies, such as "wildlife corridor", "travel route", "habitat linkage", and "wildlife crossing" to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this analysis, these terms are defined as follows:

- **Travel Route**—a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas and provides a relatively direct link between target habitat areas.
- **Wildlife Corridor**—a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bound by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.
- **Wildlife Crossing**—a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are manmade and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent "choke points" along a movement corridor.

It is important to note that, in a large open space area in which there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors as defined above may not yet exist. Given an open space area that is both large enough to maintain viable populations of species and provide a variety of travel routes (canyons, ridgelines, trails, riverbeds, and others), wildlife will use these "local" routes while searching for food, water, shelter, and mates, and will not need to cross into other large open space areas. Based on their size, location, vegetative composition, and availability of food, some of these movement areas (e.g., large drainages and canyons) are used for longer lengths of time and serve as source areas for food, water, and cover, particularly for small- and medium-sized animals. This is especially true if the travel route is within a larger open space area. However, once open space areas become constrained and/or fragmented as a result of urban development or construction of

physical obstacles such as roads and highways, the remaining landscape features or travel routes that connect the larger open space areas can "become" corridors as long as they provide adequate space, cover, food, and water, and do not contain obstacles or distractions (e.g., man-made noise, lighting) that would generally hinder wildlife movement.

In general, some portions of the Master Plan project area have been almost completely urbanized and/or developed for decades; therefore, virtually all of the viable wildlife movement that historically occurred through the area has been constrained by existing land uses and development. Other areas of the Master Plan project area support high quality habitat for wildlife, and would have viable wildlife movement. While land uses such as residential and commercial/retail have virtually eliminated the potential for wildlife movement to occur, land uses such as commercial/recreational (e.g., golf courses and parks) and industrial (e.g., gravel pits and utility/public works easements), and open space areas, may contain conditions or vegetation types with the potential to support wildlife movement in the Master Plan project area. Any such conditions could become more viable with enhancement or restoration of the habitat.

4.2.2.3 Concept Design Study Sites

The Master Plan describes five Concept Design Studies that are located in the project area: San Gabriel Canyon Spreading Grounds, Woodland Duck Farm, San Gabriel River Discovery Center at Whittier Narrows, Lario Creek, and El Dorado Regional Park. The following descriptions of the five Concept Design Study sites have been developed from field surveys and a review of existing literature completed by BonTerra Consulting in 2003 as part of the Master Plan formulation process.

San Gabriel Canyon Spreading Grounds

This Concept Design Study site primarily consists of two large recharge basins located on the south and east side of the San Gabriel River. The banks of the basins are steep and largely unvegetated; however, native vegetation is present in the north corner of Basin II (see **Figure 4.2-1**). A large windrow of non-native gum trees (*Eucalyptus sp.*) is present along the east and south sides of the recharge basins. Between the two recharge basins is a triangular area with some industrial uses, but it also supports some native vegetation that is basically contiguous with the native habitats of the San Gabriel River.

Vegetation Types. Four vegetation types were identified on the San Gabriel Canyon Spreading Grounds. These vegetation types include riparian scrub, alluvial sage scrub, ornamental, and ruderal. Riparian scrub contains willows (*Salix sp.*) and mule fat (*Baccharis salicifolia*). Alluvial sage scrub contains vegetation primarily restricted to floodplain areas. This vegetation type is typically dominated by scalebroom (*Lepidospartum squamatum*), California sagebrush (*Artemisia californica*), bush sunflower (*Encelia californica*) and California buckwheat (*Eriogonum fasciculatum*). Ornamental vegetation includes gum trees. Ruderal vegetation is present within this Concept Design Study site along with access and maintenance roads, and other areas of bare ground. Ruderal vegetation typically contains non-native grasses and other invasive herbaceous species.

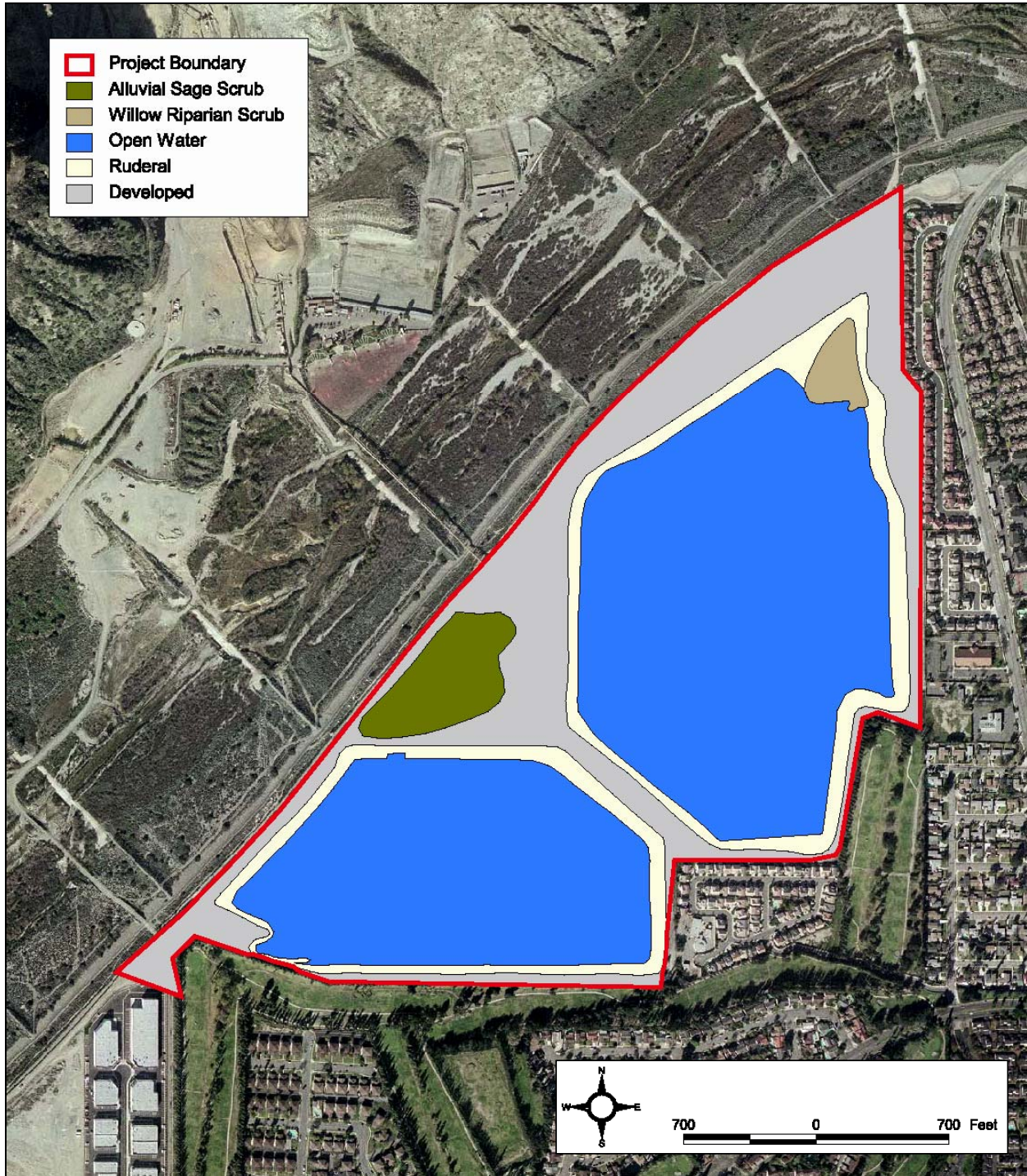
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Wildlife. A variety of avian species was observed in association with the riparian scrub and herb vegetation in the north corner of Basin II during the survey. These species included western grebe (*Aechmophorus occidentalis*), ruddy duck (*Oxyura jamaicensis*), common yellowthroat (*Geothlypis trichas*), and great-tailed grackle (*Quiscalus mexicanus*), and this area provides suitable nesting habitat for these species. The gum tree windrow on the east and south side of the recharge basins provides suitable nesting habitat for raptor species, such as the red-shouldered hawk and red-tailed hawk. The sage scrub habitat next to the San Gabriel River provides nesting opportunities for Costa's hummingbird (*Calypte costae*), Bewick's wren (*Thryomanes bewickii*), California towhee, and lesser goldfinch (*Carduelis psaltria*).

Special Status Species. Several special status plant and wildlife species are known from the vicinity of this site. Due to the highly disturbed nature of the site, no special status plant species are expected to be present. Sensitive wildlife species that may occur on site include the coastal western whiptail (*Cnemidophorus tigris multiscutatus*), Cooper's hawk, loggerhead shrike (*Lanius ludovicianus*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*).

Special Status Habitat Types. Special status habitat types on this site are riparian scrub and alluvial sage scrub. These two vegetation types support a moderate to high quality habitat for wildlife in the vicinity.

Figure 4.2-1
San Gabriel Canyon Spreading Grounds Vegetation Types



Prepared by BonTerra Consulting. Aerial photograph from 2000.

Woodland Duck Farm

This Concept Design Study Site consists of several contiguous parcels located between the I-605 Freeway and the east side of the San Gabriel River. There is little vegetation, as recent and current land uses have been a duck farm, plant nursery, and equestrian use. The vegetation that is present is dominated by non-native ruderal and ornamental species (see **Figure 4.2-2**). However, mixed in with the non-native plant species are a few native species such as Mexican elderberry (*Sambucus mexicana*).

Vegetation Types. Vegetation types identified on the Woodland Duck Farm include elderberry woodland, ornamental, and ruderal. Elderberry woodland is an open woodland dominated by Mexican elderberry. Ornamental vegetation consists of non-native species planted around buildings. The ruderal vegetation type has limited vegetation that is mostly non-native.

Wildlife. Little wildlife activity was observed on this site during the survey and included only those species adapted to highly urbanized habitats such as the rock pigeon, mourning dove (*Zenaida macroura*), European starling, house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*). Other avian species present that are typical of open habitats included killdeer (*Charadrius vociferus*) and black phoebe. The site provides limited resources for other wildlife groups such as reptiles and mammals, but common species such as western fence lizard and California ground squirrel are expected to be present.

Special Status Species. Although a variety of special status species are known to occur in the vicinity of the site, including the Endangered least Bell's vireo (*Vireo bellii pusillus*), few have potential to occur on this site due to its highly disturbed condition. No special status plant species are expected to be present on this site. Special status wildlife species that may occur are limited to birds that may occasionally forage on or over the site, such as white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), and loggerhead shrike.

Special Status Habitat Types. No special status habitat types are known to occur at this study site due to its disturbed condition.

Figure 4.2-2
Woodland Duck Farm – Vegetation Types



Prepared by BonTerra Consulting. Aerial photograph from 2000.

San Gabriel River Discovery Center at Whittier Narrows

This Concept Design Study site includes the Whittier Narrows Nature Center Headquarters and its surrounding habitats located west of the San Gabriel River. The habitats are heavily vegetated and mostly consist of native vegetation; however, there is some non-native vegetation present, including ruderal and ornamental species mixed in with the native species (see **Figure 4.2-3**). Many of the ornamental species include native species such as sycamores and cottonwoods that have been planted.

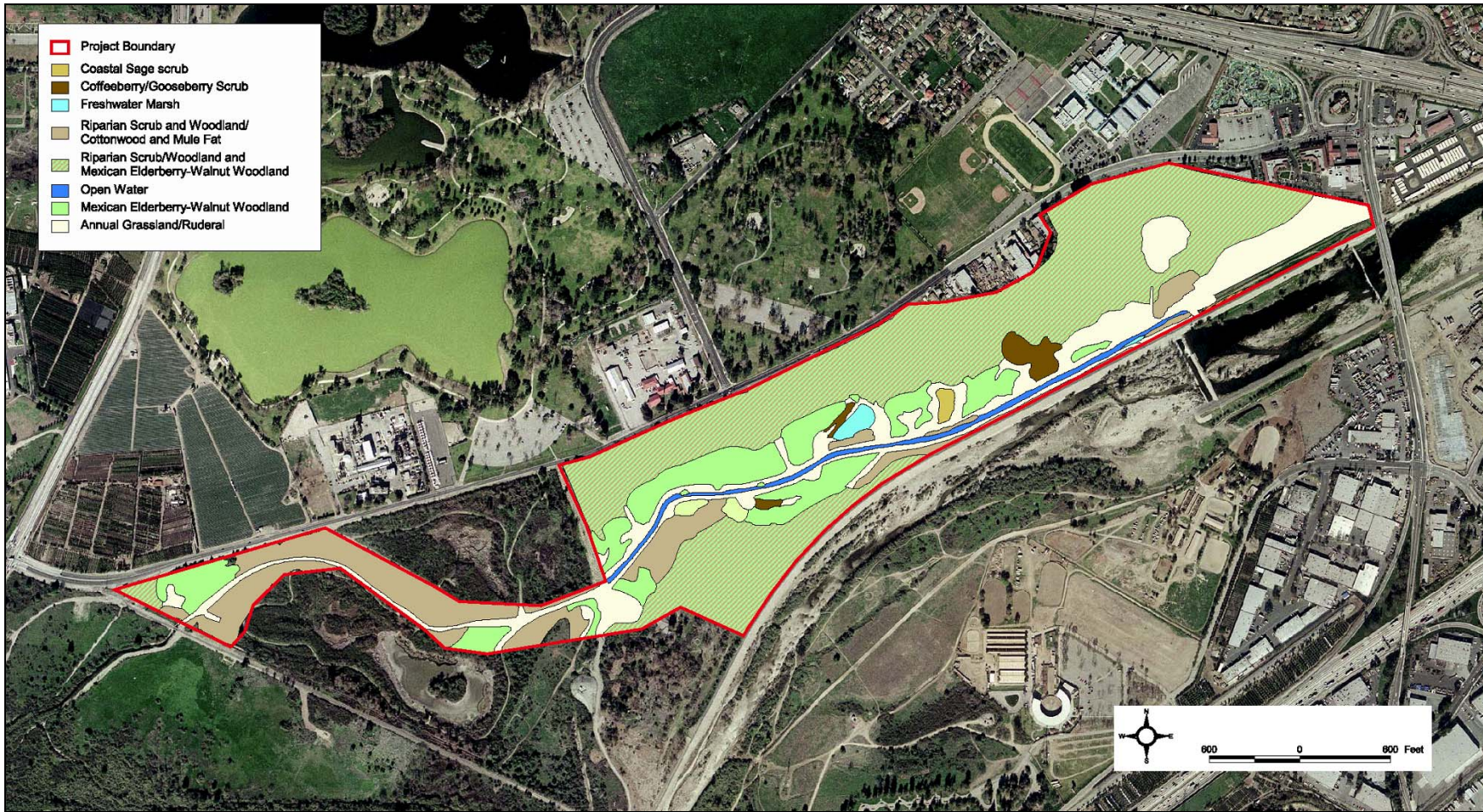
Vegetation Types. Five vegetation types occur at the San Gabriel River Discovery Center at Whittier Narrows: Mexican elderberry-walnut woodland, riparian scrub, ornamental, non-native grassland, and ruderal. Mexican elderberry-walnut woodland is dominated by Mexican elderberry and southern California black walnut (*Juglans californica*). Riparian scrub contains willow, mule fat, and coyote brush (*Baccharis pilularis*). Ornamental vegetation includes a variety of species, but at this site, consists primarily of trees, including gum trees, that have been planted around buildings. Non-native grassland and ruderal vegetation types are mostly dominated by non-native grasses.

Wildlife. A variety of wildlife species are expected to use this site including amphibians, reptiles, birds, and mammals. The Pacific slender salamander (*Batrachoseps pacificus major*) and Pacific tree frog (*Hyla regilla*) are two amphibians that are expected to occur. Reptiles expected to occur include lizards, such as the western fence lizard and alligator lizard (*Gerrhonotus coeruleus principis*), and snakes, such as the gopher snake (*Pituophis melanoleucus*) and California kingsnake (*Lampropeltis getula californiae*). Many bird species potentially nest at this site, including California quail (*Callipepla californica*), Anna's hummingbird, Nuttall's woodpecker (*Picoides nuttalli*), black phoebe, Bewick's wren, American robin (*Turdus migratorius*), orange-crowned warbler (*Vermivora celata*), and American goldfinch (*Carduelis tristis*). Mammals expected to occur include Virginia opossum, striped skunk, long-tailed weasel (*Mustela frenata*), coyote, and raccoon.

Special Status Species. Several special status plant and wildlife species are known from the vicinity of this site including the Endangered least Bell's vireo. Most of the special status wildlife species with potential to occur on this site are birds and include white-tailed kite, northern harrier, Cooper's hawk, loggerhead shrike, yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*).

Special Status Habitat Types. Special status habitat types on this study site, include Mexican elderberry-walnut woodland and riparian scrub. Mexican elderberry-walnut woodland contains southern California black walnut, which is a CNPS List 4 plant species. Riparian scrub supports moderate to high quality habitat for wildlife in the vicinity and may also be within the COE and/or CDFG jurisdiction associated with wetlands, waters of the U.S., or streambeds.

Figure 4.2-3
San Gabriel River Center at Whittier Narrows and Lario Creek – Vegetation Types



Prepared by BonTerra Consulting. Aerial photograph from 2000.

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Lario Creek

This Concept Design Study site is adjacent to the Whittier Narrows Nature Center and includes the channel and surrounding area. Lario Creek is used to convey water from the San Gabriel River south and west to the Rio Hondo spreading grounds. The habitats are heavily vegetated and mostly consist of native vegetation; however, there is non-native vegetation present, including ruderal and ornamental species mixed in with the native species (see **Figure 4.2-3**). There are large areas here where giant reed (*Arundo donax*) is dominant.

Vegetation Types. Vegetation types at Lario Creek include freshwater marsh, riparian herb, riparian forest, riparian scrub, Mexican elderberry woodland and walnut woodlands, coastal sage scrub, annual grassland, ornamental, and ruderal. Fresh water marsh includes small stands of broad-leaved cat-tail (*Typha latifolia*), tall umbrella sedge (*Cyperus eragrostis*), and California bulrush (*Scirpus californicus*). Riparian herb is dominated by herbaceous wetlands species, including dense flowered sprangletop (*Leptochloa uninervia*), rabbit's foot grass (*Polypogon monspeliensis*), and greater water speedwell (*Veronica anagallis-aquatica*). The riparian forest vegetation type is dominated by willows and cottonwood trees. Riparian scrub is not as dense as a riparian forest and is dominated by willow mule fat (*Baccharis glutinosa*), and Mexican elderberry. Mexican elderberry woodland and walnut woodland are each dominated by Mexican elderberry and southern California black walnut trees. Coastal sage scrub occurring on this Concept Design Study site is a small revegetation site located in the eastern portion of this site. It is dominated by California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). Annual grasslands on this site contain ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), slender wild oat (*Avena barbata*), foxtail fescue (*Festuca megalura*), black mustard (*Brassica nigra*), summer mustard (*Hirschfeldia incana*), and tocalote (*Centaurea melitensis*). Ornamental vegetation is dominated by gum trees. Ruderal vegetation is dominated by invasives such as giant reed.

Wildlife. A variety of wildlife species are expected to use this site, including amphibians, reptiles, birds, and mammals. The Pacific slender salamander and Pacific tree frog are two amphibians that are expected to occur. Reptiles expected to occur include lizards, such as the western fence lizard and alligator lizard, and snakes, such as the gopher snake and California kingsnake. Many bird species potentially nest at this site and include California quail, Anna's hummingbird, Nuttall's woodpecker, black phoebe, Bewick's wren, American robin, orange-crowned warbler, and American goldfinch. Mammals expected to occur include Virginia opossum, striped skunk, long-tailed weasel, coyote, and raccoon.

Special Status Species. Several special status plant and wildlife species are known from this site including the Endangered least Bell's vireo. At least one pair of least Bell's vireo has nested since the mid-1990s along Lario Creek in what is referred to as the New Lakes area of the Nature Center. Most of the special status wildlife species with potential to occur on this site are birds and include white-tailed kite, northern harrier, Cooper's hawk, loggerhead shrike, yellow warbler, and yellow-breasted chat. However, there is also potential for the western spadefoot (*Spea hammondi*) to occur.

Special Status Habitat Types. Special status habitat types on this study site include freshwater marsh, riparian herb, riparian forest, riparian scrub, walnut woodland, and coastal sage scrub.

These habitat types support a high quality habitat for wildlife in the vicinity. Riparian habitats including freshwater marsh, riparian herb, riparian forest, and riparian scrub may be within the COE and/or CDFG jurisdiction due to their association with wetlands, waters of the U.S., or streambeds. Walnut woodland is dominated by the southern California black walnut, which is a CNPS List 4 plant species. Coastal sage scrub is a special status habitat due to its potential to support coastal California gnatcatcher (*Polioptila c. californica*), a special status bird species.

El Dorado Regional Park

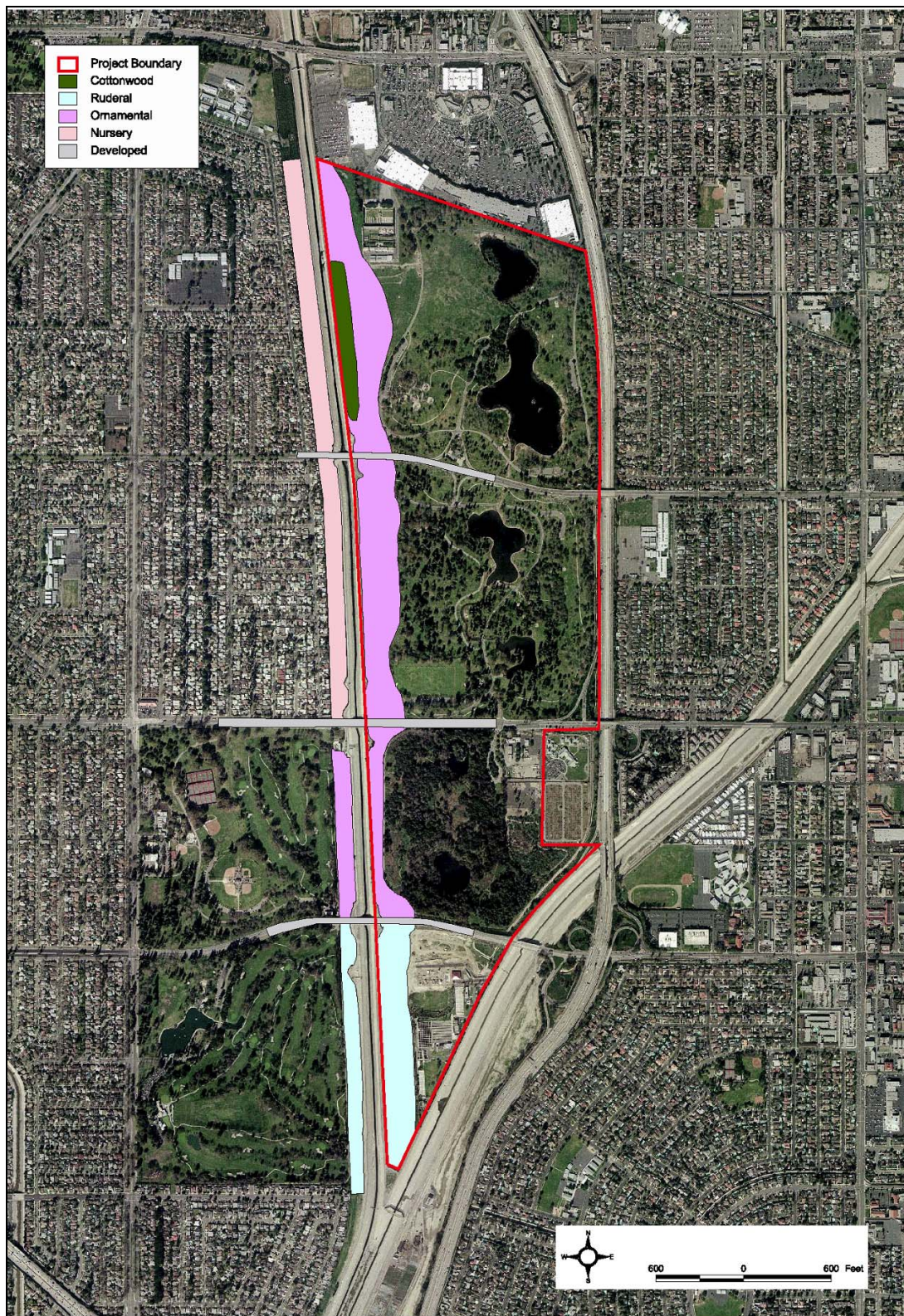
This Concept Design Study site includes portions of both sides of the San Gabriel River. The east side primarily consists of El Dorado Park, but it also includes some parcels south of the park just north of the confluence of San Gabriel River and Coyote Creek Channel. The Park supports ornamental vegetation that is mostly mowed grass with trees (see **Figure 4.2-4**). Some of the trees are planted native species such as the grove of cottonwoods north of Wardlow Road. The south end of the Park between Spring Street and Willow Street is the El Dorado Nature Center. The Nature Center supports dense vegetation that is a mix of native and non-native species. This site includes the west edge of the Nature Center, where overhead power transmission lines cross from north to south and vegetation is largely dominated by ruderal and ornamental species. South of Willow Street is a water reclamation plant that has surrounding open space that supports mostly non-native vegetation, although there is some native vegetation present, including riparian scrub species such as mule fat. Overhead power transmission lines also parallel the west side of the San Gabriel River. Under these transmission lines are a plant nursery and unused right-of-way spaces that support non-native vegetation, including ruderal and ornamental species.

Vegetation Types. Vegetation types identified at El Dorado Regional Park include mule fat scrub, non-native grassland, ornamental, and ruderal. A small amount of mule fat scrub on this site includes mule fat and Mexican elderberry. Non-native grassland is dominated by invasives such as pampas grass (*Cortaderia jubata*). Ornamental vegetation includes gum, Peruvian peppertree (*Schinus polygamus*), and planted native cottonwood trees. Ruderal vegetation is dominated by non-native grasses and other herbaceous species.

Wildlife. There is abundant wildlife activity at this site, although it is primarily bird activity. The western fence lizard is present, but other common reptile species are not expected to occur. Although many bird species are expected to occur here as migrants during the winter season, the site provides relatively limited nesting opportunities. Mammals expected to occur include Virginia opossum, striped skunk, long-tailed weasel, and raccoon.

Special Status Species. Although a variety of special status wildlife species are known from the vicinity of this site, it provides limited potential for most special status plant species. Special status wildlife species that occur in the area are primarily limited to avian species, although there may be potential for the western spadefoot in the basins south of Willow Street. Special status birds with potential to occur in the study site include white-tailed kite, northern harrier, Cooper's hawk, sharp-shinned hawk, and loggerhead shrike.

Figure 4.2-4
El Dorado Regional Park – Vegetation Types



Prepared by BonTerra Consulting. Aerial photograph from 2000.

Special Status Habitat Types. Special status habitat types on this study site include mule fat scrub. This habitat type can provide a quality habitat for wildlife in the vicinity. Mule fat scrub is a riparian habitat and may be within the COE and/or CDFG jurisdiction if associated with wetlands, waters of the U.S., or streambeds.

Summary of Sensitive Species at Concept Design Study Sites

Tables 4.2-1 and **4.2-2** summarize special status species with potential to occur within the Concept Design Study sites. **Table 4.2-2** does not include birds protected by the Migratory Bird Treaty Act (see **Section 4.2.3.1**).

Section 4.2 – Biological Resources

**Table 4.2-1
Special Status Plant Species with Potential
to Occur within Concept Design Study Sites**

Species	Status		Concept Design Study Sites with Potential Occurrence
	Federal/ State	CNPS	
Braunton’s milk vetch <i>Astragalus brauntonii</i>	FE/CE	1B	None
Parish’s brittlescale <i>Atriplex parishii</i>	--/--	1B	Potential to occur at San Gabriel River Discovery Center at Whittier Narrows, Lario Creek, and El Dorado Regional Park.
Nevin’s barberry <i>Berberis nevinii</i>	FE/CE	1B	None
Plummer’s mariposa lily <i>Calochortus plummerae</i>	--/--	1B	Potential to occur at San Gabriel River Discovery Center at Whittier Narrows, Lario Creek, and El Dorado Regional Park.
Lewis’s evening primrose <i>Camissonia lewisii</i>	--/--	3	
Southern tarplant <i>Centromadia parryi</i> ssp. <i>australis</i>	--/--	1B	
San Fernando Valley spineflower <i>Chorizanthe parryi</i> var. <i>fernandina</i>	FC/CE	1B	None
Slender-horned spineflower <i>Dodecahema leptocerus</i>	FE/CE	1B	None
Many-stemmed dudleya <i>Dudleya multicaulis</i>	--/--	1B	Potential to occur at San Gabriel River Discovery Center at Whittier Narrows.
Los Angeles sunflower <i>Helianthus nuttallii</i> ssp. <i>parishii</i>	--/SC	1B	None
San Gabriel linanthus <i>Linanthus concinnus</i>	--/--	1B	Potential to occur at San Gabriel River Discovery Center at Whittier Narrows, Lario Creek, and El Dorado Regional Park.
Davidson’s bush mallow <i>Malacothamnus davidsonii</i>	--/--	1B	
California orcutt grass <i>Ocuttia californica</i>	FE/CE	1B	
<u>Federal (USFWS)</u>		<u>State (CDFG)</u>	
FE	Endangered	CE	Endangered
FT	Threatened	CT	Threatened
PE	Proposed Endangered	PE	Proposed Endangered
PT	Proposed Threatened	PT	Proposed Threatened
SOC	Species of Concern ¹	SSC	Species of Special Concern ¹
FC	Federal Candidate	SC	State Candidate
¹ This designation, although no longer a formal status, is still used by USFWS for informational purposes.			
<u>California Native Plant Society (CNPS)</u>			
1A Plants Presume Extinct in California			
1B Plants Rare, Threatened, or Endangered in California and Elsewhere			
2 Plants Rare, Threatened, or Endangered in California but More Common Elsewhere			
3 Plants About Which We Need More Information – A Review List			
4 Plants of Limited Distribution – A Watch List			

Table 4.2-2
Special Status wildlife Species with Potential
to Occur within Concept Design Study Sites

Species		Status		Concept Design Study Sites with Potential Occurrence
		Federal	State	
Fish				
Arroyo chub <i>Gila orcutii</i>	SOC	SSC	None	
Santa Ana speckled dace <i>Rhinichthys osculus ssp</i>	--	SSC		
Santa Ana sucker <i>Catostomus santaanae</i>	FT	SSC		
Amphibians				
Arroyo toad <i>Bufo californicus</i>	FE	SSC	None	
Western spadefoot toad <i>Spea hammondi</i>	SOC	SSC	Potential to occur on Lario Creek and San Gabriel River Discovery Center at Whittier Narrows.	
Mountain yellow-legged frog <i>Rana muscosa</i>	FE ¹	SSC	None	
Reptiles				
Silvery legless lizard <i>Anniella pulchra pulchra</i>	SOC	SSC	None	
Orange-throated whiptail <i>Cnemidophorus hyperythrus beldingi</i>	None	SSC		
San Diego coast horned lizard <i>Phrynosoma coronatum blainvillei</i>	SOC	SSC		
Western pond turtle <i>Clemmys marmorata</i>	SOC	SSC	Potential to occur on Lario Creek and San Gabriel River Discovery Center at Whittier Narrows.	
Birds				
Yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	None	SE	None	
Coastal California gnatcatcher <i>Poliophtila californica californica</i>	FT	SSC		
Least Bell’s vireo <i>Vireo bellii pusillus</i>	FE	SE	Potential to occur at San Gabriel River Discovery Center at Whittier Narrows and Lario Creek.	
Mammals				
Pale big-eared bat <i>Corynorhinus townsendii pallescens</i>	SOC	SSC	Potential to occur on Woodland Duck Farm, San Gabriel River Discovery Center at Whittier Narrows, Lario Creek, and El Dorado Regional Park; for foraging only; potentially suitable foraging but no suitable roosting habitat.	
Spotted bat <i>Euderma maculatum</i>	SOC	SSC		
California mastiff bat <i>Eumops perotis californicus</i>	SOC	SSC		
Yuma myotis <i>Myotis yumanensis</i>	SOC	--	Potential to occur on Woodland Duck Farm, San Gabriel River Discovery Center at Whittier Narrows, Lario Creek, and El Dorado Regional Park; potentially suitable foraging and roosting habitat.	
Long-eared myotis <i>Myotis evotis</i>	SOC	--		
Pallid bat <i>Antrozus pallidus</i>	--	SSC		
Federal (USFWS)		State (CDFG)		
FE	Endangered	SE	Endangered	
FT	Threatened	ST	Threatened	
PE	Proposed Endangered	PE	Proposed Endangered	
PT	Proposed Threatened	PT	Proposed Threatened	
C	Candidate Species	SSC	Species of Special Concern	
SOC	Species of Concern ²	FP	Fully Protected	
¹ Southern California populations only				
² This designation, although no longer a formal status, is still used by USFWS for informational purposes.				

4.2.3 Regulatory Framework

Biological resources within the Master Plan study area are governed by several regulatory agencies and the applicable statutes and guidelines for which they are responsible, including, but not limited to: the USFWS and the Federal Endangered Species Act (FESA); the CDFG and the California Endangered Species Act (CESA) and Fish and Game Code Section 1602; Regional Water Quality Control Board (RWQCB) Section 401 of the federal Clean Water Act; the U.S. Army Corps of Engineers (COE) Section 404 of the Federal Clean Water Act; and the federal Migratory Bird Treaty Act administered by the USFWS. The applicable agencies, regulations, and terminology associated with biological resource protection and management are described below.

4.2.3.1 Federal Status

A federal Endangered species is a species facing extinction throughout all or a significant portion of its geographic range. A federal Threatened species is a species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range. The presence of any federal Threatened or Endangered species on an area proposed for development may lead to a CEQA finding of “significance” and requires consultation with the USFWS, particularly if development would result in “take” of the species or its habitat.

Section 7 of the FESA applies to federal agency actions (permits/funding, etc.) for private/public activities, such as Section 404 permits issued by the COE for construction work in jurisdictional waters, including wetlands. Specifically, Section 7 imposes an affirmative duty on federal agencies to ensure that their actions (including permitting) are not likely to jeopardize the continued existence of a listed species (plant or animal) or result in the destruction or modification of critical habitat (50 C.F.R. § 402.01[a]). Both Sections 7 and 9 of the FESA allow or authorize “incidental” takes in accordance with the provisions of the FESA as described below, but only with a permit which may be obtained through consultation with the USFWS.

Proposed Threatened and proposed Endangered species are those officially proposed by the USFWS for addition to the federal Threatened and Endangered species list. Because proposed species may become listed as Threatened or Endangered prior to or during implementation of a proposed development project, they are treated here as though they are listed species. However, USFWS will not engage in a formal consultation until the species is actually listed. Section 7 does not allow for “pre-emptive consultation.”

Federal Species of Concern is an informal designation by the USFWS for those species that the USFWS has determined might be declining or are in need of concentrated conservation actions to prevent decline.

Federal Endangered Species Act

The FESA of 1973 protects plants and animals that are listed by the federal government as “Endangered” or “Threatened.” The FESA is implemented by enforcement of Sections 7 and 9 of the Act. A federally-listed species is protected from unauthorized “take” pursuant to Section 9 of the FESA. “Take,” as defined by the FESA, means to harass, harm, pursue, hunt, shoot,

wound, kill, trap, capture, or to attempt to engage in any such conduct. All “persons” are presently prohibited from taking a federally-listed species unless and until: 1) the appropriate Section 10a permit has been issued by the USFWS; or 2) an incidental take statement is obtained as a result of formal consultation between a federal agency and the USFWS pursuant to Section 7 of the FESA and implementing regulations pertaining thereto (50 CFR 402). “Person” is defined in the FESA as an individual, corporation, partnership, trust, association, or any private entity; or any officer, employee, agent, department or instrument of the federal government, or any state, municipality or political subdivision of the state, or any other entity subject to the jurisdiction of the United States.

“Take” may be permitted pursuant to Section 10a of the FESA if a Habitat Conservation Plan (HCP), which is prepared pursuant to regulations at 50 CFR 17.22(b) (2) and 50 CFR 17.32 (b) (2), is approved by the USFWS. These regulations require, in part, that the “take” can be permitted only when the taking is incidental to, but not the purpose of, an otherwise lawful activity and that the permit applicant shall, to the maximum extent practicable, minimize and mitigate the impacts of such taking.

Clean Water Act – Section 404

Section 404 of the Clean Water Act (CWA) regulates the placement of dredged and fill material into waters of the United States, including wetlands. The CWA authorizes the issuance of permits for such discharges as long as the proposed activity complies with environmental requirements specified in Section 404(b)(1) of the CWA. Section 404 is the primary federal program regulating activities in wetlands. The Section 404 program is administered by both the COE and the U.S. Environmental Protection Agency (USEPA), while the USFWS, National Marine Fisheries Service (NMFS), and several state agencies play important advisory roles.

The COE has primary responsibility for the permit program and is authorized, after notice and opportunity for a public hearing, to issue Section 404 permits. In evaluating individual Section 404 permit applications, the COE determines compliance with Section 404(b)(1) guidelines and carries out a public-interest review. This review involves balancing such public-interest factors as conservation, economics, aesthetics, wetlands protection, cultural values, navigation, fish and wildlife values, water supply, and water quality. The COE also considers comments received from the USEPA, USFWS, NMFS, and state resource agencies. The COE is obligated to permit the “least environmentally damaging practicable alternative”, provided one exists. Also, the COE may not issue a permit before the State Water Resources Control Board, via the local Regional Water Quality Control Board (RWCQB), has issued a water quality “certification” or “waiver” of compliance with Section 401 of the federal CWA.

Section 404 regulates only the discharge of dredged or fill material into “waters of the United States.” Discharges of dredged and fill material are commonly associated with activities such as channel construction and maintenance, fills to create development sites, transportation improvements, and water resource projects (such as dams, jetties, and levees). Excavation activities (e.g. mechanized land clearing, ditching, channelization, runoff from disposal areas and others) also result in at least some discharge of dredged materials, and are thus regulated.

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Discharges can be authorized by either individual or general permits under Section 404. If an individual permit is required, an application form describing the proposed activity is submitted to the COE. Once a complete application is received, the permitting agency issues a public notice containing the information needed to evaluate the likely impact of the proposed activity. Notice is sent to all interested parties, including appropriate government agencies at the federal, state, and local level, and others as requested. Any person may request that a public hearing be held to consider the application.

The COE is authorized to issue general permits on a nationwide, state, or regional basis for categories of activities that have minimal individual and cumulative impacts. General permits are issued for five-year periods. They allow certain activities to occur without individual federal permit approval as long as the discharger complies with standard conditions issued by the COE. General permits allow certain activities to occur with little, if any, delay or paperwork. Once issued, a general permit may be modified or revoked if the permitted activities are found to have had adverse environmental impacts. On a case-by-case basis, the permitting agency may invoke discretionary authority and require a discharger that would otherwise be covered by a general permit to apply for an individual permit.

The most significant general permits are called Nationwide Permits (NWP), because they apply throughout the country. Forty NWPs exist. Some activities included under NWPs include minor discharges and dredging, wetland and riparian restoration and creation activities, and temporary construction.

Migratory Bird Treaty Act

The original Migratory Bird Treaty Act of 1918 (MBTA) implemented the 1916 Convention between the United States and Great Britain (for Canada) for the protection of migratory birds. Specific provisions of the statute include the establishment of a federal prohibition, unless permitted, to “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of the Convention ... for the protection of migratory birds ... or any part, nest, or egg of any such bird.” Bird species protected under the provisions of the Migratory Bird Treaty Act are identified in the List of Migratory Birds provided by USFWS (2004).

4.2.3.2 State Status

The State of California defines an Endangered species as a species whose prospects of survival and reproduction are in immediate jeopardy. A Threatened species is a species in such small numbers throughout its range that it is likely to become an Endangered species in the near future in the absence of special protection or management. A Rare species is one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. Rare status applies to California native plants listed prior to the CESA. State Threatened and Endangered species are protected against take unless an incidental take permit is obtained from the CDFG.

California Species of Special Concern is an informal designation used by the CDFG for some declining wildlife species that are not state candidates. This designation does not provide protection under the CESA, but signifies that these species are recognized as special status by the CDFG. Species that are California Fully Protected may not be taken or possessed at any time.

California Endangered Species Act

The CESA (Fish and Game Code Sections 2050 to 2097) is administered by the CDFG and prohibits the take of plant and animal species designated by the Fish and Game Commission as either Threatened or Endangered in the state of California. “Take” in the context of the CESA means to hunt, pursue, kill, or capture a listed species, as well as any other actions that may result in adverse impacts when attempting to take individuals of a listed species.

CESA allows for take that is incidental to otherwise lawful development projects. CESA emphasizes early consultation to avoid potential impacts on rare, Endangered, and Threatened species and to develop appropriate mitigation planning to offset project induced losses of listed species populations and their essential habitats.

Through permits or memorandums of understanding, the CDFG may authorize individuals, public agencies, or educational institutions, to import, export, take, or possess any Endangered species, Threatened species, or candidate species of plants and animals. Take is authorized only after it has been demonstrated by the applicant that the impacts of a project shall be minimized and fully mitigated. The measures required to meet this obligation are roughly proportional in extent to the impact of the authorized taking on the species and must be capable of successful implementation.

California Fish and Game Code Section 1602

The CDFG has jurisdictional authority over riparian resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600-1616. Activities of state and local agencies and public utilities that are project proponents are regulated by the CDFG under Section 1602 of the code. This Section regulates work that will: substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed. CDFG enters into a Streambed Alteration Agreement with a project proponent and can impose conditions on the agreement to ensure no net loss of riparian values or acreage.

Since the CDFG includes under its jurisdiction streamside habitats that under the federal definition may not qualify as jurisdictional waters and/or wetlands of the U.S. on a particular project site, CDFG jurisdiction may be broader than that of the COE. As an example, riparian forests in California often lie outside the plain of ordinary high water regulated under Section 404 of the CWA, and often do not have all three parameters (wetland hydrology, hydrophytic vegetation, and hydric soils) sufficiently present to be regulated as a wetland. However, riparian forests are frequently within CDFG regulatory jurisdiction under Section 1602.

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4.2.3.3 Other Statutes

Special status habitats are vegetation types, associations, or subassociations that support concentrations of special status plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife. Although special status habitats are not afforded legal protection unless they support protected species, potential impacts on habitat may increase concerns for impacts to species, as well as mitigation suggestions by resources agencies.

The CNPS is a private non-profit organization that has developed an inventory of California's special status plant species (CNPS 2001). This inventory summarizes the distribution, rarity, and endangerment of California's vascular plants. This rare plant inventory is comprised of four lists. CNPS presumes that List 1A plant species are extinct in California because they have not been seen in the wild for many years. CNPS considers List 1B plants as Rare, Threatened, or Endangered throughout their range. List 2 plant species are considered Rare, Threatened, or Endangered in California but more common elsewhere. Plant species for which CNPS needs additional information are included on List 3. List 4 plant species are those of limited distribution in California, but whose susceptibility to threat appears low at this time.

In addition to providing an inventory of special status plant and animal species, the CNDDDB also provides an inventory of vegetation types that are considered special status by the state and federal resource agencies, academic institutions, and various conservation groups.

A species that is considered a Special Animal is a species that is tracked by the CNDDDB. Species of Local Concern are those that have no official status with the resource agencies, but are being watched by local conservation organizations because either there is a unique population in the region or the species is declining in the region.

4.2.4 Significance Criteria

The potential significance of environmental impacts on biological resources has been assessed using impact significance criteria that mirror the policy contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the state to:

“Prevent the elimination of fish or wildlife species due to man’s activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities...”

In the development of thresholds of significance for impacts on biological resources, CEQA provides guidance primarily in Section 15065–Mandatory Findings of Significance, and the CEQA Guidelines, Appendix G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

“The project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or wildlife

community, reduce the number or restrict the range of an Endangered, rare, or Threatened species...”

It should be noted that the definition of endangered or threatened species under Section 15380 of CEQA is much broader than the definitions of these terms under either FESA or CESA.

Appendix G of the CEQA Guidelines is more specific in addressing biological resources and encompasses a broader range of resources to be considered, including: candidate, sensitive, or special status species; riparian habitat or other sensitive natural communities; federally protected wetlands; fish and wildlife movement corridors; local policies or ordinances protecting biological resources; and adopted habitat conservation plans. For the purpose of this analysis, impacts on biological resources are considered significant (before considering offsetting mitigation measures) if one or more of the following conditions would result from implementation of the proposed project:

- If the project has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS (CEQA Guidelines, Appendix G, IV [a])
- If the project has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS (CEQA Guidelines, Appendix G, IV [b])
- If the project has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (CEQA Guidelines, Appendix G, IV [c])
- If the project interferes substantially with the movement of any native or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites (CEQA Guidelines, Appendix G, IV [d])
- If the project conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (CEQA Guidelines, Appendix G, IV [e])
- If the project conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan (CEQA Guidelines, Appendix G, IV. [f])

An evaluation of whether an impact on biological resources would result in a “substantial adverse effect” must consider both the resource itself and how that resource fits into a regional context. For the proposed Master Plan, the regional setting of the project includes the following USGS quads that cover the San Gabriel River Watershed and that were queried in the records search: Mount Wilson, Azusa, Glendora, Baldwin Park, El Monte, Whittier, Los Alamitos, and Seal Beach.

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For the purposes of this impact analysis, “substantial adverse effect” is defined as the loss or harm of a magnitude which, based on current scientific data and knowledge, would: 1) substantially diminish population numbers of a species or distribution of a habitat type within the region; or 2) eliminate the functions and values of a biological resource in the region.

4.2.5 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.2.6**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described in **Table 4.2-3**, implementation of future projects developed in a manner consistent with the Master Plan could involve ground disturbance in areas of existing habitat. For the most part, existing habitats in the Master Plan study area are disturbed and/or low-value. However, if ground disturbance or flow alterations are proposed in areas with existing high-value habitat, this would be a potentially significant impact on biological resources. As described in **Section 4.2.7**, site-specific impacts to biological resources would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan. As described in **Table 4.2-3** and **Section 4.2.7**, site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area. With mitigation, site-specific impacts to existing biological resources, if any, would be less than significant. Overall, adoption of the Master Plan would result in beneficial biological impacts by promoting projects that include revegetation, enhancement of vegetation, and creation of habitat that would support wildlife.

Table 4.2-3
Impacts on Biological Resources from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Biological Resources	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	Beneficial: Preservation and enhancement/restoration of habitat would result in beneficial impacts on biological resources. In addition to onsite habitat improvements, projects that involve exotics removal would result in offsite benefits to native plants by reducing seed sources of exotics. Potentially Adverse: Habitat enhancement that involves active restoration in undeveloped areas (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) would result in ground disturbance, which could have temporary adverse impacts on existing biological	Potentially significant for construction-related disturbances; less than significant with mitigation Less than significant to beneficial for operations-

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Master Plan Elements	Impacts on Biological Resources	Impact Summary
	<p>resources, if any are present. The Master Plan mitigation measures described in Section 4.2.7 outline an approach to evaluation of biological resources prior to completion of detailed design plans and implementation of measures to reduce impacts by avoiding sensitive species nesting periods during construction, avoiding high value vegetation types or special status species, and/or rehabilitating habitat where avoidance is not feasible). Other activities associated with habitat enhancement (e.g., monitoring and maintenance activities or exotic species removal) could also result in incidental trampling of biological resources. However, the overall biological impact of adopting this element would be beneficial.</p> <p>For sites with habitat enhancements that support wildlife, maintenance operations may adversely affect biological resources. It is anticipated that maintenance activities would be managed in accordance with wildlife agency agreements or consultations.</p>	related impacts
<p>Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses</p>	<p>Beneficial: Preservation of existing undisturbed open space areas for passive recreational uses would result in protection of biological resources from development or other disturbances. For example, trails within a passive recreation area could be designed to direct visitors away from sensitive biological resources, or biological resources could be incorporated into the park design as an interpretive or educational element for the visitors.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on biological resources (e.g., public security along waterways).</p> <p>Potentially Adverse: Construction of recreation related facilities (e.g., interpretive centers, trails and trail amenities, signs, kiosks) on an undeveloped site would result in ground disturbance, which could have an adverse impact on existing biological resources, if any are present at those locations. The Master Plan mitigation measures described in Section 4.2.7 outline an approach to evaluation of biological resources prior to completion of detailed design plans and implementation of measures to reduce impacts by avoiding sensitive species nesting periods during construction, avoiding high value vegetation types or special status species, and/or rehabilitating habitat where avoidance is not feasible.</p> <p>Operation of facilities for active recreation could result in increased visitors and human activities,</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Potentially significant for operations-related disturbances; less than significant with mitigation</p>

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Master Plan Elements	Impacts on Biological Resources	Impact Summary
	which could result in adverse impacts to adjacent or onsite habitat areas (e.g., trampling of vegetation, disturbance of nesting behavior through increased noise and lighting), if any. The Master Plan mitigation measures described in Section 4.2.7 outline an approach to evaluation of biological resources prior to completion of detailed design plans and implementation of measures to reduce impacts by preparing a management plan to reduce impacts from human uses and/or limiting use of night lighting.	
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	<p>Beneficial: Preservation of existing open space areas (e.g., through land acquisition or conservation easements) could result in protection of biological resources from development or other disturbances. Utilizing drought tolerant and native plant materials would be have beneficial impacts on biological resources.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on biological resources (e.g., preventing crime).</p> <p>Potentially Adverse: Use of existing open space areas for active recreational facilities and activities may result in disturbance of adjacent or onsite habitat areas, if any (e.g., construction of parking facilities, incidental trampling of vegetation). The Master Plan mitigation measures described in Section 4.2.7 outline an approach to evaluation of biological resources prior to completion of detailed design plans and implementation of measures to reduce impacts by preparing a management plan to reduce impacts from human uses and/or limiting use of night lighting.</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Potentially significant for operations-related disturbances; less than significant with mitigation</p>
Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.	<p>Beneficial: Use of naturalized low-flow streambeds and restoration of local streams would result in beneficial impacts on aquatic and riparian habitats.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on biological resources (e.g., visual design standards for flood control devices).</p> <p>Potentially Adverse: Construction of new flood control facilities (e.g., stormwater detention areas) on an undeveloped site would result in ground disturbance (possibly including inundation), which could have an adverse impact on biological resources, if any are present at those locations. The Master Plan mitigation measures described in Section 4.2.7 outline an approach to evaluation of</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant to beneficial for operations-related impacts</p>

Section 4.2 – Biological Resources

Master Plan Elements	Impacts on Biological Resources	Impact Summary
	biological resources prior to completion of detailed design plans and implementation of measures to reduce impacts by avoiding sensitive species nesting periods during construction, avoiding high value vegetation types or special status species, and/or rehabilitating habitat where avoidance is not feasible.	
Water Supply and Water Quality Element: 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.	<p>Beneficial: Development of constructed wetlands for stormwater treatment would increase habitat for wildlife that depend on wetlands, a beneficial impact on biological resources. In addition, reduction of polluted stormwater runoff would be beneficial to aquatic habitats in the river.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on biological resources (e.g., extension of reclaimed water distribution, since new pipelines would most likely be constructed in urban areas within existing roadways where biological resources are absent).</p> <p>Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) on an undeveloped site would result in ground disturbance (possibly including inundation), which could have an adverse impact on biological resources, if any are present at those locations. The Master Plan mitigation measures described in Section 4.2.7 outline an approach to evaluation of biological resources prior to completion of detailed design plans and implementation of measures to reduce impacts by avoiding sensitive species nesting periods during construction, avoiding high value vegetation types or special status species, and/or rehabilitating habitat where avoidance is not feasible.</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant to beneficial for operations-related impacts</p>
Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.	<p>Beneficial: Acquisition of land within or near the river corridor could result in protection of biological resources from development or other disturbances.</p> <p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on biological resources (e.g., providing incentives to participating adjacent land owners).</p> <p>Potentially Adverse: Reclamation of inactive gravel mines could possibly result in disturbance to existing remnant habitats, if any are present at those locations. The Master Plan mitigation measures described in Section 4.2.7 outline an approach to evaluation of biological resources prior to completion of detailed design plans and</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant to beneficial for operations-related impacts</p>

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Master Plan Elements	Impacts on Biological Resources	Impact Summary
	implementation of measures to reduce impacts by avoiding sensitive species nesting periods during construction, avoiding high value vegetation types or special status species, and/or rehabilitating habitat where avoidance is not feasible.	

4.2.6 Impacts of Implementing the Concept Design Studies

Impacts that could result from implementation of each of the Concept Design Studies are described below.

4.2.6.1 San Gabriel Canyon Spreading Grounds

The San Gabriel Canyon Spreading Grounds Concept Design Study could include public access trails, landscaping, and potentially floating habitat islands. These project components would either avoid or replace existing habitats that are generally of lower quality than the proposed replacement. For example, if implemented, the floating islands would replace open water habitat that has some value, but the value of the islands as nesting and roosting habitat for a wide variety of birds far outweighs the value of the lost open water habitat. As described in **Section 3.3.3.1**, if floating islands ultimately become part of this project, any potential conflicts between the existing operation and maintenance activities for groundwater recharge and the introduction and maintenance of habitat (including water quality, water supply, and regulatory issues) will be investigated in detail.

Special Status Species

No special status plant species are expected to occur on the site; therefore no impacts on special status plants are expected. Impacts on special status wildlife species on the site, if any are present, would be short-term and would result from equipment used during construction. Any such impacts would not be expected to reduce populations of special status wildlife species substantially in the region because any such wildlife species that were present would avoid the construction activity area for its duration. Impacts would be temporary, and even over the short duration they exist, they would be less than significant. In addition, enhancement and restoration of native habitats on the site would have an overall beneficial impact on both special status plants and wildlife. An increase in habitat quality and the proposed islands would benefit a variety of wildlife species and would be a beneficial impact. Implementation of **Mitigation Measures CD-B1** and **CD-B2** would reduce construction-related impacts on sensitive plants and wildlife to less than significant levels.

Special Status Habitat Types

No impacts are expected to occur on the riparian scrub and alluvial sage scrub existing on the site because the proposed activities in the San Gabriel Canyon Spreading Basins Concept Design Study were designed to avoid these habitats. Restoration of special status habitat types such as wetland vegetation and coastal sage scrub habitat (see Map 3-11 of the Master Plan) would be a

beneficial impact and expand the viability of existing fragmented vegetation on the project site. Implementation of **Mitigation Measures CD-B1** and **CD-B2** would reduce construction-related impacts on special status habitat types to a less than significant level.

Noise

Noise levels at the site would increase substantially during project construction over present, relatively low noise levels. During construction, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and denning activities for a variety of wildlife species. Although these temporary impacts would be adverse during the construction period, they would not be significant because they would not result in permanent abandonment of suitable habitats by wildlife in the adjacent open spaces. Wildlife typically avoids areas where human activity is occurring and returns when conditions return to previous levels. Implementation of **Mitigation Measures CD-B1** and **CD-B2** would reduce construction-related impacts on sensitive wildlife species to less than significant levels.

4.2.6.2 Woodland Duck Farm

The Woodland Duck Farm Concept Design Study could include trails, vehicle site access and parking, landscaping, and an educational center. Except for the equestrian center, the proposed project components would either avoid or replace existing habitats that are generally of lower quality (e.g., dominated by non-native plants and ornamental species) than the proposed replacement. The equestrian center and its concomitant access and parking requirements may result in a net loss of natural open space that has some limited foraging value. However, this proposed facility would occur at an existing facility and any expansion into surrounding natural habitats is expected to be minimal and would not be considered significant.

Special Status Species

Because this Concept Design Study site had been used as a duck farm for many years, the habitats onsite have been degraded or modified with planting of ornamental plant species. Therefore, no special status plant species are expected to occur on the site, and no impacts on special status plants are expected. Impacts on special status wildlife species on the site due to construction activities are not expected to reduce populations substantially in the region. These impacts would be adverse but not significant because any such wildlife species would avoid the construction area for its duration. Impacts would be temporary, and even over the short duration they exist, they would be less than significant. In addition, enhancement and restoration of native habitats on the site would have an overall beneficial impact on both special status plants and wildlife. An increase in habitat quality would benefit a variety of wildlife species and would be a beneficial impact. The habitat that is present, as noted above, consists of some patches of elderberry woodland dominated largely by non-native and ornamental plants around the existing buildings. The Concept Design (see Map 3-13 in the Master Plan) proposes revegetation of the site with native upland scrub and riparian species to recreate the historical habitat that probably existed prior to the Duck Farm use. In addition, the Concept Design also proposes a system of constructed treatment wetlands to treat low flow and urban runoff. The emergent marsh habitat that would be used in the treatment process would also create additional habitat for wildlife, predominantly avian species. Implementation of **Mitigation Measures CD-B1** and **CD-B2**

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would reduce construction-related impacts on special status species to less than significant levels.

Special Status Habitat Types

As noted above, the site had been used as a duck farm for many years, and the habitats onsite have been degraded or modified with planting of ornamental plant species. Therefore, special status habitat types do not occur at this site, and no impacts on special status habitat types are expected. Restoration of special status habitat types throughout the site and particularly along the boundary with the San Gabriel River, such as riparian and sage scrub habitat, would be a beneficial impact and restore biological values to a site that for many years has had little natural habitat value. Implementation of **Mitigation Measures CD-B1** and **CD-B2** would reduce construction-related impacts on special status habitat types to less than significant levels.

4.2.6.3 San Gabriel River Discovery Center at Whittier Narrows

The Concept Design Study for the San Gabriel River Discovery Center at Whittier Narrows could include a new Discovery Center building, modifications to the site entrance and parking area, and a stormwater treatment wetland. Except for the Discovery Center, the proposed project components would either avoid or replace existing habitats that are generally of lower quality than the proposed replacement. The education facility and its concomitant access and parking requirements may result in a net loss of natural open space that has some limited forage value. However, this proposed facility would occur at an existing facility and any expansion into surrounding natural habitats is expected to be minimal and not considered significant.

Special Status Species

Several special status plant species are known to occur in the vicinity of the site. Impacts from construction of the proposed Discovery Center would be significant for any special status plants that may occur on the site. Implementation of **Mitigation Measures CD-B1** and **CD-B2** would reduce construction-related impacts on sensitive plants to a less than significant level by either confirming the non-existence of special status plants and if special status plants are present, by avoiding these areas or mitigating any construction impacts by collecting and replanting these species in areas of permanent open space on the project site.

The state- and federally-listed Endangered least Bell's vireo and several other special status bird species are known from the vicinity and have potential to occur on the site. Impacts on these bird species would be significant. Implementation of **Mitigation Measures CD-B3** and **CD-B4** would reduce construction-related impacts on least Bell's vireo and nesting raptors to a less than significant level. Such impact reduction would either occur through avoidance of construction during the nesting season (March 15 to September 1), or if construction must occur during the nesting season, by having a qualified biologist survey the site for least Bell's vireo, and if present, by avoiding construction within 1,000 feet of the nest until after the nesting season is over (**Mitigation Measure CD-B3**). Construction impacts to nesting raptors would be avoided by ensuring that construction within the raptor nesting season does not occur within 500 feet of an active raptor nest, as determined by a pre-construction survey by a qualified biologist (**Mitigation Measure CD-B4**).

Special Status Habitat Types

No impacts are expected to occur on the Mexican elderberry-walnut woodland and riparian scrub existing on the site. Direct impacts on vegetation occupied by nesting sensitive bird species (e.g., least Bell's vireo), even if the disturbance was a result of restoration efforts, would require consultation with the wildlife agencies prior to initiation of any construction activities in the vicinity of an active nest, as determined by a qualified biologist. Implementation of **Mitigation Measures CD-B3 and CD-B4** would also reduce potential impacts to vegetation occupied by nesting sensitive bird species. Overall, restoration of special status habitat types such as wetland vegetation and coastal sage scrub habitat would be a beneficial impact.

Overall, the Concept Design Study would have a beneficial impact on special status plants, wildlife, and habitat types. An increase in habitat quality from habitat enhancement and restoration would benefit a variety of wildlife species and would be a beneficial impact.

Noise

Noise levels at the site would increase substantially during project construction over present, relatively low noise levels. During construction, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and denning activities for a variety of wildlife species. Although these temporary impacts would be adverse during the construction period, they would not be significant because they would not result in permanent abandonment of suitable habitats by wildlife in the adjacent open spaces. Wildlife typically avoids areas where human activity is occurring and returns when conditions return to previous levels.

Increased noise levels would be a significant impact on the least Bell's vireo if construction occurred during the nesting season (March 15 to September 1). Implementation of **Mitigation Measure CD-B3** would reduce construction-related impacts on least Bell's vireo to a less than significant level. Such impact reduction would either occur through avoidance of construction during the nesting season (March 15 to September 1), or if construction must occur during the nesting season, by having a qualified biologist survey the site for least Bell's vireo, and if present, by avoiding construction within 1,000 feet of the nest until after the nesting season is over (Mitigation Measure CD-B3).

4.2.6.4 Lario Creek

Concept Design Study improvements to Lario Creek could include construction of a dual flow channel to convey water and to create wetland habitat. These project components would either avoid or replace existing habitats that are generally of lower quality than the proposed replacement. For example, the dual flow channel would follow an existing channel. Proposed habitat enhancements for this Concept Design Study would need to be designed to accommodate the possibility that the project site may be inundated during large storms since it is located in a flood control basin.

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Special Status Species

Several special status plant species are known to occur in the vicinity of the site. Impacts from construction of the proposed channel modifications would be significant for any special status plants that might occur on the site. Implementation of **Mitigation Measures CD-B1 and CD-B2** would reduce construction-related impacts on sensitive plants to a less than significant level by either confirming the non-existence of special status plants (Mitigation Measure CD-B1) or if special status plants are present, by avoiding these areas or mitigating any construction impacts by collecting and replanting these species in areas of permanent open space on the project site.

The state- and federally-listed Endangered least Bell's vireo and several other special status bird species are known from the vicinity and have potential to occur on the site. Impacts on these bird species would be significant. Implementation of **Mitigation Measures CD-B3 and CD-B4** would reduce construction-related impacts on least Bell's vireo and nesting raptors to a less than significant level. Such impact reduction would either occur through avoidance of construction during the nesting season (March 15 to September 1), or if construction must occur during the nesting season, by having a qualified biologist survey the site for least Bell's vireo, and if present, by avoiding construction within 1,000 feet of the nest until after the nesting season is over (Mitigation Measure CD-B3). Construction impacts to nesting raptors would be avoided by ensuring that construction within the raptor nesting season does not occur within 500 feet of an active raptor nest, as determined by a pre-construction survey by a qualified biologist (Mitigation Measure CD-B4).

Special Status Habitat Types

Impacts on freshwater marsh, riparian herb, riparian forest, riparian scrub may occur from construction of the proposed channels. These habitats may also be within the jurisdiction of COE and/or CDFG and would be subject to permit conditions.

Impacts on habitats within the jurisdiction of COE and CDFG are subject to compensatory mitigation as a fundamental component of the permitting process. The objective of the mitigation is to ensure no net loss of habitat values from the project. Implementation of mitigation for impacts on riparian habitat as required by COE and/or CDFG would reduce significant impacts from construction to a less than significant level. Proposed restoration of riparian habitats onsite could incorporate compensatory COE/CDFG permitting mitigation.

Overall, the Concept Design Study would have a beneficial impact on special status plants, wildlife, and habitat types. An increase in habitat quality from proposed habitat enhancement and restoration would benefit a variety of wildlife species and would be a beneficial impact.

Noise

Noise levels at the site would increase substantially during project construction over present, relatively low noise levels. During construction, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and denning activities for a variety of wildlife species. Although these temporary impacts would be adverse during the construction period, they would not be significant because they would not result in widespread abandonment of suitable habitats

by wildlife in the adjacent open spaces. Wildlife typically avoids areas where human activity is occurring and returns when conditions return to previous levels.

Increased noise levels would be a significant impact on the least Bell's vireo if construction occurred during the nesting season (March 15 to September 1). Implementation of **Mitigation Measure CD-B3** would reduce construction-related impacts on least Bell's vireo to a less than significant level. Such impact reduction would either occur through avoidance of construction during the nesting season (March 15 to September 1), or if construction must occur during the nesting season, by having a qualified biologist survey the site for least Bell's vireo, and if present, by avoiding construction within 1,000 feet of the nest until after the nesting season is over (Mitigation Measure CD-B3).

4.2.6.5 El Dorado Regional Park

The El Dorado Regional Park Concept Design Study site could include a stormwater treatment wetland, exotic plant species removal, an increase in river width, and replacement of the concrete river bottom with a soft bottom. These project components would either avoid or replace existing habitats that are generally of lower quality than the proposed replacement.

Special Status Species

There is a limited potential for special status plant species to occur on the project site. Impacts from construction of the proposed channel modifications would be significant for any special status plants that might be present on the project site. Implementation of **Mitigation Measures CD-B1 and CD-B2** would reduce construction-related impacts on sensitive plants to a less than significant level by either confirming the non-existence of special status plants (Mitigation Measure CD-B1) and if special status plants are present, by avoiding these areas or mitigating any construction impacts by collecting and replanting these species in areas of permanent open space on the project site.

Special status wildlife species are known from the vicinity and have potential to occur on the site. Impacts on white-tailed kite, northern harrier, Cooper's hawk, loggerhead shrike and sharp-shinned hawk species would be significant. Implementation of **Mitigation Measure CD-B4** would reduce construction-related impacts on nesting raptors to a less than significant level. Construction impacts to nesting raptors would be avoided by ensuring that construction within the raptor nesting season does not occur within 500 feet of an active raptor nest, as determined by a pre-construction survey by a qualified biologist (Mitigation Measure CD-B4).

Special Status Habitat Types

Impacts to mule fat scrub may occur from modification of the river bottom. This habitat may also be within the jurisdiction of COE and/or CDFG and would be subject to permit conditions.

Impacts on habitats within the jurisdiction of COE and CDFG are subject to compensatory mitigation as a fundamental component of the permitting process. The objective of the mitigation is to ensure no net loss of habitat values from the project. Implementation of mitigation for impacts on riparian habitat, as required by COE and/or CDFG, would reduce

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significant impacts associated with construction to a less than significant level. Proposed restoration of riparian habitats onsite could incorporate compensatory COE/CDFG permitting mitigation.

Overall, the Concept Design Study would have a beneficial impact on special status plants, wildlife, and habitat types. An increase in habitat quality from proposed habitat enhancement and restoration would benefit a variety of wildlife species and would be a beneficial impact.

Noise

Noise levels at the site would increase substantially during project construction over present, relatively low noise levels. During construction, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and denning activities for a variety of wildlife species. Although these temporary impacts would be adverse during the construction period, they would not be significant because they would not result in widespread abandonment of suitable habitats by wildlife in the adjacent open spaces. Wildlife typically avoids areas where human activity is occurring and returns when conditions return to previous levels.

Increased noise levels would be a significant impact on the nesting raptors if they occurred during the nesting season (March 15 to September 1). Implementation of **Mitigation Measure CD-B4** would reduce construction-related impacts on nesting raptors to a less than significant level. Construction impacts to nesting raptors would be avoided by ensuring that construction within the raptor nesting season does not occur within 500 feet of an active raptor nest, as determined by a pre-construction survey by a qualified biologist (Mitigation Measure CD-B4).

4.2.6.6 Impacts Common to all Concept Design Study Sites

Increased Dust and Urban Pollutants

Grading activities would disturb soils and result in the accumulation of dust on the surfaces of the leaves of trees, shrubs, and herbs. The respiratory function of the plants in the area would be impaired if dust accumulation is excessive. This indirect effect on the native vegetation in the immediate vicinity of the construction areas would be adverse but not significant because construction periods are expected to be relatively short (i.e., 2 to 3 months) and native vegetation that is present is typically not regarded as sensitive by regulatory agencies.

Lighting

Introduction of night lighting would affect the behavior patterns of nocturnal and crepuscular (active at dawn and dusk) wildlife at these areas. Of greatest concern is the effect on small ground-dwelling animals that use the darkness to hide from predators, and on owls that are specialized night foragers. These impacts, while adverse, would not be expected to reduce any current wildlife population below self-sustaining levels. However, lighting could inhibit wildlife from using the habitat adjacent to lighted areas. These impacts would be considered adverse, but less than significant. **Mitigation Measure CD-B6** has been identified to further reduce impacts from new lighting sources by requiring the use of low intensity lighting that is directed away from open space areas.

Human Activity

Individuals using the sites for passive recreation (e.g., hiking, biking) would increase noise and disturbance of habitat areas. Unchecked human disturbance could disrupt normal foraging and breeding behavior of wildlife on the site and substantially limit the potential enhancement and restoration of proposed native habitat areas. These project impacts on wildlife are significant. Implementation of **Mitigation Measure CD-B7** would reduce impacts associated with human activity to a less than significant level. Such reduction would occur through the preparation and approval of a management plan for native habitats at each Concept Design Study site prior to initiation of site development. The plan shall be prepared by a qualified biologist.

Invasive Plant Species

The proposed projects may include removal of invasive exotic plant species. This impact would be beneficial because it would increase the value of the riparian habitat. In addition, as per **Mitigation Measure CD-B5**, landscaping of surrounding vegetation shall not include any invasive plant species as listed on the California Invasive Plant Council Pest Plant List.

Native Plant Species

As noted in Chapter 3.7.2 of the Master Plan, individual habitat-enhancement projects are anticipated to adopt the Los Angeles River Landscape Guidelines and use the suggested native plant palettes as appropriate to each habitat zone. This will achieve corridor-wide habitat improvement.

4.2.7 Master Plan Program Mitigation Measures

Future projects involving site disturbance in areas with potential biological resources will require an evaluation of the impacts of proposed actions as described in program Mitigation Measure MP-B1:

MP-B1 Site-specific evaluations for biological resources will be conducted prior to completion of detailed design plans for each of the future projects to determine the presence of high-value vegetation types and the potential for special status plant and wildlife species to occur. The following tasks will be completed by these evaluations:

1. Identify and determine the extent of site disturbance proposed by the project. For sites where biological resources have any potential to be sensitive, continue evaluation as outlined below.
2. General plant and wildlife surveys will be performed by a qualified biologist to determine if any focused surveys for special status species are necessary. If the general surveys indicate that there is potential for sensitive plant or wildlife species to occur on the project site, focused surveys will be conducted for those species in accordance with relevant protocols at the appropriate time of the year.

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3. If any special status species or high-value vegetation types are identified, the proposed facilities will be designed and/or sited to avoid disturbance and loss of the sensitive resources. If nesting habitat of special status bird species will be impacted, project construction will be scheduled outside of the breeding season if feasible. If scheduling construction outside of the breeding season is not feasible, then a pre-construction survey will be conducted to identify nests and to establish a buffer zone between the construction area and the nests to avoid construction impacts.
4. In some instances, depending on the location of sensitive resources and/or construction schedule requirements, project redesign and/or construction phasing that avoids biological resources while still meeting the project objective may be infeasible. Therefore, if avoidance is not feasible, the following measures will be detailed and disclosed in second tier CEQA documentation and implemented under the direction of a qualified biologist:
 - Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; and/or
 - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project; and/or
 - Compensating for the impact by replacing or providing substitute resources or environments.
5. If avoidance of impacts to listed species is not feasible, then consultation with the USFWS shall be required for federally-listed species, and consultation with the CDFG shall be required for state-listed species. If special status plants are identified, a mitigation program shall be developed following focused surveys and submitted to the appropriate agencies for review.

In addition, the following mitigation measures will be implemented for future projects to reduce impacts on biological resources:

MP-B2 Landscaping of vegetation will not include any invasive plant species as listed on the California Invasive Plant Council Pest Plant List.

MP-B3 For projects that involve use of night lighting in public areas (e.g., parks) for health and/or safety reasons, lighting will be designed to minimize effects on the behavior patterns of nocturnal and crepuscular (active at dawn and dusk) wildlife (e.g., small ground-dwelling animals that use the darkness to hide from predators, and on owls that are specialized night foragers). To reduce light impacts on nocturnal and crepuscular wildlife, night lighting will be low intensity directional lighting focused away from open space areas.

MP-B4 For projects that involve recreational uses near habitat areas, a management plan to reduce impacts from human uses (e.g., riding, hiking, biking) on native habitats will be incorporated into detailed design plans. As relevant, the management plan will include access points including parking and restrooms, signage for

trails and restricted uses, appropriate fencing, and restrictions on domestic animals. This plan will be written by a qualified biologist and approved by the sponsoring agency prior to initiation of site development.

4.2.8 Mitigation Measures for Concept Design Studies

The following mitigation measures shall be implemented for **all five Concept Design Studies**:

CD-B1 Prior to completion of detailed design plans for each of the five Concept Design Study sites, a qualified biologist shall conduct general plant and wildlife surveys to determine if any focused surveys for special status species are necessary. If the surveys confirm the potential for one or more special status species to occur, focused surveys for those species shall be conducted as described in Mitigation Measure CD-B2.

CD-B2 If the general biological survey (Mitigation Measure CD-B1) indicates that there is potential for sensitive plant species to occur on the project site, a spring survey shall be conducted prior to finalizing the project designs. The special status plant species surveys shall follow guidelines developed by the CNPS (CNPS, 2001). These surveys, as outlined in the guidelines, shall be conducted during the appropriate time of year for each species as determined by a qualified botanist. Collection of special status plant species, if any, shall follow the guidelines of CDFG and USFWS collection permits. If any special status plant species are located, their rarity and abundance shall be evaluated. If the general biological survey indicates that there is potential for special status wildlife species to occur on the project site, protocol surveys for those species shall be conducted in accordance with appropriate survey protocols at the appropriate time of the year. The results of these investigations and the appropriate mitigation measures to reduce any potentially significant environmental impacts to a level that is less than significant shall be disclosed in second tier CEQA documentation.

If any special status wildlife species are identified, the proposed facilities shall be designed and/or sited to avoid or reduce potentially significant impacts to the species during construction to levels that are less than significant. If nesting habitat of special status bird species will be impacted, project construction shall be scheduled outside of the breeding season, or a pre-construction survey shall be conducted to identify nests and to establish a buffer zone between the construction area and identified nests to avoid construction impacts.

However, depending on the location of sensitive resources and/or construction schedule requirements, project redesign and/or construction phasing that avoids biological resources while still meeting the project objective may be infeasible. Therefore, if avoidance is not feasible, the following measures shall be detailed and disclosed in second tier CEQA document and implemented under the direction of a qualified biologist:

- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; or

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- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project; or
- Compensating for the impact by replacing or providing substitute resources or environments.

If avoidance of impacts to listed species is not feasible, then consultation with the USFWS shall be required for federally-listed species and consultation with the CDFG shall be required for state-listed species. As relevant, a special status plant mitigation program shall be developed following focused surveys and submitted to the appropriate agencies for review.

The following mitigation measure shall be implemented for the **San Gabriel River Discovery Center, Lario Creek and El Dorado Regional Park** Concept Design Studies:

CD-B3 Least Bell's Vireo - Since least Bell's vireos are known to occur in the vicinity of the San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park, the following mitigation measure shall be implemented to reduce impacts on this Endangered species:

To the extent feasible, no construction shall occur within the project site during the nesting season for least Bell's vireo (March 15 to September 1). However, if construction work is necessary between March 15 and September 1, a qualified biologist shall survey suitable habitat within the impact area, plus 1,000 feet (300 meters) on either side of the impact area, to identify the presence of any least Bell's vireo. No construction activities shall occur within 1,000 feet of a least Bell's vireo territory until the end of the nesting season (September 1) or when the least Bell's vireo departs the area, as determined by the biologist and with confirmation from the USFWS. The biological monitor shall use their discretion to increase the distance from vireo territory that construction can occur (in excess of 1,000 feet) or to limit use of the noisiest equipment to outside the nesting season if deemed necessary based on the type of construction equipment to be used.

The following mitigation measure shall be implemented for the **San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park** Concept Design Studies:

CD-B4 Nesting Raptors – The following mitigation measure shall be implemented to avoid raptor impacts:

One week prior to construction and clearing activities that would occur during the nesting/breeding season of native bird species potentially nesting on the site (typically February through August), a survey shall be conducted by a qualified biologist to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present within 300 feet (within 500 feet for raptors) of the construction zone. Construction can proceed if no active avian nests are located during this survey. If an active nest is found during the survey, a 500-foot (this distance may vary depending on the bird species and construction activity, as determined

by the biologist) fence barrier shall be erected around the nest site. Clearing and construction within the fenced area shall be postponed or halted, at the discretion of the biologist, until the nest is vacated and juveniles have fledged, as determined by the biologist, and there is no evidence of a second attempt at nesting. The biologist shall serve as a construction monitor during those periods when construction activities may occur near active nests to ensure that no inadvertent impacts on these nests occur. Results of the raptor survey and any subsequent monitoring shall be provided to the CDFG and any other appropriate agency.

The following mitigation measures shall be implemented for **all Concept Design Studies**:

CD-B5 Invasive Plant Species – Landscaping of surrounding vegetation shall not include any invasive plant species as listed on the California Invasive Plant Council Pest Plant List.

CD-B6 Night Lighting – Night lighting is expected to be used in public areas for health and safety reasons. Lighting would inadvertently affect the behavior patterns of nocturnal and crepuscular (active at dawn and dusk) wildlife at these areas. Of greatest concern is the effect on small ground-dwelling animals that use the darkness to hide from predators, and on owls that are specialized night foragers. To reduce light impacts on nocturnal and crepuscular wildlife, night lighting shall be low intensity directional lighting focused away from open space areas.

CD-B7 Human Activity – An appropriate plan for the management of native habitats shall accompany each Concept Design Study site to reduce impacts from human uses (e.g., riding, hiking, biking) on habitat areas. The management plan shall include access points including parking and restrooms, signage for trails and restricted uses, appropriate fencing, and restrictions on domestic animals. This plan shall be written by a qualified biologist and approved by the sponsoring agency prior to initiation of site development.

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4.3 CULTURAL RESOURCES

4.3.1 Existing Setting

4.3.1.1 Methodology and Approach

An evaluation of archaeological and historical resources in the project area was conducted by Greenwood and Associates, Pacific Palisades, California. The technical report prepared by Greenwood and Associates (2003) is included in **Appendix D**. Precise location of archaeological resources is considered sensitive information, and is therefore not included in this section or Appendix D.

The cultural resources evaluation conducted for the Woodland Duck Farm site as part of this Program EIR consisted of a review of recorded archaeological sites and cultural resource reports on file at the South Central Coastal Information Center, California State University, Fullerton (SCCIC) and a review of federal and state listings for designated cultural resources (**Appendix D**). The description of the proposed improvements for the Woodland Duck Farm provided in **Section 3.3.3.2** of this Program EIR represents an initial concept for the project and not an approved plan. WCA is undertaking a master plan for the site which involves all stakeholders. This planning effort will examine all potential uses of the site, and will include a CEQA process.

A review of available literature, archaeological site records, survey and excavation reports, historical maps, and landmark lists was conducted in September 2003 (for San Gabriel Canyon Spreading Grounds, San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park) and September 2004 (Woodland Duck Farm) at the SCCIC. The SCCIC is the regional clearinghouse for the State Office of Historic Preservation (OHP), and is the repository of cultural resources records for Los Angeles, Orange, and Ventura Counties. Historical maps reviewed were United States Geological Survey (USGS) 6-minute (1972) and 7.5-minute (1939) quad maps for Azusa, 15-minute quad map for Pasadena (1900), 15-minute quad maps for Downey (1896, 1941, and 1943), and 15-minute quad map for El Monte (1948).

Field surveys were conducted in September 2003 and consisted of on-foot inspection of the four Concept Design Study sites, with the exception of areas covered by thick and overgrown vegetation. Two archaeologists walked the parcels in parallel transects spaced approximately 10 meters apart, examining all visible ground surface and subsurface.

4.3.1.2 Study Area Background

Ethnography

The Native American people known to have inhabited the region surrounding the project area are referred to as the Gabrieliño. The Gabrieliño were hunters and gatherers with permanent villages, specialized processing sites, formal cemeteries, and trade networks with local and non-local groups. It is believed that they initially practiced a seasonal strategy, moving from location to location exploiting various food resources, but with technological advances they were able to maintain permanent year round villages with reliance on acorns and marine resources. At the

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time of European contact, they occupied an area that included portions of western San Bernardino, Los Angeles, and Orange Counties (Kroeber, 1953).

Prehistory

The archaeological record indicates that sedentary populations occupied the coastal and inland regions of California more than 9,000 years ago. Early periods were characterized by the processing of hard seeds with the mano and milling stone and the use of the atlatl (dart thrower) to bring down large game such as deer. Villages in the Los Angeles area were typically near permanent water sources that allowed exploitation of a variety of different habitats for food. In the later periods, prior to the arrival of Europeans, the bow and arrow was in use, beads were used as money, trade and social networks had evolved, and the mortar and pestle were used to process acorns.

History

Spanish Period (1769 - 1821). California was claimed by Spain during the sixteenth century as part of the empire it was establishing in the New World. Europeans arrived in Los Angeles in 1769 with the Gaspar de Portolá expedition. Portolá's objective was to locate potential mission sites and to establish an overland route between the first Franciscan mission, established by his party at San Diego, and Monterey Bay. To solidify their claims, the Spanish government fortified San Diego and Monterey and started to establish Mission outposts. The San Gabriel Mission was founded in 1771 and by the early 1800s, most of the Gabrieliño population, with the exception of those who had fled into the interior mountains and valleys, had come into the Mission system.

Mexican Period (1821-1846). Mexico declared independence from Spain in 1821. A city council was formed in 1822 for Los Angeles, and Alta California became a State with Monterey as the capital. During this period the Gabrieliño Indian population declined due to disease, disruption of ancient lifeways, and excessive toil.

With Mexican independence from Spain came conflict over the disposition of mission lands in Alta California. A series of laws, culminating with the Secularization Act of 1833, stripped the missions of their land and power. The Missions were secularized in 1834, and eventually the surviving Native Americans were forced out of the area and into a marginalized existence. The vast holdings of the Franciscans were opened for acquisition by private citizens. Grants were made to individuals willing to work to make the land productive, and were often used to stimulate settlement of under populated areas. The number of grants rose markedly in the mid-1840s as the Mexican government acted to place as much of its California territory into private ownership as possible prior to the imminent takeover by the United States. More than 600 rancho grants were made between 1833 and 1846.

American Period (1846-Present). The United States took control of California after the Mexican-American War of 1846. The discovery of gold in northern California created a boom in the cattle industry which fed the hordes of miners searching for gold. During the 1860s, the American population grew rapidly, partly because many of the old rancho families lost title to

their land, leaving a vacuum which was promptly filled by settlers from central and eastern United States.

History of Flood Control on the San Gabriel River. Historically, the waters of the Los Angeles, San Gabriel, and Santa Ana Rivers often mingled on the coastal plain in times of flood. Flood waters from these rivers deposited the rich soil that helped make Los Angeles County the most productive agricultural county in the United States until the 1950s (Gumprecht, 1999). The San Gabriel River once emptied into the ocean at San Pedro Bay, along a course later occupied by the Los Angeles River. The Los Angeles River joined the San Gabriel River 7 miles north of its ocean terminus; the combined flow of the two streams reached the ocean through the Wilmington Lagoon. Both the Santa Ana and the San Gabriel Rivers posed greater flood risks in their uncontrolled states than did the Los Angeles River because they spread over wide areas as soon as they left the mountains. Most of the irrigated farmland in Los Angeles County was located along the Los Angeles, San Gabriel, and Santa Ana Rivers (Gumprecht, 1999).

The floods of 1868 caused the San Gabriel River to cut a new course to the sea. Surging flood waters forced the San Gabriel River to leave its bed farther upstream, where its channel turned southwest after emerging between two hills south of El Monte, a gap known as Whittier Narrows. Flood waters washed away the town of Galatin, settled a few years earlier near the present site of Downey, and dug an entirely new channel south to Alamitos Bay, at the boundary between Los Angeles and Orange Counties. This new channel, initially known as New River, is approximately the course of the San Gabriel River today. Water continued to flow in the River's former channel, which became known as Rio Hondo. The last 7 miles of the old San Gabriel channel, downstream from its meeting with the Los Angeles River, meanwhile, gradually assumed the name of that river (Gumprecht, 1999).

The overflow of the San Gabriel River during a storm in March 1911 awakened fears of more flooding. All the flow of the San Gabriel River was forced back into its former channel, now the Rio Hondo, and had washed away bridges and destroyed valuable farmland. Studies conducted two years later showed that more than 90 percent of the water carried by the upper San Gabriel flowed west through the Rio Hondo and reached the ocean via the Los Angeles River at San Pedro Bay. Little water flowed in the main channel of the San Gabriel River below Whittier Narrows.

County Supervisors hired former Santa Fe railroad engineer Frank H. Olmstead to prepare a comprehensive plan to control the San Gabriel River. In 1913 he proposed that the banks of the San Gabriel be reinforced and that the stream channels be kept clear of brush and rubbish. During the first three decades of the twentieth century, more than 2 million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area (Gumprecht, 1999).

The disastrous flood of February 1914, which caused over \$10 million in property damage, prompted the State Legislature to enact the Los Angeles County Flood Control Act in 1915. The Act authorized the formation of the Los Angeles County Flood Control District, which is now administered by LADPW (LADPW, 2004).

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Successful bond issues in 1917 and 1924 financed construction of 14 dams which were built to impound San Gabriel Mountain storm waters until they could be released in a controlled manner. Two of these dams, now known as Cogswell and San Gabriel, were built in San Gabriel Canyon in 1934 and 1939, respectively. A third dam, known as Morris Dam was constructed in 1934 by the City of Pasadena.

After two additional bond measures were defeated in 1926 and 1934, the federal government then took action. In 1935, President Franklin D. Roosevelt allocated \$13.9 million in Works Progress Administration funds to finance 14 of the most urgent projects in the comprehensive plan. In 1936, Congress passed its first flood control act, and authorized a preliminary examination of the Los Angeles and San Gabriel Rivers. This was the first step toward creating a more comprehensive federally funded flood control program. The United States Army Corps of Engineers (COE) became the agency delegated to study flood control issues and implement measures to prevent flood events. Flood control plans completed in 1938 for the San Gabriel River are still in place today. In addition, the Los Angeles County Flood Control District began implementing its Comprehensive Plan for the Control and Conservation of Flood Waters, evolving between 1927 and 1931 and revised in 1935 and 1938, the latter in the wake of the 1938 flood.

History of Cities and Communities in the Master Plan Study Area. Appendix D (the cultural resources technical report) contains brief descriptions of history of selected cities (Azusa, Irwindale, Arcadia, Baldwin Park, El Monte, Whittier, Pico Rivera, Downey, Norwalk, Bellflower, Cerritos, Lakewood, Los Alamitos, and Long Beach) and communities within the Master Plan study area.

Historical Landmarks

According to the National Park Service (NPS, 2003a), there are no National Historic Landmarks within the Master Plan study area. One California Historical Landmark, Casa de Governor Pío Pico and Pío Pico State Historic Park (6003 Pioneer Boulevard, Whittier), is located within the Master Plan Study area. The landmark is the site of an adobe home of Pío Pico, the last Mexican governor before the American takeover. The original home was destroyed by the floods of 1883-1884. His second adobe home, now known as the Pío Pico Mansion, is located within the 4-acre State Historic Park (OHP, 2003).

U.S. Highway 66 (commonly known as Route 66), the first all-weather highway linking Chicago to Los Angeles, passes through the Master Plan study area (in Azusa). While limited segments of Route 66 have been included in the National Register of Historic Places, most of the route (including the segment that passes the Master Plan study area) has no official designation as a historical resource (K. Barthuli, pers. comm., 2004). However, its importance to U.S. history and national heritage is recognized by the Congress in the Route 66 Study Act of 1990 (NPS, 2004a). The National Park Service manages the Route 66 Corridor Preservation Program, which provides technical and financial assistance for local communities in preparing plans for protecting the route itself and other historical properties located along the route (K. Barthuli, pers. comm., 2004).

Juan Bautista de Anza National Historic Trail corridor also passes through the Master Plan study area (in El Monte and Baldwin Park, north of the 10 Freeway). This national trail commemorates the route followed by a Spanish commander, Juan Bautista de Anza, in 1775-1776 when he led a contingent of 30 soldiers and their families to found a presidio and mission near the San Francisco Bay (NPS, 2004b). While limited segments of the trail have been included in the National Register of Historic Places, most of the trail (including the segment that passes the Master Plan study area) has no official designation as a historical resource (M. Kaplan, pers. comm., 2004). As defined in the National Trails System Act (NTSA), national historic trails are “extended trails which follow as closely as possible and practicable the original trails or routes of travel of national historical significance.” The purpose of national historic trails is “the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment” (NPS, 1996). Based on a Comprehensive Management and Use Plan for the Juan Bautista de Anza National Historic Trail (NPS, 1996), the National Park Service coordinates with local agencies to implement programs that protect the trail corridor and cultural/scenic resources along the corridor and foster public appreciation and understanding of the trail.

In addition, the Master Plan study area contains a number of local historic landmarks designated by cities located along the River. Interviews conducted by the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) in 2002 identified the following City Landmarks within the Master Plan study area (see Figure M2-20 of the Master Plan for locations of state and local landmarks):

- Puente Largo Railroad Bridge/Duarte Historical Society (Duarte)
- Walnut Creek Nature Center (Baldwin Park)
- Lakewood Equestrian Center (Lakewood)
- Mae Boyer Park (Lakewood)
- Monte Verde Park (Lakewood)
- Nye Library (Lakewood)
- Rynerson Park (Lakewood)
- West San Gabriel River Open Space Area (Lakewood)
- Caruther’s Park House (Bellflower)
- Horse Country (Bellflower)
- Rancho Los Alamitos (Long Beach)
- Whittier Narrows Nature Center (El Monte)

4.3.1.3 Regulatory Framework

In 1992, the California legislature established the California Register of Historical Resources (California Register) based on the federal model, the National Register of Historic Places established by the National Historic Preservation Act of 1966. The California Register is used as a guide by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected from substantial adverse change.

The California Register, as instituted by the California Public Resources Code (PRC), includes all California properties already listed in the National Register and those formally determined to

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be eligible, as well as specific listings of State Historical Landmarks and State Points of Historical Interest (PRC Section 5024.1[d]).

The criteria for listing a resource on the California Register are the following. The resource:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values, or
4. Has yielded, or may be likely to yield, information important in prehistory or history

For purposes of CEQA, resources that are listed, as well as those formally determined eligible for listing, in the California Register are considered significant historical resources (CEQA Guidelines Section 15064.5[a]). In addition, a historical resource under CEQA includes:

- A resource included in a local register of historical resources
- Any resource which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California

4.3.1.4 Results of Records Search and Field Surveys for the Concept Design Study Sites

The results of the records searches and field surveys for cultural resources at the Concept Design Study sites are described below and summarized in **Table 4.3-1**.

Records Search Findings. The records search identified 21 previous archaeological resource investigations whose survey areas overlapped with the Concept Design Study site boundaries (three at the San Gabriel Canyon Spreading Grounds, 12 at San Gabriel Discovery Center / Lario Creek, six at El Dorado Regional Park, and none at the Woodland Duck Farm). One previous investigation conducted in 1997 had found one archaeological site (Site Record No. 19-002583) within the Lario Creek project boundary.

Field Survey Findings. During the September 2003 field survey, no cultural resources were encountered within the Concept Design Study boundaries of the San Gabriel Canyon Spreading Grounds.

There is a possibility that the existing Nature Center building at the San Gabriel River Discovery Center site may have been constructed more than 50 years ago (Jallo, pers. comm., 2003) and therefore may be considered a potential historical resource.

Within the Lario Creek site boundary, a total of ten structures were identified. Four are remains of concrete building foundations. One structure is a gaging station and appears to be abandoned. An abandoned metal water tank was also found, which appeared to have been moved from its original location. The remaining four structures are former driveways, consisting of concrete and asphalt. The archaeological site previously recorded in 1997 (Site Record No. 19-002583; adobe remains) as identified in the records search was not found during the field survey because the site was covered with several feet of soil when the 1997 survey was completed.

Within the El Dorado Regional Park site boundary, eight shell beads were found in a picnic area on a patch of dirt that appeared to have been recently fertilized. While the beads appear Native American in manufacture, they could be modern copies and/or imported from fill or other means from outside the site.

**Table 4.3-1
Summary of Records Search and Survey Findings
for the Concept Design Study Sites**

Concept Design Study Site	Findings	
	Records Search	Field Survey
San Gabriel Canyon Spreading Grounds	None	None
San Gabriel River Discovery Center	None	<ul style="list-style-type: none"> ▪ Nature Center building
Lario Creek	Site Record No. 19-002583 (adobe remains)	<ul style="list-style-type: none"> ▪ Four building foundations ▪ One gaging station ▪ One metal water tank ▪ Four driveways
El Dorado Regional Park	None	<ul style="list-style-type: none"> ▪ Eight shell beads
Woodland Duck Farm	None	N/A*

* No further archaeological work for the Woodland Duck Farm site was recommended by the SCCIC (2004; see **Appendix D**).

4.3.1.5 Paleontological Resources

Paleontological resources are remains of plants and animals, fossilized and predating human occupation. Fossils are found mostly in sedimentary rocks that have been uplifted, eroded or otherwise exposed.

The geology of the Master Plan study area consists primarily of recent, unconsolidated alluvial materials deposited by the San Gabriel River, which have low probability of containing paleontological resources (e.g., skeletal remains, fossils). Therefore, paleontological resources are unlikely to occur in the Master Plan study area.

4.3.2 Significance Criteria

Project impacts related to cultural resources would be considered significant if the project:

- Caused a substantial adverse change in the significance of an historical or archaeological resource

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- Directly or indirectly destroyed a unique paleontological resource or site or unique geologic feature
- Disturbed any human remains, including those interred outside of formal cemeteries
- Eliminated important examples of the major periods of California history or prehistory

4.3.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.3.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

A review of the history of the Master Plan study area and surrounding communities suggests that there is potential for future Master Plan project sites to contain cultural resources including: elements of Spanish Period occupation (e.g., the Ontiveros Adobe in Santa Fe Springs), Mexican Period ranchos (e.g., Azusa and Long Beach), agricultural related buildings and structures during the early American Period, and residential and transit system development in later years (e.g., Pacific Electric light rail).

As described below in **Table 4.3-2**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts on cultural resources. Adverse impacts on cultural resources associated with ground disturbance or modification of existing structures that would qualify as historic resources would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.3.5**). Since mitigation will reduce these impacts to less than significant levels (see **Table 4.3-2** and Master Plan program mitigation measures described in **Section 4.3.5**), the overall impacts on cultural resources from adopting the Master Plan are considered less than significant. Site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area.

Table 4.3-2
Impacts on Cultural Resources from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Cultural Resources	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	Beneficial: Preservation of existing habitat areas would result in protection of currently undisturbed open space areas from development or other disturbances, a beneficial impact on cultural resources (e.g., archaeological artifacts) that may be present in those areas.	Potentially significant for construction-related disturbances; less than significant

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Master Plan Elements	Impacts on Cultural Resources	Impact Summary
	<p>Potentially Adverse: Habitat enhancement that involves active restoration in undeveloped areas (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) would result in ground disturbance, which could have an adverse impact on cultural resources, if any are present at those locations. The Master Plan mitigation measures described in Section 4.3.5 outline an approach to evaluation of cultural resources prior to completion of detailed design plans and implementation of measures to reduce impacts (i.e., incorporation of cultural resources into project design thereby eliminating disturbance to the resource or removal and relocation of resources thereby ensuring preservation and reporting of previously unknown resources encountered during construction thereby minimizing disturbance to these resources). Other activities associated with habitat enhancement (e.g., monitoring and maintenance activities or exotic species removal) could also result in less than significant incidental trampling of cultural resources, if any surface resources are present.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on cultural resources (e.g., establishment of habitat area design standards and identification of indicator species).</p>	<p>with mitigation</p> <p>Less than significant to beneficial for operations-related impacts</p>
<p>Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses</p>	<p>Beneficial: Preservation of existing undisturbed open space areas for passive recreational uses could result in protection of cultural resources from development or other disturbances. For example, trails within a passive recreation area could be designed to direct visitors away from sensitive cultural resources, or cultural resources could be incorporated into the park design as an interpretive or educational element for the visitors.</p> <p>Potentially Adverse: Construction of recreation related facilities (e.g., interpretive centers, trails and trail amenities, signs, kiosks) on an undeveloped site would result in ground disturbance, which could have an adverse impact on cultural resources, if any are present at those locations. The Master Plan mitigation measures described in Section</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant to beneficial for operations-related impacts</p>

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Master Plan Elements	Impacts on Cultural Resources	Impact Summary
	<p>4.3.5 outline an approach to evaluation of cultural resources prior to completion of detailed design plans and implementation of measures to reduce impacts (incorporation of cultural resources into project design thereby eliminating disturbance to the resource or removal and relocation of resources thereby ensuring preservation and reporting of previously unknown resources encountered during construction thereby minimizing disturbance to these resources).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on cultural resources (e.g., educating the public about catch and release fishing, establishing design standards for trails).</p>	
<p>Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.</p>	<p>Beneficial: Preservation of existing open space areas (e.g., through land acquisition or conservation easements) could result in protection of cultural resources from development or other disturbances. In addition, identification of historical sites and cultural landscapes as part of promoting stewardship of the open space landscape would help facilitate protection of such resources (e.g., opportunities for incorporating into park design or implementing other protective measures). Promoting fire safety and awareness as part of the cross-jurisdictional safety and maintenance program could also result in protection of cultural resources from fires.</p> <p>Potentially Adverse: Use of existing open space areas for active recreational facilities and activities may result in disturbance of cultural resources, if any are present at those locations (e.g., construction of parking facilities, less than significant incidental trampling of cultural resources by visitors). The Master Plan mitigation measures described in Section 4.3.5 outline an approach to evaluation of cultural resources prior to completion of detailed design plans and implementation of measures to reduce impacts (i.e., incorporation of cultural resources into project design thereby eliminating disturbance to the resource or removal and relocation of resources thereby ensuring preservation and reporting of previously unknown resources encountered during construction thereby minimizing disturbance to these resources).</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant to beneficial for operations-related impacts</p>

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Master Plan Elements	Impacts on Cultural Resources	Impact Summary
	<p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on cultural resources (e.g., recycling of brownfields, use of drought tolerant and native plants).</p>	
<p>Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.</p>	<p>Beneficial: Maintenance of flood protection would have beneficial impacts on cultural resources (e.g., protection of historical structures from flood damage).</p> <p>Potentially Adverse: Construction of new flood control facilities (e.g., stormwater detention areas) on an undeveloped site would result in ground disturbance, which could have an adverse impact on cultural resources, if any are present at those locations. In addition, some existing flood control facilities may qualify as historic resources. Depending on the extent, modification of such facilities could result in adverse impacts. The Master Plan mitigation measures described in Section 4.3.5 outline an approach to evaluation of cultural resources prior to completion of detailed design plans and implementation of measures to reduce impacts (i.e., incorporation of cultural resources into project design thereby eliminating disturbance to the resource or removal and relocation of resources thereby ensuring preservation and reporting of previously unknown resources encountered during construction thereby minimizing disturbance to these resources).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on cultural resources (e.g., ensures liability is not increased, coordination of maintenance of flood protection system with habitat needs).</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant for operations-related impacts</p>
<p>Water Supply and Water Quality Element: 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.</p>	<p>Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) on an undeveloped site would result in ground disturbance, which could have an adverse impact on cultural resources, if any are present at those locations. The Master Plan mitigation measures described in Section 4.3.5 outline an approach to evaluation of cultural resources prior to completion of detailed design plans and implementation of measures to reduce</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant for operations-</p>

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Master Plan Elements	Impacts on Cultural Resources	Impact Summary
	<p>impacts (i.e., incorporation of cultural resources into project design thereby eliminating disturbance to the resource or removal and relocation of resources thereby ensuring preservation and reporting of previously unknown resources encountered during construction thereby minimizing disturbance to these resources).</p> <p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on cultural resources (e.g., maintains conservation of local water).</p>	related impacts
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Potentially Adverse: Reclamation of inactive gravel mines could result in removal or destruction of machinery or equipment. If such machinery or equipment qualified as a historical resource, this could be an adverse impact on cultural resources. In addition, ground disturbance of any remaining undisturbed areas within the parcel boundaries of the gravel pits could result in adverse impacts to buried archaeological resources, if any are present at those locations. The Master Plan mitigation measures described in Section 4.3.5 outline an approach to evaluation of cultural resources prior to completion of detailed design plans and implementation of measures to reduce impacts (i.e., incorporation of cultural resources into project design thereby eliminating disturbance to the resource or removal and relocation of resources thereby ensuring preservation and reporting of previously unknown resources encountered during construction thereby minimizing disturbance to these resources).</p> <p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on cultural resources (e.g., providing incentives to participating adjacent land owners).</p>	<p>Potentially significant for construction-related disturbances; less than significant with mitigation</p> <p>Less than significant to beneficial for operations-related impacts</p>

4.3.4 Impacts of Implementing the Concept Design Studies

4.3.4.1 San Gabriel Canyon Spreading Grounds

No cultural resources were identified at the San Gabriel Canyon Spreading Grounds. Site disturbance associated with the implementation of the Concept Design Study would be limited to installation of fencing, landscaping, installation of irrigation lines, and other minor activities. However, since the examination of the project area was limited to surface observations, there is

potential for encountering buried resources during project construction at these sites. This is a potentially significant impact. However, implementation of **Mitigation Measures CD-C1, CD-C8, and CD-C9 (Section 4.3.6)** would reduce potential impacts on buried cultural resources to a less-than-significant level through monitoring and reporting to limit the potential for inadvertent destruction of unknown cultural resources during construction activities.

4.3.4.2 Lario Creek

The Master Plan Concept Design for the Lario Creek includes: widening the Lario Creek channel to increase capacity and flow; creating a habitat channel with native vegetation; removing exotic, invasive species; consolidating multi-use trails; and adding interpretive signage. **Mitigation Measure CD-C4 (Section 4.3.6)** will be implemented to reduce project-related impacts on the structures identified as potential cultural resources during the records search and the field reconnaissance (**Section 4.3.1.4**) to a less-than-significant level by ensuring that significant cultural resources are avoided or preserved.

In addition, since there are known cultural resources at the Lario Creek project site (see Section 4.3.1.4) and the examination of the project area was limited to surface observations, there is potential for encountering buried resources during project construction. This is a potentially significant impact. However, implementation of **Mitigation Measures CD-C5, CD-C8, and CD-C9 (Section 4.3.6)** would reduce potential impacts on buried cultural resources to a less-than-significant level through monitoring and reporting to limit the potential for inadvertent destruction of unknown cultural resources during construction activities.

4.3.4.3 San Gabriel River Discovery Center

Since there are known cultural resources in the vicinity of the San Gabriel River Discovery Center project site (see **Section 4.3.1.4**) and the examination of the project area was limited to surface observations, there is potential for encountering buried resources during project construction. This is a potentially significant impact. However, implementation of **Mitigation Measures CD-C2, CD-C8, and CD-C9 (Section 4.3.6)** would reduce potential impacts on buried cultural resources to a less-than-significant level through monitoring and reporting to limit the potential for inadvertent destruction of unknown cultural resources during construction activities.

The Master Plan Concept Design for the San Gabriel River Discovery Center proposes to replace the existing Nature Center building with a new Discovery Center building. During the design phase of the San Gabriel River Discovery Center, the project proponent or the CEQA lead agency will conduct additional research and on-site surface inventory to determine the historical significance of the Nature Center building. If it is determined to be a significant historical resource, project impacts would be significant. Implementation of **Mitigation Measure CD-C3 (Section 4.3.6)** would reduce project-related impacts to a less-than-significant level by ensuring that significant cultural resources are avoided or preserved.

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4.3.4.4 El Dorado Regional Park

The Master Plan Concept Design for the El Dorado Regional Park does not propose any activities that would disturb the area where the potential archaeological resource (shell beads; see **Section 4.3.1.4**) were found. However, as with the other Concept Design Study sites, there is potential for encountering buried resources during project construction, which would include earthwork for construction of wetlands. This is a potentially significant impact. However, implementation of **Mitigation Measures CD-C6, CD-C8, and CD-C9 (Section 4.3.6)** would reduce potential impacts on buried cultural resources to a less-than-significant level.

4.3.4.5 Woodland Duck Farm

Based on the results of the records search, no further archaeological work for the Woodland Duck Farm site is recommended by the SCCIC (2004; see **Appendix D**). However, as with the other Concept Design Study sites, there is potential for encountering buried resources during project construction. This is a potentially significant impact. However, implementation of **Mitigation Measures CD-C8 and CD-C9 (Section 4.3.6)** would reduce potential impacts on buried cultural resources to a less-than-significant level.

In addition, the SCCIC has recommended that if the Original Ranch House or any adjacent structure located on the site is 45 years and older, the building should be assessed and evaluated for potential historical significance by a professional architectural historian. The description of the proposed improvements for the Woodland Duck Farm provided in **Section 3.3.3.2** of this Program EIR represents an initial concept for the project not an approved plan. WCA is undertaking a master plan for the site involving all stakeholders. This planning effort will examine all potential uses of the site, and will include a CEQA process. As part of this planning effort, **Mitigation Measure CD-C7 (Section 4.3.6)** will be implemented to reduce project-related impacts on potential historic structures to a less-than-significant level by ensuring that significant cultural resources are avoided or preserved.

4.3.4.6 Paleontological Resources

Due to the alluvial geology in the Master Plan study area, the potential for encountering paleontological resources during project construction is considered low. Future projects are anticipated to have less than significant impacts on paleontological resources.

4.3.5 Master Plan Program Mitigation Measures

Future projects involving site disturbance or modifications to existing structures will require an evaluation of the impacts of proposed actions on known or potential cultural resources as described in program Mitigation Measure MP-C1:

MP-C1 Site-specific evaluations for cultural resources will be conducted as follows prior to completion of detailed design plans for each future Master Plan project:

1. Identify and determine the extent of site disturbance and/or structural modifications proposed by the project. For sites where ground will be newly disturbed (i.e., not fill

soils or previously completely disturbed sites) and/or for sites with potentially historic structures present, continue evaluation as outlined below.

2. Conduct background research to identify previous cultural resources investigations and known cultural resources relevant to the project site (review records at the South Central Coastal Information Center, contact local historical societies, the Native American Heritage Commission, etc.).
3. Conduct field reconnaissance if the project site has not been surveyed for cultural resources in the last five years.
4. If potential resources are identified in the field reconnaissance, determine if avoidance is feasible (e.g., design project to locate the proposed structures or site disturbance away from or around the area of the potential resource; a buffer of 100 meters is recommended in most cases). If feasible, the resource shall be avoided.
5. If avoidance is not feasible, evaluate the significance of the potential resource. The evaluation process may include excavation, additional review of records and literatures, interviews, field examination by a an architectural historian, and/or laboratory analysis. Based on the results of the evaluation, the significance of the potential resource should be determined using the criteria listed in **Section 4.3.1.3**.
6. If the resource is found to be significant, determine significance of project impacts on the resource. (Significant change to a resource includes demolition, replacement, substantial alteration, or relocation (California Code of Regulations [CCR] Section 15064.5)).
7. If project impacts are determined to be significant, the following measures (in order of preference) will be implemented to reduce impacts to below a level of significance:
 - Incorporating the resource into the project design (e.g., for projects involving park development or interpretive centers); or
 - Remove and relocate the resource to an appropriate location (e.g., museum, public library, or school)

The results of site-specific evaluations and detailed mitigation measures, if any, will be disclosed in subsequent CEQA documentation.

In addition, the following mitigation measures will be implemented for future projects to reduce any inadvertent disturbances to buried cultural resources during construction to below a level of significance:

MP-C2 If previously unknown cultural resources are discovered in the course of excavation for project construction, the construction inspector shall have the authority and responsibility to halt construction until a qualified archaeologist can evaluate the significance and distribution of the materials, and identify future activities needed. If the cultural material discovered is determined to be of potential archaeological significance, the investigation and future activities shall be conducted in consultation with a culturally affiliated Native American or other parties, as necessary.

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MP-C3 If human remains are discovered in the course of excavation for project construction, the County Coroner shall be contacted and provisions of State CEQA Guidelines Section 15064.5 shall be followed.

4.3.6 Mitigation Measures for Concept Design Studies

The following mitigation measure shall be implemented for the **San Gabriel Canyon Spreading Grounds** Concept Design Study:

CD-C1 On the first day of subsurface work at the San Gabriel Canyon Spreading Grounds, a professional monitor qualified in historical archaeology shall be present to assess whether further monitoring might be warranted. Further monitoring may be required if subsurface cultural material was uncovered on the first day of earthwork and/or if the monitor determined that there was a high probability of additional subsurface cultural materials being encountered.

The following mitigation measures shall be implemented for the **San Gabriel River Discovery Center** Concept Design Study:

CD-C2 A professional monitor qualified in historical archaeology shall be present at the San Gabriel River Discovery Center for subsurface work between the surface and 5 feet (or more as determined by the monitor based on soil conditions) in depth. If potentially important cultural deposits are encountered in the course of construction, work shall be temporarily diverted from the vicinity of the discovery until the monitoring archaeologist can identify and evaluate the importance of the find and conduct any appropriate assessment and activities, as necessary.

CD-C3 During the design phase of the San Gabriel River Discovery Center, the project proponent shall evaluate whether the Nature Center building is a significant historical resource using the criteria described in Section 15064.5(a) of the State CEQA Guidelines. If it is determined to be a significant historical resource, the lead agency shall:

- Remove and relocate the building or historically significant portion of the building to an appropriate location, or
- Incorporate the historically significant elements of the existing building into the new Discovery Center.

The following mitigation measures shall be implemented for the **Lario Creek** Concept Design Study:

CD-C4 During the design phase of Lario Creek, LADPW shall evaluate if the project can be designed to avoid the structures identified in Section 4.3.1.4 (locate the proposed structures or site disturbance at least 100 meters away from or around the structures).

If avoidance is not feasible for one or more of the structures, the structure's significance shall be evaluated, using the criteria listed in CEQA Guidelines Section 15064.5[a]. Results of this evaluation would be disclosed in second-tier environmental documentation.

If the resource is found to be significant, the significance of project impacts on the resource shall be determined. (Significant change to a resource includes demolition, replacement, substantial alteration, or relocation (California Code of Regulations [CCR] Section 15064.5)). If feasible, the significant resource(s) shall be avoided.

If project impacts are determined to be significant, LADPW shall:

- Incorporate the resource into the project design, or
- Remove and relocate the resource to an appropriate location (e.g., museum, public library, or school)

CD-C5 A professional monitor qualified in historical archaeology shall be present at the Lario Creek project site for subsurface work between the surface and 5 feet (or more as determined by the monitor based on soil conditions) in depth. If potentially important cultural deposits are encountered in the course of construction, work shall be temporarily diverted from the vicinity of the discovery until the monitoring archaeologist can identify and evaluate the importance of the find and conduct any appropriate assessment and activities, as necessary.

The following mitigation measure shall be implemented for the **El Dorado Regional Park** Concept Design Study:

CD-C6 On the first day of subsurface work at El Dorado Regional Park, a professional monitor qualified in historical archaeology shall be present to assess whether further monitoring might be warranted.

The following mitigation measure shall be implemented for the **Woodland Duck Farm** Concept Design Study:

CD-C7 During the design phase of Woodland Duck Farm, WCA shall evaluate if any onsite structures that are 45 years and older may be affected by the project.

For each structure that is 45 years and older and shall be affected by the project, the structure's significance shall be evaluated by a professional architectural historian, using the criteria listed in CEQA Guidelines Section 15064.5[a]. Results of this evaluation would be disclosed in second-tier environmental documentation.

If the resource is found to be significant, the significance of project impacts on the resource shall be determined. (Significant change to a resource includes demolition, replacement, substantial alteration, or relocation (CCR Section 15064.5)).

If project impacts are determined to be significant, the relevant resources shall be:

- Incorporated into the project design, or

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- Removed and relocated to an appropriate location (e.g., museum, public library, or school)

The following mitigation measures shall be implemented for all five Concept Design Studies:

CD-C8 If previously unknown cultural resources are discovered in the course of excavation for project construction, the construction inspector shall have the authority and responsibility to halt construction until a qualified archaeologist can evaluate the significance and distribution of the materials, and identify future activities needed. If the cultural material discovered is determined to be of potential archaeological significance, the investigation and future activities shall be conducted in consultation with a culturally affiliated Native American or other parties, as necessary.

CD-C9 If human remains are discovered in the course of excavation for project construction, the County Coroner shall be contacted and provisions of State CEQA Guidelines Section 15064.5 shall be followed.

4.4 GEOLOGY AND SOILS

4.4.1 Existing Setting

4.4.1.1 Regional Geology and Soils

The Master Plan study area is a 1-mile wide corridor along 58 river miles of the San Gabriel River in southern California, from its headwaters in the Angeles National Forest to its terminus at the Pacific Ocean between Long Beach in Los Angeles County and Seal Beach in Orange County. The project area travels through three regions with different geological characteristics (Upper San Gabriel River Watershed, San Gabriel Basin, and Los Angeles Coastal Plain), which are discussed below. Soil types in the Master Plan study area are shown in **Figure 4.4-1**.

The Concept Design Study site for the San Gabriel Canyon Spreading Grounds is located in the San Gabriel Basin region. The Woodland Duck Farm, San Gabriel River Discovery Center, and Lario Creek project sites are located on the border between the San Gabriel Basin and Los Angeles Coastal Plain regions. The Concept Design Study site for El Dorado Regional Park is located in the Los Angeles Coastal Plain region.

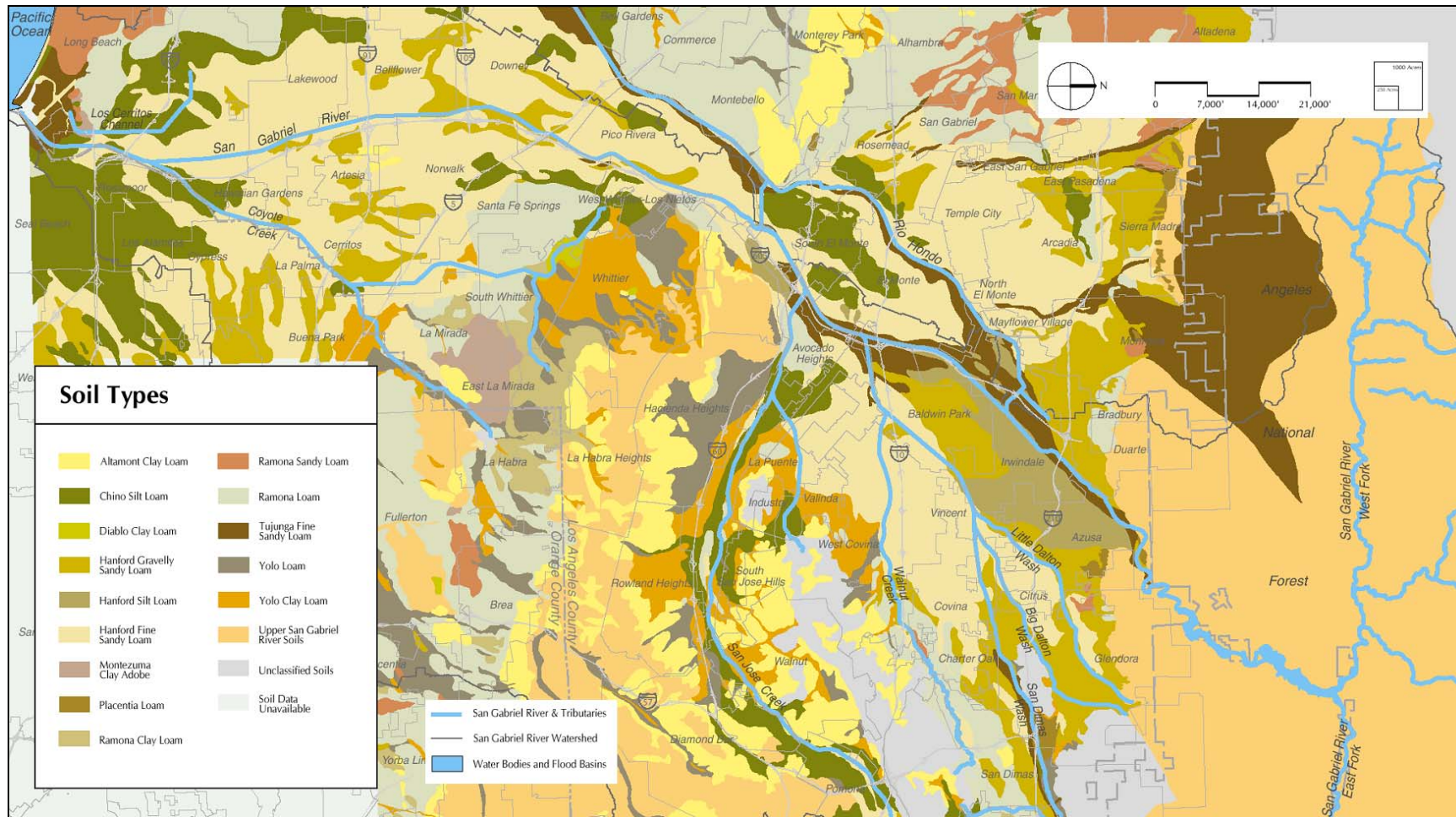
Upper San Gabriel River Watershed

The Upper San Gabriel River Watershed, located within the Angeles National Forest in the San Gabriel Mountains, begins at the headwaters of the San Gabriel River and ends approximately at San Gabriel Canyon Road in Azusa. The San Gabriel Mountains are part of the Transverse Ranges, which are steep mountain slopes formed by rapid tectonic uplift resulting from the collision of two tectonic plates estimated to have started over 6 million years ago. Elevations in the San Gabriel Mountains range from 900 feet above mean sea level (msl) along their base to over 10,000 feet above msl.

Geology of the San Gabriel Mountains is mostly Mesozoic (65 to 245 million years ago) granitic rocks, but there are also Precambrian (544 to 4,600 million years ago) igneous and metamorphic rock complexes. There are also occasional Pleistocene (57.8 to 65 million years ago) non-marine sedimentary deposits adjacent to the riverbed.

The primary native soil types in the San Gabriel Mountains are silt loam and sand (SCAG, 2004).

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San Gabriel Basin

The San Gabriel Basin region begins approximately at the San Gabriel Canyon Road in Azusa and extends south to Whittier Narrows, which is a low point between the Puente Hills and Merced Hills, which forms the southern boundary of the San Gabriel Valley.

The geology in the San Gabriel Basin is dominated by unconsolidated to semi-consolidated alluvium deposited by streams flowing out of the San Gabriel Mountains. These deposits include Pleistocene and Holocene (10,000 years ago to the present) alluvium and the lower Pleistocene San Pedro Formation (CDWR, 1966). The Upper Pleistocene alluvium deposits form alluvial fans along the San Gabriel Mountains. The San Pedro Formation is characterized by its interbedded marine sand, gravel, and silt (CDWR, 1966).

The San Gabriel Basin is an unconfined aquifer (i.e., the groundwater is not separated from the ground surface by an impermeable geological boundary) (CSPUP, 2000). The porous alluvium, which can be hundreds of feet in depth, provides a highly permeable connection between the surface and the aquifer. The result is that much of the river flows underground southward from the mountains below the valley and forms the San Gabriel Valley Groundwater Basin (CSPUP, 2002). The alluvium forms most of the productive water-bearing zones, but the San Pedro Formation also bears fresh water.

The primary native soil types in the San Gabriel Basin area are sandy loam, silt loam, and clay loam (SCAG, 2004).

Los Angeles Coastal Plain

The Los Angeles Coastal Plain region extends from the Whittier Narrows to the Pacific Ocean. The geology of the Los Angeles Coastal Plain ranges from Pleistocene- to Holocene-aged alluvium deposited from the San Gabriel River to marine sediments deposited during periodic encroachment of the sea. These sediments are grouped in four different formations: recent alluvium, the Lakewood Formation, the San Pedro Formation, and the Pico Formation.

The Los Angeles Coastal Plain is divided into two groundwater basins, the Central Basin and the West Basin. The Newport-Inglewood Uplift and a confining unit of clay and silt divide these two basins. The basins were formed by folding of consolidated sedimentary, igneous, and metamorphic rocks that underlie the basins at great depths. These groundwater basins consist of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay soils that extend to about 2,200 feet below ground surface (CDWR, 1961).

The primary native soil type in the Los Angeles Coastal Plain is sandy loam (SCAG, 2004).

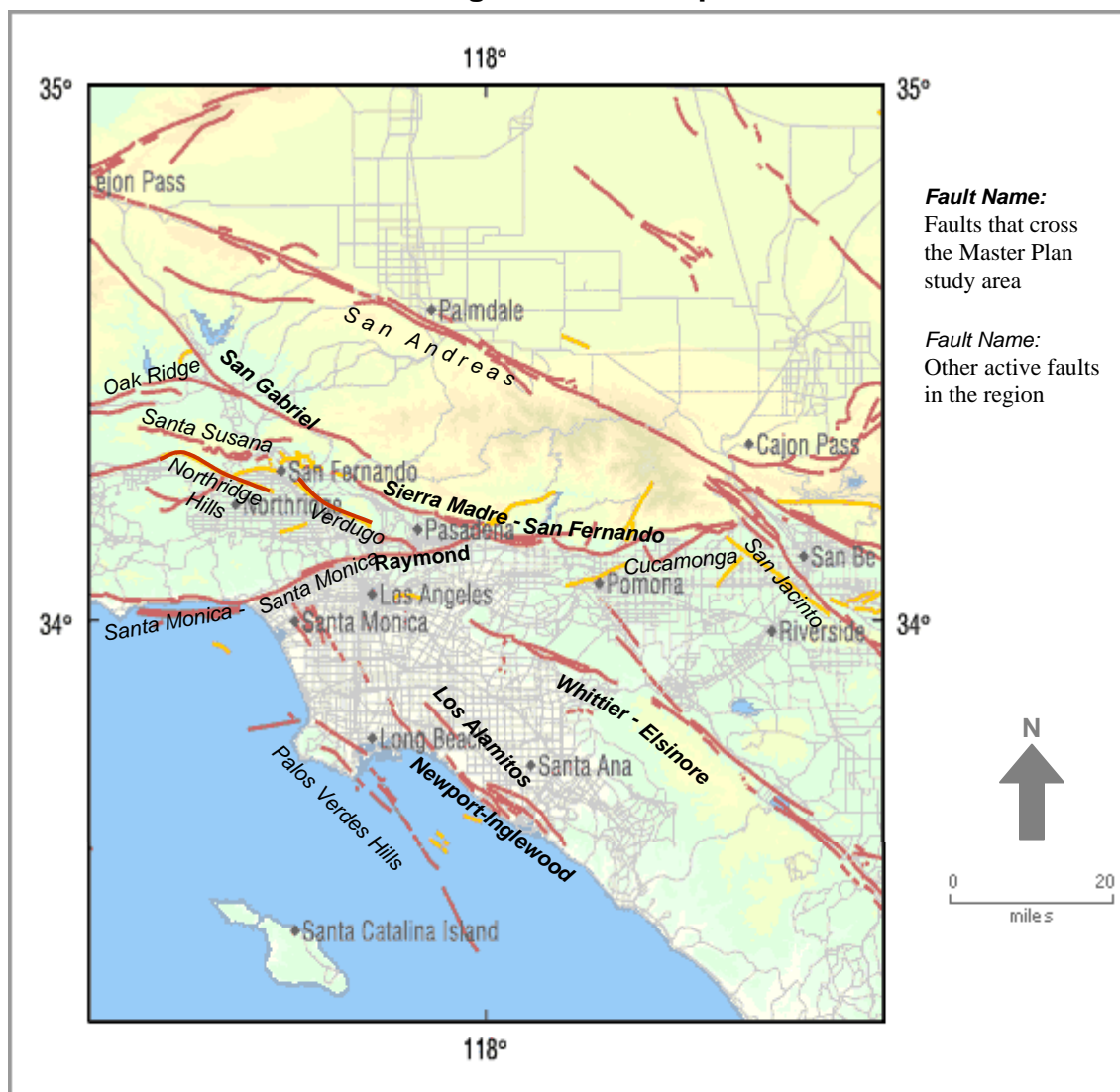
4.4.1.2 Faults

The Master Plan study area is penetrated by several faults, including the Newport-Inglewood, Los Alamitos, Whittier-Elsinore, Raymond, Sierra Madre-San Fernando, and San Gabriel (See **Figure 4.4-2**). Fault lines gave rise to the formation of the east and west forks of the San Gabriel River. The surface flow of the river cut its course to the ocean before the uplift occurred

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that resulted in the formation of the Puente and Montebello Hills. Geologists believe that the river then eroded these formations to form the Whittier Narrows before continuing its course to the ocean again. Fault information is taken primarily from the Southern California Earthquake Data Center (SCEDC, 2004).

**Figure 4.4-2
Regional Fault Map**



Source: USGS, 2003.

San Gabriel Fault

The San Gabriel fault trends northwest-southeast through the San Gabriel Mountains and is approximately 87 miles in length. The fault is comprised of a series east-west trending faults with a right-lateral strike-slip and with a dip steep to the north. The most recent surface rupture was in the Holocene Epoch. Estimated slip rate is 1 to 5 millimeters per year (mm/yr). There are no estimations on the maximum credible magnitude of future earthquakes, but the recurrence

interval varies per fault section and is likely to be more active on the western portions of the fault.

Sierra Madre-San Fernando Fault

The Sierra Madre-San Fernando fault trends along the front of the San Gabriel Mountains. The fault is made of five separate reverse faults measuring approximately 9 miles per section and 47 miles total. It has recently been suggested that a large event on the San Andreas fault to the north could cause simultaneous ruptures on reverse faults south of the San Gabriel Mountains. The most recent surface rupture was in the Holocene Epoch. Estimated slip rate is between 0.36 and 4 mm/yr. Interval between surface ruptures is estimated to be several thousand years. Its estimated probable Magnitude is between 6 and 7.

Raymond Fault

The Raymond fault is an east-northeast trending, left-lateral fault with minor reverse slip. The structure forms the western boundary of the San Gabriel Basin with the Raymond Groundwater Basin. The fault has a slip rate between 0.10 and 0.22 mm/yr. This fault extends a total of 16.2 miles. The most recent surface rupture was during the Holocene Epoch. The most recent major earthquake associated with this fault was the Pasadena Earthquake of 1988, which occurred at a depth 9.6 miles below ground with a 5.0 magnitude. The interval between major ruptures is estimated to be 4,500 years.

Whittier-Elsinore Fault

The Whittier-Elsinore fault is a right-lateral strike-slip fault with a northeastern dip and an estimated slip rate between 2.5 and 3.0 mm/yr. Its estimated length is 25 miles. The most recent surface rupture occurred in the Holocene Epoch. Historical activity has been limited to microseismicity and several Magnitude 4 or less events. The Whittier-Elsinore fault is considered capable of producing an earthquake with a magnitude between 6.0 and 7.2.

Los Alamitos Fault

The Los Alamitos fault is indistinct and considered by some as part of another fault system, possibly the Compton-Los Alamitos fault. The fault is located near the Lakewood, Bellflower, and Los Alamitos communities and extends 6.8 miles. The most recent surface rupture occurred in the Late Quaternary Period.

Newport-Inglewood Fault

The Newport-Inglewood Fault is a right-lateral strike-slip fault with a slip rate of 0.6 mm/yr. The total length of the fault is approximately 47 miles. This fault is associated with the Long Beach Earthquake of 1933, which had a magnitude of 6.4. Its probable magnitude is between 6.0 and 7.4.

4.4.1.3 Seismic Ground Shaking and Surface Rupture

Seismic Ground Shaking. The greatest concentration of historical, local seismic events has resulted from activity on the Newport-Inglewood Fault (related to recent activity), the Whittier Fault (1987 Whittier Narrows earthquake), the Sierra Madre Fault (1971 San Fernando earthquake), and the Raymond Fault (1988 Pasadena earthquake).

Ground motion or shaking caused by an earthquake is commonly measured as a percentage of the force of gravity, or %g. The force of gravity (g) is equivalent to an acceleration of 9.78 meters per second². The peak acceleration is the largest acceleration recorded by a particular station during an earthquake. The maximum credible peak acceleration (the percent probability of ground motion hazard in the area) with a 10 percent probability of exceedance in 50 years is between 60 and 80 %g for the Master Plan study area (USGS, 1996).

Surface Rupture. Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Fault rupture usually follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by shaking.

The Alquist-Priolo Earthquake Fault Zoning Act is a California law passed in 1972 to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Alquist-Priolo Act only addresses the hazard of surface fault ruptures and is not directed toward other earthquake hazards. The law requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling new or renewed construction (California Geological Survey, 2002a). According to the California Geological Survey (2002b), all five Concept Design Study sites are located outside of the Alquist-Priolo Earthquake Fault Zones. Within the overall Master Plan study area, the coastal area along the Newport-Inglewood Fault is the only area that could potentially contain active fault traces within an Alquist-Priolo Earthquake Fault Zone.

4.4.1.4 Landslides / Slope Instability

Landslides involve the downslope movement of masses of soil and rock material under gravity. There is a broad range of landslide morphology, rates, patterns of movement, and scale. Landslides can be caused by ground shaking, such as earthquakes, or heavy precipitation events. Surface ground failure could also be associated with subsurface slope failure adjacent to a river or wash, as the stream undercuts the adjacent bank. The risk of this type of failure increases during seismic events. Unstable conditions are also increased by a lack of vegetation cover.

Since the San Gabriel Mountains are essentially shattered from extensive faulting, the mountains and hillsides in the northern portion of the Master Plan study area are vulnerable to landslides, undercutting by streams and heavy debris flows. According to the State of California Department of Conservation Seismic Hazard Mapping Program (CDOC, 1999), the following areas within the Master Plan study area are considered to be landslide hazard zones: the San

Gabriel Mountains, the Puente Hills area east of the Whittier Narrows and south of State Route 60, and the sideslopes of several gravel mines located in Irwindale. None of the Concept Design Study sites are located within landslide hazard zones.

4.4.1.5 Liquefaction

Liquefaction is a process by which sediments below the water table temporarily lose strength and behave as a liquid rather than a solid. In the liquefied condition, soil may deform enough to cause damage to buildings and other structures. Seismic shaking is the most common cause of liquefaction. Liquefaction occurs in sands and silts in areas with high groundwater levels.

Liquefaction has been most abundant in areas where groundwater occurs within 30 feet of the ground surface. Few instances of liquefaction have occurred in areas with groundwater deeper than 60 feet (EERI, 1994). Dense soils, including well-compacted fills, have low susceptibility to liquefaction (EERI, 1994). According to the CDOC (1999), the San Gabriel Canyon area and the area along the San Gabriel River from Baldwin Park to the ocean are considered susceptible to liquefaction based on historical occurrence of liquefaction or local geological and groundwater conditions. All five Concept Design Study sites are located in areas identified to be susceptible to liquefaction.

4.4.1.6 Expansive Soils

Expansive soils are soils that swell when they absorb water and shrink as they dry. Pure clay soils and claystone are good examples of expansive soils. Typically, soils that exhibit expansive characteristics comprise the upper 5 feet of the surface (SCAG, 2004). The hazard associated with expansive soils is that structural damage may occur when buildings are placed on these soils. Foundations rise during the wet periods and fall during the dry periods. Different parts of a building may rise and fall at varying rates and cause foundation cracking. Various structural portions of a building may become distorted so that doors and windows do not function properly. Locations of expansive soils are site-specific. Potential impacts due to presence of expansive soils can generally be remedied through standard engineering practices (SCAG, 2004).

4.4.1.7 Subsidence

Land subsidence is the loss of surface elevation due to the removal of subsurface support. Land subsidence is caused by a variety of activities that contribute to the loss of support materials within a geologic formation. For example, agricultural practices can cause oxidation and subsequent compaction and settlement of organic clay soils or hydro-compaction allowing land elevations to lower or sink. Land subsidence can also result from overdraft of an aquifer (i.e., groundwater pumping in exceedance of the rate of aquifer replenishment). The extraction of mineral or oil resources can also cause subsidence. Adverse effects associated with subsidence include lowering of the land surfaces, increased potential for flooding, disturbance or damage to buried pipelines and associated structures, and damage to structures.

Within the Master Plan study area, subsidence is known to occur in the following areas: along the coast (Long Beach area), the area northeast of the intersection of Interstate 5 and 605 freeways, and the Whittier Narrows area (SCAG, 2004).

4.4.1.8 Soil Erosion

Soil erosion is the process whereby soil materials are worn away and transported to another area by either wind or water. Rates of erosion can vary depending on the soil material, structure, and placement by human activity. The erosion potential for soils is variable throughout the project area. Soil containing high amounts of silt can be easily erodible while sandy soils are less susceptible. Excessive soil erosion can eventually lead to damage of building foundations, roadways and dam embankments. Erosion is most likely on sloped areas with exposed soil, especially where unnatural slopes are created by cut and fill activities.

4.4.2 Significance Criteria

Project impacts related to geology and soils would be considered significant if the project:

- Exposes people or structures to risk of substantial damage, loss, injury, or death involving:
 - Rupture of a known earthquake fault
 - Strong seismic ground shaking
 - Seismic-related ground failure, including liquefaction
 - Landslides / slope instability
 - Expansive soils
 - Subsidence
- Results in substantial soil erosion or the loss of topsoil

4.4.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.4.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.4-1**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts. Primary adverse impacts related to geology and soils are temporary increases in soil erosion potential during construction of facilities and potential increases in liquefaction risk from stormwater infiltration. These impacts would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.4.5**). Since mitigation will reduce these impacts to less than

significant levels (see **Table 4.4-1** and **Section 4.4.5**), the overall impacts related to geology and soils from adopting the Master Plan are considered less than significant. Site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area.

Table 4.4-1
Impacts on Geology and Soils from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Geology and Soils	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	<p>Beneficial: Preservation of existing habitat areas would prevent development of habitable structures on open space areas subject to seismic related hazards. Habitat restoration efforts that include planting vegetation would serve to stabilize project site soils and reduce erosion.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on geology and soils (e.g., establishment of habitat area design standards and identification of indicator species).</p> <p>Potentially Adverse: Habitat enhancement that involves active restoration in undeveloped areas (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) could result in ground disturbance, which would result in temporary increase in soil erosion potential. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5).</p>	<p>Potentially significant for construction-related soil disturbance; less than significant with mitigation</p> <p>Less than significant for project operation</p>
Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses	<p>Beneficial: Preservation of existing open space areas for passive recreational uses would prevent development of habitable structures in areas subject to seismic related hazards. Development of park space that includes planting vegetation would serve to stabilize project site soils and reduce erosion.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts related to geology and soils (e.g., educating the public about catch and release fishing, establishing design standards for trails).</p> <p>Potentially Adverse: Adoption of this element may result in projects that involve construction of recreation related habitable structures (e.g., interpretive centers and park buildings). The design of such structures would be required by law to conform to the latest versions of the uniform building code and possibly relevant municipal codes. Building codes include minimum design standards for structural seismic resistance to reduce the risk of life loss or injury in the event of an earthquake. Adherence to these regulations would minimize potential seismic impacts to the proposed structures. This impact would be less than significant.</p>	<p>Potentially significant for construction-related soil disturbance; less than significant with mitigation</p> <p>Less than significant for project operation</p>

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Master Plan Elements	Impacts on Geology and Soils	Impact Summary
	Construction of recreation related facilities (e.g., interpretive centers, trails and trail amenities, signs, kiosks) on an undeveloped site would result in ground disturbance, which would result in temporary increase in soil erosion potential. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5).	
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	<p>Beneficial: Preservation of existing open space areas would prevent development of habitable structures on open space areas subject to seismic related hazards. Enhancement of open space that includes planting vegetation would serve to stabilize project site soils and reduce erosion.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on geology and soils (e.g., use of drought tolerant and native plants).</p>	Beneficial (no adverse impact)
Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on geology and soils (e.g., coordination of maintenance of flood protection system with habitat needs).</p> <p>Potentially Adverse: Flood control related facilities (e.g., storm drains) could be damaged during an earthquake and may need to be repaired. Failure of storm drains and underground tanks could result in release of water to the immediate vicinity, but would not create dangerous conditions to nearby residences since the structures would be buried. Since failure of these structures would not result in substantial risk to people or properties, this impact is less than significant.</p> <p>Construction of new flood control facilities (e.g., stormwater detention areas) on an undeveloped site would result in ground disturbance, which would result in temporary increase in soil erosion potential. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5).</p>	<p>Potentially significant for construction-related soil disturbance; less than significant with mitigation</p> <p>Less than significant for project operation</p>
Water Supply and Water Quality Element: 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.	Potentially Adverse: Adoption of this element would encourage construction of stormwater treatment wetlands and other facilities that are designed to allow infiltration to the groundwater. As described in further detail in Section 4.4.4.3 , if groundwater levels rise within 30 feet of the surface from project infiltration, this could result in increased risk of liquefaction. Prior to construction of facilities that involve infiltration, a geotechnical investigation will be conducted to define site-specific subsurface conditions and evaluate the potential for increase in liquefaction risk. If the project is determined to have the potential to cause groundwater levels to rise within 30 feet of the surface, monitoring and	<p>Potentially significant for construction-related soil disturbance; less than significant with mitigation</p> <p>Less than</p>

Master Plan Elements	Impacts on Geology and Soils	Impact Summary
	<p>contingency measures would be required as described in Mitigation Measure MP-G1 to reduce liquefaction-related impacts to a less-than-significant level.</p> <p>Ground disturbance during construction of facilities designed to increase water supply or improve water quality could result in temporary increase in soil erosion potential. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5).</p>	significant for project operation
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on geology and soils (e.g., providing incentives to participating adjacent landowners).</p> <p>Potentially Adverse: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. Adoption of this element could encourage reclamation of gravel mines. Sideslopes of gravel mines are potentially susceptible to landslides in the event of an earthquake or heavy precipitation. An evaluation of slope stability conducted as part of the geotechnical analyses during design of gravel mine reclamation projects would ensure that proposed modification does not result in unstable slope conditions (see also Section 4.4.5.2).</p>	Potentially significant; less than significant with mitigation

4.4.4 Impacts of Implementing the Concept Design Studies

4.4.4.1 Seismic Ground Shaking and Surface Rupture

As with the rest of southern California, the Master Plan study area is located in a seismically active region. In general, future projects implemented in the Master Plan study area would be subject to ground shaking during a seismic event. As described in **Section 4.4.1.5**, many active faults occur within the area, and future Master Plan project sites could be affected by surface ruptures if movement occurred along a fault underlying the site.

Projects without Habitable Structures. The Concept Design Studies for the San Gabriel Canyon Spreading Grounds, Woodland Duck Farm, Lario Creek, and El Dorado Regional Park do not involve construction of habitable structures. However, these projects may include construction or installation of other structures/facilities such as trails, signage, gateways, constructed wetlands, and structures for storage or conveyance of stormwater or reclaimed water (e.g., retention basins, underground pipes, and pump stations). While these structures could be damaged during an earthquake and may need to be repaired, they would not pose substantial risks to people or properties. Failure of storm drains and underground tanks could result in release of water to the immediate vicinity, but would not create dangerous conditions to nearby residences since the structures would be buried. Since failure of these structures would not result in substantial risk to people or properties, this impact is less than significant.

Projects with Habitable Structures. The Concept Design Study for the San Gabriel River Discovery Center includes construction of a habitable structure (the Discovery Center building). Other future projects may also involve construction of habitable structures such as park buildings or education centers. The design of such structures would be required by law to conform to the latest versions of the uniform building code and possibly relevant municipal codes. Building codes include minimum design standards for structural seismic resistance to reduce the risk of life loss or injury in the event of an earthquake. Adherence to these regulations would minimize potential seismic impacts to the proposed structures. This impact would be less than significant.

4.4.4.2 Landslides / Slope Instability

As described in **Section 4.4.1.4**, there are three major areas within the Master Plan study area with potential for landslide hazards: the San Gabriel Mountains, the Puente Hills east of the Whittier Narrows and south of State Route 60, and the sideslopes of several gravel mines located in Irwindale. The five Concept Design Study sites are not located within landslide hazard zones or in hillside areas. It is anticipated that future projects located within these hazard areas would be designed with necessary slope stabilizing measures. Therefore, impacts related to landslides and slope stability are considered less than significant.

4.4.4.3 Liquefaction

Due to the presence of loose alluvium materials deposited by the San Gabriel River, most of the Master Plan study area falls within the liquefaction hazard zone (see **Section 4.4.1.5**). All five Concept Design Study sites are located in areas considered by the California Geological Survey to be susceptible to liquefaction based on historical occurrence of liquefaction or local geological and groundwater conditions.

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include constructed wetlands, which may be unlined and designed to allow infiltration to the groundwater. Additionally, other future projects may include groundwater recharge of stormwater (e.g., at former gravel pits). If project-related stormwater infiltration caused groundwater levels to rise within 30 feet of the surface, the project could result in an increased risk of liquefaction. In addition to the long-term effects of stormwater infiltration on groundwater levels, large volumes of stormwater infiltrated over a short period of time could have a temporary “mounding” effect, causing a localized increase in the groundwater level beneath the infiltration basins. If stormwater infiltration at the Concept Design Study sites resulted in a substantial increase in groundwater levels and consequently increased liquefaction risk for onsite or adjacent habitable or other structures (e.g., power line towers, bridges, and flood control facilities), the impact would be significant. Incorporation of **Mitigation Measure CD-G1** (conduct groundwater monitoring and cease infiltration if necessary to prevent groundwater levels from increasing to within 30 feet of the surface) would reduce project impacts related to liquefaction to a less-than-significant level.

The Lario Creek Concept Design Study would also facilitate transfer of additional water to existing spreading basins for groundwater recharge. Since the volume of water to be infiltrated

is within the existing capacity of the spreading basins, impacts related to this component of the Concept Design Study are considered less than significant.

4.4.4.4 Expansive Soils

Master Plan Concept Design Studies for the Woodland Duck Farm and El Dorado Regional Park and other future projects may involve construction of stormwater infiltration facilities near power line towers. Project-related infiltration would likely alter the moisture content of the soils in the immediate vicinity of the infiltration areas. If infiltration facilities were sited in close proximity to the power line towers and if these structures were located on expansive soils, the change in soil moisture content from the infiltration could result in damage to these structures, a potentially significant impact. Incorporation of **Mitigation Measure CD-P10** (see **Section 4.9.6 – Public Services and Utilities**) would reduce this impact to a less-than-significant level.

The Concept Design Study for the San Gabriel River Discovery Center includes construction of a habitable structure (the Discovery Center building). Other future projects may also involve construction of habitable structures such as park buildings or education centers. If habitable structures were constructed on expansive soils, the potential damage to these structures would be considered a significant impact. Incorporation of **Mitigation Measure CD-G2** (site-specific review of soil conditions and, if necessary, replacement or treatment of expansive soils to minimize risk of structural damage) would reduce this impact to a less-than-significant level.

4.4.4.5 Subsidence

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Center, and El Dorado Regional Park include constructed wetlands, which may be unlined and designed to allow infiltration to the groundwater. Additionally, other future projects may include groundwater recharge of stormwater (e.g., at former gravel pits). These projects could involve minor groundwater withdrawal for groundwater quality monitoring. However, the amount required would be a negligible fraction of existing groundwater extractions in the area and would be offset by the proposed infiltration of stormwater, which would overall result in a beneficial impact with respect to subsidence. Therefore, the proposed project is not expected to result in subsidence. No impacts would occur.

4.4.4.6 Soil Erosion

Soil disturbance associated with project construction will increase the potential for wind and water erosion in the immediate vicinity of the facilities. As required by the Environmental Protection Agency and the Los Angeles Regional Water Quality Control Board, the construction contractor(s) will develop and implement a Stormwater Pollution Prevention Plan (SWPPP) during construction of various project components. This plan is required as part of the federal Clean Water Act National Pollution Discharge Elimination System (NPDES) Permit for discharge of stormwater associated with construction activities greater than 1 acre in area. Incorporation of stormwater best management practices in the SWPPP would reduce the potential for soil erosion during construction. Specific erosion control measures to be considered for inclusion in site-specific SWPPPs are listed in **Section 4.6 – Water Quality**. Therefore, with

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the incorporation of control measures in the SWPPPs, construction impacts on soil erosion are expected to be less than significant.

Once construction is complete, disturbed surfaces at each project site would be stabilized (i.e., paved or revegetated). All five Concept Design Study sites currently include unimproved surfaces that are prone to soil erosion. Implementation of each of the Concept Design Studies would likely reduce the soil erosion potential at these sites by increasing the vegetative cover. Therefore, the project is expected to have a beneficial impact with respect to soil erosion once construction has been completed (no adverse impact).

4.4.5 Master Plan Program Mitigation Measures

4.4.5.1 Liquefaction

As described above in **Section 4.4.1.5**, most of the Master Plan study area falls within a liquefaction hazard zone. Future projects that would result in increased infiltration of stormwater will require an evaluation of the increase in liquefaction potential. Future projects that would result in increased infiltration (including but not limited to construction of stormwater retention/infiltration facilities, unlined wetlands, and structures designed to increase in-stream recharge (e.g., rubber dams)) will require an evaluation of the impacts of the proposed actions on liquefaction potential as described in program Mitigation Measure MP-G1:

MP-G1 During facility design, a site-specific geotechnical analysis will be conducted to determine soil types and groundwater levels. Based on the results of the geotechnical analysis, the potential increase in liquefaction potential from the proposed infiltration will be evaluated. Factors that will be considered include the capacity of the infiltration facility and the associated amount of water proposed for infiltration, infiltration rate, proximity and types of nearby structures (including pipelines) that could be damaged from liquefaction, and infiltration at adjacent spreading grounds, if any.

If the project is determined to have the potential to cause groundwater levels to rise within 30 feet of the surface, new monitoring wells and/or existing wells in the project area will be used to detect any substantial increase in groundwater levels. If monitoring indicates a substantial rise in groundwater levels that could impact adjacent structures, stormwater would not be infiltrated and would be diverted into storm drains or onto street surfaces or routed to other stormwater management facilities as applicable. Re-diversion of storm flows will be in compliance with the applicable provisions of the relevant NPDES municipal stormwater permits.

4.4.5.2 Landslides / Slope Instability

Sideslopes of gravel mines are potentially susceptible to landslides in the event of an earthquake or heavy precipitation. Future projects that involve reclamation of gravel mines to create parks, open space and/or stormwater retention facilities will require an evaluation of the impacts of proposed actions related to landslides and slope instability as described in program Mitigation Measure MP-G2:

MP-G2 Site-specific evaluation of slope stability will be conducted as a part of the geotechnical analyses during design of each future Master Plan project that involves modification of a gravel mine. The recommendations of the geotechnical study will include optimum slope design for stability and safety, soil compaction or recompaction requirements, surface cover, and potentially other slope stabilizing measures. The recommendations of the geotechnical analysis will be incorporated into the detailed design of the project. The results of site-specific evaluations and detailed mitigation measures, if any, will be disclosed in subsequent CEQA documentation.

4.4.5.3 Habitable Structures

For future projects that include construction of habitable structures (e.g., recreation or interpretive centers), an evaluation of the impacts of proposed actions related to geologic hazards will be required as described in program Mitigation Measure MP-G3:

MP-G3 The site plan and building footprint will be reviewed by a registered professional to ensure that project siting and design provides adequate protection from geologic hazards such as fault rupture (including Alquist-Priolo Earthquake Fault Zones), expansive soils, liquefaction, and unstable slopes. If a project site is located in known high risk areas with respect to geological hazards, a site-specific geotechnical study will be performed during facility design to identify potential concerns and recommended measures to reduce hazards. Recommendations in the geotechnical study will be incorporated into the final design.

4.4.6 Mitigation Measures for Concept Design Studies

Liquefaction

The following mitigation measure shall be implemented for the **Woodland Duck Farm, San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park** Concept Design Studies:

CD-G1 Prior to construction, conduct a geotechnical investigation to define site-specific subsurface conditions, including determination of site-specific groundwater levels and soil conditions to evaluate the potential for liquefaction onsite or at adjacent properties. Based on the results of the geotechnical analysis, the potential increase in liquefaction potential from the proposed infiltration shall be evaluated. Factors that should be considered include the capacity of the infiltration facility and the associated amount of water proposed for infiltration, infiltration rate, proximity and types of nearby structures that could be damaged from liquefaction, and infiltration at adjacent spreading grounds, if any.

If the project is determined to have the potential to cause groundwater levels to rise within 30 feet of the surface, new monitoring wells and/or existing wells in the project area shall be used to detect any substantial increase in groundwater levels. If monitoring indicates a substantial rise in groundwater levels that could impact adjacent structures, stormwater would not be infiltrated and would be diverted into storm drains or onto street surfaces with sufficient capacity. Re-diversion of storm

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flows will be in compliance with the applicable provisions of the relevant NPDES municipal stormwater permits.

Soil Erosion

Section 4.6 – Hydrology and Water Quality lists possible erosion control measures to be incorporated into site-specific SWPPPs. Measures to reduce fugitive dust generated during construction (see **Section 4.1 – Air Quality**) will also minimize the potential for wind erosion of soils.

Expansive Soils

The following mitigation measure shall be implemented for the **San Gabriel River Discovery Center** Concept Design Study:

CD-G2 During facility design, evaluate site soils to determine the area and thickness of expansive soils. If expansive soils are found, one or more of the following measures shall be specified in the construction plans to minimize potential hazards associated with expansive soils:

- Replacement of expansive soils with granular non-expansive soils, or
- Treatment of expansive soils with lime to reduce expansivity, or
- Other appropriate geotechnical practices.

These measures that mitigate for expansive soils shall be incorporated into the construction documents.

4.5 HAZARDS AND HAZARDOUS MATERIALS

Hazards and hazardous materials issues discussed in this section are construction in areas of potential soil contamination, disposal of potentially contaminated sediments, use of potentially hazardous materials, potential for bird/wildlife aircraft strike hazard, public health hazards from insect vectors and other vector species, and public health hazards from use of recycled water/stormwater. Geologic hazards are addressed in Section 4.4.

4.5.1 Existing Setting

4.5.1.1 Existing Land Uses

Master Plan Study Area. The general land uses within each of the seven reaches of the Master Plan study area (1-mile wide corridor along the River) are described below.

- 1. Headwaters** – The first reach of the river is the headwaters along the West Fork in the San Gabriel Mountains. Land use in this area is open space/recreation (Angeles National Forest).
- 2. San Gabriel Canyon** – The San Gabriel Canyon reach begins at the point where the West, North, and East Forks of the river join, and ends at Morris Dam. Land uses in this reach include open space/recreation (Angeles National Forest) and public facilities related to flood control and water resource management (i.e., San Gabriel Dam, Morris Dam and associated maintenance facilities).
- 3. Upper San Gabriel Valley** – The Upper San Gabriel Valley reach extends from Morris Dam, passes through unincorporated Los Angeles County and Azusa, and ends at the Santa Fe Dam in Irwindale. In the northern portion of this reach between Morris Dam and Azusa, the primary land uses are open space. While there are some residential areas in this reach within Azusa and Duarte, the southern portion between Azusa and Santa Fe Dam in Irwindale is occupied primarily by industrial land uses and open space/recreation (Santa Fe Dam Recreation Area).
- 4. Lower San Gabriel Valley** – The Lower San Gabriel Valley reach runs between the Santa Fe Dam and Whittier Narrows Dam in unincorporated Los Angeles County north of Pico Rivera. The primary land uses in this reach are industrial in the northern portion and residential and open space/recreation (Whittier Narrows Recreation Area and California Country Club) in the middle and southern portions.
- 5. Upper Coastal Plain** – This reach begins at the outlet of the Whittier Narrows Dam and ends where the San Gabriel River crosses Firestone Boulevard in Norwalk, near the 605 Freeway. The primary land use in this reach is residential.
- 6. Lower Coastal Plain** – This reach begins at Firestone Boulevard and extends to the confluence of Coyote Creek and the San Gabriel River in Rossmoor, located in unincorporated Orange County. The primary land use in this reach is residential with some commercial and open space areas (e.g., El Dorado Regional Park).

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7. Zone of Tidal Influence – This 3.5-mile reach extends from the confluence with Coyote Creek to the Pacific Ocean. The primary land uses in this reach are residential and industrial.

Concept Design Study Sites. The land use characteristics of the five Concept Design Study sites are as follows:

- San Gabriel Canyon Spreading Grounds
 - Public facilities (Spreading grounds operated by LADPW; water tanks, wells, and pumps operated by City of Azusa)
 - Recreation (bike trail along the River)
- Woodland Duck Farm
 - Vacant (former duck farm site containing remnant structures)
 - Recreation (Rio San Gabriel Equestrian Center maintained by RIO Trust)
- San Gabriel River Center at Whittier Narrows
 - Recreation/Open Space (Nature Area within Whittier Narrows Recreation Area, including Nature Center)
- Lario Creek
 - Recreation/Open Space (Nature Area within Whittier Narrows Recreation Area)
 - Public facilities (Lario Creek, a water conveyance feature operated by LADPW)
- El Dorado Regional Park
 - Open Space/Recreation

4.5.1.2 Hazardous Materials

Section 65962.5 of the California Government Code requires the California Environmental Protection Agency (Cal/EPA) to update a list of known hazardous materials sites, which is also called the “Cortese List.” The Cortese List identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, reported leaking underground storage tanks (LUSTs), and solid waste disposal facilities from which there is known hazardous substance migration.

In accordance with the CEQA Statute (Section 21092.6 of the Public Resources Code), a records search was conducted by Environmental Data Resources, Inc. (EDR, 2003) to determine whether any of the proposed Concept Design Study project sites is included in the Cortese List. The results of the records search are presented in **Table 4.5-1**.

Table 4.5-1
Cortese List Sites located within 0.25-mile Radius of the
Master Plan Concept Design Study Site Boundary

Concept Design Study	Cortese List Site	
	Name and Address	Reason For Listing
San Gabriel Canyon Spreading Grounds	None	
Lario Creek	COE-SPL District Baseyard 645 Durfee Avenue, South El Monte (located outside of the Concept Design Study site boundary)	Leaking Underground Storage Tank (Diesel) – Case Number: R-15494 (Status: Leak being confirmed; Review Date: 3/23/1996)
San Gabriel River Center at Whittier Narrows	None	
Woodland Duck Farm	None	
El Dorado Regional Park	Tree Farm 7600 E. Spring Street, Long Beach	Leaking Underground Storage Tank (Gasoline) – Case Number: 908150270 (Status: Pollution Characterization; Review Date: 1/30/2002)

Source: EDR, 2003.

4.5.1.3 Bird/Wildlife Aircraft Strike Hazard

Three airports are located within 5 miles of the Master Plan study area. El Monte Airport is owned by the County of Los Angeles, and is located approximately 2 miles west of the river in the City of El Monte. Long Beach airport is owned and operated by the City of Long Beach, and is located approximately 2 miles west of El Dorado Regional Park near the San Gabriel River confluence with Coyote Creek. The Los Alamitos Joint Forces Training Base is located approximately 1.5 miles east of the River confluence with Coyote Creek.

Aircraft collisions with birds and other wildlife can damage aircraft and pose a threat to human safety. According to the Federal Aviation Administration (FAA), reported wildlife strikes involving civil aircraft in the past few years have exceeded 5,000 cases annually (FAA, 2002). Over 97 percent involved birds, and less than 3 percent of the cases involved mammals or reptiles. Gulls, doves, raptors, and waterfowl were the most frequently struck bird groups among the reported cases. The majority of the reported strikes occurred at lower altitudes, such as during take-off, climb, approach, or landing-roll.

In 1997, the FAA issued an advisory circular (FAA, 1997) that provides guidance on locating land uses having the potential to attract hazardous wildlife (wildlife attractants) to or in the vicinity of public-use airports. Putrescible-waste (i.e., organic waste) disposal operations, wastewater treatment facilities, artificial marshes, and wetlands are considered potential wildlife attractants. The FAA recommends the following minimum distances between these land uses and an airport's aircraft movement areas, loading ramps, or aircraft parking areas:

- Airports serving piston-powered aircraft: 5,000 feet
- Airports serving turbine-powered aircraft: 10,000 feet

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- Approach or departure airspace: 5 miles, if the wildlife attractant may cause hazardous wildlife movement into or across the approach or departure airspace

EPA requires any operator proposing a new or expanded waste disposal operation within 5 statute miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal (40 CFR 258, *Criteria for Municipal Solid Waste Landfills*, section 258.10, *Airport Safety*). Although not legally required for other land use changes that do not involve landfills, FAA requests that similar notices be provided if a land use change proposed within the distances listed above has the potential to attract hazardous wildlife.

4.5.1.4 Vectors of Public Health Concern

Section 4.5.1.4 incorporates the comments of the San Gabriel Valley Mosquito and Vector Control District, Greater Los Angeles County Vector Control District, and California Department of Health Services Vector-Borne Disease Section (the vector control authorities) (S. West, pers. comm., April 25, 2005; Appendix F).

Populations of vectors such as mosquitoes pose a public health hazard by transmitting viruses and other disease-causing agents. In addition, vectors can be a nuisance or source of substantial discomfort for humans.

Division 3, Chapter 1 of the California Health and Safety Code defines a vector as any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and rodents and other vertebrates.

California Health and Safety Code Sections 2000 through 2067 gives mosquito and vector control districts broad authority and substantial powers aimed at protecting public health, including the power to require abatement of activities that support the development, attraction, or harborage of vectors, or that facilitate the introduction or spread of vectors. A responsible party's failure to control such activities as required by a district may lead to civil penalties up to \$1,000 per day plus the cost of abatement by the district.

The Master Plan Concept Design Studies and other future projects may include new or modified water features, such as stormwater treatment wetlands. Mosquitoes are the vector of primary concern for the Master Plan, since they require aquatic habitats to complete their life cycle and are known to transmit agents that cause disease in humans and other animals. Wetlands attract mosquitoes as well as resident and migrant bird species perpetuating bird-mosquito disease transmission cycles. Infected mosquitoes can disperse up to 10 miles (depending on species) from these aquatic habitats into adjacent residential neighborhoods thereby increasing disease risks to surrounding communities and the visiting public.

Additional aquatic vectors of concern for the Master Plan are black flies and midges, which also require aquatic habitats for breeding and are a public nuisance. In the U.S. black flies do not generally carry disease-causing agents to humans; however, painful bites from some species can cause extensive swelling, allergic reaction, and secondary infection. Most midges do not bite;

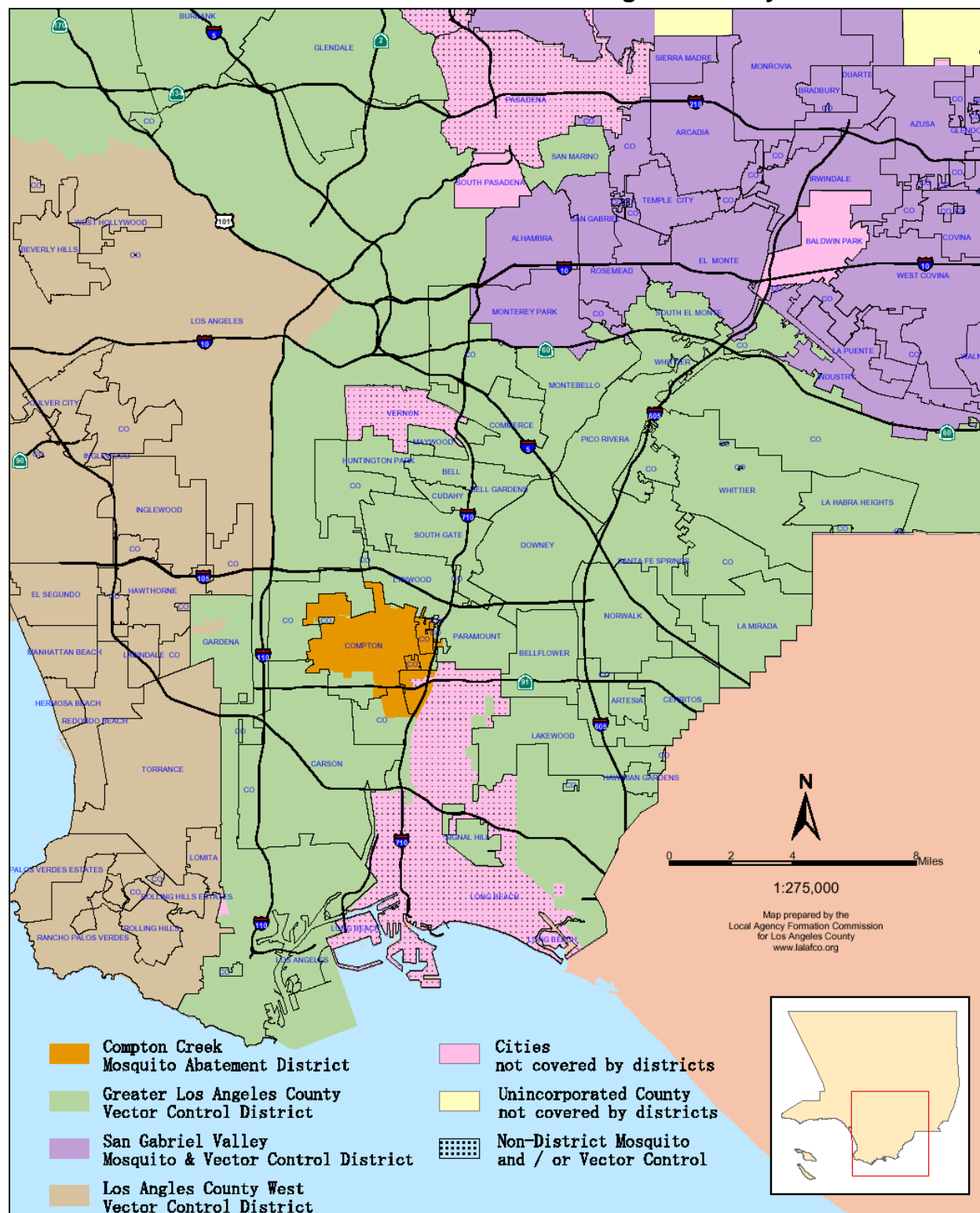
however, large populations are known to cause allergic reactions and have negative economic impacts on local residents and businesses.

Finally, various rodent and larger wildlife species and the parasites they harbor can cause disease in humans and other animals. In California, over 45 percent of human diseases reportable to the California Department of Health Services are diseases of animals transmissible to people (zoonoses) (County of Los Angeles Department of Health Services, 2005). Increasing corridor/habitat connections would, by design, increase movement and dispersion of wildlife adjacent to and into urban areas thereby increasing human-wildlife interactions and disease transmission risks to the public.

Vector control and disease surveillance in the Master Plan study area is carried out by three vector control districts, the City of Long Beach Vector Control Program, and the Los Angeles County Department of Health Services, Vector Management Program. The vector control districts and their respective service areas within the Master Plan study area are listed below and shown in **Figure 4.5-1**:

- San Gabriel Valley Mosquito and Vector Control District (SGVMVCD) – Arcadia, Azusa, Duarte, Irwindale, El Monte, and City of Industry
- Greater Los Angeles Vector Control District (GLAVCD) – Bellflower, Santa Fe Springs, Pico Rivera, Downey, Norwalk, Lakewood, Cerritos, northeastern portions of Long Beach, South El Monte, and Whittier
- Orange County Vector Control District (OCVCD) – Seal Beach and unincorporated areas of Orange County
- City of Long Beach Vector Control Program – Southwestern portions of Long Beach
- County of Los Angeles Vector Management Program – Entire Los Angeles County area

**Figure 4.5-1
Vector Control Districts in Los Angeles County**



Source: K. Middleton, San Gabriel Valley Mosquito and Vector Control District, 2004.

Mosquitoes. In California, there are several species of mosquitoes known to transmit agents that cause mosquito-borne diseases, such as West Nile virus, western equine encephalomyelitis, St. Louis encephalitis, and malaria. The primary mosquito species in urban Los Angeles County responsible for disease transmission to humans (*Culex spp.*) are also the most abundant and are considered ‘bridge vectors’ due to their predilection for biting both birds and humans thereby serving to vector avian encephalitis-causing viruses to humans.

Since the introduction of the West Nile virus into the Western Hemisphere in 1999, this mosquito-borne virus has spread throughout the continental United States, with human cases detected in 47 states and the District of Columbia (CDC, 2004). According to the California Department of Health Services (CDHS), 830 human cases were reported in California in 2004, including 331 cases in Los Angeles County and 64 cases in Orange County. In 2003, there were 28 West Nile virus-related fatalities in California (in Los Angeles, Orange, San Bernardino, Riverside, Glenn, Kern, and Tehama counties) (CDHS, 2004). According to the CDC (2004), most people who are bitten by a mosquito carrying the West Nile virus will not become ill. People who do may experience moderate to severe illness exhibiting symptoms like fever, headache and body ache with symptoms lasting a few days to several weeks. It is estimated that less than 1 percent of the people who are infected with the virus become severely ill and require hospitalization. Severe illness often results in long-term or permanent neurologic damage and can be fatal. The elderly and people with compromised immune systems are particularly susceptible to illness caused by the virus. West Nile virus and other encephalitis-causing viruses are endemic to California and will continue to be transmitted and cause disease in humans and other animals.

Mosquitoes require standing water to breed and complete the life cycle, which takes about 7 days during warm weather. Mosquito control methods include elimination of potential breeding sources through water and vegetation management, public education and source reduction, the use of biological controls and chemical insecticides, and legal abatement (California Health and Safety Code, Sections 2000 through 2067).

Water and Vegetation Management. Water and vegetation management to minimize areas of stagnant water and improve water quality area the first consideration for mosquito control in constructed wetlands and other water features. Overgrowth of emergent vegetation (e.g., cattails), which can create stagnant water around the margins of constructed wetlands and lakes, can be prevented by periodic removal of vegetation, the use of herbicides, and/or by managing water depth and flow patterns. In addition, water motion can be encouraged by allowing the water to be exposed to wind, altering water depth, and/or by controlling flow patterns.

For example, the 45-acre San Joaquin Marsh on San Diego Creek (Orange County) was designed so that portions of the marsh can be drained selectively, and a system of water pumps and weirs are used to manage the water levels for mosquito control (Denger and Brandt, pers. comm., 2003). At the Rio Hondo Coastal and San Gabriel Coastal Spreading Grounds, LADPW removes vegetation periodically to minimize areas of stagnant water and maintain percolation rates. While helpful, these solutions do not alleviate all mosquito problems, and routine mosquito surveillance and control is required. In addition, densely vegetated areas (such as the

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San Joaquin Marsh) often require adult mosquito suppression due to the large numbers of mosquitoes produced (R. Meyer, OCVCD, pers. comm., 2005).

Mosquitofish. Mosquitofish (*Gambusia affinis*) are small, guppy-like fish that feed on mosquito larvae, and are stocked in ponds, lakes, and other water features as a safe and effective biological control method. However, mosquitofish may disrupt aquatic ecosystems if introduced into natural streams, lakes, or ponds; however, the alternative need for increased chemical control measures must be weighed against this potential disadvantage.

Enhancing populations of natural aquatic mosquito predators (e.g., dragonfly and damselfly larvae, aquatic beetles, and native fish) in lieu of mosquitofish, although beneficial, will not alleviate all mosquito problems. Although mosquitofish are present throughout the U.S. in natural bodies of water, many vector control districts advocate only placing mosquitofish in closed systems to alleviate potential concerns.

Bti. *Bacillus thuringiensis* var. *israelensis* (Bti) and *Bacillus sphaericus* (Bs) are naturally occurring soil-borne bacteria that affect the digestive systems of mosquito larvae, and are commonly used larvicides. Bti/Bs can be broadcast onto the water surface by a hand crew or from a vehicle or a boat, depending on environmental conditions and site access. Bti/Bs are highly specific and do not pose risks to wildlife, non-target species, or the environment (EPA, 2002a; S. West, pers. comm., April 25, 2005, Appendix F).

Methoprene. Methoprene is a mosquito juvenile growth hormone mimic that artificially extends the larval stage of mosquitoes and prevents normal maturation to adulthood. Methoprene is often used in larval mosquito control (sometimes in combination with Bti) and is a highly specific, targeted option for mosquito control. Methoprene has the added benefit of maintaining mosquito larvae as a food source for native fish and invertebrates while still fulfilling public health objectives.

Although other products are available for immature mosquito control, the above are the most environmentally sensitive and most likely to be used in naturalized systems in the Los Angeles basin.

Adult Mosquito Control. When the above control measures are infeasible or ineffective for reducing the adult mosquito population, adulticides (chemicals used to control adult mosquitoes) may be used. Chemical adulticides are applied by hand-held, truck-mounted or aircraft-mounted sprayers. Chemical adulticides are not species-specific and can have adverse effects on non-target insects. In addition, both larvicide and adulticide applications can lead to resistance in the vector population. A sometimes suggested biological control method for adult mosquitoes is installation of nesting or roosting houses to attract insectivorous bats or birds that feed on adult mosquitoes. According to the vector control districts, this option has very limited overall value and may artificially increase bat populations risking rabies transmission in Los Angeles and Orange counties.

Black flies. Black flies are common in the San Gabriel Valley, but are not known to transmit human disease locally. They can, however, be a nuisance by causing allergic reaction,

discomfort and irritation to humans due to their biting habits and/or presence in large numbers (i.e., flying into eyes, ears, and noses). In two of the three species that are locally present, females will bite mammals, including humans. Black flies breed in oxygenated, flowing water, such as dam spillways, rivers and streams with rocky beds, and pipe seepages. Black fly populations are present throughout the year, peaking in late spring and summer.

Black fly control is typically performed on immature stages rather than adults. The primary method is to interrupt the flow of water for 24 to 48 hours so that the larvae are deprived of oxygen and desiccate. If this is not feasible or ineffective, Bti may be applied. For example, at the San Gabriel Canyon Spreading Grounds, the SGVMVCD works with LADPW to periodically shut off the outflows from Morris Dam during weekends to dry out black fly larvae. This allows the vector control districts to minimize the need to apply Bti (Fujioka, pers. comm., 2003). Black fly adults tend to be difficult to control (SGVMCD, 2003a).

Midges. Midges are widespread in the San Gabriel Valley. Though they are often confused with mosquitoes, midges do not bite but may contribute to allergies and large populations can result in economic impacts. Midges can be found hovering in swarms on warm summer evenings. They breed in standing and flowing waters, and can often be found in watercourses and storm drain systems. Throughout the Master Plan area, control measures are undertaken when there are high numbers of adult insects. The larvicidal agents used for mosquito control are generally effective for midges (SGVMCD, 2003a).

Fleas, Ticks, and Other Vectors of Concern. This subsection in its entirety incorporates text provided by the vector control authorities (S. West, pers. comm., April 25, 2005; Appendix F).

In California, 45 percent of the 83 human diseases reportable to the California Department of Health Services are zoonoses (animal diseases transmittable to people). Many of these diseases are present in southern California, require diligent monitoring, and in many instances have resulted in human disease.

High raccoon densities in urban environments (a result of abundant anthropogenic food sources) increase the risk of transmission of raccoon roundworm (*Balysiscaris procyonis*). This is a density dependent disease and the cause of serious or fatal larval migrans in humans and animals.

Lyme disease is a serious vector-borne disease in California, and although rare in Los Angeles County, has been identified (LACDHS, 2004). Tick species responsible for its transmission is found in the local foothills. The predominant host of larval ticks (*Peromyscus spp.*) commonly inhabit disturbed or transitional coastal sage scrub habitat. Both larval and adult ticks are capable of traveling into urban areas via animal movements. Researchers in Maryland found a strong correlation between increased lyme disease risk and vegetated corridors through urban development (Frank, et al., 2002).

Probably of greater concern is the risk of plague and murine typhus in southern California. Plague is detected in Los Angeles County wildlife nearly every year, with ground squirrels (and their associated fleas) being the most important source of human exposure. Although rare, human plague cases do occur in this area (LACDHS, 2000). A suburban cycle of murine typhus

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has been identified involving opossums, rat fleas, and cats that is readily transmittable to humans. Ten human cases were reported on average each year from 1993 to 2002 (Ramirez, 2003).

Increasing interactions (and disease transmission) between wildlife, domesticated animals, and humans is of growing concern in urban and suburban areas. Surveillance and control methods vary and are typically undertaken if disease activity is detected and the public's health is at risk. Reducing human-wildlife interactions are best accomplished by discouraging overpopulation due to abundant food and water resources and with extensive educational outreach geared towards "keeping wildlife wild."

4.5.2 Significance Criteria

Project impacts related to hazards and hazardous materials would be considered significant if the project:

- exposed the general public to hazardous situations through transport, use, storage, or disposal of hazardous materials
- created wildlife habitat in a manner and amount that result in a substantial increase in the potential for aircraft collisions with birds and other wildlife
- created vector breeding conditions in an amount that would require increased levels of mosquito and other vector abatement to control vector populations at pre-project levels

4.5.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.5.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.5-2**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts related to hazards and hazardous materials. Adverse impacts are primarily related to: 1) potential ground disturbance in areas of soil contamination during construction of proposed facilities, and 2) increase in potential mosquito and other vector breeding habitats and creation of ecological habitats conducive to mosquito-borne disease propagation from development of facilities that retain water (e.g., for flood control, groundwater recharge, and/or stormwater treatment) or increase in animal movements into urban areas. Site-specific impacts related to hazards and hazardous materials would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.5.5**). Since mitigation will reduce these impacts to less than significant levels (see

Table 4.5-2 and Section 4.5.5), the overall impacts related to hazards and hazardous materials from adopting the Master Plan are considered less than significant. Site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area.

Table 4.5-2
Impacts related to Hazards and Hazardous Materials from
Adopting the Master Plan Elements

Master Plan Elements	Impacts related to Hazards and Hazardous Materials	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts related to hazards and hazardous materials (e.g., establishment of habitat area design standards and identification of indicator species).</p> <p>Potentially Adverse: Habitat enhancement that involves active restoration (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) would involve ground disturbance. If contaminated soils are encountered during project construction and are not recognized and not disposed of properly, this would be a potentially adverse impact. The Master Plan mitigation measure described in Section 4.6.5.6 outlines an approach to evaluation of potential for soil contamination and implementation of measures to reduce impacts by removing and disposing of contaminated soils in compliance with applicable regulations at approved disposal sites.</p> <p>If conducted in accordance with manufacturer's recommendations and general standards of use e.g., restricted application before and during rain storms, application of herbicides/pesticides for removal of invasive plants will not have significant impacts with respect to hazardous materials.</p> <p>Habitat restoration or enhancement involving wetlands or other water-features could result in an increased potential in bird/wildlife air strike hazard by attracting waterfowl and other wildlife, if the proposed project is located in the vicinity of an airport (see Sections 4.5.4.2 and 4.5.5.3). The Master Plan mitigation measure described in Section 4.5.5.3 requires consultation with relevant airports and the FAA, which would ensure that any potentially significant Master Plan impacts related to bird/wildlife air strikes would be recognized early in the planning process and avoided or minimized.</p> <p>Habitats with wetlands or other water-features could increase mosquito or other vector breeding areas, an adverse impact on public health. In addition, habitat enhancements could result in increased animal movements into urban areas and increased interactions between vectors and humans, which could also have an adverse impact on public health. The Master Plan mitigation measure described in Section 4.5.5.2 requires consultation with the vector control district and implementation</p>	Potentially significant; less than significant with mitigation

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Master Plan Elements	Impacts related to Hazards and Hazardous Materials	Impact Summary
	of vector management measures to reduce vector breeding habitat, which would ensure that any potentially significant Master Plan impacts related to vector control would be recognized early in the planning process and avoided or minimized.	
Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses	<p>Beneficial: This element includes establishment of design standards to safely accommodate various users, which would promote public safety and reduce hazards to recreational users.</p> <p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts related to hazards and hazardous materials (e.g., public education on catch and release fishing).</p> <p>Potentially Adverse: Construction of recreation related facilities (e.g., interpretive centers, trails and trail amenities, signs, kiosks) would involve ground disturbance. If contaminated soils are encountered during project construction and are not recognized and not disposed of properly, this would be a potentially adverse impact. The Master Plan mitigation measure described in Section 4.6.5.6 outlines an approach to evaluation of potential for soil contamination and implementation of measures to reduce impacts by removing and disposing of contaminated soils in compliance with applicable regulations at approved disposal sites.</p>	Potentially significant; less than significant with mitigation
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	<p>Beneficial: Adoption of this element would encourage reduction of vector breeding potential and public education of vector issues, which would have a beneficial impact by reducing public health hazards associated with vector-borne diseases. Additionally, use of native species for landscaped areas would reduce irrigation demand, potentially reducing vector breeding conditions (areas of stagnant water).</p> <p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts related to hazards and hazardous materials (e.g., coordination of land management policies).</p> <p>Potentially Adverse: Adoption of this element may encourage recycling of brownfields. Hazardous materials issues associated with brownfields recycling projects would need to be addressed on a site-by-site basis. However, any impact from brownfields development is too speculative at this time to be able to be analyzed.</p> <p>Increasing open space elements within the urban matrix has the potential to increase vector populations and human-wildlife interactions within and surrounding these projects, which could also have an adverse impact on public health.</p>	Less than significant
Flood Protection Element: Maintain flood protection and	Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on	Potentially significant;

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Master Plan Elements	Impacts related to Hazards and Hazardous Materials	Impact Summary
<p>existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.</p>	<p>hazards and hazardous materials (e.g., coordination of maintenance of flood protection system with habitat needs).</p> <p>Potentially Adverse: Construction of new flood control facilities (e.g., stormwater detention areas) on an undeveloped site would involve ground disturbance. If contaminated soils are encountered during project construction and are not recognized and not disposed of properly, this would be a potentially adverse impact. The Master Plan mitigation measure described in Section 4.6.5.6 outlines an approach to evaluation of potential for soil contamination and implementation of measures to reduce impacts by removing and disposing of contaminated soils in compliance with applicable regulations at approved disposal sites.</p> <p>Adoption of this element would encourage recycling of sediments from sluicing and maintenance operations. In some instances, sediments may contain pollutants from urban runoff. Transport or disposal of stormwater sediments, when conducted properly (i.e., in accordance with applicable hazardous waste regulations including the federal Resource Conservation and Recovery Act and California Hazardous Waste Control Law (Title 22 of California Code of Regulations)), would not create a significant hazard to the public or the environment.</p> <p>Projects with constructed wetlands, stormwater retention basins, and other above- or below-ground facilities designed to collect stormwater could increase mosquito breeding areas, an adverse impact on public health. The Master Plan mitigation measure described in Section 4.5.5.2 requires consultation with the vector control district and implementation of vector management measures to reduce mosquito breeding habitat.</p>	<p>less than significant with mitigation</p>
<p>Water Supply and Water Quality Element: 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.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on hazards and hazardous materials (e.g., prevention of reduction of water conservation facilities).</p> <p>Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) would involve ground disturbance. If contaminated soils are encountered during project construction and are not recognized and not disposed of properly, this would be a potentially adverse impact. The Master Plan mitigation measure described in Section 4.6.5.6 outlines an approach to evaluation of potential for soil contamination and implementation of measures to reduce impacts by removing and disposing of contaminated soils in compliance with applicable regulations at approved disposal sites).</p> <p>Adoption of this element would encourage projects with constructed wetlands, stormwater retention basins, and other</p>	<p>Potentially significant; less than significant with mitigation</p>

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Master Plan Elements	Impacts related to Hazards and Hazardous Materials	Impact Summary
	<p>facilities designed to collect and remove sediments and other pollutants from stormwater. Maintenance activities for these stormwater treatment facilities include periodic removal of sediments and potentially large amounts of aquatic vegetation, which can contain pollutants from urban runoff. Transport or disposal of stormwater sediments, when conducted properly (i.e., in accordance with applicable hazardous waste regulations including the federal Resource Conservation and Recovery Act and California Hazardous Waste Control Law (Title 22 of California Code of Regulations)), would not create a significant hazard to the public or the environment.</p> <p>Projects with constructed wetlands, stormwater retention basins, and other facilities designed to collect stormwater could increase mosquito breeding areas, an adverse impact on public health. The Master Plan mitigation measure described in Section 4.5.5.2 requires consultation with the vector control district and implementation of vector management measures to reduce mosquito breeding habitat.</p>	
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts related to hazards and hazardous materials (e.g., providing incentives to participating adjacent land owners).</p> <p>Potentially Adverse: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. Adoption of this element could encourage projects that involve reclamation of idle industrial properties, which could contain contaminated soils or other hazardous materials. Hazardous materials issues associated with such projects would need to be addressed on a site-by-site basis. The Master Plan mitigation measure described in Section 4.6.5.6 outlines an approach to evaluation of potential for soil contamination and implementation of measures to reduce impacts by removing and disposing of contaminated soils in compliance with applicable regulations at approved disposal sites.</p>	<p>Potentially significant; less than significant with mitigation</p>

4.5.4 Impacts of Implementing the Concept Design Studies

4.5.4.1 Hazardous Materials

Construction in Areas of Potential Soil Contamination. As described in **Section 4.5.1.2**, two Concept Design Studies, Lario Creek and El Dorado Regional Park, are located on or near sites that with documented leaking underground storage tanks. Since the remediation status of these sites is not fully known, it is possible that contaminated soils may still be present near the areas of proposed construction activities for the Concept Design Studies. In addition, due to the highly urbanized environment and the presence of industrial land uses in the Master Plan study area, there is potential for contaminated soils to be present at these and other future project sites. If

contaminated soils are encountered during project construction and are not recognized and not disposed of properly, this would be a potentially significant impact. However, incorporation of **Mitigation Measure CD-W3** (see **Section 4.6.6**; site-specific investigation of soil contamination and proper disposal of contaminated soil, if any) would ensure that if contaminated soils are found in areas that would be disturbed by project construction, they would be disposed of in compliance with applicable regulations at approved disposal sites. The impact would then be less than significant.

Stormwater Disinfection. The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Center at Whittier Narrows, and El Dorado Regional Park propose constructed wetlands for stormwater treatment. Additionally, other future projects may involve wetlands, stormwater retention basins, and other facilities designed to collect and treat stormwater. Depending on the final project design, portions of the collected stormwater may be reused for irrigation or other uses with the potential for public contact, and may require disinfection. Potential methods of disinfection include Ultraviolet (UV) irradiation or sodium hypochlorite. UV disinfection does not involve use of hazardous materials and would have a beneficial impact on public health and safety. Liquid sodium hypochlorite, a concentrated form of household bleach, can be generated onsite using salt, water, and electricity or may be delivered periodically. Sodium hypochlorite is a commonly used chemical and does not pose substantial risks to public health and safety if handled and stored properly. Impacts associated with handling and use of sodium hypochlorite would be less than significant.

Disposal of Sediments Removed for Maintenance of Stormwater Treatment Facilities. The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Center at Whittier Narrows, and El Dorado Regional Park include constructed wetlands for stormwater treatment. Additionally, other future projects may involve wetlands, stormwater retention basins, and other facilities designed to collect and remove sediments and other pollutants from stormwater. Maintenance activities for these stormwater treatment facilities include periodic removal of sediments and aquatic vegetation, which can contain hazardous contaminants, such as heavy metals and organics that might be present in the influent runoff. Sediments removed from these facilities will be disposed of properly in accordance with applicable hazardous waste regulations (e.g., federal Resource Conservation and Recovery Act and California Hazardous Waste Control Law (Title 22 of California Code of Regulations)). at approved disposal sites. Transport or disposal of stormwater sediments, when conducted properly, would not create a significant hazard to the public or the environment. This impact is less than significant.

Use of Pesticides or Herbicides in Landscaped Areas or for Exotic Species Removal. All five Master Plan Concept Design Studies as well as many other future projects could include landscaping/habitat restoration as potential project elements. In addition, the Concept Design Studies for San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park propose removal of exotic plant species. With incorporation of **Mitigation Measure CD-W2** (see **Section 4.6.6**; preferentially select biological or non-chemical controls and select compounds that are less persistent in the environment), use of chemical pesticides/herbicides would be minimized. If any, use of chemicals for control of weeds, pests, or exotic plants will be limited to approved herbicides and pesticides. Application of herbicides/pesticides will be

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conducted in accordance with manufacturers' recommendations and general standards of use, e.g., restricted application before and during rain storms. Additionally, applications of aquatic pesticides/herbicides to waters of the U.S. may require coverage under a general permit under the National Pollutant Discharge Elimination System (NPDES). This impact is less than significant.

4.5.4.2 Bird/Wildlife Aircraft Strike Hazard

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Center at Whittier Narrows, and El Dorado Regional Park include constructed wetlands. Additionally, other future projects may involve wetlands, stormwater retention basins, and other surface water features. These surface water features have the potential to attract wildlife, particularly waterfowl. This is considered a beneficial impact on biological resources (see **Section 4.2**).

However, if these features attracted a large number of birds and other wildlife and substantially increased the potential for collisions between wildlife and aircraft, the project would have an adverse effect on airport safety. El Monte Airport and Long Beach Airports are the only airports located within 5 miles of the Master Plan study area. Woodland Duck Farm (approximately 2 miles from El Monte Airport) and El Dorado Regional Park (approximately 2 miles from the Long Beach Airport) are the only Concept Design Study sites located within 5 miles of an airport. Since there are no airports located adjacent to the Master Plan study area, non-avian wildlife species are not a safety concern for the project. With respect to birds, the water features proposed at Woodland Duck Farm and El Dorado Regional Park may attract waterfowl and other birds, potentially increasing the diversity of bird species in the project area. At Woodland Duck Farm, the development of the stormwater treatment wetlands would result in creation of waterfowl habitat (potentially up to 30 acres). At El Dorado Regional Park, the development of the proposed wetlands (6 acres) would increase the amount of potential waterfowl habitat by approximately 17 percent over existing conditions (approximately 35 acres of existing lakes at the park). However, due to the highly urbanized nature of the project area and the continuing influence of human activity thus reducing the attractiveness of the created habitat to wildlife, a substantial increase in waterfowl population is not anticipated. Additionally, for the period 1990 to 2001, there were no cases of bird air strike reported to the FAA for the El Monte or Long Beach airports (FAA, 2002). Therefore, implementation of the Woodland Duck Farm and El Dorado Regional Park Concept Design Studies would not result in a substantial increase in the potential for bird/wildlife aircraft strike hazard. This would be a less than significant impact on airport safety.

Implementation of **Mitigation Measure CD-H2** (notification of FAA and airport operators) would further reduce this impact in accordance with FAA recommendations. Note, notification is not legally required but recommended for the types of land use changes proposed under the project (see **Section 4.5.1.3** above).

4.5.4.3 Vectors of Public Health Concern

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Discovery Center at Whittier Narrows, and El Dorado Regional Park include collection and treatment of stormwater runoff. Additionally, other future projects may involve

wetlands, stormwater retention basins, and other above- or below-ground facilities designed to collect and treat stormwater. While the detailed design has not been determined, these projects would involve construction of stormwater retention facilities that vary in size and operating conditions. Below is a description of each type of facility and its potential for creating mosquito-breeding conditions. In addition, underground utility vaults (for cable, telephone, and electricity) mandated by current Federal Communications Commission regulations often retain standing water and breed mosquitoes (C. Myers, California Department of Health Services, pers. comm., 2005; see Appendix F).

Catch Basins. Catch basins may need to be constructed in streets surrounding the project sites to collect and convey runoff from street surfaces to the stormwater treatment facilities. Catch basins are typically designed so that runoff would flow into the downstream facilities without ponding. As part of regular maintenance, catch basins will be cleaned to remove leaves, sediments, and other debris. However, during the storm season, catch basins may temporarily contain stagnant water if they become clogged and are not cleaned out prior to the next rainfall event. Therefore, catch basins have some potential to create mosquito-breeding conditions.

Shallow depressions for infiltrating stormwater. A potential stormwater treatment method is creation of shallow depressions for infiltrating stormwater. This type of facility consists of a grassy surface (several acres in area) that is excavated and graded to create a shallow depression of several feet. During large storms, water would temporarily pond in the depressed area, but would likely infiltrate into the ground within a few days of most storm events. Additionally, improper irrigation in the vicinity of these facilities (over-irrigation) would also have the potential to maintain standing water in these depressions. Stormwater would be present primarily in winter, when most species of mosquitoes are less active. Therefore, the mosquito breeding potential at this type of facility is low, unless improperly constructed or poorly managed.

Retention Basins. Stormwater runoff collected in retention basins is generally infiltrated or transferred to a reuse location. Therefore, retention basins are dry most of the time. In addition, stormwater would be present primarily in winter, when most species of mosquitoes are less active. However, in the event of a large storm, water may remain in the basins for extended periods, depending on the basin capacity and percolation rates. Additionally, retention basins designed and managed to allow emergent vegetation along the perimeter would increase vector breeding potential. Therefore, retention basins have the potential for mosquito breeding.

Stormwater Wetlands. Stormwater treatment wetlands are generally designed to continuously circulate the water using a pump. However, water may become stagnant for extended periods due to the presence of wetland vegetation. Maintenance issues, such as pump failure, could further contribute to increases in vector breeding potential. Therefore, stormwater wetlands have the potential to create mosquito-breeding conditions. In addition, wetlands can attract wild birds and increase interactions between mosquitoes and wild birds, which are hosts for mosquito-borne viruses that can be transmitted to humans (SGVMVCD, 2003b).

Permanent Lakes. Some stormwater treatment facilities may be designed as lakes that hold water year-round. Mosquitoes generally prefer shallow water for breeding since it tends to be

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more stagnant. Although wind action on the water surface will discourage egg-laying to some extent, lakes are potential mosquito-breeding sites, particularly in the perimeter area where shallow and more stagnant water is expected to occur. Additionally, lakes and ponds designed and managed to allow emergent vegetation along the perimeter would increase vector breeding potential and could impede vector control.

As described above, stormwater treatment facilities have the potential to create mosquito breeding conditions. Allowing public access to wetlands or other water features for recreational purposes could also increase interactions between mosquitoes and humans, thereby increasing the risk of disease transmission to the public (SGVMVCD, 2003b). In addition, increasing vegetation in existing water features for habitat restoration or as aesthetic amenities can also increase potential mosquito breeding habitat (e.g., floating islands proposed as a potential opportunity for habitat restoration at San Gabriel Canyon Spreading Grounds). Considering the urban setting in most of the Master Plan study area and the arrival of the West Nile virus to the Southern California region in 2003, this is a potentially significant impact on public health. However, with incorporation of **Mitigation Measure CD-H1** (incorporation of vector control into project design and operation and maintenance in consultation with vector control districts), project impacts on public health due to mosquitoes and mosquito-borne diseases would be less than significant.

Stormwater treatment facilities may also create breeding areas for black flies and midges. The increase in nuisance due to the potential increase in black flies and midges is a less than significant impact since they do not transmit disease-causing agents. Implementation of **Mitigation Measure CD-H1** (incorporation of vector control into project design and operation and maintenance in consultation with vector control districts) would further reduce impacts associated with black flies and midges.

Future visitors to parks or other outdoor recreational areas at project sites could be exposed to other insect vectors and wildlife that could be hazardous to human health (e.g., bees, fleas, ticks, snakes, yellow jackets, wild rodents, etc.). In areas where the potential for such hazards are known to be high, warning signs may be incorporated into the project design. This impact would be less than significant.

4.5.4.4 Recycled Water and Stormwater Use

The Master Plan Concept Designs for Woodland Duck Farm, Lario Creek, and El Dorado Regional Park proposes using recycled water for irrigation, supplying man-made water features and other non-potable uses. Other future projects may also propose use of recycled water for irrigation or other non-potable uses and groundwater recharge. Similarly, Woodland Duck Farm, Lario Creek, the San Gabriel River Center at Whittier Narrows, El Dorado Regional Park and other future projects may involve reuse of treated stormwater for irrigation and other non-potable uses.

Title 22, Division 4, Chapter 3 of California Code of Regulations (CCR) regulates non-potable uses of recycled wastewater (i.e., water from sources that contain treated sewage). The objective of Title 22 standards is to protect public health from pathogens and other contaminants that may be present in recycled wastewater. Although they do not legally apply to stormwater reuse, Title

22 standards have been used as a treatment goal for previous stormwater reuse projects, such as the Santa Monica Urban Runoff Recycling Facility (City of Santa Monica, 2003).

Title 22 establishes required treatment levels for recycled water use based on the expected degree of public contact with the recycled water. For applications with a high potential for the public to come in contact with the recycled water (e.g., irrigation of food crops, residential landscaping, and parks and playgrounds), Title 22 requires tertiary treatment and disinfection. For applications with a lower potential for public contact (e.g., irrigation of areas with restricted access, crops for livestock, and freeway landscaping), Title 22 requires secondary treatment with varying degrees of disinfection depending on the proposed use (CCR Sections 60303-60307).

Title 22 does not specify water quality or treatment level standards for use of recycled wastewater for groundwater recharge. The regulations stipulate generally that “reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health.” CDHS makes recommendations to the applicable Regional Water Quality Control Board on an individual case basis where there is a potential risk to public health (CCR Section 60320).

Future projects that directly use recycled water would be required to comply with Title 22 regulations, which would ensure protection of public health. Although not a legal requirement, stormwater collected by future projects implemented by LADPW would be disinfected to meet Title 22 standards for bacteria before being reused for irrigation or other uses with the potential for public contact. Therefore, the public health impact of recycled water and stormwater reuse would be less than significant.

4.5.5 Master Plan Program Mitigation Measures

4.5.5.1 Hazardous Materials

Future projects involving soil disturbance (e.g., excavation and grading) will require an evaluation of the impacts of proposed actions with respect to hazardous materials as described in program **Mitigation Measure MP-W8** (site-specific investigation of soil contamination and proper disposal of contaminated soil; see Section 4.6.5).

4.5.5.2 Vectors of Public Health Concern

Future projects that involve construction of stormwater treatment wetlands, other water features or underground utility vaults or propose increasing vegetation within existing water features will require an evaluation of the impacts of proposed actions with respect to vectors as described in program Mitigation Measure MP-H1:

MP-H1 Project plans and designs will be submitted to the applicable vector control district (see Section 4.5.1.4) for review and comment with respect to control of mosquitoes and other vectors. Upon consultation with the vector control district, appropriate vector management measures will be incorporated into the project design. Potential management measures include the following:

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- Design to minimize and/or provide periodic removal of vegetation on bank slopes and periphery of water bodies to minimize areas of stagnant water.
- Design and/or manage to optimize water depths and flow pattern. For mosquito control, maintain water depths and encourage/provide water circulation. For black fly control, minimize aeration of flowing water. If necessary, design water features to allow for periodical drying to desiccate vector larvae.
- Work with the vector control district to stock ponds and other permanent water features with mosquito-eating fish as needed.
- Provide site access to vector control district specifications (e.g., dikes with access roads or trails) to potential breeding areas for maintenance (e.g., vegetation removal) and treatment (e.g., application of Bti or other larvicides).
- Design stormwater retention facilities/devices to drain completely within 72 hours, or design with the capability to be dewatered rapidly if needed for vector control.
- Incorporate measures into project designs that serve to educate the public about wildlife safety and vector-borne disease issues, prevent wildlife-human interactions, and prevent wildlife access to trash and unnatural food and water sources that are likely to result in unnatural population levels.
- Design underground utility vaults, if needed for project implementation, to prevent retention of standing water thereby reducing vector breeding habitat.
- Regularly consult with the vector control district to identify mosquito management problems, mosquito monitoring and abatement procedures, and opportunities to adjust water and vegetation management practices to reduce mosquito production.
- Incorporate funding for vector management activities into project funding or implement a secure and reliable funding source for vector management activities.

4.5.5.3 Bird/Wildlife Aircraft Strike Hazard

MP-H2 For projects located within 5 miles of El Monte Airport or Long Beach Airport, the potential for the proposed facilities to attract waterfowl and other birds will be evaluated. If the evaluation indicates that the project would attract birds, the FAA Western Pacific Regional Office, Long Beach Airport, El Monte Airport and Los Alamitos Joint Forces Training Base will be notified of the proposed land use change to recognize potentially significant hazards early in the planning process and avoid or minimize the hazards.

4.5.6 Mitigation Measures for Concept Design Studies

The following mitigation measure will be implemented for **all five Concept Design Studies**:

CD-H1 Project plans and designs shall be submitted to the applicable vector control district (SGVMVCD for San Gabriel Canyon Spreading Grounds and Woodland Duck Farm and GLAVCD for San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park) for review and comment with respect to control of mosquito and other

vectors. Upon consultation with the vector control district, appropriate vector management measures shall be incorporated into the project design. Potential management measures include the following:

- Design to minimize and/or provide periodic removal of vegetation on bank slopes and periphery of water bodies to minimize areas of stagnant water.
- Design and/or manage to optimize water depths and flow pattern. For mosquito control, maintain water depths and encourage/provide water circulation. For black fly control, minimize aeration of flowing water. If necessary, design water features to allow for periodical drying to desiccate vector larvae.
- Work with the vector control district to stock ponds and other permanent water features with mosquito-eating fish as needed.
- Provide site access to vector control district specifications (e.g., dikes with access roads or trails) to potential breeding areas for maintenance (e.g., vegetation removal) and treatment (e.g., application of Bti or other larvicides).
- Design stormwater retention facilities/devices to drain completely within 72 hours, or design with the capability to be dewatered rapidly if needed for vector control.
- Incorporate measures into project designs that serve to educate the public about wildlife safety and vector-borne disease issues, prevent wildlife-human interactions, and prevent wildlife access to trash and unnatural food and water sources that are likely to result in unnatural population levels.
- Design underground utility vaults, if needed for project implementation, to prevent retention of standing water thereby reducing vector breeding habitat.
- Regularly consult with the vector control district to identify mosquito management problems, mosquito monitoring and abatement procedures, and opportunities to adjust water and vegetation management practices to reduce mosquito production.
- Incorporate funding for vector management activities into project funding or implement a secure and reliable funding source for vector management activities.

The following mitigation measure shall be implemented for the Woodland Duck Farm and El Dorado Regional Park Concept Design Studies:

CD-H2 During the detailed design phase, FAA Western Pacific Regional Office and El Monte Airport (for Woodland Duck Farm) and Long Beach Airport (for El Dorado Regional Park) shall be notified of the proposed land use change to recognize potentially significant hazards early in the planning process and avoid or minimize the hazards.

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4.6 HYDROLOGY AND WATER QUALITY

4.6.1 Existing Setting

The Master Plan study area is the 1-mile wide corridor along 58 river miles of the San Gabriel River from its headwaters in the San Gabriel Mountains to its terminus at the Pacific Ocean between Long Beach and Seal Beach (**Figure 4.6-1**). The study area includes 19 cities as well as unincorporated areas of Los Angeles and Orange counties.

Local water supplies provide less than half of the total municipal water use in the San Gabriel River area (R.A. Rhone, pers. comm., April 19, 2005 (Appendix F)), but are a critical component to the overall water supply system. As noted below, there are numerous water rights holders, the majority of which provide municipal water service in the region.

4.6.1.1 Surface Water Features

The San Gabriel River flows from the San Gabriel Mountains in the north through the San Gabriel Valley and the Los Angeles Coastal Plain, and empties into the Los Angeles/Long Beach Harbor. The River runs parallel to Interstate 605 almost the entire length of the freeway from Azusa to Long Beach. The San Gabriel River Watershed (the area that drains into the River) encompasses 635 square miles (LASGRWC, 2001), and lies mostly within Los Angeles County with small portions in San Bernardino and Orange Counties.

The major tributaries to the San Gabriel River are Walnut Creek, San Jose Creek, and Coyote Creek. The Rio Hondo, a distributary of the San Gabriel River, branches from the River just below Santa Fe Dam and flows westward to the Whittier Narrows area. The Whittier Narrows area is a low point between the Puente Hills and Merced Hills, which forms the southern boundary of the San Gabriel Valley. At Whittier Narrows, portions of the flow from San Gabriel River are conveyed to the Rio Hondo by a manmade channel known as Lario Creek or Zone 1 Ditch.

Channel Conditions

Since the early 1900s, the San Gabriel River and its tributaries have been altered significantly through channelization and construction of dams primarily for flood control purposes (**Figure 4.6-2**). Upstream of Morris Dam, the River remains mostly in its natural state, flowing through the deep, wide canyons of the San Gabriel Mountains. Reaches of the River downstream of Morris Dam have been modified to make the channel straighter, deeper, and narrower. From San Gabriel Canyon Road in Azusa to Firestone Boulevard in Norwalk/Downey, the channel is trapezoidal in shape, with grouted stone sidewalls and an earthen bottom. The 10-mile reach from just south of Firestone Boulevard to the confluence with Coyote Creek in Long Beach is a trapezoidal channel lined with concrete both on the sides and the bottom. Within the 3-mile reach from the confluence with Coyote Creek to the mouth of the river (San Gabriel River estuary), the channel has an earthen bottom.

**Figure 4.6-1
Surface Water Bodies and Flood Control Facilities
in the San Gabriel River Watershed**

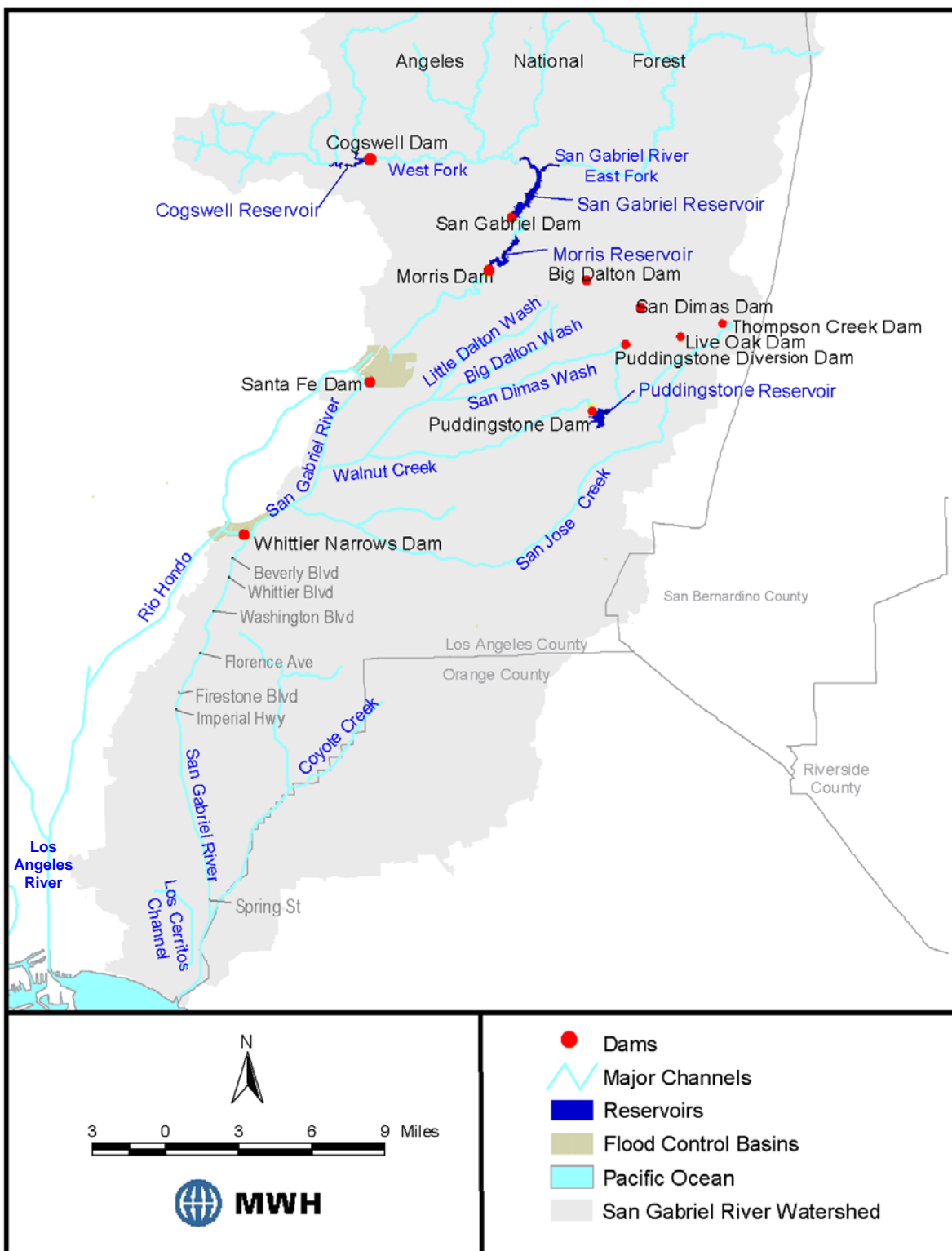


Figure 4.6-2
San Gabriel River Channel Conditions




Table 4.6-1 summarizes the channel widths, capacities, and 100-year flood discharges at different segments of the river. The channel accommodates 100-year flood discharges except in two segments (at Whittier Boulevard and between the San Diego Freeway and 7th Street). The reaches upstream and just downstream of the Whittier Narrows Dam have channel capacities substantially in excess of the 100-year flood discharge.

Table 4.6-1
Channel Widths, Capacities, and 100-year Flood Discharges

Channel Segment (From North to South)	Invert Width ¹ (feet)	Channel Capacity ² (cfs)	100-year Discharge ² (cfs)
Santa Fe Dam - Walnut Creek	216-312	41,000	32,800
Walnut Creek - San Jose Creek	400-450	60,000	49,000
San Jose Creek - Whittier Narrows	N/A	98,000	70,700
Whittier Narrows - San Gabriel River Parkway	240-640	13,100	5,000
San Gabriel River Parkway - Beverly Boulevard	240-640	13,500	12,200
Beverly Boulevard - Whittier Boulevard	240-640	13,300	12,800
Whittier Boulevard	240-640	13,100	13,400
Washington Boulevard - Slauson Avenue	240	14,700	14,000
Slauson Avenue - Telegraph Road	240	16,700	14,600
Telegraph Road - Florence Avenue	240	18,800	15,200
Florence Avenue - Imperial Highway	160-240	19,000	15,800
Imperial Highway - Compton Boulevard	80-160	18,900	16,500
Compton Boulevard - Coyote Creek	80-90	20,000	17,200
Coyote Creek - San Diego Freeway	240	58,800	55,900
San Diego Freeway - 7th Street	240	51,100	55,500
7th Street - Ocean	240-164	55,600	55,000

Sources: 1 COE, 1975.

2 LADPW, 2003b.

 Channel segments with capacities below the 100-year discharge

N/A – Not Available

Note: Invert width is the width of the channel bottom. The total width of the channel easement also includes the side slopes, typically sloped at 30 degrees, berms on either side of the channel, and the slope back to grade level.

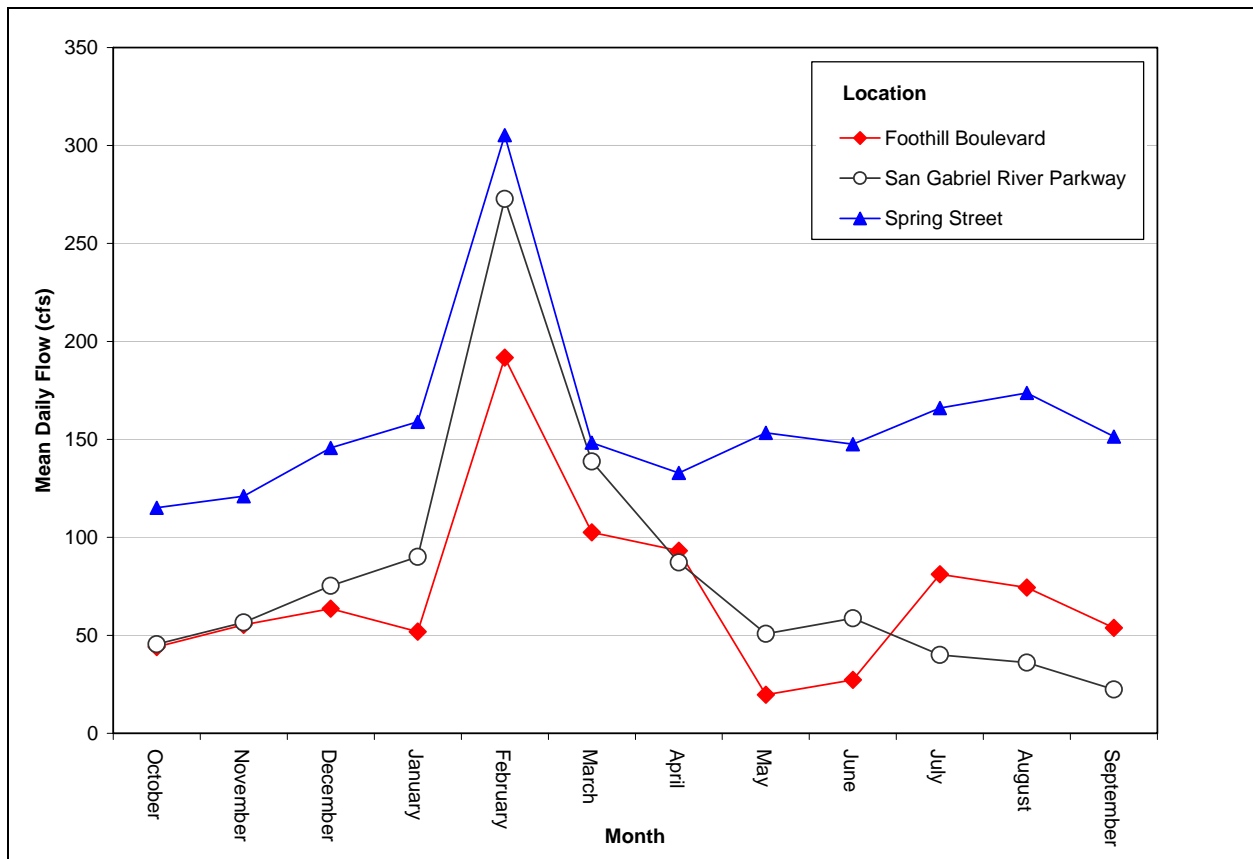
River Flows

The flow in the River and its tributaries consist of runoff, imported water, and recycled water. **Figure 4.6-3** depicts the mean daily flows by month at three locations along the river (listed from north to south):

- Foothill Boulevard in Azusa/Irwindale
- San Gabriel River Parkway in Pico Rivera
- Spring Street in Long Beach/Los Alamitos

Figure 4.6-3 represents average daily flows by month and does not represent the peak flows that can occur on a daily or hourly basis.

Figure 4.6-3
San Gabriel River Mean Daily Flows
(1996 – 2001 Water Years)



Source: LADPW Stream Gauges F190-R (at Foothill Boulevard), F263C-R (below San Gabriel River Parkway), and F42B-R (above Spring Street).

Note: Data shown exclude dam release of May 1998.

At Foothill Boulevard, upstream of most urban development, flows are regulated by the operation of Morris, San Gabriel, and Cogswell Dams. In addition to stormwater runoff, flows at this location can also contain imported water discharged from the outlet of Foothill Feeder-Service Connection USG-3, a pipeline owned by Metropolitan Water District of Southern California (Metropolitan); these flows vary depending on the availability of imported water and the water order placed by the various entities. Average flows range between 40 and 100 cfs throughout most of the year. Flows significantly above 100 cfs have also been recorded during storm events. The maximum recorded flow was 24,800 cfs (recorded on 1/26/1969 at station E322 at Peck Road). Highest flows (approximately 200 cfs) are observed in February, corresponding with the precipitation pattern. Flows at Foothill Boulevard are highly variable from year to year. In dry years, there can be weeks or months with almost no flow even during the winter.

Below San Gabriel River Parkway (just downstream of the Whittier Narrows Dam), flows between May and October are generally below 50 cfs. Flows increase in the winter with a peak

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of approximately 330 cfs in February, and then gradually decrease throughout the spring. Between August and October there is generally very little flow at this location.

Above Spring Street (just upstream of the confluence with Coyote Creek), flows are fairly constant, ranging between 110 and 160 cfs for most of the year. The flow at this location contains approximately 26 cfs of effluent discharged by the Los Coyotes Water Reclamation Plant. Similar to the other two locations, highest flows are observed in February (approximately 300 cfs).

Dams and Spreading Facilities

The San Gabriel River is part of an extensive network of channels, dams, and spreading grounds used for flood control and water conservation. LADPW and the United States Army Corps of Engineers (COE) are the two primary agencies responsible for operating these facilities. **Figure 4.6-1** shows the locations of the dams and spreading facilities discussed below.

The five dams located on the San Gabriel River within the Master Plan study area (**Table 4.6-2**) are described in further detail below. An additional 11 dams are located on the tributaries (Big Dalton, Thompson Creek, Live Oak, San Dimas, Sawpit, Santa Anita, Puddingstone Diversion, Puddingstone, Eaton Wash, Fullerton, and Brea Dams). Originally constructed primarily for flood control, many of these dams are now also operated for water conservation (groundwater recharge) in conjunction with the spreading grounds located along the River. LADPW operates all spreading basins that receive water from the San Gabriel River (**Table 4.6-3**). In addition, the open space areas outside the reservoirs and dams are used for recreation in many cases (see **Section 4.10** regarding recreational facilities in the Master Plan study area).

Table 4.6-2
Dams on the San Gabriel River

Facility (From North to South)	Year Constructed	Maximum ⁽¹⁾ Capacity (acre-feet)	Approx. Capacity (acre-feet)	Spillway Elevation (feet)	Purpose	Operator
Cogswell	1934	11,913	11,139 ⁽²⁾	2,385	Flood Control and Water Conservation	LADPW
San Gabriel	1939	53,344	43,655 ⁽³⁾	1,543	Flood Control and Water Conservation	LADPW
Morris	1935	32,300	22,540 ⁽⁴⁾	1,152	Water Conservation	LADPW
Santa Fe	1949	34,276	30,887 ⁽⁵⁾	496	Flood Control	COE
Whittier Narrows	1957	34,947	33,465 ⁽⁶⁾	229	Flood Control	COE

Source: LASGRWC, 2001; LADPW Water Resources Division.

(1) Maximum capacity is the original design capacity as modified by seismic, structural integrity and other requirements as determined by the California Department of Water Resources Division of Safety of Dams.

(2) As of last survey (1999)

(3) As of last survey (2002)

(4) As of last survey (1998)

(5) As of last survey (1996)

(6) As of last survey (1996)

Table 4.6-3
Spreading Facilities Receiving San Gabriel River Flows

Facility (From North to South)	Location	Size (acres)	Underlying Groundwater Basin*
San Gabriel Canyon	East side of San Gabriel River, below the mouth of San Gabriel Canyon in Azusa	165	San Gabriel Valley
Santa Fe	Within the Santa Fe Dam reservoir and spillway areas in Irwindale	338	San Gabriel Valley
Peck Road	Confluence of Sawpit and Santa Anita Washes (tributaries to the Rio Hondo) in Arcadia	157	San Gabriel Valley
San Gabriel River (San Gabriel Valley)	In-channel from Santa Fe Dam to Whittier Narrows Dam	196	San Gabriel Valley
Rio Hondo Coastal	On both sides of the Rio Hondo between Whittier Boulevard in Pico Rivera and Foster Bridge Boulevard in Bell Gardens	570	Central
San Gabriel Coastal	West side of the River between Whittier Boulevard and Washington Boulevard in Pico Rivera	128	Central
San Gabriel River (Montebello Forebay)	In-channel from Whittier Narrows Dam to Firestone Avenue	308	Central

Source: LADPW, 2003b.

* See Section 4.6.1.2.

Cogswell, San Gabriel, and Morris Dams, located in the San Gabriel Mountains, are operated by LADPW. These dams capture runoff and snow melt from the mountains and form large reservoirs. Water released from these dams is either diverted to the San Gabriel Canyon Spreading Grounds or conveyed to downstream facilities (Santa Fe Spreading Grounds and the Montebello Forebay via the San Gabriel River; Peck Road Spreading Basin via the Santa Fe Diversion Channel and the Sawpit Wash; and the Montebello Forebay via the Rio Hondo).

Santa Fe Dam, located approximately 4 miles downstream of the mouth of the San Gabriel Canyon, is operated by COE. Water collected behind Santa Fe Dam is used to recharge groundwater, either within the unlined channel of the River downstream of the dam or at the Peck Road Spreading Basin via Sawpit Wash (tributary to the Rio Hondo) (LADPW, 2003b), or is conveyed to the Montebello Forebay via the San Gabriel River or the Rio Hondo.

Whittier Narrows Dam, the largest flood control facility on the River, is operated by COE to regulate flows from the San Gabriel River to the Rio Hondo for flood control and water conservation. The two rivers are connected by two manmade channels – the Crossover Channel and Lario Creek. The Crossover Channel provides the main connection during large storms. Lario Creek (originally named the Zone 1 Ditch) conveys imported water and recycled water deliveries in addition to storm flows. Flood flows from the San Gabriel River are stored temporarily behind the dam, and controlled releases are made to the Rio Hondo and/or the San Gabriel River. Flows released to the Rio Hondo and the San Gabriel River are then diverted for groundwater recharge at the Rio Hondo Coastal Spreading Grounds and the San Gabriel Coastal

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Spreading Grounds, respectively. Flows in excess of the capacity of the San Gabriel River that cannot be stored behind the dam are discharged to the ocean.

Rubber Dams. In addition to the permanent dam structures described above, a number of rubber dams are located on the River. When inflated, the rubber dams impound the River flow either to divert it into nearby spreading grounds or to facilitate in-channel recharge.

Discharges to the River and Tributaries

Water Reclamation Plants. Major discharges to the San Gabriel River include five Water Reclamation Plants (WRPs) and two power plants. All five WRPs located on the River or its tributaries (**Figure 4.6-4**) are operated by the County Sanitation Districts of Los Angeles County (LACSD), and provide primary, secondary and tertiary treatment and disinfection of municipal wastewater. **Table 4.6-4** shows the WRP capacities and the amount of water treated and the amount reused during fiscal year 2000-2001.

Other Discharges. There are two power plants that discharge cooling water into the San Gabriel River Estuary (LASGRWC, 2001). The Alamitos Generating Station, owned by AES Corporation, is permitted to discharge about 1,250 million gallons per day (mgd). The LADWP Haynes Generating Station is permitted to discharge about 1,000 mgd of water (LASGRWC, 2001; LARWQCB, 2003). In addition, there are numerous storm drains operated by LADPW and other municipalities that discharge urban runoff into the San Gabriel River. In addition, imported water is discharged to the River (or its tributaries) at several locations, including: downstream of Morris Dam (“USG-3” outlet owned by Metropolitan), the northern basin of the San Gabriel Canyon Spreading Grounds (outlet owned by San Gabriel Valley Municipal Water District (SGVMWD)), Thompson Creek (“CB-28” outlet owned by Metropolitan), and San Dimas Wash (“CB-48” outlet owned by Metropolitan and an outlet owned by SGVMWD).

Table 4.6-4
Water Reclamation Plants with Discharges to San Gabriel River and Tributaries

Plant (Receiving Water Body)	Capacity (mgd)	Amount Treated and Reused (Fiscal Year 2000 - 2001)			Primary Types of Reuse
		Type	mgd	AFY	
Pomona (South Fork San Jose Creek, which is tributary to San Jose Creek)	15	Treated	11	12,600	Irrigation and Industrial
		Reused	7	8,000	
		Discharged to RWB	4	4,600	
San Jose Creek¹ (San Jose Creek/San Gabriel River)	100	Treated	89	100,200	> 90% for groundwater recharge < 10 % Irrigation and Industrial
		Reused	35	39,000	
		Difference	54	61,200	
Whittier Narrows² (Rio Hondo/San Gabriel River)	15	Treated	7	7,900	> 90% for groundwater recharge < 10 % Irrigation and Industrial
		Reused	7	7,700	
		Difference	0	200	
Los Coyotes (San Gabriel River)	37.5	Treated	35	39,600	Irrigation and Industrial
		Reused	5	5,400	
		Discharged to RWB	30	34,200	
Long Beach (Coyote Creek)	25	Treated	20	22,900	Irrigation and Industrial
		Reused	4	4,300	
		Discharged to RWB	16	18,600	

Source: LACSD, 2001; C. Alarcon, pers. comm., May 5, 2005 (Appendix F)

RWB = receiving water body

mgd = million gallons per day

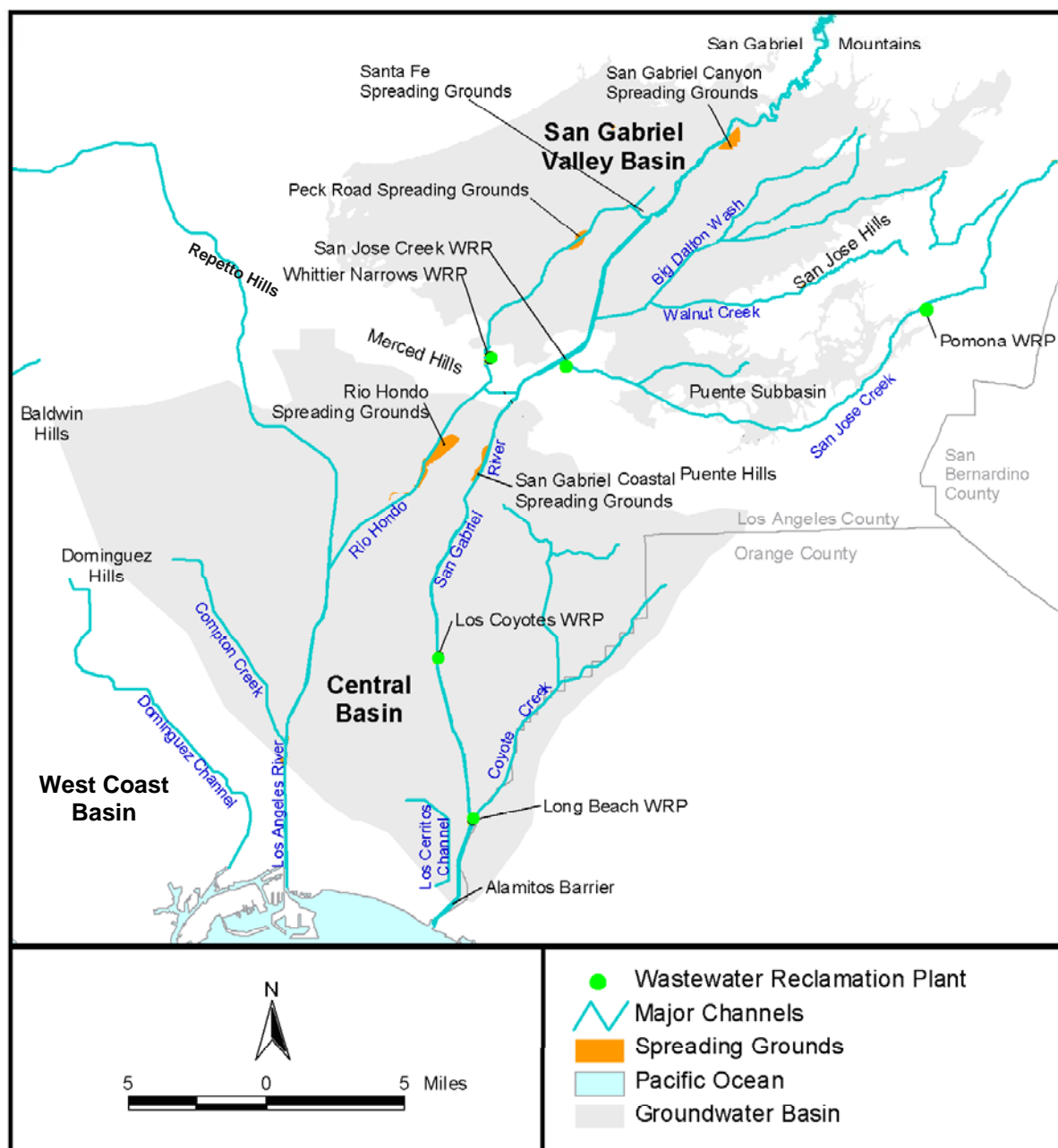
AFY = acre-feet per year

- 1 Reclaimed water from the San Jose Creek WRP is delivered to the San Gabriel Coastal Spreading Grounds by a direct pipeline or by first discharging into San Jose Creek (to San Gabriel River) then diverting flows from the San Gabriel River. Flows may also be diverted via Lario Creek to the Rio Hondo for recharge at the Rio Hondo Spreading Grounds. San Jose Creek WRP can also discharge to the San Gabriel River (downstream of the confluence with San Jose Creek).
- 2 The Whittier Narrows WRP discharges directly into either the Rio Hondo, the San Gabriel River, or Lario Creek.

4.6.1.2 Groundwater Basins

The Master Plan study area spans two groundwater basins: the San Gabriel Valley Basin and Central Basin (**Figure 4.6-4**). The two basins are described in detail below.

**Figure 4.6-4
Groundwater Basins**



San Gabriel Valley Basin

The San Gabriel Valley Basin covers 255 square miles in northeastern Los Angeles County. The basin is bound to the north by the San Gabriel Mountains and the Raymond fault. The Repetto, Merced, and Puente Hills bound the basin to the south and west. The Chino fault and the San Jose fault form the eastern boundary (CDWR, 2003). The storage capacity of the basin is estimated to be approximately 10.7 million acre-feet (CDWR, 2003).

The water bearing materials of the basin are dominated by unconsolidated to semi-consolidated alluvium from the San Gabriel Mountains deposited by streams. The San Gabriel Valley Basin is an unconfined aquifer (i.e., the groundwater is not separated from the ground surface by an impermeable geological boundary). The general direction of the groundwater flow is from the edges of the basin boundary towards the center, then to the southwest to exit through Whittier Narrows (CDWR, 2003) to the Central Basin.

Data necessary to provide a complete accounting of inflows into and outflows from the San Gabriel Valley Basin were not available (CDWR, 2003). As an example of basin's water balance, **Table 4.6-5** presents the amount of known inflows and outflows for the basin for one year (Water Year 1998-1999). Water used to recharge the San Gabriel Valley Basin includes both imported water (from Northern California and the Colorado River) and local surface water.

Table 4.6-5
San Gabriel Valley Basin Inflow and Outflow (Water Year 1998-1999)

Inflow		Outflow	
Type	Amount (acre-feet)	Type	Amount (acre-feet)
Natural Recharge	186,268	--	--
Artificial Recharge	82,803	Extractions	269,782
Subsurface Inflow*	N/D	Subsurface Outflow to Central Basin	27,000

Source: CDWR, 2003.

* N/D – Not Determined. Subsurface inflow to the San Gabriel Valley Basin includes flows from the Raymond Basin, from the Chino Subbasin, and from fracture systems along the San Gabriel Mountain front.

Central Basin

The Central Basin underlies the southeastern part of the Los Angeles Coastal Plain, covering 277 square miles (CDWR, 2003). The Central Basin is bound on the north by the La Brea High and on the northeast and east by the Elysian, Repetto, Merced and Puente Hills. The southeast boundary between the Central and Orange County Groundwater Basins roughly follows the Coyote Creek. The southwest boundary, which separates the Central and West Coast Basins, is the Newport-Inglewood fault system and the Newport-Inglewood uplift (CDWR, 2003). The total storage capacity of the Central Basin is estimated to be approximately 13.8 million acre-feet.

Groundwater in the Central Basin occurs in Holocene and Pleistocene sediments at relatively shallow depths. Areas available for surface recharge of the Central Basin are limited due to the presence of the Bellflower Aquiclude, which is an impermeable layer of soil that prevents downward movement of water. The Bellflower Aquiclude creates semi-perched groundwater conditions in some areas (CDWR, 2003). The Montebello Forebay area, located just south of Whittier Narrows, consists of highly permeable soils and is the most significant area for surface recharge of the Central Basin and the adjacent West Coast Basin. The WRD and LADPW use local runoff, imported water, and recycled water for groundwater recharge at spreading facilities

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located in the Montebello Forebay (see **Table 4.6-3**). The Los Angeles Forebay, another area of permeable soils, is not available for surface recharge due to urban development (CDWR, 2003). The general direction of the groundwater flow is from the northeast (San Gabriel Valley Basin and recharge areas) to the southwest (West Coast Basin and Pacific Ocean) (CDWR, 2003).

Data necessary to provide a complete accounting of inflows into and outflows from the Central Basin were not available (CDWR, 2003). As an example of basin's water balance, **Table 4.6-6** presents the amount of known inflows and outflows for the basin for one year (Water Year 1998-1999).

Table 4.6-6
Central Basin Inflow and Outflow (Water Year 1998-1999)

Inflow		Outflow	
Type	Amount (acre-ft)	Type	Amount (acre-ft)
Natural Recharge	31,950	--	--
Artificial Recharge	63,688	Extractions	204,335
Subsurface inflow from the San Gabriel Valley Basin	27,000	Subsurface Outflow (to West Coast Basin and Pacific Ocean)	N/D

Sources: CDWR, 2003.

N/D – Not Determined

West Coast Basin

The southern end of the Master Plan study area overlaps the West Coast Basin, which is located west of Central Basin. The West Coast Basin is bound on the north by the Ballona Escarpment, an abandoned erosional channel from the Los Angeles River. On the east it is bound by the Newport-Inglewood fault zone, and on the south and west by the Pacific Ocean and Palos Verdes Hills. The storage capacity of the basin is estimated to be approximately 6.5 million acre-feet (CDWR, 2003).

Groundwater in the West Coast Basin occurs in the unconsolidated and semi-consolidated marine and alluvial sediments of Holocene, Pleistocene, and Pliocene ages. Natural replenishment of the basin's groundwater supply is largely limited to underflow from the Central Basin through and over the Newport-Inglewood fault zone. In addition, freshwater is injected to prevent seawater intrusion near the coast. Minor replenishment to the West Coast Basin occurs from infiltration of surface inflow from both the Los Angeles and San Gabriel Rivers (CDWR, 2003). The general regional groundwater flow pattern is southward and westward from the Central Basin towards the ocean.

Data necessary to provide a complete accounting of inflows into and outflows from the West Coast Basin were not available (CDWR, 2003). As an example of basin's water balance, **Table 4.6-7** presents the amount of known inflows and outflows for the West Coast Basin for one year (Water Year 1998-1999).

Table 4.6-7
West Coast Basin Inflow and Outflow (Water Year 1998-1999)

Inflow		Outflow	
Type	Amount (acre-ft)	Type	Amount (acre-ft)
Natural Recharge	N/D	--	--
Artificial Recharge	95,638	Extractions	51,762
Subsurface inflow (primarily from the Central Basin)	68,473	Subsurface Outflow	N/D

Sources: CDWR, 2003.

N/D – Not Determined

4.6.1.3 Water Rights

The Water Commission Act, which took effect in 1914, established a system of state-issued permits and licenses to appropriate water. Amended over the years, the provisions for appropriating water now appear in Division 2 (commencing with Section 1000) of the California Water Code. The State Water Resources Control Board (SWRCB) is responsible for administering water rights (CDWR, 1998).

Water rights to the San Gabriel River and the groundwater basins underlying the Master Plan study area have been allocated to numerous users. SWRCB (2003a) has declared the San Gabriel River fully appropriated, i.e., no new users can file for a share of the river water. The two groundwater basins, the San Gabriel Valley Basin and the Central Basin, are both adjudicated basins, i.e., rights to extract groundwater have been allocated to various users by a court order. Agencies and organizations involved in administering water rights in the Master Plan study area are described below.

San Gabriel River Watermaster

In 1965, a court judgement settled a lawsuit filed by water users downstream of the Whittier Narrows on the San Gabriel River (Lower Area). The court judgement, known as the Long Beach Judgement, declared that the Lower Area is entitled to receive an annual average of 98,415 acre-feet of “usable water” from the Upper Area (upstream of Whittier Narrows) (SGRWM, 2003). The Judgement is administered by a three-person Watermaster (the San Gabriel River Watermaster) that accounts for all water (surface and subsurface) passing through Whittier Narrows each year and for credit and debit obligations (CRA et al., 2001). The Watermaster is composed of one representative from the Upper Area, one from the Lower Area, and one chosen by both areas (Blomquist, 1992).

Main San Gabriel Basin Watermaster

The San Gabriel Valley Basin is divided into two main parts, the Main San Gabriel Basin and the Puente Subbasin. The Puente Subbasin, lying in the southeast portion outside of the Master Plan Study area, is tributary and hydraulically connected to the Main San Gabriel Basin. However, it is considered a separate entity for management purpose (MSGBW, 2002).

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The Main San Gabriel Basin was adjudicated in 1973 to 190 parties (MSGBW, 2003). The Main San Gabriel Basin Watermaster is responsible for administering the water rights allocations, including water spreading activities. The amount of groundwater that can be extracted from the basin (Operating Safe Yield, OSY) is determined by the Watermaster each year based on rainfall, groundwater levels, water held in storage, and various other considerations (CDWR, 2003; C.T. Williams, pers. comm., April 27, 2005 (**Appendix F**)). The long-term average OSY (1973 to 2002) is 199,545 acre-feet. The minimum and maximum OSY during this period were 140,000 and 230,000 acre-feet, respectively (MSGBW, 2002).

Parties who pumped 5,000 acre-feet or more in Fiscal Year 2001-2002 from the Main San Gabriel Basin are listed below (MSGBW, 2002). In addition, there are numerous parties with smaller water rights.

- Azusa Valley Water Company
- California Domestic Water Company
- California-American Water Company
- City of Alhambra
- City of Arcadia
- City of Azusa
- City of Glendora
- City of Monrovia
- City of Monterey Park
- City of Whittier
- Covina Irrigating Company
- San Gabriel County Water District
- San Gabriel Valley Water Company
- Southern California Water Company
- Suburban Water Systems
- Valley County Water District

Central Basin Watermaster

The Central Basin was adjudicated in 1965, with the California Department of Water Resources (CDWR) as the Watermaster. Currently, 146 parties hold rights to the Central Basin. The allowed pumping allocation of the basin, as set by the Judgement, is 217,367 acre-feet (CDWR, 2002a). WRD, in conjunction with LADPW, is responsible for replenishing groundwater supply in the Central Basin. Imported water purchased from the Metropolitan Water District of Southern California (Metropolitan) and recycled water from Whittier, Pomona, and San Jose Creek WRPs are used for artificial recharge at LADPW Spreading Grounds (**Table 4.6-3**).

Parties with allocation of 3,000 acre-feet or more from the Central Basin are listed below (CDWR, 2002a). In addition, there are numerous parties with smaller water rights.

- City of Huntington Park

- City of Lakewood
- City of Long Beach
- City of Lynwood
- City of Paramount
- City of Pico Rivera
- City of Santa Fe Springs
- City of South Gate
- City of Vernon
- Los Angeles Department of Water and Power
- Pico Water District
- Southern California Water Company
- Suburban Water Systems

West Coast Basin Watermaster

The West Coast Basin was first adjudicated in 1955, with CDWR as the Watermaster. The final judgement was signed in 1965 and became effective in 1966. Currently, 68 parties hold rights to the West Coast Basin. The allowed pumping allocation of the basin, as set by the adjudication, is 64,468.25 acre-feet (CDWR, 2002b). WRD, in conjunction with LADPW, is responsible for replenishing groundwater supply in the Central Basin. Imported water purchased from the Metropolitan Water District of Southern California (Metropolitan) and recycled water from Whittier, Pomona, and San Jose Creek WRPs are used for artificial recharge at LADPW Spreading Grounds (**Table 4.6-3**).

Parties with allocation of 1,000 acre-feet or more from the West Coast Basin are listed below (CDWR, 2002b). In addition, there are numerous parties with smaller water rights.

- Atlantic Richfield Company
- California Water Service Company
- Chevron USA, Inc.
- City of Hawthorne
- City of Inglewood
- City of Lomita Water System
- City of Los Angeles
- City of Manhattan Beach
- City of Torrance
- Equilon Enterprises, LLC
- Mobil Oil Corporation
- Shell Oil Company
- Southern California Water Company
- Tosco Corporation

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San Gabriel River Water Committee

SGRWC was formed in 1889 to settle disputes between nine local water interests and was originally called the “Committee of Nine.” Currently, the SGRWC consists of the California-American Water Company, Monrovia Nursery Company, City of Azusa, Covina Irrigating Company, and Azusa Agricultural Water Company. The diversion rights of each SGRWC member are shown in **Table 4.6-8**. SGRWC members are entitled to the first 135 cfs of flow in the San Gabriel River (Rhone, 2003). Most of the diverted water is used for potable uses. The river water is treated at Canyon Filtration Plant (City of Azusa) and Covina Filtration Plant (Covina Irrigating Company) before distribution to consumers. Excess flows are used for groundwater recharge at spreading facilities under an agreement with LADPW. SGRWC members are the only parties allowed to divert water from the River for potable uses.

Table 4.6-8
San Gabriel River Water Committee Members and Diversion Rights
(acre-feet per year)

Party	Amount of Entitlement
City of Azusa	3,252
Covina Irrigating Company	2,514
California-American Water Company	1,672
Monrovia Nursery Company	958
Azusa Agricultural Water Company	170

Source: Rhone, 2003

San Gabriel Valley Protective Association

SGVPA was formed in 1919 to safeguard the rights of water users from Azusa to Whittier (Robinson, 1991). The SGVPA members listed below (C. Shaw, pers. comm., 2003) are entitled to water from the San Gabriel River in excess of 135 cfs (Rhone, 2003), and they use the water solely for groundwater recharge at LADPW facilities.

- Cadway, Inc.
- California Domestic Water Company
- California-American Water Company
- Central Basin Municipal Water District
- City of Alhambra
- City of Arcadia
- City of Azusa
- City of Glendora
- City of Lakewood
- City of Monrovia
- City of Whittier
- Covina Irrigating Company
- East Pasadena Water Company
- La Habra Heights County Water District
- Montebello Land and Water Company
- Pico County Water District
- San Gabriel County Water District
- San Gabriel Valley Municipal Water District
- San Gabriel Valley Water Company
- Southern California Water Company
- Suburban Water Systems
- Upper San Gabriel Valley Municipal Water District
- Valencia Heights Water Company
- Valley County Water District
- Water Replenishment District of Southern California

4.6.1.4 Water Quality

Water Quality Regulatory Framework

Basin Plan Beneficial Uses and Water Quality Objectives. The Los Angeles Regional Water Quality Control Board (Regional Board) establishes water quality standards for the Los Angeles Region in its Water Quality Control Plan, commonly known as the Basin Plan. The Basin Plan presents designated beneficial uses for surface and ground waters and numeric and narrative water quality objectives necessary to support the beneficial uses.

Table 4.6-9 summarizes the designated beneficial uses for the San Gabriel River and other water bodies within the Master Plan study area (LARWQCB, 1994).

Beneficial uses for the San Gabriel Valley, Central, and West Coast groundwater basins are Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, and Agricultural Supply (all designated as existing beneficial uses).

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**Table 4.6-9
Beneficial Uses of Water Features within the Master Plan Study Area**

Water Body		Municipal and Domestic Supply	Industrial Service Supply	Industrial Process Supply	Agricultural Supply	Groundwater Recharge	Water Contact Recreation	Non-Contact Water Recreation	Warm Freshwater Habitat	Cold Freshwater Habitats	Wildlife Habitat	Rare, Threatened, or Endangered Species	Spawning, Reproduction, and/or Early Development	Wetland Habitat
Name	HU No.	MUN	IND	PROC	AGR	GWR	REC-1	REC-2	WARM	COLD	WILD	RARE	SPWN	WET
San Gabriel River														
San Gabriel River West Fork	405.43	P	--	--	--	E	E	E	E	E	E	E	E	E
San Gabriel River Main Stem	405.43	E	E	E	E	E	E	E	E	E	E	--	E	--
San Gabriel River	405.42	E	E	E	E	E	E	E	E	E	E	E	--	--
San Gabriel River	405.41	P	--	--	--	I	I	I	I	--	E	--	--	--
San Gabriel River (Whittier Narrows – Firestone Boulevard)	405.15	P	P	P	--	I	E	E	I	--	E	E	--	--
San Gabriel River (Firestone Boulevard - Estuary)	405.15	P	--	--	--	--	E	E	P	--	P	--	--	--
San Gabriel River Estuary*	405.15	--	E	--	--	--	E	E	--	--	E	E	E	--
Tributaries														
Walnut Creek	405.41	P	--	----	--	I	I	I	I	--	E	--	--	E
San Jose Creek	405.41	P	--	--	--	I	P	I	I	--	E	--	--	--
Coyote Creek	405.15	P	P	P	--	--	P	I	P	--	P	E	--	--
Reservoirs and Flood Control Basins														
Cogswell Reservoir	405.43	P	--	--	--	E	E	E	E	E	E	--	E	--
San Gabriel Reservoir**	405.43	E	E	E	E	E	E	E	E	E	E	--	--	--
Morris Reservoir**	405.43	E	E	E	E	E	P	E	E	E	E	--	E	--
Santa Fe Flood Control Basin	405.41	P	--	--	--	I	P	I	I	--	E	--	--	E
Whittier Narrows Flood Control Basin	405.41	P	--	--	--	E	E	E	E	--	E	P	--	--
Legg Lake	405.41	P	--	--	--	E	E	E	E	E	E	--	--	E

HU: Hydrologic Unit P: Potential Use E: Existing Use I: Intermittent Use

* Beneficial uses for the San Gabriel River Estuary also include the following: Navigation, Commercial and Sport Fishing, Estuarine Habitat, Marine Habitat, and Migration of Aquatic Organisms (existing uses) and Shellfish Harvesting (a potential use)

** Beneficial uses for the San Gabriel and Morris reservoirs also include Hydropower Generation (an existing use).

Source: LARWQCB, 1994.

The Basin Plan presents numeric water quality objectives that apply to all inland surface waters in the Los Angeles Region. These objectives have been established for various parameters including metals, organic compounds (e.g., pesticides and petroleum byproducts), bacteria, dissolved oxygen, pH, temperature, and total residual chlorine (LARWQCB, 1994).

In addition to the general objectives, the Basin Plan has established water body-specific objectives for certain areas. The objectives specific to the San Gabriel River are presented in **Table 4.6-10**.

Table 4.6-10
Water Quality Objectives for Surface Water Features
in the Master Plan Study Area

Reach	Objectives					
	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)	Nitrogen* (mg/L)	SAR
Above Morris Dam	250	30	10	0.6	2	2
Between Morris Dam and Ramona Boulevard	450	100	100	0.5	8	--
Between Ramona Boulevard And Firestone Boulevard	750	300	150	1.0	8	--
Between Firestone Boulevard and San Gabriel River Estuary including Coyote Creek	--	--	--	--	--	--
All other minor San Gabriel Mountain streams tributary to San Gabriel Valley	300	40	15	--	--	--

Source: LARWQCB, 1994.

* Nitrogen as NO₃-N + NO₂-N

-- No water body specific objectives

TDS: Total Dissolved Solids

SAR: Sodium Adsorption Ratio

Basin Plan water quality objectives for groundwater basins relevant to the Master Plan study area are shown in **Table 4.6-11**.

Table 4.6-11
Water Quality Objectives for Groundwater Basins in the Master Plan Study Area

Basin	Objectives (mg/L)			
	TDS	Sulfate	Chloride	Boron
Main San Gabriel Basin – Western Area*	450	100	100	0.5
Main San Gabriel Basin – Eastern Area*	600	100	100	0.5
Central Basin	700	250	150	1.0

Source: LARWQCB, 1994.

TDS: Total Dissolved Solids

*Walnut Creek, Big Dalton Wash, and Little Dalton Wash separate the Eastern area from the Western area.

NPDES Stormwater Program. The primary regulatory framework for pollutant discharges to water bodies is the National Pollutant Discharge Elimination System (NPDES) program, which is administered by the U.S. Environmental Protection Agency (EPA) under the Clean Water Act (CWA) with authority delegated to the Regional Board. In 1987, the NPDES program was expanded to regulate stormwater discharges in response to the increasing awareness for the need to control stormwater pollution. Under the NPDES Stormwater Program, municipalities, ten categories of industrial activities, and construction activities over 1 acre in area are required to obtain a NPDES permit for stormwater discharges.

Municipalities in the Master Plan study area are covered by three separate NPDES municipal stormwater discharge permits. The County of Los Angeles and all incorporated cities in the Master Plan Study area within Los Angeles County (except the City of Long Beach) are covered under Order No. 01-182, issued by the Regional Board in 2001. The City of Long Beach is covered under Order No. 99-060 issued by the Regional Board in 1999. The City of Seal Beach and unincorporated areas of Orange County are covered under Order No. R8-2002-0010 issued by the Santa Ana Regional Water Quality Control Board (SARWQCB) in 2002. Under these permits, municipalities are required to develop area-wide stormwater management plans (known as Standard Urban Stormwater Mitigation Plans or SUSMPs), implement best management practices (BMPs) to reduce and/or treat stormwater runoff, and perform stormwater monitoring. LADPW has prepared a manual that serves as a guideline for compliance with the County's SUSMP (LADPW, 2002b). Similarly, the County of Orange has prepared the Drainage Area Management Plan (DAMP; Orange County, 2003), which incorporates the requirements of the SARWQCB Order No. R8-2002-0010 and is the principal policy and guidance document for the countywide NPDES Stormwater Program. The SUSMP and the DAMP outline the necessary BMPs that must be incorporated into design plans for various categories of development and/or redevelopment.

(See Section 4.5.1.4 regarding the potential for stormwater capture devices or treatment options to serve as vector habitats.)

NPDES stormwater permits do not currently impose effluent limitations. However, as part of the NPDES Stormwater Program, EPA established “benchmark” concentrations for various pollutant parameters that are of potential concern in stormwater runoff from industrial facilities. If

concentrations of constituents exceed the benchmark levels, stormwater discharges are considered by EPA to have the potential to impair, or contribute to impairing, water quality or to affect human health if ingested. The benchmarks are intended to serve as a guide in determining whether stormwater pollution prevention measures have been successfully implemented. They are not effluent limitations (EPA, 1995).

Title 22 – Recycled Water Use Regulations. Title 22, Division 4, Chapter 3 of California Code of Regulations (CCR) regulates non-potable uses of recycled wastewater (i.e., water from sources that contain treated sewage). The objective of Title 22 standards is to protect public health from pathogens and other contaminants that may be present in recycled wastewater. Although they do not legally apply to stormwater reuse, Title 22 standards have been used as a treatment goal for previous stormwater reuse projects, such as the Santa Monica Urban Runoff Recycling Facility (SMURRF) (City of Santa Monica, 2003).

Title 22 establishes required treatment levels for recycled water use based on the expected degree of public contact with the recycled water. For applications with a high potential for the public to come in contact with the recycled water (e.g., irrigation of food crops, residential landscaping, and parks and playgrounds), Title 22 requires tertiary treatment and disinfection. For applications with a lower potential for public contact (e.g., irrigation of areas with restricted access, crops for livestock, and freeway landscaping), Title 22 requires secondary treatment with varying degrees of disinfection depending on the proposed use (CCR Sections 60303-60307).

Title 22 does not specify water quality or treatment level standards for use of recycled wastewater for groundwater recharge. The regulations stipulate generally that “reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health.” The California Department of Health Services (CDHS) makes recommendations to the applicable Regional Water Quality Control Board on an individual case basis where there is a potential risk to public health (CCR Section 60320).

Surface Water Quality

LADPW Water Quality Data. Table 4.6-12 presents selected water quality data for the San Gabriel River. The left column shows water quality data collected in September 2001 from 12 locations, ranging from the West Fork of the River in the San Gabriel Mountains to upstream of the City of Azusa. This set of data was collected by LADPW (2002) as required by the permits issued for sediment management in the San Gabriel and Morris Reservoirs.

The two columns on the right present water quality data collected from 1994 to 2000 in the River below San Gabriel River Parkway in Pico Rivera and in Coyote Creek below Spring Street in Long Beach/Los Alamitos. This set of data was collected by LADPW (2001) as part of the annual stormwater sampling and reporting program throughout Los Angeles County as required by the NPDES Municipal Stormwater Permit.

Water quality in the River north of Azusa (upstream of urban development) is generally good. Most parameters are consistent with the Regional Board’s water quality objectives. However, the Curve and Williams Fires of 2002 in the Angeles National Forest have affected the water

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quality in this reach and will continue to do so for several years until the watershed recovers. The lower reaches of the River and Coyote Creek generally have higher turbidity and nutrient concentrations. High bacteria counts are also observed in the downstream portions.

Table 4.6-12
Selected Water Quality Data – San Gabriel River and Coyote Creek

Parameter	Unit	September 2001 (LADPW, 2002a)	1994-2000 (LADPW, 2001)	
		12 Sampling Points Upstream of City of Azusa	San Gabriel River Below San Gabriel River Parkway	Coyote Creek below Spring Street
		Range	Median	Median
Temperature	°C	19 - 23.5	---	---
pH	std units	8.1 - 8.5	7.5	7.4
Dissolved Oxygen	mg/L	6.6 - 7.2	---	---
Biological Oxygen Demand	mg/L	---	32	20
Chemical Oxygen Demand	mg/L	---	56	55
Turbidity	NTU	0.3 - 5.2	41	64
Total Suspended Solids	mg/L	ND	96	196
Total Petroleum Hydrocarbons	mg/L	---	0.5	1.0
Total Residual Chlorine	mg/L	ND - 0.14	---	---
Indicator Bacteria				
Total Coliform	MPN/100ml	---	300,000	1,600,000
Fecal Coliform	MPN/100ml	---	30,000	900,000
Nutrients				
Ammonia-Nitrogen	mg/L	ND - 0.12	0.41	0.33
Total Kjeldahl Nitrogen	mg/L	ND - 0.37	2.7	2.2
Nitrate + Nitrite as N	mg/L	ND - 0.15	1.9	1.1
Orthophosphate-P	mg/L	ND - 0.018	---	---
Total phosphorus-P	mg/L	ND - 0.053	0.43	0.28
Metals				
Aluminum	µg/L	---	333	419
Boron	µg/L	---	265	225
Copper	µg/L	---	8	14
Chromium	µg/L	---	2.5	2.5
Lead	µg/L	---	2.5	11
Nickel	µg/L	---	2.5	7.5
Zinc	µg/L	---	51	125

MPN Most Probable Number

ND non-detect

NTU nephelometric turbidity units

--- Data not reported

Impaired Water Bodies and Total Maximum Daily Loads. Section 303(d) of the CWA requires each state to develop a list of water bodies that do not meet water quality standards (“impaired water bodies”). This list of impaired water bodies is referred to as the “303(d) list”, and is developed and periodically updated by the Regional Board. States are then required to develop action plans for improving the water quality of impaired water bodies on the 303(d) list.

The process for developing the action plan begins with establishment of Total Maximum Daily Loads (TMDLs). TMDL is defined as the maximum amount of a particular pollutant that a water body can receive from various sources without violating the water quality standard. Once a TMDL is established for a specific body of water, responsibility for reducing pollution is assigned among both point sources and non-point sources that discharge to the target water body.

According to the 303(d) list, the water quality of the San Gabriel River is substantially impaired downstream of Whittier Narrows by a variety of pollutants. **Table 4.6-13** lists the San Gabriel River reaches listed on the most recent 303(d) list. The major point source dischargers that are potentially contributing to these water quality impairments include: five WRPs located on the River or its tributaries (**Table 4.6-4**); industrial facilities (the Alamitos and Haynes generating stations); and municipal storm drains (LARWQCB, 2002). In addition to general urban development, potential nonpoint sources of pollution include equestrian facilities, nurseries, and golf courses (LARWQCB, 2002).

The Regional Board, SWRCB, and EPA share responsibilities for the development of TMDLs for the San Gabriel River and tributaries. The only TMDL that has been developed in the San Gabriel River Watershed to date is the Trash TMDL for the East Fork San Gabriel River (outside of the Master Plan study area). According to the Draft Strategy for Developing TMDLs and Attaining Water Quality Standards in the Los Angeles Region (LARWQCB, 2002), the following TMDLs for the San Gabriel River Watershed are scheduled for completion in 2004: nutrients, organics, bacteria, and metals. These future TMDLs will most likely include requirements for municipalities and other dischargers to reduce pollutant loads.

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Table 4.6-13
Impaired Reaches within the Master Plan Study Area

Water Body / Reach	Abnormal Fish Histology	Algae	High Coliform Count	Toxicity	Copper	Zinc	Lead	Selenium	pH
San Gabriel River (From North to South)									
Above Ramona	None								
Ramona to Whittier Narrows Dam (7.2 miles)				X					
Whittier Narrows Dam to Firestone Boulevard (12 miles)			X		X	X	X		
Estuary to Firestone Boulevard (6.4 miles)	X	X	X	X					
Estuary (3.4 miles)	X								
Walnut Creek Wash – Drains from Puddingstone Reservoir (12 miles)				X					X
San Jose Creek									
Confluence with San Gabriel River to Temple Street (2.7 miles)		X	X						
Temple Street to I-10 at White Avenue (17 miles)		X	X						
Coyote Creek (13 miles)	X	X	X	X	X	X	X	X	

Source: SWRCB, 2003b.

Stormwater Quality

Stormwater contains various pollutants that are picked up as runoff travels through urban and suburban areas. Typical pollutants in urban stormwater are bacteria, nutrients, trash, sediment, heavy metals, and organic compounds (e.g., pesticides, vehicular exhaust materials, and chemicals used in industrial processes). However, the types and amounts of pollutants contained in stormwater are highly variable, depending on factors such as climate, season, drainage area land use, and sequence and duration of storm events. Therefore, numerical characterization of stormwater quality can be a challenge.

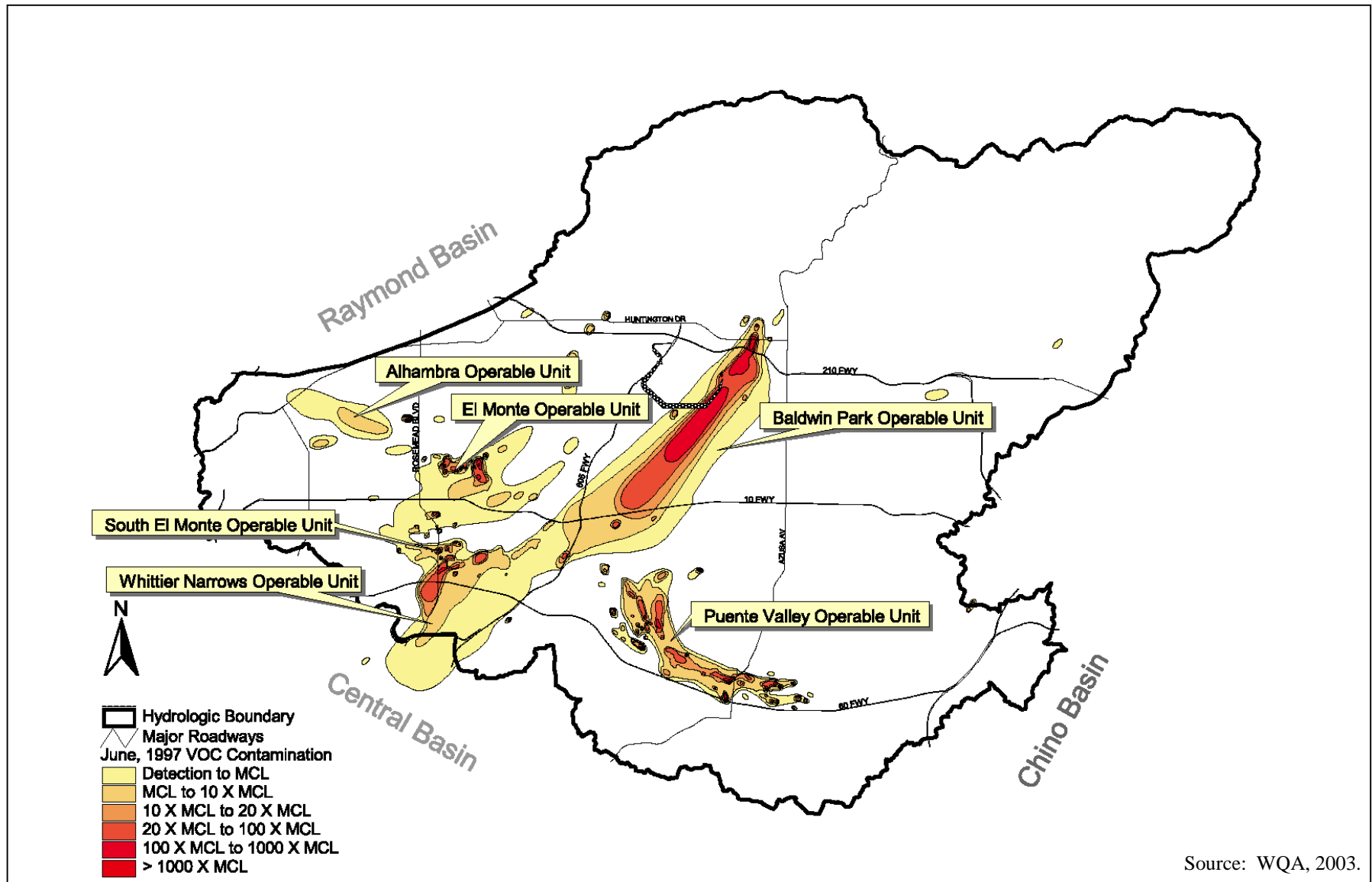
Since the 1994-1995 storm season, LADPW has been conducting an annual stormwater sampling and reporting program throughout Los Angeles County as required by the NPDES Municipal Stormwater Permit. Two of the monitoring stations used in this program are located in the Master Plan study area. The San Gabriel River Monitoring Station (Station No. S14) is located at an historic stream gage station below San Gabriel River Parkway in Pico Rivera. The Coyote Creek Monitoring Station (Station No. S13) is located at the existing COE stream gage station below Spring Street in Long Beach/Los Alamitos (LADPW, 2001). Selected water quality data collected at these two stations are shown in **Table 4.6-12** above.

Groundwater Quality

San Gabriel Valley Basin. The primary water quality issue in the San Gabriel Valley Basin is volatile organic compounds (VOCs) contamination caused by historical ground disposal of industrial solvents and other pollutants. VOC contamination in the basin was first detected in 1979. In 1984, EPA added approximately 30 square miles within the San Gabriel Valley to the National Priorities List (NPL) under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. NPL is a list of sites with known or threatened releases of contaminants that have been determined to warrant further investigation by EPA. Primary contaminants of concern for the San Gabriel Valley Superfund site include trichloroethylene (TCE, commonly used for degreasing and cleaning), perchloroethylene (PCE, a component of solid rocket fuel), and carbon tetrachloride (used to make chlorofluorocarbon propellants and refrigerants).

EPA and local agencies, including the San Gabriel Basin Water Quality Authority (WQA), have been conducting clean-up by pumping groundwater from a series of wells and treating the water to remove the VOCs. The WQA was formed in 1993 by cities and municipal water districts within the San Gabriel Valley Superfund area to augment EPA's cleanup activities. Currently, there are six active Operable Units (OUs), or focused study areas established to facilitate the clean-up efforts (**Figure 4.6-5**). Portions of the Whittier Narrows, South El Monte and Baldwin Park OUs overlap with the Master Plan study area. Water from wells located within the OUs is treated and/or blended with higher quality water to meet drinking water standards before entering public water supply distribution systems (EPA, 2002b).

Figure 4.6-5
San Gabriel Valley Basin Superfund Sites



Source: WQA, 2003.

Central Basin. The Central Basin Early Remediation Project removes contaminants entering the Central Basin from the San Gabriel Valley Basin. WRD issued a “Non-Consumptive Use Permit” in Fiscal Year 2001-2002 allowing groundwater extraction for the program (CDWR, 2002a).

Since the 1950s, saltwater intrusion has been an issue in groundwater basins in the coastal areas of Los Angeles County, including the Central Basin. Saltwater intrusion is the subsurface movement of ocean water into freshwater groundwater basins in coastal and inland areas, usually caused by excessive groundwater pumping. To protect the freshwater supply of the Central Basin, the Alamitos Barrier Project was constructed in 1964. The project, now operated by LADPW, recharges the basin through a series of injection wells located near the Los Angeles-Orange County line about two miles inland from the mouth of the San Gabriel River, an area known as the Alamitos Gap. The injected water consists of imported water from Metropolitan’s distribution system and reclaimed water (LADPW, 2003d).

West Coast Basin

Seawater intrusion occurs in the Silverado zone along the Santa Monica Bay and in the Gaspar zone in the San Pedro Bay. Two seawater barrier projects are currently in operation: the West Coast Basin Barrier Project, which runs from the Los Angeles Airport to the Palos Verde Hills, and the Dominguez Gap Barrier Project, which covers the area of the West Coast Basin bordering the San Pedro Bay. Injection wells along these barriers create a groundwater ridge, which inhibits the inland flow of salt water into the subbasin to protect and maintain groundwater elevations (CDWR, 2003).

4.6.2 Significance Criteria

Project impacts related to hydrology and water quality would be considered significant if the project:

- Exposed people or structures to a significant risk of loss, injury or death involving flooding
- Increased runoff volume to a level which could exceed the capacity of existing or planned stormwater drainage systems
- Altered the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation
- Resulted in substantial degradation of water quality or exceedance of the established water quality objectives for a surface water feature or groundwater basin

4.6.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los

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Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.6.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.6-14**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts. Adverse impacts on hydrology and water quality would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.6.5**). Since mitigation will reduce these impacts to less than significant levels (see Master Plan program mitigation measures described in **Table 4.6-14** and **Section 4.6.5**), the overall impacts on hydrology and water quality from adopting the Master Plan are considered less than significant. Site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area.

Table 4.6-14
Impacts on Hydrology and Water Quality from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Hydrology and Water Quality	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	<p>Beneficial: Habitat enhancements could result in a reduction of impervious surfaces thus reducing urban runoff and stormwater pollutant discharges to surface waters (beneficial impact on flooding and water quality).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on hydrology and water quality (e.g., identification of indicator species, enhances specific species that have experienced decline).</p> <p>Potentially Adverse: Habitat enhancement that involves active restoration (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) would result in ground disturbance, which could have a temporary adverse impact on water quality, if appropriate measures are not taken to minimize the release of sediments from disturbed surfaces or pollutant releases from construction equipment or vehicles. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5).</p> <p>Adoption of this element would encourage removal of invasive species. If chemical herbicides are used, this could temporarily result in adverse water quality impacts. Implementation of MP-W4 would reduce this</p>	<p>Potentially significant for construction related soil disturbance; less than significant with mitigation</p> <p>Potentially significant for effects associated with chemical use for exotics removal; less than significant with mitigation</p> <p>Beneficial (no adverse impact) for operations-related effects</p>

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Master Plan Elements	Impacts on Hydrology and Water Quality	Impact Summary
	impact by limiting chemical use, requiring the selection of chemicals that are less persistent in the environment, and restricting use to favorable weather conditions.	
Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses	<p>Beneficial: Development of recreational facilities could result in a reduction of impervious surfaces thus reducing urban runoff and stormwater pollutant discharges to surface waters (beneficial impact on flooding and water quality).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on hydrology and water quality (e.g., educating the public about catch and release fishing, establishing design standards for trails).</p> <p>Potentially Adverse: Construction of recreation related facilities (e.g., interpretive centers, trails and trail amenities, signs, kiosks) would result in ground disturbance, which could have a temporary adverse impact on water quality, if appropriate measures are not taken to minimize the release of sediments from disturbed surfaces or pollutant releases from construction equipment or vehicles. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5). Projects that involve construction of parking facilities, buildings, roads, and/or paved trails could have adverse impacts on flooding and water quality if they caused an increase in impervious surfaces or otherwise altered the existing drainage pattern and increased the amount of runoff leaving the site. However, the Master Plan includes the Flood Protection Element and Water Supply and Water Quality Element (see below), which would encourage projects designed to result in an overall reduction of stormwater runoff and associated pollutants.</p>	<p>Potentially significant for construction related soil disturbance; less than significant with mitigation</p> <p>Less than significant to beneficial for operations-related effects</p>
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	<p>Beneficial: Open space enhancements could result in a reduction of impervious surfaces thus reducing urban runoff and stormwater pollutant discharges to surface waters (beneficial impact on flooding and water quality). Adoption of this element would also encourage volunteer cleanup activities, which would reduce the amount of trash in the river corridor (beneficial impact on surface water quality).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on hydrology and water quality (e.g., identifies historical sites and cultural landscapes).</p> <p>Potentially Adverse: Use of existing open space areas</p>	<p>Potentially significant for construction related soil disturbance; less than significant with mitigation</p> <p>Beneficial (no adverse impact) for operations-related effects</p>

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Master Plan Elements	Impacts on Hydrology and Water Quality	Impact Summary
	for active recreational facilities and activities would result in ground disturbance, which could have a temporary adverse impact on water quality, if appropriate measures are not taken to minimize the release of sediments from disturbed surfaces or pollutant releases from construction equipment or vehicles. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5).	
Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.	<p>Beneficial: Adoption of this element would encourage projects that maintain existing flood protection, develop stormwater detention facilities, and/or reduce impermeable surfaces, which would improve surface water quality and reduce flooding.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on hydrology and water quality (e.g., establishes visual design standards for flood control devices).</p> <p>Potentially Adverse: Construction of new flood control facilities (e.g., stormwater detention areas) would result in ground disturbance, which could have a temporary adverse impact on water quality, if appropriate measures are not taken to minimize the release of sediments from disturbed surfaces or pollutant releases from construction equipment and vehicles. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways would reduce impacts to less than significant levels (Section 4.6.5).</p>	<p>Potentially significant for construction related soil disturbance; less than significant with mitigation</p> <p>Beneficial (no adverse impact) for operations-related effects</p>
Water Supply and Water Quality Element: 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.	<p>Beneficial: Adoption of this element would encourage projects that reduce runoff discharges into waterways, expand reclaimed water use, and/or treat stormwater runoff, which would improve surface water quality and reduce flooding.</p> <p>Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) would result in ground disturbance, which could have a temporary adverse impact on water quality, if appropriate measures are not taken to minimize the release of sediments from disturbed surfaces or pollutant releases from construction equipment and vehicles. Preparation of SWPPPs including implementation of standard erosion control measures that would contain sediment on-site and minimize sedimentation to adjacent waterways</p>	<p>Potentially significant for construction related soil disturbance; less than significant with mitigation</p> <p>Potentially significant for groundwater quality and hydrology related effects from stormwater infiltration; less than significant with mitigation</p>

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Master Plan Elements	Impacts on Hydrology and Water Quality	Impact Summary
	<p>would reduce impacts to less than significant levels (Section 4.6.5).</p> <p>Adoption of this element would encourage projects that involve stormwater infiltration. In most cases, infiltration is a desirable way of managing urban runoff since it contributes to groundwater recharge, reduces pollutant discharges to downstream surface waters, and reduces downstream flooding. However, as discussed in Section 4.6.4.4, if site-specific conditions are not taken into account in designing and operating stormwater infiltration facilities, stormwater infiltration projects have the potential to degrade groundwater quality. Implementation of MP-W6 would reduce this impact by monitoring to assess the ongoing effectiveness of the stormwater treatment methods and provision of additional treatment or project redesign if monitoring results indicate substantial water quality degradation.</p> <p>Projects that increase recharge of stormwater or recycled water would generally result in beneficial impacts on groundwater elevations of the underlying groundwater basins. However, projects that involve large amounts of groundwater recharge could have adverse effects on groundwater hydrology (groundwater elevations and flow directions). Potential adverse impacts include: the inundation of landfill materials or other contaminant sources and leaching of contaminants into the groundwater basin; and change in groundwater flow directions and consequently change in the shape and configuration of the existing VOC contamination plumes (see Section 4.6.4.5). Implementation of MP-W7 would reduce this impact by evaluation of proximity to known hazardous materials sites and potential for inundation of contamination sources and siting infiltration facilities away from these potential contamination sources or partially lining infiltration basins.</p>	
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on hydrology and water quality (e.g., providing incentives to participating adjacent land owners).</p> <p>Potentially Adverse: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. Minor modifications of existing or new business development in the river corridor needed for consistency with Master Plan elements (e.g., trail connections and aesthetic features and compliance with design guidelines) are anticipated to have minimal or no impacts on hydrology and water quality.</p>	<p>Less than significant</p>

4.6.4 Impacts of Implementing the Concept Design Studies

4.6.4.1 Flood Control

Projects Involving Stormwater Retention. The Master Plan Concept Design Studies for the Woodland Duck Farm, the San Gabriel River Discovery Center at Whittier Narrows, Lario Creek, and El Dorado Regional Park include constructed wetlands. These wetlands may be designed with retention, reuse, and/or infiltration of stormwater. These and other future projects that involve stormwater retention would have beneficial impacts on flood control by reducing the amount of runoff and/or the peak flow entering existing storm drains and flood control channels (i.e., the San Gabriel River and tributaries). Projects with these elements may be designed to allow inundation of project facilities during flood flows. Since specifically designed as part of the project, flooding impacts on project-related structures (i.e., parking lots, fields, wetlands, etc.) would be considered less than significant.

Projects that Increase Impervious Surfaces or Change Drainage Patterns. The Master Plan Concept Design Studies for the San Gabriel Canyon Spreading Grounds, Woodland Duck Farm and the San Gabriel River Discovery Center at Whittier Narrows involve construction of parking facilities or buildings. These and other future projects that involve construction of parking facilities, buildings, roads, and/or paved trails could have adverse impacts on flooding if they caused an overall increase in impervious surfaces or otherwise altered the existing drainage pattern and increased the amount of runoff leaving the site. However, since the Master Plan encourages the following practices as part of the Master Plan performance criteria for the Flood Protection and Water Supply and Water Quality goals (see Tables 3.3-4 and 3.3-5 in Section 3), it is anticipated that these projects will be designed to include stormwater management features (e.g., dry wells, swales, etc.) to result in a net decrease in runoff from the site:

- Reduces volume and velocity of storm water runoff where feasible
- Reduces the amount of precipitation that is converted to urban runoff (decreases the acreage of impermeable surfaces)
- Reduces dry weather urban runoff discharge into waterways
- Utilizes on-site opportunities to reduce impermeable surfaces and increase infiltration
- Encourages onsite collection of stormwater for irrigation and percolation, where consistent with water rights
- Utilizes open spaces and landscaped areas to filter and cleanse runoff

Projects Involving Modifications to an Existing Channel. The Master Plan Concept Design Study for El Dorado Regional Park considers removal of concrete from the bottom and the eastern slope of the San Gabriel River channel as an alternative that may be implemented in the long-term. Concrete removal will increase the roughness of the channel, which increases the area required to convey the same amount of flow. If channel modifications exposed people or structures to flooding, the impact would be significant. However, since the Master Plan Flood Protection Element includes maintenance of existing flood protection as an objective and

performance criterion, project design will increase channel width such that there will be no reduction in overall channel flood capacity. Since it is expected that it will be designed in this manner, impacts on flooding would be less than significant.

The Lario Creek Concept Design Study also proposes channel modifications. Neither of the options proposed for the Concept Design Study would reduce channel capacities. Therefore, the impact on flooding is less than significant.

The Woodland Duck Farm Concept Design Study may include diversion of flows from Avocado Creek to an off-channel wetland. Minor modifications to the channel, if any, would not reduce channel capacities. Therefore, the impact on flooding is less than significant.

4.6.4.2 Construction Impacts on Surface Water Quality

Projects Involving Soil Disturbance during Construction. Construction activities that involve soil disturbance (e.g., excavation, grading, and filling) would temporarily increase the potential for soil erosion. In addition, during the rainy season, construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, and adhesives) may come in contact with runoff. If appropriate measures are not taken to minimize the release of sediments and other materials from construction sites, this could result in a temporary impact on surface water quality. All five Concept Design Studies involve varying amounts of soil disturbing activities during construction.

As required by the EPA and the Regional Board, a Stormwater Pollution Prevention Plan (SWPPP) will be developed and implemented during construction of project components greater than 1 acre in area. This plan is required as part of the NPDES Permit for discharge of stormwater associated with construction activities. Incorporation of stormwater best management practices in the SWPPP would reduce the potential for soil erosion and release of other pollutants during construction. Specific control measures to be considered for inclusion in site-specific SWPPPs are listed below in **Mitigation Measure CD-W1**. These measures would minimize the amount of runoff and associated pollutants (e.g., sediments) leaving the construction site by containing the runoff onsite (e.g., sedimentation basins), containing the sediments onsite (e.g., silt fences and hay bales), or minimizing the potential for stormwater to come in contact with pollutants (e.g., conduct activities during the dry season, control pollutant releases (oils, grease, etc.) from construction equipment). With the incorporation of such control measures in the SWPPPs, construction impacts on surface water quality are expected to be less than significant.

Projects Involving Modifications to an Existing Channel. The Master Plan Concept Design Studies for El Dorado Regional Park, Lario Creek, and potentially Woodland Duck Farm include channel modifications. These and other future projects that propose earth moving activities within the channel of the River or tributaries could result in a temporary increase in the potential for soil erosion and release of sediments. The resultant increase in turbidity (and potential release of pollutants in the soils underlying the concrete) in river flows could be a significant water quality impact. For projects involving channel modifications, COE, Regional Board, U.S. Fish and Wildlife Service, and California Department of Fish and Game will be consulted (**Mitigation Measure CD-W6**). All necessary federal and state approvals, including CWA

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Section 404 permits and CWA Section 401 water quality certifications or waivers will be obtained prior to the implementation of construction activities. Any conditions of agency approvals (e.g., measures to minimize the potential water quality impacts associated with the channel modification) will be incorporated into the project design to reduce impacts to below a level of significance. Water quality mitigation options for use during construction of in-channel improvements include diversion of flows around the construction site to prevent flows from coming in contact with the disturbed areas, installation of in-stream silt curtains to prevent sediments from flowing downstream, or use of off-channel sediment retention ponds or tanks to capture sediments from the disturbed areas.

4.6.4.3 Operational Impacts on Surface Water Quality

Projects that Reduce or Treat Stormwater Runoff. The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Discovery Center at Whittier Narrows, and El Dorado Regional Park include collection and treatment of stormwater runoff. Operation of these and other projects involving stormwater collection and treatment would reduce the amount of stormwater pollutants currently discharged into the San Gabriel River. In addition, projects that reduce soil erosion potential (e.g., by planting vegetation on currently unimproved surfaces prone to erosion thus reducing sediment load in stormwater runoff) or increase onsite percolation of runoff (e.g., by replacing concrete or asphalt surfaces with more porous materials thus reducing overall stormwater runoff volumes) would have beneficial operational impacts on surface water quality.

Projects that Increase Impervious Surfaces or Change Drainage Patterns. As discussed in **Section 4.6.3.1** above, individual components of future projects may increase impervious surfaces over existing conditions, potentially increasing stormwater pollutants discharged to the receiving water. However, since the Master Plan includes the performance criteria outlined above, it is anticipated that these projects will be designed for an overall improvement in surface water quality.

Use of Pesticides or Herbicides in Landscaped Areas or for Exotic Species Removal. All five Master Plan Concept Design Studies could include landscaping/habitat restoration as potential project elements. In addition, the Concept Design Studies for San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park propose removal of exotic plant species. With incorporation of **Mitigation Measure CD-W2**, use of chemical herbicides/pesticides will be minimized, and impacts from this type of chemical use would be less than significant. As described in Mitigation Measure CD-W2, use of chemicals will be limited to approved herbicides and pesticides, and application will be conducted in accordance with manufacturers' recommendations and general standards of use, e.g., restricted application before and during rain storms.

Projects Involving Modifications to an Existing Channel. The Master Plan Concept Design Study for El Dorado Regional Park considers removal of concrete from the bottom and the eastern slope of the San Gabriel River channel as an alternative that may be implemented in the long-term. If concrete removal results in substantial erosion, water quality impacts could be significant. However, project design will consider necessary slope stabilization (via terracing, landscaping, limiting steep slopes, installation of retaining walls) and scour control (via measures

to hold soils in place by covering soils with vegetation, river rock, or other materials to control soil erosion.

4.6.4.4 Groundwater Quality Impacts of Stormwater Infiltration

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Discovery Center at Whittier Narrows, and El Dorado Regional Park include constructed wetlands, which may be unlined and designed to allow infiltration to the groundwater. Additionally, other future projects may include groundwater recharge of stormwater (e.g., at former gravel pits). In most cases, infiltration is a desirable way of managing urban runoff since it contributes to groundwater recharge, reduces pollutant discharges to downstream surface waters, and reduces downstream flooding. However, as discussed above in **Section 4.6.1.4**, urban runoff can contain various pollutants, and therefore stormwater infiltration practices need to address the potential adverse effects on groundwater quality. Review of previous studies indicates that infiltration of stormwater generally does not pose considerable risk of groundwater contamination, given sufficient soil depth and proper design and maintenance of infiltration facilities (LASGRWC, 2002). However, if site-specific conditions are not taken into account in designing and operating stormwater infiltration facilities, certain pollutants do have the potential to reach groundwater (LASGRWC, 2002).

Whether or not stormwater infiltration can have an adverse effect on groundwater quality depends on the pollutants of concern and site-specific factors including: drainage area land use and associated stormwater quality, distance to groundwater from the point of infiltration, soil characteristics, and level of treatment that occurs prior to infiltration (Pitt et al., 1996). Below is a description of these factors.

Pollutants of Concern. Pitt, et al. (1996) conducted an extensive literature review of studies investigating the potential groundwater impacts from infiltrating stormwater. Based on the literature review and consideration of factors such as solubility, mobility, and general abundance in stormwater, the authors evaluated the groundwater contamination potential of various pollutants associated with stormwater infiltration practices. In general, stormwater pollutants that present higher risks of groundwater contamination are those that are highly soluble and have high mobility in the vadose zone (Pitt, et al., 1996). Such pollutants are more likely to remain dissolved in water and travel through the soil and reach the water table. Based on solubility and mobility, pollutants with high groundwater contamination potential are nitrate, certain organics such as VOCs and polyaromatic hydrocarbons (PAHs), viruses, some metals, and chloride.

Organics, and metals are known to be present in stormwater from county-wide samples (**Table 4.6-12**). However, chloride and nitrate are not anticipated to be pollutants of concern in infiltrated stormwater for the proposed project. The primary manmade source of chloride in stormwater is road salts used in colder climates. Observed levels of nitrate in stormwater in county-wide samples are well below Basin Plan objectives and the drinking water maximum contaminant level (MCL). Filtration and adsorption during stormwater treatment and infiltration under the proposed project will further remove nitrate.

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Although high levels of bacteria can be found in stormwater, bacteria are intercepted during the infiltration process by filtration, adsorption, and microbial decomposition, and are prevented from reaching the underlying groundwater in most cases (Pitt et al., 1996).

Drainage Area Land Use. Runoff generated from residential areas is generally less polluted than runoff from other land uses, and is considered appropriate for infiltration, especially if surface infiltration is used (Pitt, et al., 1996). Runoff from industrial land uses can contain high concentrations of soluble toxicants such as metals and organics, and require caution and pretreatment if it is used for infiltration (Pitt, et al., 1996).

Depth to Groundwater. The vadose zone (layer of soil above the water table and below the ground surface; also called the unsaturated zone) provides an important pollutant removal mechanism and protects the water table from direct contamination. Therefore, the bottom of the infiltration area should be well above the seasonal high water table. Sites where the groundwater surface is less than 4 feet below the infiltration surface, or where very sandy soils with low organic content exist, are the least suitable for groundwater recharge unless runoff is first treated to remove pollutants (Urbonas and Stahre, 1993). In areas where background metals are present in the soil, depth to groundwater should not be less than 10 feet below the infiltration device (Hathhorn and Yonge, 1995). Surface devices are generally preferable to subsurface infiltration systems (e.g., dry wells) since surface infiltration takes greater advantage of pollutant removal processes in the vadose zone (Pitt, et al., 1996).

Vadose Zone Soil Properties. Properties of the vadose zone soil can affect its effectiveness in pollutant removal. Sandy soils with low organic matter content have lower pollutant removal capacities than clayey soils with high organic content (Pitt, et al., 1996). Soils with a higher proportion of clay and organic matter have greater capacity for removing metals and organic compounds by sorption processes. (However, clay soils have lower percolation rates than sandy soils, which can impact recharge capacity.)

Treatment Prior to Infiltration. Many types of stormwater pollutants, including metals and organics, are bound to particulates that can be removed through settling or filtering processes. Therefore, treatment methods designed to remove particulate pollutants (e.g., stormwater separation devices, sedimentation basins, and vegetated surfaces) reduce the risk of groundwater contamination (Pitt, et al., 1996). In addition, treating for sediment removal prior to infiltration prevents infiltration systems from becoming clogged and maintains their performance. Typical pollutant removal rates of various stormwater treatment methods are summarized in **Table 4.6-15**.

Table 4.6-15
Typical Pollutant Removal Rates of Stormwater Treatment Methods

Type of Treatment Method	Typical Pollutant Removal (Percent)				
	Suspended Solids	Nitrogen	Phosphorus	Pathogens	Metals
Sedimentation Basins	30 - 65	15 - 45	15 - 45	< 30	15 - 45
Constructed Wetlands	50 - 80	< 30	15 - 45	< 30	50 - 80
Infiltration Basins	50 - 80	50 - 80	50 - 80	65 - 100	50 - 80
Dry Wells	50 - 80	50 - 80	15 - 45	65 - 100	50 - 80
Grassed Swales	30 - 65	15 - 45	15 - 45	< 30	15 - 45
Surface Sand Filters	50 - 80	< 30	50 - 80	< 30	50 - 80
Other Media Filters	65 - 100	15 - 45	< 30	< 30	50 - 80

Source: EPA, 1999.

Conclusion. With treatment prior to infiltration (including constructed wetlands), recharge of stormwater is not expected to result in significant groundwater contamination. Treatment methods designed to remove suspended solids and floatables (e.g., oil and grease) are expected to remove many of the pollutants (e.g., heavy metals and organics) that are sorbed onto particulates. For projects that include industrial land uses in the drainage areas, additional treatment, including constructed wetlands and use of proprietary stormwater filters, could be used to further improve water quality. Some of the dissolved constituents that are not removed in treatment processes prior to infiltration will be further removed in the vadose zone as water infiltrates into the soils, provided that the vadose zone below the infiltration site is sufficiently deep. With appropriate treatment and monitoring (see **Section 4.6.5.4**), impacts on groundwater quality from pollutants in stormwater are anticipated to be less than significant.

4.6.4.5 Impacts Related to Groundwater Hydrology

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Discovery Center at Whittier Narrows, and El Dorado Regional Park include constructed wetlands. Groundwater recharge is a potential use of stormwater collected at these and other future projects. Projects that increase recharge of stormwater or recycled water would generally result in beneficial impacts on groundwater elevations of the underlying groundwater basins. However, projects that involve large amounts of groundwater recharge could have adverse effects on groundwater hydrology (groundwater elevations and flow directions). Potential adverse impacts include the following:

- Substantial rise in groundwater levels underneath existing active or historical landfills could cause inundation of landfill materials (if unlined) and potential leaching of contaminants into the groundwater basin or impact landfill gas (methane) releases.
- Groundwater recharge may affect the groundwater flow directions and consequently change the shape and configuration of the existing VOC contamination plumes in the San Gabriel Valley Groundwater Basin (see **Section 4.6.1.4** above). If such an effect on the contamination plumes occurred, it could interfere with the ongoing remediation and cleanup efforts.

The significance of impacts on groundwater hydrology would be site-specific, and depend on the volume and rate of water infiltrated and proximity to contamination plumes and landfills. Note, there are no known active landfills in the immediate vicinity of the corridor. However, since historical landfills cannot be excluded from the project area, **Mitigation Measures CD-W3 and CD-W4** will be implemented to reduce impacts to a less than significant level. Under Mitigation Measure CD-W3, a site-specific assessment will be conducted to identify active or abandoned landfills or other land uses with the potential for contaminated soils which would be incompatible with infiltration. If the results of the investigation in Mitigation Measure CD-W3 indicate that a closed landfill (either municipal solid waste or inert construction waste) is located within 500 feet of the project site boundary, then a site-specific geotechnical study (Mitigation Measure CD-W4) will be conducted to estimate the potential for project infiltration to result in interaction between infiltrated stormwater and landfill materials. Under Mitigation Measure CD-W4, project infiltration would cease when monitoring indicates that groundwater levels have risen to the alert level (defined as within 10 feet of landfill materials), which would prevent infiltrated stormwater from interacting with the landfill materials.

4.6.4.6 Potential Soil Contamination at Infiltration Sites

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Discovery Center at Whittier Narrows, and El Dorado Regional Park include collection and treatment of urban runoff. Groundwater recharge is a potential use of stormwater collected at these and other future projects. Due to the highly urbanized environment and the presence of industrial land uses in the Master Plan study area, there is potential for contaminated soils to be present at these and other future project sites. If stormwater were infiltrated in large amounts through contaminated soils and caused pollutants to leach out into the underlying groundwater, this would be considered a significant impact on groundwater quality. Implementation of **Mitigation Measure CD-W3** (site-specific investigation of soil contamination potential and proper disposal of contaminated soil, if any) would reduce this potential impact to a less than significant level.

4.6.4.7 Water Supply and Water Rights

Future projects that propose to use treated stormwater or recycled water for groundwater recharge will have a beneficial impact on water supply. Similarly, El Dorado Regional Park Concept Design Study proposes use of recycled water in onsite lakes, thus conserving potable water. As is the current practice, swimming will not be allowed in the lakes. Other projects that include irrigation of landscaped areas with recycled water would have a similar benefit. Quantification of water supply benefits will be conducted, if relevant, as each project is more specifically defined.

The groundwater basins in the Master Plan study area are fully adjudicated. Therefore, pumping groundwater for seasonal make-up of wetlands, if included as part of project design, would be implemented within the confines of existing groundwater rights. Similarly, water consumption associated with future projects that include planting of riparian vegetation in existing channels (i.e., increased evapotranspiration) would be implemented within the confines of existing surface water rights.

4.6.4.8 Dam Safety

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, the San Gabriel River Discovery Center at Whittier Narrows, and El Dorado Regional Park include collection and treatment of stormwater runoff using treatment wetlands or other retention facilities. Depending on their dimensions, the proposed basins and associated berms may be considered “jurisdictional dams” and require approval from CDWR Division of Safety of Dams (DSOD). Jurisdictional dams are defined as structures that are 25 feet or higher from the lowest point at the downstream toe with a reservoir storage capacity of more than 15 acre-feet, or higher than 6 feet with a storage capacity of 50 acre-feet or more (California Water Code, Sections 6002 and 6003). Prior to construction of dams within the jurisdiction of the DWR, plans and specifications must be reviewed and approved by the DSOD. All dam safety related issues must be resolved prior to approval of the application, and the work must be performed under the supervision of a civil engineer registered in California (S. Verigin, pers. comm., 2002).

During detailed design of projects involving large basins, the project proponent would determine whether each proposed structure would be jurisdictional according to DSOD criteria. If structures were determined to be jurisdictional, the project proponent would file the plans and specifications with DSOD and consult with DSOD staff regarding any dam safety related issues. With consultation and incorporation of any design recommendations from the DSOD, impacts related to dam safety are expected to be less than significant.

4.6.5 Master Plan Program Mitigation Measures

4.6.5.1 Flood Control

MP-W1 Future projects that propose modifications to an existing flood control channel will include detailed engineering studies, including hydrologic and hydraulic modeling as applicable, to assess potential impacts on the channel’s flood control capacities and effects on upstream and downstream floodplain properties and recommendations to avoid or minimize these impacts. Recommendations of the engineering studies will be incorporated into project design. Modifications to Federal Emergency Management Agency (FEMA) floodplain maps will be made as needed.

4.6.5.2 Construction Impacts on Surface Water Quality

MP-W2 For future projects involving constructing, clearing, grading or excavation on areas over 1 acre in size, develop and implement a Storm Water Pollution Prevention Plan (SWPPP) to minimize the amount of runoff and associated pollutants (e.g., sediments) leaving the construction site by containing the runoff onsite, containing the sediments onsite, and/or minimizing the potential for stormwater to come in contact with pollutants. The following are possible measures to be incorporated into site-specific SWPPPs as applicable. Additional sample measures and guidelines for developing SWPPPs are available in California Stormwater Quality Association’s Stormwater Best Management Practice Handbook – Construction (CASQA, 2003). Measures to reduce fugitive dust generated during construction (see Section 4.1.5 – Air Quality) will also minimize the potential for soil erosion.

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- Install perimeter silt fences or hay bales.
- Stabilize soils through hydroseeding with native plant species where possible and use of soil stabilizers.
- Install temporary sedimentation basins.
- Conduct earth moving activities during the dry season (April through October), as feasible.
- Designate storage areas for construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) to keep these materials out of the rain and minimize contact with stormwater.
- Conduct regular inspections to ensure compliance with the SWPPP.

MP-W3 For future projects involving channel modifications, COE, Regional Board, U.S. Fish and Wildlife Service, and California Department of Fish and Game will be consulted. All necessary federal and state approvals (including CWA Section 404 permits, CWA Section 401 water quality certifications or waivers, and California Fish and Game Code Section 1602 Streambed Alteration Agreements) will be obtained prior to the implementation of construction activities. Any conditions of agency approvals (e.g., measures to minimize the potential water quality impacts associated with the channel modification) will be incorporated into the project design. Water quality mitigation options for use during construction of in-channel improvements include diversion of flows around the construction site, installation of in-stream silt curtains, or use of off-channel sediment retention ponds or tanks.

4.6.5.3 Operational Impacts on Surface Water Quality

MP-W4 For future projects involving landscaping, habitat restoration, and/or removal of exotic plant species, select biological or non-chemical means of controlling exotics and pests unless not feasible because biological or non-chemical controls are not readily available for the specific exotics to be controlled. If chemical pesticide or herbicide use is necessary, compounds that are less persistent in the environment will be selected, and application will be conducted in accordance with manufacturers' recommendations and general standards of use, e.g., restricted application before and during rain storms.

MP-W5 For future projects involving channel modifications, detailed engineering studies (including sediment transport as applicable) will be conducted to assess the impact of the proposed changes on the channel's stability and erodability and will include recommendations to avoid or minimize the impact. Recommendations of the engineering studies will be incorporated into project design to minimize impacts on surface water quality associated with potential increase in erosion of channel banks from proposed modifications.

4.6.5.4 Groundwater Quality Impacts of Stormwater Infiltration

MP-W6 For projects that involve stormwater infiltration, a comprehensive stormwater and groundwater quality monitoring program will be designed and implemented, or the results of existing monitoring programs will be considered. Monitoring results will be used to assess the ongoing effectiveness of the proposed stormwater treatment methods in protecting both surface

and groundwater. If monitoring results indicate substantial water quality degradation associated with project infiltration, the following strategy will be followed:

- Provide additional treatment prior to infiltration, or
- Redesign project to reduce or eliminate infiltration (e.g., lining), or
- Identify an alternative water source (e.g., reclaimed water).

4.6.5.5 Impacts Related to Groundwater Hydrology

MP-W7 For projects involving groundwater recharge, the project site's proximity to existing groundwater contamination plumes and landfills (or other known hazardous materials sites that could become a contamination source if inundated with groundwater) will be evaluated. If a project site is located within or adjacent to a plume or in the vicinity of a contamination source, the effect of the proposed recharge on groundwater hydrology (changes in flow direction and levels) will be evaluated. As applicable, groundwater modeling would be conducted to determine whether the rate and amount of recharge proposed by the project could result in substantial changes to the location or shape of existing contamination plumes, or in the inundation of landfills or other contamination sources. As part of the investigation, relevant agencies, including the Regional Board, Watermasters, and agencies involved in groundwater clean-up activities (e.g., EPA and WQA), will be consulted. As applicable, **Mitigation Measure CD-W4** will be implemented to prevent interaction of infiltrated water with landfill materials or other contaminant sources.

4.6.5.6 Potential Soil Contamination at Infiltration Sites

MP-W8 For projects involving substantial ground disturbance where prior land use is unknown and the potential for soil contamination or other constraints (e.g., oil or gas wells) from previous land uses exists, a Phase I Environmental Site Assessment (ESA) will be conducted to determine the site-specific potential for soil contamination or other constraints. The Phase I ESA will be conducted in accordance with the latest version of the American Society of Testing and Materials (ASTM) 1527 "Standard Practice for Environmental Site Assessments: Phase I Environmental Assessment Process." This document outlines the customary practice for performing ESA's in the United States. Phase I ESA will consist of a review of site-specific documents and historical maps to determine past uses of the site, a site visit to visually inspect the property for signs of potential environmental contamination, and investigation of state and federal environmental regulatory databases to identify recognized hazardous materials usage or spills, and include review of California Department of Conservation Division of Oil, Gas, & Geothermal Resources records of oil, gas, and geothermal wells. For project sites with infiltration, the boundary of the Phase I ESA will include parcels located within 500 feet of the project site boundary to identify active or abandoned landfills or other land uses with the potential for contaminated soils which would be incompatible with infiltration (to be cross-referenced with Mitigation Measure CD-W4). If the Phase I ESA concludes that there is no substantial potential for soil contamination or other constraints, no further action would be required. If the Phase I ESA indicates that there is potential for soil to be contaminated, additional investigation (Phase II ESA, including soil sampling and analysis) will be conducted to determine the presence and extent of the contamination. If the proposed project would involve disturbance of soil in the contaminated area, soil would be removed and disposed of in

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compliance with applicable regulations at approved disposal sites. If the proposed project site includes or is in the immediate vicinity of oil or gas wells or if any unrecorded wells are damaged or uncovered during excavation or grading, the project proponent shall submit the information outlined in the “Construction Project Site Review and Well Abandonment Procedure” to the California Department of Conservation Division of Oil, Gas & Geothermal Resources. In order of preference, wells should be avoided, plugged or re-plugged to current Division specifications, or an adequate gas venting system should be installed if construction over an abandoned well is unavoidable.

4.6.6 Mitigation Measures for Concept Design Studies

CD-W1 Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for projects that involve constructing, clearing, grading or excavation on areas over 1 acre in size to minimize the amount of runoff and associated pollutants (e.g., sediments) leaving the construction site by containing the runoff onsite, containing the sediments onsite, and/or minimizing the potential for stormwater to come in contact with pollutants. The following are possible measures to be incorporated into site-specific SWPPPs. Additional sample measures and guidelines for developing SWPPPs are available in California Stormwater Quality Association’s *Stormwater Best Management Practice Handbook – Construction* (CASQA, 2003). Measures to reduce fugitive dust generated during construction (see **Section 4.1.5 – Air Quality**) will also minimize the potential for soil erosion.

- Install perimeter silt fences or hay bales.
- Stabilize soils through hydroseeding with native plant species where possible and use of soil stabilizers.
- Install temporary sedimentation basins.
- Conduct earth moving activities during the dry season (April through October), as feasible.
- Designate storage areas for construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) to keep these materials out of the rain and minimize contact with stormwater.
- Conduct regular inspections to ensure compliance with the SWPPP.

CD-W2 For projects involving landscaping, habitat restoration, and/or removal of exotic plant species, select biological or non-chemical means of controlling exotics and pests unless not feasible because biological or non-chemical controls are not readily available for the specific exotics to be controlled. If chemical pesticide or herbicide use is necessary, compounds that are less persistent in the environment shall be selected, and application shall be conducted in accordance with manufacturers’ recommendations and general standards of use, e.g., restricted application before and during rain storms.

CD-W3 For projects involving substantial ground disturbance, conduct a Phase I Environmental Site Assessment (ESA) to determine the site-specific potential for soil contamination. The Phase I ESA shall be conducted in accordance with the latest version of the American Society of Testing and Materials (ASTM) 1527 “Standard Practice for Environmental Site Assessments: Phase I Environmental Assessment Process.” This document outlines the customary practice for performing ESA’s in the United States. Phase I ESA shall consist of a review of site-specific documents and historical maps to determine past uses of the site, a site visit to visually inspect the property for signs of potential environmental contamination, and investigation of state and federal environmental regulatory databases to identify recognized hazardous materials usage or spills. For project sites with infiltration, the boundary of the Phase I ESA shall include parcels located within 500 feet of the project site boundary to identify active or abandoned landfills or other land uses with the potential for contaminated soils which would be incompatible with infiltration (to be cross-referenced with Mitigation Measure CD-W4). If the Phase I ESA concludes that there is no substantial potential for soil contamination, no further action would be required. If the Phase I ESA indicates that there is potential for soil to be contaminated, additional investigation (Phase II ESA, including soil sampling and analysis) shall be conducted to determine the presence and extent of the contamination. If the proposed project would involve disturbance of soil in the contaminated area, soil would be removed and disposed of in compliance with applicable regulations at approved disposal sites.

CD-W4 If the site-specific Phase I ESA (Mitigation Measure CD-W3) indicates that an active or closed landfill (either municipal solid waste or inert construction waste) is located within 500 feet of the project site boundary, then a site-specific geotechnical study shall be conducted to: 1) characterize the extent and composition of landfill materials; 2) determine whether the landfill materials are releasing methane; 3) and estimate the potential mounding effect from the proposed stormwater infiltration. The results of the geotechnical study shall be incorporated into the project design to minimize the potential for project infiltration to result in interaction between infiltrated stormwater and landfill materials or to impact landfill gas releases, if any. Potential design modifications include siting the infiltration facilities away from the landfill and/or partially lining the facilities to direct infiltration away from the landfill. For sites with stormwater infiltration within 500 feet of an active or closed landfill, a groundwater monitoring program shall be developed and implemented to ensure that infiltration does not result in interaction between infiltrated stormwater and landfilled materials or impact landfill gas releases. Infiltration would cease at any site where groundwater levels rose to within 10 feet of landfilled materials to prevent interaction of infiltrated water with landfill materials.

CD-W5 For projects that involve stormwater infiltration, conduct vadose zone and groundwater quality monitoring. If monitoring results indicate substantial water quality degradation, pursue the following general strategy:

- Provide additional treatment prior to infiltration, or

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- Redesign project to reduce or eliminate infiltration (e.g., lining), or
- Identify an alternative water source (e.g., reclaimed water).

CD-W6 For projects involving channel modifications, COE, Regional Board, U.S. Fish and Wildlife Service, and California Department of Fish and Game shall be consulted. All necessary federal and state approvals (including CWA Section 404 permits, CWA Section 401 water quality certifications or waivers, and California Fish and Game Code Section 1602 Streambed Alteration Agreements) shall be obtained prior to the implementation of construction activities. Any conditions of agency approvals (e.g., measures to minimize the potential water quality impacts associated with the channel modification) shall be incorporated into the project design. Water quality mitigation options for use during construction of in-channel improvements include diversion of flows around the construction site, installation of in-stream silt curtains, or use of off-channel sediment retention ponds or tanks.

4.7 LAND USE

4.7.1 Existing Setting

4.7.1.1 Master Plan Study Area

Existing Land Uses

The Master Plan study area is a 1-mile wide corridor along 58 river miles of the San Gabriel River from its headwaters in the San Gabriel Mountains to its terminus at the Pacific Ocean between Long Beach and Seal Beach. The study area includes 19 cities as well as unincorporated areas of Los Angeles and Orange counties. The general land uses within each of the seven reaches of the Master Plan study area are described below and shown in Figure M2-19, Chapter 2 of the Master Plan.

- 1. Headwaters** – The first reach of the river is the headwaters along the West Fork in the San Gabriel Mountains. Land use in this area is open space/recreation (Angeles National Forest). The peaks of the San Gabriel Mountains are identified as scenic resources in the Los Angeles County General Plan (1993a).
- 2. San Gabriel Canyon** – The San Gabriel Canyon reach begins at the point where the West, North, and East Forks of the river join, and ends at Morris Dam. Land uses in this reach include open space/recreation (Angeles National Forest) and public facilities related to flood control and water resource management (e.g., San Gabriel Dam, Morris Dam, and pipelines for conveyance of imported water).
- 3. Upper San Gabriel Valley** – The Upper San Gabriel Valley reach extends from Morris Dam, passes through unincorporated Los Angeles County and Azusa, and ends at the Santa Fe Dam in Irwindale. In the northern portion of this reach between Morris Dam and Azusa, the primary land uses are open space. While there are some residential areas in this reach within Azusa and Duarte, the southern portion between Azusa and the Santa Fe Dam in Irwindale is occupied primarily by industrial land uses and open space/recreation (Santa Fe Dam Recreation Area).
- 4. Lower San Gabriel Valley** – The Lower San Gabriel Valley reach runs between the Santa Fe Dam and Whittier Narrows Dam in unincorporated Los Angeles County north of Pico Rivera. The primary land uses in this reach are industrial in the northern portion and residential and open space/recreation (Whittier Narrows Recreation Area and California Country Club) in the middle and southern portions.
- 5. Upper Coastal Plain** – This reach begins at the outlet of the Whittier Narrows Dam and ends where the San Gabriel River crosses Firestone Boulevard in Norwalk, near the 605 Freeway. The primary land use in this reach is residential.
- 6. Lower Coastal Plain** – This reach begins at Firestone Boulevard and extends to the confluence of Coyote Creek and the San Gabriel River in Rossmore, located in

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unincorporated Orange County. The primary land use in this reach is residential with some commercial and open space areas (e.g., El Dorado Regional Park).

7. Zone of Tidal Influence – This 3.5-mile reach extends from the confluence with Coyote Creek to the Pacific Ocean. The primary land uses in this reach are residential and industrial.

Most of the lands adjacent to the San Gabriel River are privately owned residential and industrial land uses. Southern California Edison (SCE) utility easements and fee owned properties make up a substantial proportion of the privately owned lands along the river corridor. Large parcels of public lands located along the river include the Angeles National Forest, Santa Fe Dam Reservoir, Whittier Narrows, El Dorado Regional Park, and the 605 Freeway.

There are no officially designated state scenic highways in the Master Plan study area. However, the following two state route segments are indicated by Caltrans (2003) as eligible for designation as state scenic highways and pass through the Master Plan study area:

- State Route 39 in the San Gabriel Mountains – Master Plan Reaches 1, 2, and 3 (from Interstate 210 Freeway in Azusa to State Route 2 in the Angeles National Forest)
- State Route 1 in Long Beach/Seal Beach area – Master Plan Reach 7 (from State Route 19 near Long Beach to Interstate 5 Freeway).

Both of these highways are indicated as proposed scenic highways in the Draft Los Angeles County General Plan Update (2003a).

Land Use Policies and Regulations

CEQA Guidelines Section 15125(d) states that an EIR should discuss any inconsistencies between the proposed project and applicable general and regional plans. The following is a discussion of the general and regional plans in place along the corridor and the project's consistency with each plan.

General Plan. Within incorporated cities located in the Master Plan study area, land use planning is provided by general plans developed by each municipality. Within unincorporated communities of Los Angeles County and Orange County, land use planning is provided by the Los Angeles County General Plan and the Orange County General Plan, respectively. The purpose of general plans is to guide future development by establishing goals and policies concerning topics that are mandated by state law or which the jurisdiction has chosen to include. Required topics are land use, circulation, housing, conservation, open space, noise, and safety. Other topics that local governments frequently choose to address are public facilities, parks and recreation, community design, and growth management, among others. General plans include descriptions and maps of where certain types of development should take place to achieve the stated goals and policies.

Table 4.7-1 summarizes the local general plan policies relevant to the Master Plan and their consistency with the Master Plan. Municipalities located in the Master Plan study area were consulted regarding the consistency of the Master Plan with local general plans and zoning

designations. None of the municipalities identified inconsistencies between the proposed project and their General Plan policies. To evaluate consistency, the General Plan goals and policies were compared to the six elements of the Master Plan (Habitat, Recreation, Open Space, Flood Protection, Water Supply and Water Quality, and Economic Development; see **Section 3.3.1.1**). In some cases, the municipalities identified specific elements and/or policies of the General Plan that are relevant to the Master Plan. It should be noted that the Master Plan goals, objectives, and performance criteria are not intended to amend or replace any existing local General Plan goals or policies.

Table 4.7-1
Project Consistency with Local General Plans

Municipality	Consistency with the San Gabriel River Corridor Master Plan
Arcadia	The City of Arcadia General Plan Community Development chapter includes policies to preserve existing open space and maintain recreational areas (General Plan Strategies CD-29 through CD-31). The Municipal Facilities and Services chapter includes a policy to provide park facilities and recreation areas (FS-31). The Environmental Resources chapter includes policies to protect riparian and other biologically sensitive habitats (ER-18), encourage education programs that increase public awareness of biological resources (ER-19), and protect existing groundwater recharge capacities (ER-35). The Open Space, Habitat, Recreation, and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Arcadia General Plan.
Azusa	The City of Azusa has identified the Built Environment and the Natural Environment Chapters as General Plan elements relevant to the proposed project. The Built Environment Chapter of the General Plan includes land use policies designed to promote preservation and provision of open spaces that provide visual amenity, recreational opportunities, environmental protection, and protection from natural hazards (Policies 8.1 through 8.12). The Natural Environment Chapter of the General Plan includes policies designed to promote recreation by combining sites that contain historic or natural features with recreational learning opportunities (Recreation Policy 1.2), enhancing the river and canyon trailheads as hubs of recreational and community activity (Recreation Policy 1.3), and providing a foothill and river recreational environment that enhances the enjoyment of the natural resources without degradation (Recreation Policies 5.1 and 5.2). In addition, the Natural Environment Chapter includes goals and policies to promote preservation, restoration, and enhancement of biological resources; provide a system of natural areas that provide multiple uses including recreation, habitat, watershed protection, flood protection, and scenic beauty (Policies 1.1 through 1.3 and 2.1 through 2.4); and work with mining companies and agencies to enhance habitat in abandoned/reclaimed mined sites (Policies 7.1 through 7.3). The areas adjacent to the River are identified as Biological Resource Overlay Zones in Figure OS-1 of this chapter. The Open Space, Habitat, and Recreation elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Azusa General Plan.

Table 4.7-1 (Continued)
Project Consistency with Local General Plans

Municipality	Consistency with the San Gabriel River Corridor Master Plan
Baldwin Park	The City of Baldwin Park has identified the Land Use Element as the General Plan Element relevant to the proposed project. The Land Use Element includes a policy to evaluate development projects for compliance with NPDES requirements to reduce pollution in runoff and minimize impervious surfaces and peak flows (Policy 18.1). The Water Supply and Water Quality element of the Master Plan complement this policy. Thus, the Master Plan is consistent with the City of Baldwin Park General Plan.
Bellflower	The City of Bellflower has identified the Housing Element as the General Plan Element relevant to the proposed project. The Housing Element contains a policy to ensure that adequate, freely accessible open space is provided within reasonable distance to all community residents (Policy 1.1.10). The of the Master Plan Open Space element complement this policy. Thus, the Master Plan is consistent with the City of Bellflower General Plan.
Cerritos	<p>The City of Cerritos General Plan Land Use Element includes policies to promote environmentally conscious and verdant landscaping (Policy LU-1.3), balancing housing, open space, and public facilities (Policy LU-2.4), and maximizing open space in new developments (LU-14.1). The Habitat and Open Space elements of the Master Plan are consistent with these policies. The Open Space / Recreation Element includes policies to preserve and enhance open space resources (OSR-1.1 to 1.5, 2.1 to 2.4, 5.1 to 5.3), and provide and improve park and recreational facilities (OSR-3.1, 3.2, 4.1, and 4.2). These policies are consistent with the Open Space and Recreation elements of the Master Plan. In addition, this element includes policies to use open space areas as buffer zones adjacent to flood control facilities (OSR-6.2) and to maintain pervious surfaces within the city’s open space (OSR-8.1). These policies are consistent with the Open Space, Flood Protection, and Water Supply and Water Quality elements of the Master Plan. The Conservation Element includes policies to expand use of recycled water for irrigation purposes and promote use of drought tolerant plants (CON-1.1 and 1.2). These policies are consistent with the Open Space and Water Supply and Water Quality elements of the Master Plan. In addition, this element includes policies to protect and promote community knowledge and appreciation for historic and cultural resources (CON-7.1, 7.2, 8.1, and 8.2. The Recreation and Open Space elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Cerritos General Plan.</p> <p>The City of Cerritos has stated, “While the proposed San Gabriel River Corridor Master Plan is generally consistent with the goals and policies of the City of Cerritos General Plan Open Space/Recreation Element, any proposal for increasing the amount of existing recreational or open space adjacent to the San Gabriel River within the City of Cerritos would be in direct conflict with the Cerritos General Plan Land Use Element” (T.N. Contreras, pers. comm., May 2, 2005, Appendix F).</p>

Table 4.7-1 (Continued)
Project Consistency with Local General Plans

Municipality	Consistency with the San Gabriel River Corridor Master Plan
Downey	<p>The Circulation Element of the General Plan includes a policy to encourage bicycling as an alternative to vehicular transportation (Policy 2.6.1). Program 2.6.1.2 (proposed in the April 2004 Preliminary Draft General Plan Update) includes establishment of bikeways along the San Gabriel River, which is consistent with the Recreation element of the Master Plan. The Conservation Element includes policies to encourage use of reclaimed water and promote water conservation (e.g., through use of drought tolerant plants) (Policies 4.2.1, 4.2.2, and 4.3.2). These policies are consistent with the Open Space and Water Supply and Water Quality elements of the Master Plan. The Open Space Element of the General Plan includes policies to develop new parks and recreational facilities (Policy 7.2.1), examine the use of existing right-of-ways for recreational facilities (Policy 7.2.2), and upgrade existing recreation facilities and parks (Policy 7.3.1) including those along the River (e.g., the Rio San Gabriel Park and Wilderness Park; Programs 7.3.1.3 and 7.3.1.4). The Open Space and Recreation elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Downey General Plan.</p>
Duarte	<p>The City of Duarte has identified the Conservation / Open Space Element as the General Plan Element relevant to the proposed project. The Conservation / Open Space Element includes policies to require the use of drought-resistant trees and plant materials in all new landscaping (Policy 5.4), to construct a bridge to connect the Duarte Bike and Equestrian Trail with the San Gabriel River Trail (Policy 6.2), to encourage multiple recreation uses for open space areas (Policy 7.1), to increase recreational facilities (Policies 7.2, 7.3, and 7.4), and to preserve the characteristics of the mountains, river beds, and canyons to protect the watershed (Policy 9.1). The Open Space and Recreation elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Duarte General Plan.</p>
El Monte	<p>The City of El Monte General Plan Open Space and Conservation Element contains policies to provide and maintain open space areas and recreational facilities, including through supporting Los Angeles County's efforts to maintain and expand the multi-use corridor concept along the River (Policy 1.1), developing a system of bikeways (Policy 2.5), and cooperating with all levels of government (Policy 3.1). The Open Space and Conservation Element also contains policies to maintain groundwater recharge and flood control facilities as open space areas (Policy 4.1) cooperate with the County to prevent runoff from entering the groundwater basin (Policy 4.2), and support other agencies efforts to expand reclaimed water use (Policy 4.3). The Open Space, Recreation, and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of El Monte General Plan.</p>
City of Industry	<p>The City of Industry General Plan includes a goal to promote programs to beautify the city and conserve its natural resources. Since the Habitat, Open Space, and Recreation elements of the Master Plan include goals and objectives that complement this goal, the Master Plan is consistent with the City of Industry General Plan.</p>

Table 4.7-1 (Continued)
Project Consistency with Local General Plans

Municipality	Consistency with the San Gabriel River Corridor Master Plan
Irwindale	The City of Irwindale has identified the Land Use Element as the General Plan Element relevant to the proposed project. The Land Use Element identifies the possibility of redevelopment of quarries as industrial, manufacturing, or recreational facilities after closures. It also recognizes the importance of Santa Fe Flood Control Reservoir as a regional recreational facility. Reclamation of quarries in Irwindale (Master Plan Action Grid projects R3.23, R3.24, R4.01 R4.02, R4.03, R4.04, R4.05, R4.07) and habitat and recreation enhancements to the Santa Fe Dam Recreation Area (Master Plan Project R3.21) are included in the Master Plan Projects Action Grid. Thus, the Master Plan is consistent with the City of Industry General Plan.
Lakewood	The City of Lakewood has identified the Recreation and Community Services Element as the General Plan Element relevant to the proposed project. The Recreation and Community Services Element of the General Plan includes a policy to maintain the existing system of parks, recreational facilities, and bikeways (Policy 2.1). The Open Space and Recreation elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Lakewood General Plan.
Long Beach	The City of Long Beach has identified the Open Space and Recreation Element as the General Plan Element relevant to the proposed project. The Open Space and Recreation Element includes policies to promote creation of new and reestablished habitats and ecological preserves (Policy 1.1), protect natural resources (Policy 1.2), preserve and create open space (Policy 2.1), protect groundwater recharge areas (Policy 2.2), create additional recreation open space (Policy 4.1), and develop an open space linkage/trails plan (Policy 4.13). The Habitat, Open Space, Recreation, and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Long Beach General Plan.
Los Alamitos	The City of Los Alamitos General Plan Conservation Element includes policies to encourage the use of drought tolerant landscapes (Policy 2-1.1), and promote the use of reclaimed water (Policy 2-1.7). The Open Space and Recreation Element includes policies to encourage preservation of existing parks, recreational facilities, and bikeways (Policy 4-1.1) and an implementation program (4-1.1.2) to preserve and protect selected areas, including areas along the River. The Open Space, Recreation, and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Los Alamitos General Plan.

Table 4.7-1 (Continued)
Project Consistency with Local General Plans

Municipality	Consistency with the San Gabriel River Corridor Master Plan
Norwalk	<p>The City of Norwalk General Plan Land Use element includes a policy to examine the potential and feasibility of providing for recreational facilities along the River (p. 5A.20). The Circulation Element includes a policy to support and coordinate the development and maintenance of city bikeways in conjunction with the city's Bikeway Plan, the County of Los Angeles Master Plan of Bikeways, and the bikeway plans of neighboring jurisdictions. The Conservation Element includes policies to prohibit discharge of pollutants into the River, promote public awareness of water pollution and means of prevention, and encourage recreational uses along the River, encourage the use of drought-tolerant plant materials, and minimize the amount of paved surfaces in new development (pp. 5D.6 and 5D.7). The Open Space Element includes various policies designed to preserve and enhance open space areas. The Utility Infrastructure Element includes policies to encourage reclaimed water use and to reduce storm water pollution (pp. 5J12 and 5J13). The Open Space, Recreation, and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Norwalk General Plan.</p>
Pico Rivera	<p>The City of Pico Rivera General Plan Circulation Element includes policies to develop and maintain a system of bicycle, pedestrian and equestrian trails, including those that are located along or connect to the River (Policy A.2.4) and to coordinate the development of trails with the regional trail system and adjacent cities' local trail systems (Policy A.2.7). The Community Facilities element includes policies to coordinate park and recreation facilities planning with other agencies (Policy B.4.4) and investigate the feasibility of using open drainage facilities and utility rights-of-way to offset needed park acreage in the city (Policy B.4.6). The Environmental Resources Element includes policies to ensure that new development does not adversely affect groundwater supplies (Policy A.2.2) and adjacent wildlife areas (Policy A.5.3), protect existing water supply through a combination of water conservation and use of reclaimed water (Policy A.2.4), support protection and preservation of sensitive plants and animals (Policy A.5.1), and encourage educational programs to increase public awareness of the importance of biological resources (Policy A.5.2). The Habitat, Recreation, and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Pico Rivera General Plan.</p>
Santa Fe Springs	<p>The City of Santa Fe Springs General Plan Open Space Element includes policies to promote acquisition of property to preserve open space (Policy 1.1), promote development of open space and recreational facilities (Policies 2.2. and 2.3), and expand Santa Fe Springs Park adjacent to the River (Policy 2.6; included in the Master Plan Project Action Grid as R5.14). The Conservation Element includes policies to protect and preserve natural resources (Policies 1.1 and 1.2), and promote use of reclaimed water (Policies 3.5 and 2.7). The Habitat, Recreation, and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of Santa Fe Springs General Plan.</p>

Table 4.7-1 (Continued)
Project Consistency with Local General Plans

Municipality	Consistency with the San Gabriel River Corridor Master Plan
Seal Beach	The City of Seal Beach has identified the Land Use Element and the Open Space / Recreation / Conservation Element as the General Plan Elements relevant to the proposed project. The City has noted that several of the Master Plan Action Grid projects (R7.09, Trail Connection; R7.10, Hellman Ranch Wetland Restoration; R7-08, County of Orange Flood Control Basin; and R7.11 through R7.17) are either discussed directly in the Land Use and/or Open Space Elements of the General Plan or are projects that are consistent with the goals and policies of the City. Therefore, the Master Plan is consistent with the City of Seal Beach General Plan.
South El Monte	The City of South El Monte General Plan Circulation Element includes a policy to provide a local bicycle path link to the Whittier Narrows Recreation Area (Policy 4.2). The Resources Element includes policies to investigate opportunities to create small neighborhood or “pocket” parks in the north half of the city (including areas adjacent to the River) (Policy 1.2), and provide residents and businesses with information about landscaping and irrigation that reduce water use (Policy 4.2). The Recreation and Water Supply and Water Quality elements of the Master Plan complement these policies. Thus, the Master Plan is consistent with the City of South El Monte General Plan.
Whittier	The City of Whittier has identified the Land Use Element and Transportation Element as the General Plan Elements relevant to the proposed project. The Land Use Element of the General Plan includes policies to develop and retain parks and recreation areas and acquire land for recreational activities and urban or wilderness parks (Policies 5.1, 5.2, 5.3, and 5.4). The Transportation Element includes policies that promote bicycle paths, walking paths, and equestrian trails (Policies 3.2, 2.4, 4.1, and 4.3). The Recreation element of the Master Plan complements these policies. Thus, the Master Plan is consistent with the City of Whittier General Plan.

Zoning Code. The city or county zoning code is a set of detailed and enforceable requirements that implement the general plan policies at the level of the individual parcel. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. One of the objectives of the zoning code is to separate incompatible land uses (e.g., heavy manufacturing facilities and elementary schools) and cluster compatible uses (e.g., residential uses and schools). For each zoning district, the zoning code generally identifies uses that are permitted by right, uses that may be permitted with additional review and conditions (i.e., requires a conditional use permit (CUP)), and uses that are prohibited. In addition, the zoning code regulates the size of parcels and type and size of structures that can be erected within each zoning district. A zoning variance (exemptions from or modification of zoning regulations) may be granted on a case-by-case basis if application of the zoning standards would result in unnecessary hardships or inconsistencies with the general purposes of the zoning code due to site- or case-specific conditions.

Coastal Zone. Reach 7 of the Master Plan area is located within the designated Coastal Zone. Development within the Coastal Zone (generally areas immediately adjacent to the beach, bay, ocean or canals) requires a Coastal Development Permit (or exemption) obtained from the local municipality (State authority rests with the California Coastal Commission). Consistency with both the City of Long Beach or Seal Beach (as relevant) Local Coastal Plan and California Coastal Act are generally required for improvements, demolition or construction of any structure located within the Coastal Zone boundary.

Regional Land Use Planning. The Master Plan study area is located within the regional planning area of the Southern California Association of Governments (SCAG). The SCAG Regional Comprehensive Plan and Guide is discussed in **Section 6.3.3** of this document.

Mineral Resources

Mineral Resource Areas. The Master Plan study area includes several sand, gravel, and crushed stone mining operations, primarily located in Azusa and Irwindale. This area is classified by the California Geological Survey as Mineral Resource Zone 2 (MRZ-2), which is defined as an area where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.

Active gravel mines in the Master Plan study area, all privately owned and operated, are:

- Azusa Rock Mine (Vulcan Materials Company) – Located approximately 0.5 mile to the northwest and across the river from the San Gabriel Canyon Spreading Grounds in Azusa
- Azusa Largo and Reliance No. 2 Mines (Vulcan Materials Company) – Located approximately 0.5 mile to the southwest of the San Gabriel Canyon Spreading Grounds on the border of Azusa and Irwindale
- Durbin Quarry (Vulcan Materials Company) – Located approximately 1 mile north of the intersection of the Interstate 605 and 10 freeways in Irwindale.
- Hanson Quarry (Hanson Aggregates) – Located west of the Interstate 605 Freeway and south of Live Oak Avenue in Irwindale

United Rock Products operates two active gravel mines (Quarry No. 2 and No. 3) outside, but in the vicinity of, the Master Plan study area in Irwindale. There are other sites within and near the Master Plan study area that are no longer operated as active gravel mines and are used as gravel processing areas, landfills, or recycling centers for inert construction debris.

Historically, areas in the San Gabriel Mountains have been mined for gold, silver, and copper (Robinson, 1991). In addition, oil deposits are located in the project vicinity - primarily in the coastal areas of Los Angeles County.

Surface Mining and Reclamation Act. Under the California Surface Mining and Reclamation Act (SMARA), all surface mining operations which disturb more than 1 acre or remove more than 1,000 cubic yards of material are required to have an approved reclamation plan. A

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reclamation plan identifies appropriate measures, including financial assurances to implement those measures, to rehabilitate a mineral mining site prior to its abandonment. Following completion of mining activities, mining operators return mined lands to a second, productive use in accordance with the approved reclamation plan and relevant permit conditions. Examples of post-mining uses may include, but are not limited to, open space, wildlife habitat, agricultural lands, grazing, park lands, and preparing the land for industrial or commercial uses (OMR, 2004a).

At the state level, the California Department of Conservation Office of Mine Reclamation (OMR) and the State Mining and Geology Board (SMGB) are jointly responsible for the administration of SMARA. At the local level, SMARA is implemented through city and county “lead agencies” that have adopted ordinances for land use permitting and reclamation procedures to provide the regulatory framework under which local mining and reclamation activities are conducted. The local SMARA lead agency reviews applications for mining permits and reclamation plans (or amendments thereto), submits reclamation plans and financial assurances to the State for review prior to approval, reviews financial assurances, inspects mining operations for compliance, and takes enforcement actions where necessary (OMR, 2004a). According to the list published by OMR, all active gravel mines located within or near the Master Plan study area described above have approved reclamation plans on file with the lead agencies. These reclamation plans generally propose to fill the site to street level (e.g., with inert construction debris) and develop the site for recreational, commercial, or industrial uses in accordance with the local zoning regulations. In most reclamation plans, final and interim uses are described in general terms or not specified.

Within the Master Plan study area, the following municipalities are SMARA lead agencies (OMR, 2004b):

- Arcadia (Community Development Division) – Land use regulations regarding mining and reclamation are contained in Article IX, Chapter 5 of the Arcadia Municipal Code.
- Azusa (Community Development Department) – Land use regulations regarding mining and reclamation are contained in Chapter 88, Article XII of the Azusa Municipal Code.
- Irwindale (Planning Department and Public Works Department) – Land use regulations regarding mining and reclamation are contained in Title 17, Chapter 17.63 of the Irwindale Municipal Code.
- County of Los Angeles (Department of Public Works and Department of Regional Planning) – Land use regulations regarding mining and reclamation are contained in Title 22, Chapter 22.56, Part 9 of the Los Angeles County Code.
- County of Orange (Planning and Development Services Department) – Land use regulations regarding mining and reclamation are contained in Title 7, Division 9, Article 2, Section 7-9-104 of the Orange County Code.

4.7.1.2 Concept Design Study Sites

San Gabriel Canyon Spreading Grounds

The existing land uses of the Concept Study site for San Gabriel Canyon Spreading Grounds include public facilities (spreading grounds operated by LADPW; water tanks, wells, and pumps operated by City of Azusa) and recreation (bike trail along the River).

The San Gabriel Canyon Spreading Grounds is located within the City of Azusa. The City's General Plan identifies the land use for this project site as Recreation. Typical use for the Recreation land use classification includes dedicated parks or fields (City of Azusa, 2004).

The City's zoning code is established in Chapter 88 of the Azusa Municipal Code (AMC). The Concept Design Study site for the San Gabriel Canyon Spreading Grounds is zoned as a General Commercial zone (C-3) and Water Conservation zone (W). The C-3 zone is established "to provide for the continued use and expansion and new development of a wide variety of retail and wholesale commercial enterprises, service uses, professional and medical offices, entertainment uses, and similar businesses" (AMC Section 88-1075). The primary uses that are permitted in this zone are retail and service commercial (AMC Chapter 88, Appendix A – Regulation of Use by Zoning District).

The purpose of the W zone is to protect public health, safety, and welfare by prohibiting structures in areas that are subject to inundation or flooding (AMC Section 88-1235). In general, the only uses that are permitted in this zone are agricultural activities without structures (AMC Section 88-1240). Uses listed as conditionally permitted include golf driving range, boarding/raising horses, sand and gravel pit, shooting range, and public stables (AMC Chapter 88, Appendix A). Conditionally permitted uses are subject to the review requirements and conditions contained in AMC Chapter 88, Article III, Division 7. If a specific proposed use is not listed in Appendix A, the community development director has the authority to determine whether the proposed use is permitted, permitted subject to CUP review and approval, permitted as a temporary use, or prohibited (AMC Section 88-1240).

Woodland Duck Farm

The existing land uses of the Concept Study site for the Woodland Duck Farm include: vacant (former duck farm site containing remnant structures) and recreation (Rio San Gabriel Equestrian Center maintained by RIO Trust).

Portions of this Concept Design Study site are located within the City of Industry and unincorporated Los Angeles County. The portion of the Concept Design Study located within the City of Industry is subject to the City's land use policy for open space and recreation (J. Scrivens, pers. comm., 2003). The City of Industry has designated this portion of the project site as an industrial (M) zone. Land uses permitted in the M zone include various manufacturing businesses as well as some agricultural uses such as greenhouses and livestock grazing (City of Industry, 1996).

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The portion of the site located within unincorporated Los Angeles County is subject to the County land use designations of low-density residential (areas east of the 605 freeway) and open space (areas west of the 605 freeway) (L. Stark, pers. comm., 2003). The County's zoning ordinance is established in Title 22 of the Los Angeles County Code. The majority of the project site within unincorporated Los Angeles County is designated as Light Agricultural Zone (A-1). Permitted uses for the A-1 zone includes light agricultural uses, such as raising, breeding, and training horses, cattle, sheep, or goats. Land uses that would be subject to a CUP in this zone include: riding and hiking trails; arboretums and horticultural gardens; campgrounds; picnic areas; land reclamation projects; parks, playgrounds and associated facilities; and riding academies and stables. A small portion of this Concept Design Study site is designated a Restricted Business Zone (C-1). Permitted uses in the C-1 zone include: arboretums and horticultural gardens; parking lots and parking buildings; parks, playgrounds, and associated facilities; and riding and hiking trails (excluding trails for motorized vehicles) (County of Los Angeles, 2003b).

San Gabriel River Discovery Center and Lario Creek

The project sites for the San Gabriel River Discovery Center and Lario Creek are located adjacent to each other within the Whittier Narrows Nature Area. The existing land uses of these Concept Study sites include: recreation and open space (nature area within Whittier Narrows Recreation Area, including Nature Center) and public facilities (Lario Creek, a water conveyance feature operated by LADPW). The project sites are within unincorporated Los Angeles County. The County General Plan designates the general land use for this site as open space (County of Los Angeles, 1993a). The project sites fall into three different zoning categories: Open Space (O-S), Light Agricultural (A-1), and Heavy Agricultural (A-2).

The O-S zone is established to provide for the preservation, maintenance, and enhancement of natural resources. Permitted uses in the O-S zone include camping, picnic areas, and trails for hiking and riding (excluding motorized vehicles). These uses are permitted as long as the premises remain essentially unimproved. Uses that would require a CUP include parks, playgrounds, and facilities that are usually associated with such uses (County of Los Angeles, 2003b). Permitted uses in the A-1 zone are discussed above for the Woodland Duck Farm site. Permitted uses in the A-2 zone include riding and hiking trails (excluding motorized vehicles). In the A-2 zone, uses such as water reservoirs, dams, treatment plants, and other uses associated with storage and distribution of water require a CUP (County of Los Angeles, 2003b).

El Dorado Regional Park

The existing land uses of the Concept Study site for the El Dorado Regional Park are recreation and open space. The project site is located in the City of Long Beach. The City of Long Beach currently identifies El Dorado Regional Park in Land Use District (LUD) No. 11 – Open Space and Park District. There are diverse uses allowed in this LUD. Typical land uses include: agriculture, golf courses, beaches, flood control channels and basins, rivers, utility rights-of-way, public parks, local marine areas, inland bodies of water, off street bike routes, estuaries, and lagoons. This LUD also supports uses such as ecological preserves and commercial recreation (City of Long Beach, 1997).

The City's zoning ordinance is established in Title 21 of the Long Beach Municipal Code (LBMC). The zoning designation for the project site is Park (P). The purpose of the P zone is to set aside and preserve publicly owned park areas for recreational and cultural uses by the public. These areas are often characterized by landscaped open space. Permitted uses in the P zone include parks, cultural and educational uses, athletic activities, and campgrounds (LBMC Chapter 21.35).

4.7.2 Significance Criteria

Project impacts related to land use would be considered significant if the project:

- Physically divided an established community
- Conflicted with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect
- Conflicted with any applicable habitat conservation plan or natural community conservation plan

Project impacts related to mineral resources would be considered significant if the project:

- Resulted in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state
- Resulted in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

4.7.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.7.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.7-2**, adoption of the Master Plan would result in mostly beneficial or no land use impacts. Most future projects developed in a manner consistent with the Master Plan are anticipated to be consistent with local planning. For example, public facilities such as parks and open space are consistent with most land use and zone designations. In locations where proposed uses are not expressly allowed, a CUP or zoning variance may be required for implementation of the specific component. Assessment of mineral resource issues associated

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with conversion of active gravel mines would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.7.5**). The overall land use impacts from adopting the Master Plan are considered less than significant.

Table 4.7-2
Land Use Impacts from Adopting the Master Plan Elements

Master Plan Elements	Land Use Impacts	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	Beneficial: Preservation of existing habitat areas could have a beneficial impact on land use by protecting open space areas from development that could be incompatible with surrounding land uses (e.g., heavy industrial use adjacent to residences). Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on land use (e.g., identification of indicator species).	Beneficial (no adverse impact)
Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses	Beneficial: Preservation of existing open space for passive recreational uses would have a beneficial impact on land use by protecting open space areas from development that could be incompatible with surrounding land uses (e.g., heavy industrial use adjacent to residences). The Master Plan includes aesthetic design guidelines for new or modified facilities such as trails, signage, fences, walls, and buildings (see Chapter 3.7.3 of the Master Plan). Therefore, buildings associated with recreational facilities would be designed to be compatible with the character of the surrounding community. Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on land use (e.g., educating the public about catch and release fishing).	Beneficial (no adverse impact)
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	Beneficial to Neutral: Preservation of existing open space areas (e.g., through land acquisition or conservation easements) would generally be consistent with local general plan policies and would have beneficial effects on the character of the surrounding communities. Promoting fire safety and awareness could also result in protection of adjacent land uses. Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on land use (e.g., utilizes drought tolerant and native plant materials).	Beneficial (no adverse impact)
Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.	Beneficial: Adoption of this element would result in protection of adjacent land uses from flood damage. In addition, this element would encourage establishment of visual design guidelines for new flood control facilities, which would have a beneficial impact on the aesthetic characteristics of adjacent communities. Neutral: This element includes objectives and	Beneficial (no adverse impact)

Master Plan Elements	Land Use Impacts	Impact Summary
	performance criteria that are neutral with respect to impacts on land use (e.g., coordination of maintenance of flood protection system with habitat needs). Additionally, future projects may include construction of storm drains, catch basins, or other structures within street rights-of-way as part of a stormwater management facility. Since such structures would be constructed underground within existing street right-of-ways, they would not physically divide an established community or otherwise adversely impact land use.	
Water Supply and Water Quality Element: 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.	Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on land use (e.g., employs phyto-remediation to treat water).	No adverse impact
Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.	Neutral to Potentially Adverse: Adoption of this element could encourage redevelopment and reclamation, including development of gravel mines or abandoned lands for various purposes including active and passive recreation and habitat restoration. The Master Plan envisions that reclamation plans would be developed based on negotiation and partnership with the current owners and operators of these properties, including mining operations. Therefore, implementation of redevelopment and reclamation projects under the Master Plan are anticipated to take place after extraction of mineral resources have been completed. However, if a Master Plan project proposes development of facilities that would result in the restriction of future mineral extraction operations (e.g., reclamation of an existing gravel mine before gravel extraction activities have been completed or restriction of access for in-channel gravel removal activities approved by the U.S. Army Corps of Engineers), the potential impact of the project on mineral resources would be evaluated (see Section 4.7.5.1).	Potentially significant for effects on mineral resources associated with potential development at active gravel mines; less than significant with mitigation

4.7.4 Impacts of Implementing the Concept Design Studies

4.7.4.1 Land Use

Overall Impacts

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include collection and treatment of stormwater runoff. Projects involving stormwater collection and treatment may involve construction of storm drains, catch basins, or other structures within street rights-of-way as part of a stormwater management facility. Since such structures would be constructed underground within existing street right-of-ways, they would not physically divide an established community.

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Buildings such as education centers (e.g., San Gabriel River Discovery Center) or pump buildings would be designed to be compatible with the character of the surrounding community. Any adverse impacts on the visual character and quality of the project sites during construction of the proposed facilities would be temporary and localized and less than significant.

The primary objective of the Concept Design Studies and other future projects developed in a manner consistent with the Master Plan is to provide new or enhanced open space, recreational opportunities, and habitat areas for the benefit of the surrounding communities. The Master Plan includes aesthetic design guidelines for new or modified facilities such as trails, signage, fences, walls, and buildings (see Chapter 3.7.3 of the Master Plan). These guidelines are intended to create a “sense of place” and a common identity for the river corridor. In addition, all five Concept Design Studies include landscaping or revegetation, which would improve the aesthetics of the project site. Therefore, implementation of the Concept Design Studies would have an overall beneficial impact on land use and aesthetics.

Consistency with Land Use and Zoning Designations

The compatibility of the uses proposed by the Master Plan Concept Design Studies with the existing land use and zoning designations (see Section 4.7.1.2 above) is discussed below.

San Gabriel Canyon Spreading Grounds. The Concept Design Study for the San Gabriel Canyon Spreading Grounds includes improvements to existing trails and fencing, installation of signage, habitat restoration and landscaping, and construction of small parks in southwest and northwest corners of the site. These uses are generally compatible and consistent with the City’s land use designation of Conservation and Open Space. However, since these are not expressly permitted uses under the existing zoning designation of Water Conservation and General Commercial, the proposed improvements may require review by the City of Azusa.

Woodland Duck Farm. The Concept Design Study for the Woodland Duck Farm includes trail enhancements, constructed wetlands, habitat restoration and landscaping, signage, and passive recreation. These uses are generally compatible and consistent with the land use designations of open space and recreation (City of Industry) and low-density residential and open space (County of Los Angeles). However, within the Industrial zone (City of Industry) and the agricultural zone (County of Los Angeles), the proposed uses may require review by the relevant municipalities.

San Gabriel River Discovery Center and Lario Creek. The Concept Design Studies for the San Gabriel River Discovery Center and Lario Creek include a new Discovery Center building, constructed wetlands, habitat restoration, trail enhancements, signage, and modifications to an existing flood control and water conservation facility (Lario Creek). These uses are generally compatible and consistent with the County’s land use designation of Open Space. However, some proposed uses such as the Discovery Center building and associated facilities and constructed wetlands may require review by the Los Angeles County.

El Dorado Regional Park. The Concept Design Study for the El Dorado Regional Park includes constructed wetlands, replacement of lake water with non-potable supply, habitat restoration, trail enhancements, and signage. These uses are generally compatible and consistent

with the City's land use designation of Open Space and Park District. However, since constructed wetlands or other stormwater management facilities are not expressly permitted under the Park zoning designation, some project elements may require review by the City of Long Beach.

4.7.4.2 Mineral Resources

The Concept Design Studies do not involve reclamation of active gravel mines or other activities that would result in the loss of availability of mineral resources that are important to the state, region, or local jurisdiction. Therefore, implementation of the Concept Design Studies would have a less than significant impact on mineral resources.

4.7.5 Master Plan Program Mitigation Measures

4.7.5.1 Mineral Resources

MP-L1 For future projects that propose development of facilities that would result in restriction of future mineral extraction operations (e.g., reclamation of an existing gravel mine before gravel extraction activities have been completed), site-specific evaluations described below will be conducted and the results will be disclosed in subsequent CEQA documentation:

1. Determine the site-specific availability of mineral resources by reviewing relevant publications from the California Geological Survey (e.g., SMARA Mineral Land Classification, available at: <http://www.consrv.ca.gov/cgs/minerals/mlc/index.htm>) and/or mine reclamation plans (if the proposed project site is an existing mine).
2. Contact the relevant SMARA lead agency (see **Section 4.7.1.1**) to determine whether the proposed land use change could restrict or preclude the extraction of mineral resources designated as regionally significant (MRZ-2) or locally important (as designated in a local land use plan).

4.7.6 Mitigation Measures for Concept Design Studies

Since implementation of the Concept Design Studies would not result in significant impacts on land use or mineral resources, no mitigation measures are proposed.

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4.8 NOISE

Noise is usually defined as sound that is undesirable because it interferes with speech communication and hearing, is intense enough to damage hearing, or is otherwise annoying. Sound levels are measured in decibels (dB), a unit of power expressed on a logarithmic scale. The most common measure for environmental sound is the “A” weighted sound level (dBA), which indicates that the decibel value has been adjusted to properly weigh the sound frequencies within the range of the human ear.

Two of the most commonly used noise scales designed to account for the known effects of noise on people are: Equivalent Noise Level (L_{eq}) and Community Noise Equivalent Level (CNEL). L_{eq} is the “energy” average noise level during the time period of the sample. L_{eq} can be measured for any time period, but is typically measured for 1 hour. CNEL is the predominant rating scale used in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on dBA. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is adjusted upwards. Noises occurring during the evening time period (7 p.m. to 10 p.m.) are counted as if they were 5 dBA louder, while nighttime (10 p.m. to 7 a.m.) noises are counted as if they were 10 dBA louder.

In addition to the absolute noise level, the increase in noise level over the existing noise environment is also an important consideration. General rules of thumb for real-life noise environments are that a change of over 5 dB is readily noticeable. Changes from 3 to 5 dB may be noticed by some individuals, possibly resulting in sporadic complaints. Changes of less than 3 dB are normally not noticeable.

Noise-sensitive land uses typically include residences, hospitals, schools, guest lodging, libraries, long-term care facilities (including convalescent and retirement facilities), houses of worship, auditoriums and concert halls, outdoor theaters, nature and wildlife preserves, and parks.

4.8.1 Existing Setting

4.8.1.1 Master Plan Study Area

The Master Plan study area is the 1-mile wide corridor along 58 river miles of the San Gabriel River from its headwaters in the San Gabriel Mountains to its terminus at the Pacific Ocean between Long Beach and Seal Beach. The study area includes 19 cities as well as unincorporated areas of Los Angeles and Orange counties.

The northern-most portion of the Master Plan Study Area from the headwaters to the area downstream of Morris Dam is located within the San Gabriel Mountains. Noise levels in this area are generally low, since existing land uses consist mostly of open space/recreation areas (Angeles National Forest) and public facilities related to flood control and water resource management (i.e., San Gabriel Dam, Morris Dam and associated maintenance facilities). However, noise levels may be higher at certain times (e.g., weekends) due to higher recreational uses, including use of off-highway vehicles.

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Downstream of Morris Dam beginning in the City of Azusa, the Master Plan study area consists of a variety of urban land uses, including residential, commercial, and industrial. Noise levels in this urbanized portion are generally higher than in the undeveloped portion of the Master Plan study area. The San Gabriel Valley Gun Club in Azusa/Duarte is an intermittent source of noise in the northern portion of the study area. The Interstate 605 Freeway, which parallels the River from Azusa to Long Beach, is a major linear noise source. Other freeways that cross the study area are (from north to south): Foothill Freeway (I-210), San Bernardino Freeway (I-10), Pomona Freeway (SR 60), Santa Ana Freeway (I-5), Century Freeway (I-105), Artesia Freeway (SR 91), and San Diego Freeway (I-405). Railroads that cross the study area include Union Pacific and Metrolink tracks that run east-west through Azusa and Irwindale and Union Pacific tracks that run southeast-northwest along Valley Boulevard in the City of Industry. Another transit-related source of noise for the Master Plan study area is the Long Beach Airport, which is located approximately 2 miles west of El Dorado Regional Park near the San Gabriel River confluence with Coyote Creek.

4.8.1.2 Concept Design Study Sites

San Gabriel Canyon Spreading Grounds

The San Gabriel Canyon Spreading Grounds are located below the mouth of San Gabriel Canyon in the City of Azusa. The site consists of two spreading basins (operated by LADPW) and a parcel between the two basins that contains water storage tanks, wells, and pumps (operated by City of Azusa). The site is bounded by the San Gabriel River channel and a bike trail on the northwest and residential homes and a golf course (Azusa Greens Country Club) on the east and south. The Azusa Rock Quarry, an active mining operation, is located approximately 0.5 mile to the northwest across the River. Hodge Elementary School is located approximately 0.4 mile to the south.

Woodland Duck Farm

The Woodland Duck Farm site is located in a residential and industrial area. The site is bordered on the west by the San Gabriel River, on the north by Valley Boulevard, and on the east by a residential community. The 605 Freeway runs through the center of the site from north to south. Current uses on the property include open space (with remnant structures related to the previous use of the site as a duck farm), an equestrian center, nurseries, and a tree-trimming company. Power line towers are located throughout the site on both sides of the 605 freeway. Land uses east of the project area are primarily residential. Andrews Elementary School and Don Julian Elementary School are located approximately 0.4 mile to the east. Mountain View High School and a mobile home park are located west of the site across the San Gabriel River. Land uses north of the project site across Valley Boulevard are primarily industrial. The San Jose Creek Water Reclamation Plant is located south of the site on the east side of the river.

San Gabriel River Discovery Center

The project site is located in the northeastern portion of the Nature Area within the Whittier Narrows Dam Recreation Area. The area is bordered by Durfee Avenue to the north, Peck Road to the west, and the San Gabriel River to the south. The project area is primarily open space,

consisting of natural woodlands, scrub, grasslands, lakes, and a portion of Lario Creek. The existing Nature Center building is located on the northern portion of the site. Land uses surrounding the project site are primarily open space and recreation, including the Whittier Narrows Dam Recreation Area, Pico Rivera Park, and Pico Rivera Golf Course. Rose Hills Memorial Park and Mortuary is located within general proximity of the project. South El Monte High School is located northwest of the project site across Durfee Avenue.

Lario Creek

The Lario Creek project site consists of a man-made conveyance structure that diverts water from the San Gabriel River to the Rio Hondo through the Whittier Narrows Flood Control Basin. The site is bounded by Durfee Avenue on the north, the San Gabriel River on the east, a flood control channel to the south, and Rosemead Boulevard to the west. Rose Hills Memorial Park and Mortuary is located within general proximity of the project. The area surrounding the project site is primarily open space.

El Dorado Regional Park

The project site for El Dorado Regional Park is primarily open space. Power line towers are located along the western edge of the site and parallel to the River. The area surrounding the park is an urbanized area that includes commercial and residential land uses. To the north, the park is bordered by the Long Beach Police Academy and the Long Beach Town Center (a shopping center). The Lakewood Equestrian Center and Charter Community Hospital are located further to the north across Carson Street. The west side of the park is bordered by the San Gabriel River, and the area directly west of the river is primarily residential. There is also a nursery and the El Dorado Park Golf Course in the area surrounding the Park. The park is bordered by the 605 freeway on the east side. An industrial area borders the southeast portion of the park and contains a maintenance yard, a Society for the Prevention of Cruelty to Animals (SPCA) facility, and community gardens.

4.8.2 Regulatory Setting

Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, which are not applicable to the proposed project. Stationary noise sources and construction noise are regulated by local agencies through implementation of General Plan policies and Noise Ordinance standards. Local noise standards applicable to the proposed Master Plan Concept Design Studies are described below.

City of Azusa (San Gabriel Canyon Spreading Grounds)

Construction Noise. The San Gabriel Canyon Spreading Grounds are located in the City of Azusa. Section 88-675(c) of the Azusa Municipal Code prohibits operation of construction equipment within a radius of 500 feet of a residential zone from 6:00 p.m. to 7:00 a.m. except in cases of emergency. The same provision also prohibits generation of construction equipment noise in excess of 85 dBA as measured at a distance of 100 feet from the equipment.

County of Los Angeles (Woodland Duck Farm, San Gabriel River Discovery Center, and Lario Creek)

The following Concept Design Studies are located within unincorporated portions of the County of Los Angeles, and are subject to the noise regulations contained in the Los Angeles County Code: Woodland Duck Farm, San Gabriel River Discovery Center, and Lario Creek.

Construction Noise. Title 12, Chapter 12.08 of the Los Angeles County Code contains regulations pertaining to construction noise. It generally prohibits generation of construction noise between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound creates a noise disturbance across a residential or commercial real-property line. Exceptions to this prohibition are made for emergency work of public service utilities and if a variance is issued by the health officer. It also establishes maximum noise levels at the affected buildings that should not be exceeded during construction (**Table 4.8-2**).

In addition, Title 12, Chapter 12.12 prohibits use of noise-generating equipment (e.g., compressors, jackhammers, power-driven drill, riveting machine, excavator, diesel-powered truck, tractor or other earth moving equipment, hand hammers on steel or iron) on any Sunday or at any other time between the hours of 8:00 p.m. and 6:30 a.m. if it results in disturbance of persons occupying sleeping quarters in a dwelling, apartment, hotel, mobile home, or other place of residence.

Table 4.8-2
Maximum Noise Levels – Los Angeles County Construction Noise Ordinance

Time	Single Family Residential	Multi-Family Residential	Semi-residential/ Commercial
Nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dBA	64 dBA	70 dBA
Repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Los Angeles County Code, Section 12.08.440.

Noise/Land Use Compatibility. Title 12, Chapter 12.08 outlines guidelines for noise/land use compatibility for development and planning purposes (**Table 4.8-3**).

Table 4.8-3
Los Angeles County Guidelines for Noise Compatible Land Use

Designated Noise Zone Land Use	Time Interval	Exterior Noise Level
Noise-Sensitive Area	Anytime	45 dBA
Residential	Nighttime (10:00 p.m. to 7:00 a.m.)	45 dBA
	Daytime (7:00 a.m. to 10:00 p.m.)	50 dBA
Commercial	Nighttime (10:00 p.m. to 7:00 a.m.)	55 dBA
	Daytime (7:00 a.m. to 10:00 p.m.)	60 dBA
Industrial	Anytime	70 dBA

Source: Los Angeles County Code, Section 12.08.390.

City of Long Beach (El Dorado Regional Park)

Construction Noise. The Concept Design Study site for the El Dorado Regional Park is located within the City of Long Beach. Noise generating activities prohibited by the City of Long Beach Noise Ordinance (Long Beach Municipal Code Title 8, Chapter 8.80) are as follows:

- Loading or unloading of building materials or similar objects between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause noise disturbance across a residential property line
- Operating a device that creates vibration above the vibration threshold (0.001g in the frequency range of 0-30 hertz and 0.003 g in the frequency range between 30-100 hertz) at 150 feet from the source
- Creating sound within or adjacent to a noise sensitive zone containing a hospital, nursing home, school or other designated use
- Operation of construction tools or equipment which produce loud or unusual noise between 7:00 p.m. and 7:00 a.m. Monday through Friday and federal holidays, between 7:00 p.m. on Friday and 9:00 a.m. on Saturday, after 6:00 p.m. on Saturday, and all day Sunday. (Emergency work authorized by the building official is exempt. Construction work on Sundays between 9:00 a.m. and 6:00 p.m. may be conducted if a permit is obtained from the noise control officer.)

Noise/Land Use Compatibility. The Noise Element of the City of Long Beach General Plan establishes the criteria for maximum acceptable noise levels by land use type.

Table 4.8-4
Criteria for Maximum Acceptable Noise Levels – City of Long Beach

Major Land Use Type	Outdoor			Indoor
	Maximum Single Hourly Peak	L ₁₀	L ₅₀	L _{dn}
Residential (7:00 a.m. – 10:00 p.m.)	70 dBA	55 dBA	45 dBA	45 dBA
Residential (10:00 p.m. – 7:00 a.m.)	60 dBA	45 dBA	35 dBA	35 dBA
Commercial	75 dBA	65 dBA	55 dBA	--
Industrial	85 dBA	70 dBA	60 dBA	--

Source: City of Long Beach, 2003.

L₁₀: Noise levels exceeded 10 percent of the time

L₅₀: Noise levels exceeded 50 percent of the time

L_{dn}: Day-night average sound level.

4.8.3 Significance Criteria

Project impacts related to noise would be considered significant if the project:

- Exposed persons to noise levels in excess of standards established in the applicable municipal noise ordinance during project construction (**Section 4.8.2**)
- Resulted in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

(See Section 4.2, Biological Resources, for a discussion of noise-related impacts on wildlife.)

4.8.4 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.8.5**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.8-5**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts related to noise. Adverse noise impacts would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.8.6**). Since mitigation will reduce these impacts to less than significant levels (see **Table 4.8-5** and Master Plan program mitigation measures described in **Section 4.8.6**), the overall noise impacts from adopting the Master Plan are considered less than

significant. Site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area.

Table 4.8-5
Noise Impacts from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Traffic and Transportation	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	<p>Beneficial: Preservation of existing habitat areas would result in protection of currently undisturbed open space areas, which would have a beneficial impact on noise by preventing generation of noise associated with new residential, commercial, or industrial development.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to noise impacts (e.g., establishment of habitat area design standards and identification of indicator species).</p> <p>Potentially Adverse: Habitat enhancement that involves active restoration in undeveloped areas (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) would result in noise generation from use of construction equipment and worker commutes. Other activities associated with habitat enhancement (e.g., monitoring and maintenance activities or exotic species removal) could also result in minor noise increases from worker vehicle trips. The Master Plan mitigation measure described in Section 4.8.6 outlines an approach to evaluation of construction noise and implementation of measures to reduce noise (via installation of mufflers, notification to nearby receptors, limitation of construction hours, and development of site-specific noise mitigation plans (to potentially include sound barriers, etc.)). The implementation of appropriate noise control measures is expected to reduce noise impacts to below a level of significance.</p>	<p>Potentially significant for construction-related effects; less than significant with mitigation</p> <p>Less than significant for operations-related effects</p>
Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses	<p>Beneficial: Preservation of existing undisturbed open space areas for passive recreational uses would result in protection of currently undisturbed open space areas, which would have a beneficial impact on noise by preventing generation of noise associated with new residential, commercial, or industrial development.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to noise impacts (e.g., educating the public about catch and release fishing, establishing design standards for trails).</p> <p>Potentially Adverse: Construction of recreation related facilities (e.g., interpretive centers, trails and trail amenities, signs, and kiosks) would temporarily increase noise from construction equipment use and worker vehicle trips. The Master Plan mitigation measure described in Section 4.8.6 outlines an approach to</p>	<p>Potentially significant for construction-related effects; less than significant with mitigation</p> <p>Potentially significant for operational effects of new parks adjacent to noise-sensitive land uses; less than significant with mitigation</p>

Master Plan Elements	Impacts on Traffic and Transportation	Impact Summary
	<p>evaluation of construction noise and implementation of measures to reduce noise (via installation of mufflers, notification to nearby receptors, limitation of construction hours, and development of site-specific noise mitigation plans (to potentially include sound barriers, etc.).</p> <p>Operation of recreational facilities would also result in generation of noise associated with park users, which could have adverse impacts on adjacent noise-sensitive land uses (e.g., residential uses or habitat areas).</p> <p>Implementation of MP-N2 would require siting facilities away from noise sensitive land uses, limiting hours of operation, and installation of sound barriers, etc, thereby mitigating this impact to below a level of significance.</p> <p>Most of the river corridor is parallel to the Interstate 605 freeway. Projects that propose noise-sensitive uses (e.g., parks) adjacent to the freeway could require installation of sound barriers (e.g., trees and/or structural barriers) to minimize noise exposure of future visitors to the outdoor recreational facilities.</p>	<p>Less than significant for other operations-related effects</p>
<p>Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.</p>	<p>Beneficial: Preservation of existing open space areas (e.g., through land acquisition or conservation easements) could result in protection of currently undisturbed open space areas, which would have a beneficial impact on noise by preventing generation of noise associated with new residential, commercial, or industrial development.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to noise impacts (e.g., use of drought tolerant and native plants).</p> <p>Potentially Adverse: Use of existing open space areas for active recreational facilities and activities would result in generation of noise from construction of facilities (e.g., parking and sports fields) and vehicle trips from new recreational users. The Master Plan mitigation measure described in Section 4.8.6 outlines an approach to evaluation of construction noise and implementation of measures to reduce noise (via installation of mufflers, notification to nearby receptors, limitation of construction hours, and development of site-specific noise mitigation plans (to potentially include sound barriers, etc.).</p>	<p>Potentially significant for construction-related effects; less than significant with mitigation</p> <p>Less than significant for operations-related effects</p>
<p>Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.</p>	<p>Beneficial: Improving flood protection using natural processes (e.g., use of non-structural flood control) could have beneficial noise impacts by minimizing the need for development of new structural flood control facilities (which would generate more noise during construction).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to noise impacts (e.g., ensures liability is not increased, coordination of maintenance of flood protection system with habitat needs).</p>	<p>Potentially significant for construction-related effects; less than significant with mitigation</p> <p>Less than significant for operations-</p>

Section 4.8 – Noise

Master Plan Elements	Impacts on Traffic and Transportation	Impact Summary
	<p>Potentially Adverse: Construction of new flood control facilities (e.g., stormwater detention areas) would result in noise generation from use of construction equipment and worker commutes. The Master Plan mitigation measure described in Section 4.8.6 outlines an approach to evaluation of construction noise and implementation of measures to reduce noise (via installation of mufflers, notification to nearby receptors, limitation of construction hours, and development of site-specific noise mitigation plans (to potentially include sound barriers, etc.). Operation of flood control facilities would also result in minor less than significant noise generation (vehicle trips by operations and maintenance crews).</p>	related effects
<p>Water Supply and Water Quality Element: 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.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to noise impacts (e.g., maintains conservation of local water).</p> <p>Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) would result in noise generation from use of construction equipment and materials and worker commutes. The Master Plan mitigation measure described in Section 4.8.6 outlines an approach to evaluation of construction noise and implementation of measures to reduce noise (via installation of mufflers, notification to nearby receptors, limitation of construction hours, and development of site-specific noise mitigation plans (to potentially include sound barriers, etc.). Operation of flood control facilities would also result in minor less than significant noise generation (vehicle trips by operations and maintenance crews).</p>	<p>Potentially significant for construction-related effects; less than significant with mitigation</p> <p>Less than significant for operations-related effects</p>
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to noise impacts (e.g., educates participating landowners about potential liability and protective measures).</p> <p>Potentially Adverse: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. Minor modifications of existing or new business development in the river corridor needed for consistency with Master Plan elements (e.g., trail connections and aesthetic features and compliance with design guidelines) are anticipated to have minimal or no noise impacts.</p>	Less than significant

4.8.5 Impacts of Implementing the Concept Design Studies

4.8.5.1 Construction Impacts

Construction noise represents a temporary impact on ambient noise levels. The dominant source of noise from most construction equipment is the engine, usually diesel, without sufficient muffling. In a few cases, such as impact pile driving or pavement breaking, noise generated by the process dominates (FTA, 1995). During project construction, the highest noise-generating activities at most project component sites are expected to be earth moving, including excavation, grading, and filling. Typical noise levels during excavation at public works construction sites (e.g., roads, highways, sewers, and trenches) are 88 dBA with all pertinent equipment present at the site (Canter, 1977).

Construction equipment can operate intermittently or continuously. Construction activities are characterized by variations in the power expended by the equipment, with resulting variation in noise levels over time. To account for this variation, noise generated from equipment can be expressed in terms of L_{eq} , which takes into consideration the percentage of time during the workday that the equipment is operating at full power. Typical noise levels for various types of equipment in terms of L_{eq} are shown in **Table 4.8-6**.

Table 4.8-6
Construction Equipment Noise Levels in terms of L_{eq}

Equipment	Typical Noise Level (dBA) at 50 feet from Source	Equipment	Typical Noise Level (dBA) at 50 feet from Source
Air Compressor	81	Pile Driver (Impact)	101
Backhoe	80	Pile Driver (Sonic)	96
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	76
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	98
Concrete Pump	82	Roller	74
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	89
Dozer	85	Shovel	82
Generator	81	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Insertter	85
Loader	85	Truck	88
Paver	89		

Source: FTA, 1995.

In addition to having daily variations in activities, construction projects are carried out in several different phases, each with a different combination of equipment depending on the work being performed. The L_{eq} for each phase can be determined by combining the L_{eq} contributions from each piece of equipment used in that phase. For a general assessment of construction noise, it is

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sufficient to determine the noise levels generated from the two noisiest pieces of equipment used concurrently in each phase (FTA, 1995).

Since detailed construction plans have not been developed for the proposed Concept Design Studies, MWH staff members experienced with construction management have estimated the types of construction equipment required for each project based on the concept designs of the proposed facilities. To assess a typical construction noise condition for each project site, the two noisiest pieces of equipment that would be operating concurrently were selected based on the estimated noise levels shown in **Table 4.8-6**. Then, the cumulative noise level of the two pieces of equipment was estimated using **Table 4.8-7**. Since dB is expressed on a logarithmic scale, dB values cannot be summed directly (Canter, 1977). For example, two pieces of equipment each generating 80 dB do not add up to 160 dB, but would have a cumulative noise level of 83 dB.

The following equation was then used to estimate the attenuation of noise with distance from its source (i.e., the two pieces of construction equipment) to the nearest sensitive receptor.

$$SL_2 = SL_1 - 20 \log_{10} (r_2/r_1)$$

Where:

SL_1 = sound level at 50 feet, in dB

SL_2 = sound level at the boundary of the nearest noise sensitive receptor's property, in dB

r_1 = 50 feet

r_2 = distance to the boundary of the nearest noise sensitive receptor's property, in feet

(Source of Equation: Canter, 1977)

Table 4.8-7
Aid for Determining Cumulative Noise Levels

Difference Between Noise Levels, dBA	No. of dBA to be added to higher level
0	3.0
1	2.6
2	2.1
3	1.8
4	1.5
5	1.2
6	1.0
7	0.8
8	0.6
10	0.4
12	0.3
14	0.2
16	0.1

Source: Canter, 1977

Table 4.8-8 presents the estimated construction noise levels at the nearest sensitive receptor for each Concept Design Study site.

Table 4.8-8
Estimated Construction Noise for Concept Design Studies
 (without incorporation of noise-related mitigation)

Concept Design Study	Two Noisiest Pieces of Equipment Estimated to be in Use Concurrently		Approx. Distance to Nearest Sensitive Receptor, r_2 (feet)	Estimated Noise Level at Nearest Sensitive Receptor, SL_2 (dBA)	Relevant Jurisdiction's Construction Noise Standard (Section 4.8.2)
	Type of Equipment	Cumulative Noise Level at 50 feet from the Source, SL_1 (dBA)			
San Gabriel Canyon Spreading Grounds	Trucks	91	2,500 ¹ 50 ²	57 91	85 dBA at 100 feet from noise source
Woodland Duck Farm	Trucks	91	1,000 ¹ 50 ²	65 91	60 dBA if continuous; 75 dBA if intermittent (daytime on weekdays)
San Gabriel River Discovery Center	Trucks	91	250 ³	77	
Lario Creek	Trucks	91	100 ⁴	85	
El Dorado Regional Park	Trucks	91	1,000 ¹ 100 ²	65 85	No numerical standard

¹ Distance to the nearest school

² Distance to the nearest residence

³ Distance to nearest school building

⁴ Distance to the nearest school's athletic field

Table 4.8-8 indicates that, during project construction, noise levels at the sensitive receptors located near the project component sites would range between approximately 57 dBA and 91 dBA, and in some cases would, at times, exceed the applicable jurisdiction's standard for construction noise.

The estimated noise levels shown in **Table 4.8-8** represent the worst-case scenario, since the equation does not take into account noise attenuation due to site topography (i.e., difference in elevation between the noise source and the receiver), presence of natural or man-made sound barriers, and ground conditions (hard vs. soft surfaces). Furthermore, actual distances to the nearest sensitive receptor from the noise source (construction equipment) would be smaller than the distances used in the calculation since the construction equipment would likely be operated at some distance away from the project site boundary. However, for all Concept Design Study sites, at least a portion of the site boundary is adjacent to a sensitive receptor such as a school or residences. The project would also result in construction vehicle traffic and an associated increase in noise levels along the streets in the project area. (Construction impact on traffic is discussed in **Section 4.11.**)

In addition, the Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include collection and

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treatment of stormwater runoff. Construction of these and other projects involving stormwater collection and treatment may involve construction of storm drains, catch basins, or other structures within street rights-of-way as part of a stormwater management facility. While noisy, construction impacts related to storm drain installation are very temporary at any one location. These linear construction zones typically progress at an average rate of 200 to 500 feet per day. Therefore, any particular location would usually be directly impacted by the construction activities for only one to five days.

Construction noise impacts on sensitive receptors would be potentially significant for all five Concept Design Studies. Implementation of **Mitigation Measures CD-N1 through CD-N4** would reduce construction noise impacts to less than significant levels by limiting construction activities to daytime hours (thereby avoiding noise generation during nighttime when nearby receptors are most sensitive to noise), using noise reduction devices on construction equipment, and identifying site specific measures to reduce noise levels to meet construction noise standards established by the applicable municipality.

4.8.5.2 Operational Impacts

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include collection and treatment of stormwater runoff. Projects involving stormwater collection and treatment may require operation of pumps (e.g., for circulation of water in constructed wetlands or to transport collected stormwater to irrigation systems). Typical noise levels from water pumps are 76 dBA for standard equipment and 75 dBA for quieted equipment (Bolt, et. al., 1971). Since these pumps would generally be enclosed thus substantially reducing the noise generated, noise impacts from operation of these pumps would be less than significant. Note, noise enclosures can be designed to accomplish a wide range of noise abatement depending on site needs (distance of pump to sensitive receptors).

During project operation, noise will also be generated by worker vehicles travelling to various project components for maintenance and inspection, which is expected to be several times a year for each project component. Operation of proposed parks would result in generation of visitor traffic (see **Section 4.11**). Noise impacts related to increases in traffic associated with project operation are considered less than significant.

4.8.5.3 Impact of Siting New Parks

Two of the five Concept Design Studies (San Gabriel Canyon Spreading Grounds and Woodland Duck Farm) include development of new parks. Existing surrounding land uses for the San Gabriel Canyon Spreading Grounds site are primarily open space and residential. Recreational use policies for the proposed new or improved recreational facilities as part of this Concept Design Study (e.g., trail improvements, pocket parks) would define hours of operation, prohibited activities, etc. to limit noise generation by users. Therefore, recreational facilities proposed at this site would be compatible with the surrounding land uses and the associated noise environment.

The project site for the Woodland Duck Farm is traversed by the Interstate 605 freeway. Portions of the project site adjacent to the freeway currently experience high ambient noise levels. The project design would include installation of sound barriers (e.g., trees and/or structural barriers) to ensure that future visitors to the project site's outdoor recreational facilities would not be exposed to excessive noise levels. This impact would be less than significant.

4.8.6 Master Plan Program Mitigation Measures

Future projects involving use of use of heavy equipment and vehicles during construction will require an evaluation of the impact of proposed actions related to noise as described in program Mitigation Measure MP-N1:

MP-N1 Evaluations of construction noise generation will be conducted as follows during site-specific environmental review of each future Master Plan project:

1. Identify noise-sensitive land uses located in the vicinity of the project site (e.g., residences, hospitals, schools, guest lodging, libraries, convalescent and retirement facilities, houses of worship, auditoriums and concert halls, outdoor theaters, nature and wildlife preserves, parks, and cemeteries).
2. Determine the existing noise environment of the project area (e.g., rural vs. high density urban). Identify nearby existing noise sources that affect the project site (e.g., heavy industrial operations or major highways).
3. Review the relevant jurisdiction's noise regulations and policies (e.g., noise ordinances and general plan noise element) to identify construction noise standards and noise/land use compatibility guidelines.
4. Estimate the construction equipment needed and resultant noise generation (see **Section 4.8.5.1**). Compare the estimated construction noise levels that would be experienced by the nearest sensitive receptor to the relevant jurisdiction's construction noise standards. The impact evaluation will also take into consideration construction duration, whether the noise generated would be intermittent or continuous, and the existing noise environment of the project area.
5. If the estimated noise levels exceed the standards, one or more of the following applicable site-specific measures will be implemented to reduce noise levels to meet the relevant jurisdiction's noise standards:
 - Equip all mobile construction equipment with properly operating mufflers or other noise reduction devices
 - Install sound walls, sound curtains, or other temporary sound barriers
 - Select quieter construction procedures and/or equipment

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6. For projects at school sites: schedule the noisier phases of construction on Saturdays, school vacation periods, and/or after regular class hours but before 9 p.m., as feasible; and maintain ongoing communications with the schools' administrators to address any construction noise-related issues.

Future projects involving new or expanded facilities for active recreation (e.g., athletic fields) will require an evaluation of the impact of proposed actions related to noise as described in program Mitigation Measure MP-N2:

MP-N2 Projects that involve new or expanded facilities for active recreation (e.g., athletic fields) will be designed to minimize impacts on nearby noise-sensitive land uses, if any, by siting facilities away from noise-sensitive land uses, limiting hours of operation, installation of sound barriers, and/or using other appropriate measures as necessary.

4.8.7 Mitigation Measures for Concept Design Studies

The following mitigation measures shall be implemented for all five Concept Design Studies:

- CD-N1** Limit construction activities to the hours allowed by the applicable jurisdiction's noise ordinance (City of Azusa for San Gabriel Canyon Spreading Grounds; County of Los Angeles for Woodland Duck Farm, San Gabriel River Discovery Center, and Lario Creek; and City of Long Beach for El Dorado Regional Park).
- CD-N2** Equip all mobile construction equipment with properly operating mufflers or other noise reduction devices.
- CD-N3** Notify businesses and residences immediately adjacent to the construction site prior to the start of construction (e.g., via flyers). Include a telephone number for noise complaints in this notification.
- CD-N4** Prior to the start of construction of the project, require the construction contractor to develop a site-specific noise mitigation plan based on an updated estimate of construction equipment and schedule. One or more of the following measures shall be implemented as applicable to reduce noise levels to meet the relevant jurisdiction's construction noise standards:
- Install temporary sound walls, sound curtains, or other temporary sound barriers
 - Select quieter construction procedures and/or equipment

4.9 PUBLIC SERVICES AND UTILITIES

4.9.1 Existing Setting

The Master Plan study area is the 1-mile wide corridor along 58 river miles of the San Gabriel River from its headwaters in the San Gabriel Mountains to its terminus at the Pacific Ocean between Long Beach and Seal Beach. The study area includes 19 cities as well as unincorporated areas of Los Angeles and Orange counties.

4.9.1.1 Fire and Police

The Master Plan study area is served by multiple fire and police protection providers (**Table 4.9-1**). While some incorporated cities have their own police or fire departments, others contract with the Los Angeles County Fire Department (LACFD), Los Angeles County Sheriff's Department (LASD), or the Orange County Fire Authority (OCFA) for police and fire protection services. LACFD, LASD, OCFA, and Orange County Sheriff's Department (OSD) also provide police and fire services to unincorporated areas of Los Angeles and Orange Counties.

Table 4.9-1
Fire and Police Service Providers in the Master Plan Area

Municipality	Fire	Police
Arcadia	Arcadia Fire Department	Arcadia Police Department
Azusa	LACFD	Azusa Police Department
Baldwin Park	LACFD	Baldwin Park Police Department
Bellflower	LACFD	LASD
Cerritos	LACFD	LASD
City of Industry	LACFD	LASD
Downey	Downey Fire Department	Downey Police Department
Duarte	LACFD	LASD
El Monte	LACFD	El Monte Police Department
Irwindale	LACFD	Irwindale Police Department
Lakewood	LACFD	LASD
Long Beach	Long Beach Fire Department	Long Beach Police Department
Los Alamitos	OCFA	Los Alamitos Police Department
Norwalk	LACFD	LASD
Pico Rivera	LACFD	LASD
Santa Fe Springs	Santa Fe Springs Fire Department	Whittier Police Department
Seal Beach	OCFA	Seal Beach Police Department
South El Monte	LACFD	LASD
Whittier	LACFD	Whittier Police Department
Unincorporated Los Angeles County	LACFD	LASD
Unincorporated Orange County	OCFA	OSD

LACFD: Los Angeles County Fire Department
 OCFA: Orange County Fire Authority
 LASD: Los Angeles County Sheriff's Department
 OSD: Orange County Sheriff's Department

Section 4.9 – Public Services and Utilities

Fire and police/sheriff stations that serve the Concept Design Study sites are shown in **Table 4.9-2**.

Table 4.9-2
Fire and Police Stations Serving the Concept Design Study Sites

Concept Design Study	Police Station	Fire Station
San Gabriel Canyon Spreading Grounds	Azusa Police Station 725 N. Alameda Avenue, Azusa	LACFD Station No. 32 805 N. Angeleno Avenue, Azusa
Woodland Duck Farm	LASD Bassett Substation 13308 1/2 Valley Boulevard, Bassett	LACFD Station No. 87 140 S. Second Avenue, Industry
San Gabriel River Discovery Center	LASD Pico Rivera Station 6631 Passons Blvd, Pico Rivera	LACFD Station No. 40 4864 S. Durfee Avenue, Pico Rivera
Lario Creek		
El Dorado Regional Park	Long Beach Police Department East Substation 4800 E Los Coyotes Diagonal, Long Beach	Long Beach Fire Department Station No. 5 7575 E. Wardlow Road, Long Beach

LACFD: Los Angeles County Fire Department

LASD: Los Angeles County Sheriff's Department

4.9.1.2 Schools

Over 20 public school districts serve the municipalities and communities in the Master Plan study area. Elementary, middle and high schools located in the vicinity of the Concept Design Study sites and the associated school districts are shown in **Table 4.9-3**.

**Table 4.9-3
Schools Located in the Vicinity of Concept Design Study Sites**

Concept Design Study Site	School Name* and Address	School District
San Gabriel Canyon Spreading Grounds	Hodge Elementary 700 W. Eleventh Street, Azusa	Azusa Unified
	Longfellow Elementary 245 W. Tenth Street, Azusa	Azusa Unified
Woodland Duck Farm	Andrews Elementary 1010 S. Caraway Drive, Whittier	Whittier City Elementary
	Don Julian Elementary 13855 Don Julian Road, La Puente	Bassett Unified
	Kranz Intermediate 12460 Fineview Street, El Monte	Mountain View Elementary
	Madrid Middle 3300 Gilman Road, El Monte	Mountain View Elementary
	Maxson Elementary 12380 Felipe Street, El Monte	Mountain View Elementary
	Mountain View High 2900 Parkway Drive, El Monte	El Monte Union High
San Gabriel River Discovery Center	South El Monte High 1001 Durfee Avenue, South El Monte	El Monte Union High
Lario Creek		
El Dorado Regional Park	DeMille Middle 7025 E. Parkcrest Street, Long Beach	Long Beach Unified
	Keller Elementary 7020 E. Brittain Street, Long Beach	Long Beach Unified
	Lee Elementary 11481 Foster Road, Los Alamitos	Los Alamitos Unified
	Los Alamitos High 3591 Cerritos Avenue, Los Alamitos	Los Alamitos Unified
	Oak Middle School 10821 Oak Street, Los Alamitos	Los Alamitos Unified
	Rossmoor Elementary 3272 Shakespeare Drive, Los Alamitos	Los Alamitos Unified
	Weaver Elementary 11872 Wembley Road, Los Alamitos	Los Alamitos Unified

* Schools within approximately 0.5-mile radius of the project site boundary

Section 4.9 – Public Services and Utilities

4.9.1.3 Utilities

Utilities (e.g., water, sewer, electricity, gas, cable, and telephone) are operated by various public and private entities throughout the Master Plan study area. **Table 4.9-4** lists utilities that serve the Concept Design Study sites.

Table 4.9-4
Utilities Serving the Concept Design Study Sites

Concept Design Study Site	Water	Sewer Lines	Electricity	Natural Gas
San Gabriel Spreading Grounds	Azusa Light and Water	City of Azusa Department of Public Works	Azusa Light and Water	SCGC
Woodland Duck Farm	San Gabriel Valley Water Company	City of Industry Engineering Department	SCE	SCGC
San Gabriel River Discovery Center	San Gabriel Valley Water Company	City of Whittier Public Works Department	SCE	SCGC
Lario Creek				
El Dorado Regional Park	City of Long Beach Water Department	City of Long Beach Water Department	SCE	SCGC

SCE: Southern California Edison

SCGC: Southern California Gas Company

Flood Protection. Throughout Los Angeles County, LADPW operates and maintains 15 major dams, nearly 500 miles of open channel, 2,500 miles of underground storm drains, over 70,000 catch basins, approximately 300 debris retaining structures, 230 concrete stream bed stabilization structures, 40 pumping plants, and nearly 27 spreading grounds. Specifically for the San Gabriel River, LADPW and the United States Army Corps of Engineers (COE) are the two primary agencies responsible for operating flood control facilities. Additional information on flood control facilities within the River system is provided in Section 4.6.1.1.

Water. Water is provided in the Master Plan study area by various public and private entities. The Metropolitan Water District of Southern California (Metropolitan) owns and operates various pipelines within the Master Plan study area, including: Foothill Feeder-Service Connection USG-3, Fish Canyon Adit to Monrovia Tunnel No. 3 of the Upper Feeder Pipeline, Upper Feeder Pipeline, Middle Feeder Pipeline, Lower Feeder Pipeline, and Second Lower Feeder Pipeline. In addition, Metropolitan owns a property known as Old Navy Peninsula, which is located on the west side of Morris Reservoir (L.J. Simonek, Metropolitan, pers. comm., 2003). Other public water providers that may operate pipelines within street rights-of-way and/or have utility easements in the Master Plan study area include: Azusa Light and Water, San Gabriel Valley Municipal Water District, Central Basin Municipal Water District, City of Long Beach Water Department, and Upper San Gabriel Valley Municipal Water District.

Sewer and Wastewater Treatment Systems. Sewer lines in the Master Plan study area are operated by the County Sanitation Districts of Los Angeles County (LACSD) and various municipalities. In general, the public works department or the engineering department of each municipality is responsible for maintenance and repair of local sewer lines, and LACSD operates and maintains the larger trunk sewer lines. Wastewater treatment is provided by water reclamation plants operated by LACSD (see **Table 4.6-4** in **Section 4.6**).

Electricity. Electrical power for a majority of the Master Plan study area is provided by Southern California Edison (SCE), a private utility. Azusa Light and Water, operated by City of Azusa, provides electrical power to residents of Azusa. SCE high-voltage power line towers are located throughout the Master Plan study area, approximately paralleling the river from south of Santa Fe Dam in Irwindale to the electrical power facilities in Seal Beach. The City of Los Angeles Department of Water and Power (LADWP) also operates some high-voltage power line towers along the River.

Natural Gas. Southern California Gas Company (SCGC), a private utility, provides natural gas service throughout the Master Plan study area, except for the City of Long Beach and portions of surrounding communities. The service area for Long Beach Energy, a municipal utility and natural gas supplier owned and operated by the City of Long Beach, includes the cities of Long Beach and Signal Hill, and sections of surrounding communities, including Lakewood, Bellflower, Compton, Seal Beach, Paramount, and Los Alamitos (SCAG, 2004).

Other Utilities. Other utilities that may have facilities or easements located within the Master Plan study area (e.g., within street rights-of-way) include telephone, cable, and oil.

(See Section 4.5.4.3 regarding the potential for underground utility vaults to retain standing water and breed mosquitoes.)

4.9.1.4 Solid Waste

Solid waste collection services are provided by private companies or municipalities throughout the Master Plan study area. Municipal solid waste landfills in the region are listed in **Table 4.9-5**. Puente Hills Landfill, operated by LACSD, is located just outside of the Master Plan study area in Whittier.

The California Integrated Waste Management Act of 1989 and its subsequent amendments required all California cities and counties to implement programs (by the year 2000) that would reduce, recycle, or compost at least 50 percent of the quantity of wastes produced. The California Integrated Waste Management Board is the state entity that administers the act. To facilitate the County's compliance with the waste reduction mandate, projects implemented by the County are required to comply with the County's construction and demolition debris recycling specifications and submit reports to LADPW Environmental Programs Division, detailing the volume of debris generated and the percentages of debris that are recycled and disposed in landfills.

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Solid waste issues for the River include wash-down of litter onto downstream beaches. For example, during the first three months of 2005, Seal Beach removed in excess of 540 tons of debris from area beaches (P. Yost, pers. comm., April 25, 2005 (Appendix F)).

4.9.1.5 Road Maintenance

If construction vehicle travel associated with the project resulted in substantial damage to roadways or other features within the public right-of-way, the municipality with jurisdiction over the local roadways or Caltrans (for state routes and other Caltrans facilities such as highway bridges) may require repair of the damage.

**Table 4.9-5
Regional Municipal Solid Waste Landfills**

Facility Name (Location)	Owner/Operator	Permitted Tonnage (tons per day)	Average Daily Tonnage (tons per day)	Approximate Closure Date
Antelope Valley (Palmdale)	Antelope Valley Recycling and Disposal Facility	1,400	600	2011
Bradley West (Sun Valley)	Waste Management, Inc.	10,000	2,200	2006
Calabasas (Agoura)	LACSD	3,500	1,100	2018
Chiquita Canyon (Castaic)	Republic Services of California	6,000	5,300	2011
Lancaster (Lancaster)	Waste Management, Inc.	1,700	1,200	2032
Puente Hills Landfill (Whittier)	LACSD	13,200	13,200	2013
Scholl Canyon (Glendale)	LACSD	3,400	1,200	2024
Sunshine Canyon (Sylmar)	Browning-Ferris Industries	11,500	6,500	2006

Sources: Federal Aviation Authority and City of Los Angeles, 2003, and R. Barker, pers. comm., 2004.

4.9.2 Significance Criteria

Project impacts related to public services and utilities would be considered significant if the project:

- Required additional fire protection or law enforcement staff and/or equipment to maintain an acceptable level of service
- Substantially increased emergency service response times by fire and law enforcement staff
- Required substantial changes to the daily schedule or calendar of a school, a major reorganization of students or classrooms, or other temporary or permanent disturbance to a school's activities

- Created unsafe conditions for school staff and/or students
- Created overcrowded conditions at schools
- Interfered with existing utility infrastructure in a manner which would result in interruption of service for extended periods
- Generated demand for utilities which exceeds the capacity of the providers
- Was not served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs

4.9.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.9.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.9-6**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts. Adverse impacts on public services and utilities would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.9.5**). Since mitigation will reduce these impacts to less than significant levels (see **Table 4.9-6** and Master Plan program mitigation measures described in **Section 4.9.5**), the overall impacts on public services and utilities from adopting the Master Plan are considered less than significant. Site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area.

Table 4.9-6
Impacts on Public Services and Utilities from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Public Services and Utilities	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses.	<p>Beneficial: Preservation of existing habitat areas would have a beneficial impact on public services and utilities by protecting open space areas from residential, commercial, or industrial development which could increase the demand for public services and/or require increased capacities of utility infrastructure.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on public services and utilities (e.g., establishment of habitat area design standards and identification of indicator species).</p>	Beneficial (no adverse impact)
Recreation Element: Encourage	Beneficial: Preservation of existing open space for	Less than

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Master Plan Elements	Impacts on Public Services and Utilities	Impact Summary
and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses.	<p>passive recreational uses would have a beneficial impact on public services and utilities by protecting open space areas from residential, commercial, or industrial development which could increase the demand for public services and/or require increased capacities of utility infrastructure. In addition, adoption of this element would encourage projects that provide access for emergency use.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on public services and utilities (e.g., educating the public about catch and release fishing, establishing design standards for trails).</p> <p>Potentially Adverse: Construction of recreational facilities would generate solid waste (e.g., soil, asphalt, concrete, and rock). Projects involving demolition of existing structures or modification of paved areas could generate the greatest volumes of construction waste. Implementation of MP-P5 would further reduce this impact by requiring the construction contractors to identify and implement programs for minimizing solid waste during construction including recycling.</p> <p>Operation of new parks may result in minor less than significant increases for police services. Operation of recreational facilities would result in minor less than significant increases in electricity consumption (e.g., park buildings and night-time lighting), water use (e.g., park buildings), sewer connections (e.g., park buildings), and solid waste generation (e.g., trash collection at parks).</p>	significant
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	<p>Beneficial: Preservation of existing open space would have a beneficial impact on public services and utilities by protecting open space areas from residential, commercial, or industrial development which could increase the demand for public services and/or require increased capacities of utility infrastructure. In addition, adoption of this element would encourage projects that promote fire safety and awareness, use drought tolerant native plants (reduces water use for irrigation of landscaped areas), and establish public safety measures to prevent crime in the river corridor, all beneficial impacts on public services and utilities.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on public services and utilities (e.g., improves aesthetic quality of the corridor, reduce vector breeding potential).</p>	Beneficial (no adverse impact)
Flood Protection Element: Maintain flood protection and existing water and other rights	Beneficial: Maintenance of flood protection and development of new flood control facilities would have beneficial impacts on the capacity of existing storm	Potentially significant for construction

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Master Plan Elements	Impacts on Public Services and Utilities	Impact Summary
<p>while enhancing flood management activities through the integration with recreation, open space and habitat systems.</p>	<p>drains.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on public services and utilities (e.g., establish visual design standards for flood control facilities).</p> <p>Potentially Adverse: Adoption of this element would encourage construction of stormwater management facilities, which may include storm drains, catch basins, or other structures within street rights-of-way. Temporary road or lane closures associated with construction of these facilities may have a temporary adverse impact on police and fire emergency response times and emergency vehicle access to streets, fire hydrants or structures adjacent to the affected roadways. Temporary road or lane closures may also have adverse impacts on school commuting routes. Implementation of MP-P1 and MP-P2 would reduce this impact to below a level of significance by requiring consultation with emergency service providers and schools and implementation of traffic control measures to reduce temporary adverse effects to emergency vehicle response and school vehicles.</p> <p>Construction of storm drains, catch basins, or other structures within street rights-of-way has the potential to affect various underground utilities, including water, sewer, electricity, gas, oil, telephone, and cable. If underground utilities are not identified prior to construction, damage and temporary disruption to those lines and associated services could occur. Implementation of MP-P3 would reduce this impact to below a level of significance by requiring identification of buried facilities in affected roadways and relocation of facilities as necessary.</p> <p>Operation of stormwater management facilities would result in generation of minor less than significant amounts of solid waste from periodic removal of sediments. Operation of pumps associated with conveyance of stormwater would result in less than significant increased electricity consumption.</p>	<p>effects; less than significant with mitigation</p> <p>Less than significant for operational effects</p>
<p>Water Supply and Water Quality Element: 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.</p>	<p>Beneficial: Adoption of this element would encourage projects that enhance groundwater recharge and increase reclaimed water use, a beneficial impact on water supply.</p> <p>Potentially Adverse: Adoption of this element would encourage construction of stormwater management facilities, which may include storm drains, catch basins, or other structures within street rights-of-way. Temporary road or lane closures associated with construction of these facilities may have an temporary adverse impact on police and fire emergency response</p>	<p>Potentially significant for construction effects; less than significant with mitigation</p> <p>Potentially significant for stormwater infiltration</p>

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Master Plan Elements	Impacts on Public Services and Utilities	Impact Summary
	<p>times and emergency vehicle access to streets, fire hydrants or structures adjacent to the affected roadways. Temporary road or lane closures may also have adverse impacts on school commuting routes. Implementation of MP-P1 and MP-P2 would reduce this impact to below a level of significance by requiring consultation with emergency service providers and schools and implementation of traffic control measures to reduce temporary adverse effects to emergency vehicle response and school vehicles.</p> <p>Construction of storm drains, catch basins, or other structures within street rights-of-way has the potential to affect various underground utilities, including water, sewer, electricity, gas, oil, telephone, and cable. If underground utilities are not identified prior to construction, damage and temporary disruption to those lines and associated services could occur. Implementation of MP-P3 would reduce this impact to below a level of significance by requiring identification of buried facilities in affected roadways and relocation of facilities as necessary.</p> <p>Operation of stormwater management facilities would result in generation of minor less than significant amounts of solid waste from periodic removal of sediments. Operation of pumps for conveyance of stormwater or provision of water circulation in constructed wetlands would result in increased electricity consumption.</p> <p>Portions of the river corridor parallel power transmission lines. Operation of stormwater infiltration facilities near power line towers could result in saturation of soil surrounding the towers, which could affect the stability of the power line towers, a potentially significant impact on utilities. Implementation of MP-P4 would reduce this impact to below a level of significance by requiring a geotechnical investigation and modifications to infiltration system design to minimize saturation of soils around power line towers.</p>	<p>impacts on power line tower stability; less than significant with mitigation</p> <p>Less than significant for all other operations-related effects</p>
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on public services and utilities (e.g., educates participating landowners about potential liability and protective measures).</p> <p>Potentially Adverse: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. Minor modifications of existing or new business development in the river corridor needed for consistency with Master Plan elements (e.g., trail connections and aesthetic features and compliance with</p>	<p>Less than significant</p>

Master Plan Elements	Impacts on Public Services and Utilities	Impact Summary
	design guidelines) are anticipated to have minimal or no impacts on public services and utilities.	

4.9.4 Impacts of Implementing the Concept Design Studies

4.9.4.1 Fire and Police

Construction Impacts

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include collection and treatment of stormwater runoff. Projects involving stormwater collection and treatment may include construction of storm drains, catch basins, or other structures within street rights-of-way as part of a stormwater management facility. During construction of these structures, temporary road or lane closures may be required. Road or lane closures may require police and fire emergency vehicles to use less direct routes in responding to emergency calls in the project area, resulting in increased response times. In addition, project construction may temporarily affect fire vehicle access to streets, fire hydrants or structures adjacent to the affected roadways. Incorporation of **Mitigation Measures CD-P1, CD-P2, and CD-P3** would reduce these potential impacts to less-than-significant levels through consultation with fire and police service providers so that appropriate traffic controls and emergency routes may be put in place to avoid traffic and emergency tie-ups.

Operational Impacts

Fire Protection Services. The project does not involve construction of housing or other structures that would result in a substantial increase in the demand for fire protection or emergency medical services. Buildings that could be constructed as part of Concept Design Studies or other future projects include park buildings (e.g., San Gabriel River Discovery Center) and pump enclosures, which would not substantially increase fire hazards in the area. The Discovery Center building will be designed to comply with applicable fire codes. Therefore, the project is expected to be adequately served by existing resources of fire departments serving the project area, and would not require additional fire protection staff and/or equipment to maintain an acceptable level of service. No significant impacts would occur.

Police Protection Services. Implementation of the Master Plan would not result in an increase in residences or businesses, and would not otherwise result in a substantial increase in the demand for security or calls for police services. Minor increases for police services may be required at newly developed park space and project proponents would consult with law enforcement agencies regarding security issues. However, since no population increase is associated with the Master Plan, project sites are expected to be adequately served by the existing resources of police departments serving the project area, and would not require additional law enforcement staff and/or equipment to maintain an acceptable level of service. Impacts on police services are anticipated to be less than significant.

4.9.4.2 Schools

Construction Impacts

The Concept Design Study sites for the San Gabriel River Discovery Center and Lario Creek are located adjacent to the South El Monte High School. Construction activities (e.g., construction traffic and parking of construction vehicles on the street adjacent to the school) could have temporary impacts on access to the school and on student safety. This is a less than significant impact. Implementation of **Mitigation Measures CD-P4 and CD-P5** would further reduce the magnitude of this impact through proper planning of construction activities in coordination with school administrators and/or implementation of traffic control measures to avoid impacts on access to the school and student safety.

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include collection and treatment of stormwater runoff. Projects involving stormwater collection and treatment may include construction of storm drains, catch basins, or other structures within street rights-of-way as part of a stormwater management facility. During construction of these structures, temporary road or lane closures may be required, which may cause students to take less direct routes when commuting to school. Construction vehicles may also cause traffic delays within the project area and affect the on-time performance of school buses. Incorporation of **Mitigation Measure CD-P6** would reduce these potential impacts to less-than-significant levels through proper planning of construction activities and/or identification of alternative bus routes, as necessary.

Operational Impacts

The Concept Design Studies would not involve construction of housing or other structures that would result in an increase in population. Therefore, the proposed project would not have any impact on school capacity, and would not cause or contribute to overcrowding of schools in the project area. No impacts would occur regarding school population.

4.9.4.3 Utilities

Construction Impacts

Various utility lines are likely located within existing street rights-of-way surrounding the Master Plan project sites. The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center, and El Dorado Regional Park include collection and treatment of stormwater runoff. Projects involving stormwater collection and treatment may include construction of storm drains, catch basins, or other structures within street rights-of-way as part of a stormwater management facility. Utilities that may be affected by construction of these facilities include water, sewer, electricity, gas, oil, telephone, and cable. In addition, the Concept Design Study site for the San Gabriel Canyon Spreading Grounds contains an underground water pipeline near the perimeter of the spreading grounds. This pipeline is owned and maintained by City of Azusa for conveying water from its wells to its water treatment facility.

If affected utilities in the project area are not identified prior to construction, damage and temporary disruption to those lines and associated services could occur. Damage to major utility lines could result in significant impacts on the service area. Coordination and notification with utility service providers, as outlined in **Mitigation Measure CD-P7** would minimize interference with existing lines and interruption of service through proper planning of construction activities and use of construction methods that avoid damage and minimize interference with utilities as necessary. With implementation of these mitigation measures, construction impacts on utilities would be less than significant.

Operational Impacts

Sewer and Wastewater Treatment Systems. The Concept Design Studies and other projects developed in a manner consistent with the Master Plan would only require minimal, if any, connection to the sewer system at park buildings (e.g., San Gabriel River Discovery Center). Therefore, project operation would have a less-than-significant impact on existing sewer or wastewater treatment systems.

Water Supply Systems. All five Master Plan Concept Design Studies could include landscaping/habitat restoration as potential project elements. To the extent feasible, collected stormwater would be used to supply the water necessary to irrigate these new landscaped areas. Therefore, new or expanded water supply sources or entitlements would not be required.

The Master Plan Concept Design Studies for the Woodland Duck Farm, Lario Creek, San Gabriel River Discovery Center at Whittier Narrows, and El Dorado Regional Park include collection and treatment of stormwater runoff. Stormwater runoff collected for these Concept Design Studies would be infiltrated into the ground for groundwater recharge or reused for non-potable purposes at local facilities (e.g., landscape irrigation). Additionally, other future projects developed in a manner consistent with the Master Plan may include groundwater recharge of stormwater (e.g., at former gravel pits). Implementation of these types of projects would conserve water, which would be a beneficial impact on the existing water supply.

Electricity Consumption. The Concept Design Studies and other projects developed in a manner consistent with the Master Plan that involve collection and treatment of stormwater may require electricity for operation of pumps associated with the stormwater collection and treatment systems. In addition, minor pumps would be required for project components that include irrigation systems designed to use stormwater collected onsite.

Operation of these pumps would result in a minor increase in the demand for electricity. The project could also result in a minor increase in electricity demand from operation of park buildings (e.g., San Gabriel River Discovery Center) and lighting for recreational facilities that include night-time use (e.g., sports fields). However, the minor increases in demand from the project would not exceed the existing capacity of electricity providers or local delivery systems. Therefore, this impact is less than significant.

Operational Impact on Power Line Towers. Master Plan Concept Design Studies for the Woodland Duck Farm and El Dorado Regional Park and other projects developed in a manner

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consistent with the Master Plan may involve construction of stormwater infiltration facilities near power line towers. If stormwater infiltration saturates the soil surrounding the towers and affects the stability of the power line towers, it could result in a significant impact on the electricity infrastructure. **Mitigation Measure CD-P10** would reduce this impact to a less-than-significant level by requiring proper geotechnical investigations and incorporation of design changes if stormwater infiltration may affect the stability of the power line towers.

4.9.4.4 Solid Waste

Construction Impacts

Construction Waste Generation. Construction waste generated from implementation of the Concept Design Studies and other projects developed in a manner consistent with the Master Plan would primarily be soil, asphalt, concrete, and rock. For some project sites, disturbed soils could be reused onsite, limiting the volume of material needing disposal at a landfill. Projects that involve building demolition (e.g., potentially at San Gabriel River Discovery Center) or modification of paved areas could generate the greatest volumes of construction waste. Since implementation of future projects and associated construction waste generation would be phased over decades and since onsite reuse/redistribution of soil would reduce the net amount of construction waste, the impact on landfill capacity is less than significant. **Mitigation Measure CD-P8** will be implemented to further reduce impacts on solid waste by requiring construction contractors to minimize waste through recycling and reuse as feasible.

Modification of Solid Waste Collection Routes. During project construction within roadways, some roadway lane closures may be required. Any temporary modifications to existing solid waste collection routes associated with lane closures would be a less-than-significant impact. Implementation of **Mitigation Measure CD-P9** would further reduce project-related impacts on solid waste collection by providing advance notification so that solid waste collection routes may be modified as necessary.

Operational Impacts

Solid waste generated during operation of the project would be limited to sediments removed periodically from the stormwater collection facilities during maintenance. Sediments would be disposed of in compliance with applicable regulations at approved sites. In addition, the project could generate minor amounts of solid waste from operation of parks and park buildings (e.g., San Gabriel River Discovery Center). However, the minor increases in demand from the project would not exceed the capacity of the existing waste collection and disposal system. Therefore, this impact is less than significant.

4.9.4.5 Road Maintenance

Project construction will be phased over decades, and would occur at various locations throughout the Master Plan study area. Substantial damage to local roadways or other features within the public right-of-way is not anticipated but could occur depending on the weight and size of construction vehicles necessary and the condition of affected roadways at the time of

construction. Impacts are anticipated to be less than significant. However, if deemed necessary by the relevant municipality, post-construction road maintenance would be implemented.

4.9.5 Master Plan Program Mitigation Measures

4.9.5.1 Fire and Police

MP-P1 For future projects with substantial construction periods, the following measures will be implemented as applicable to minimize construction impacts on emergency response requirements of relevant police and fire departments. (See also **Section 4.11.6** regarding mitigation measures related to construction impacts on traffic and roadways).

- Prior to the start of construction, consult the fire station(s) serving the project area and review phasing, road/lane closure, and detour plans. The fire station(s) may then identify alternative fire and emergency medical response routes.
- Prior to the start of construction, consult the police station(s) serving the project area, as appropriate, of project-related lane and/or road closures and detour plans. The police station(s) may then identify alternative police emergency response routes.
- If determined to be necessary by the relevant police and/or fire service providers, implement one or more of the following applicable traffic control measures capable of reducing the temporary adverse effects to police and emergency vehicle travel during project construction:
 - Use flagmen to direct traffic
 - Post “No Parking” signs along the affected area
 - Install temporary signals or signs to direct traffic
 - Other equivalent traffic control measures

4.9.5.2 Schools

MP-P2 For future projects located adjacent to a school, evaluate the impact on school access (vehicles and pedestrians) and student safety from operation and/or parking of construction vehicles and equipment near the school property. The school district or the school administrator will be contacted to identify any policies that the school or the school district has established regarding construction on or near school properties (e.g., noise and traffic control standards) and to provide sufficient notice to forewarn school bus operators, children, and parents if existing pedestrian and vehicular routes to school would be affected. As necessary to protect the safety of children, parents and employees accessing the school, one or more of the following measures will be implemented in coordination with the school administrators:

- Develop temporary alternative pedestrian and vehicular routes to the school that avoid construction areas
- Install appropriate temporary traffic controls (signs, crossing guards, and/or signals) as needed to ensure pedestrian and vehicular safety

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- Minimize use of haul routes past the school when school is in session
- Prohibit parking or staging of construction or worker vehicles on streets adjacent to the school.

4.9.5.3 Utilities

MP-P3 For future projects that include construction of pipelines or other underground structures, identify the roadways or other rights-of-way that would be affected during construction. During facility design, contact the relevant utilities (e.g., water, sewage, electricity, natural gas, telephone, cable, and oil) to identify existing and proposed buried facilities in affected roadways. To the extent feasible, the alignment of new facilities will be designed to avoid the existing utilities. If avoidance is not feasible, one or more of the following measures will be implemented as applicable:

- If relocation is required, sequence construction activities to avoid or minimize interruptions in service.
- If utility service disruption is necessary, notify residents and businesses in the project area a minimum of 2 to 4 days prior to service disruption through local newspapers, direct mailings to affected parties, or public posting of notices.
- If project construction would occur near existing utilities, require the contractor to excavate around utilities, including hand excavation as necessary, to avoid damage and to minimize interference with safe operation and use. Hand tools must be used to expose the exact location of buried gas or electric utilities.

MP-P4 For future projects that include stormwater infiltration in the vicinity of power line towers, a geotechnical investigation will be conducted during facility design to assess the characteristics and stability of the soil around the power line towers. If results of the investigation indicate that stormwater infiltration may saturate the soil and affect the stability of the towers, one or more of the following changes will be incorporated into the site design as applicable:

- Site the proposed retention basins to avoid the towers, if possible, or construct a series of drywells so that water would be infiltrated deeper into the ground to avoid saturation of surface soils.
- Install a liner along the sideslope of the basin closest to the power line towers to prevent infiltration. (The liner would cover only a small portion of the infiltration basin.)

4.9.5.4 Solid Waste

MP-P5 State in the plans and specifications for the proposed project that the construction contractor is required to identify and implement programs for minimizing solid waste generated during construction. These programs could include recycling of asphalt and concrete paving materials, reuse and composting of green waste materials on site where appropriate (e.g., where there is limited potential for inadvertent spreading of invasive plants), and balance of graded soil on site to the maximum extent feasible.

MP-P6 Prior to construction, notify the relevant municipality of the construction schedule and planned lane or road closures. The municipality or agency may then modify the solid waste collection routes and access in the area.

4.9.6 Mitigation Measures for Concept Design Studies

Construction Impact on Fire and Police Protection Services

The following mitigation measure shall be implemented for **all five Concept Design Studies**:

- CD-P1** Prior to the start of construction, consult the fire station(s) serving the project area and review phasing, road/lane closure, and detour plans. The fire station(s) may then identify alternative fire and emergency medical response routes.
- CD-P2** Prior to the start of construction, consult the police station(s) serving the project area, as appropriate, of project-related lane and/or road closures and detour plans. The police station(s) may then identify alternative police emergency response routes.
- CD-P3** If determined to be necessary by the relevant police and/or fire service providers, implement one or more of the following applicable traffic control measures capable of reducing the temporary adverse effects to police and emergency vehicle travel during project construction:
- Use flagmen to direct traffic
 - Post “No Parking” signs along the affected area
 - Install temporary signals or signs to direct traffic
 - Other equivalent traffic control measures

Construction Impact on South El Monte High School

The following mitigation measures shall be implemented for **San Gabriel River Discovery Center and Lario Creek** Concept Design Studies to minimize impacts at South El Monte High School:

- CD-P4** Prior to project construction, contact school administrators to provide sufficient notice to forewarn school bus operators, children, and parents when existing pedestrian and vehicular routes to school will be affected. As necessary to protect the safety of children, parents and employees accessing the school, one or more of the following measures shall be implemented in coordination with the school administrators:
- Develop temporary alternative pedestrian and vehicular routes to the school that avoid construction areas
 - Install appropriate temporary traffic controls (signs, crossing guards, and/or signals) as needed to ensure pedestrian and vehicular safety

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- Minimize use of haul routes past the school when school is in session
- Prohibit parking or staging of construction or worker vehicles on streets adjacent to the school.

CD-P5 Secure all construction areas adjacent to the school, including trench areas, operating equipment areas and equipment staging and stockpile areas, through fencing or other barriers to prevent trespassing and reduce hazards to children and other pedestrians.

Construction Impact on School Commuting Routes

The following mitigation measures shall be implemented for **all five Concept Design Studies**:

CD-P6 Notify the applicable school district of the expected start and end dates for various portions of the project that may affect traffic in the area and any potential impact on existing school bus routes to facilitate identification of alternative routes and minimize unexpected delays in commuting to the school.

Construction Impact on Underground Utilities

The following mitigation measure shall be implemented for **all five Concept Design Studies**:

CD-P7 During design of each project component, consult the applicable utility service provider(s) to identify existing and proposed buried facilities in affected roadways and to determine which utilities require relocation and which can be avoided. If results of the consultation indicate that project construction could affect buried facilities, one or more of the following measures shall be implemented as applicable:

- If relocation is required, sequence construction activities to avoid or minimize interruptions in service.
- If utility service disruption is necessary, notify residents and businesses in the project area a minimum of 2 to 4 days prior to service disruption through local newspapers, direct mailings to affected parties, or public posting of notices.
- If project construction would occur near existing utilities, require the contractor to excavate around utilities, including hand excavation as necessary, to avoid damage and to minimize interference with safe operation and use. Hand tools must be used to expose the exact location of buried gas or electric utilities.

Construction Waste Disposal

The following mitigation measure shall be implemented for **all five Concept Design Studies**:

CD-P8 State in the plans and specifications for the proposed project that the construction contractor is required to identify and implement one or more of the following applicable programs for minimizing solid waste generated during construction:

- Recycling of asphalt and concrete paving materials
- Reuse and composting of green waste materials where there is limited potential for inadvertent spreading of invasive plants
- Balance graded soil on site to the maximum extent feasible

Construction Impact on Solid Waste Collection Routes

The following mitigation measure shall be implemented for **all five Concept Design Studies**:

CD-P9 Prior to construction, notify the relevant municipality of the construction schedule and planned lane or road closures. The municipality or agency may then modify the solid waste collection routes and access in the area.

The following mitigation measure shall be implemented for **Woodland Duck Farm and El Dorado Regional Park** Concept Design Studies:

CD-P10 During design of the facility, conduct a geotechnical investigation to assess the characteristics and stability of the soil around the power line towers. If results of the investigation indicate that stormwater infiltration may saturate the soil and affect the stability of the towers, one or more of the following changes shall be incorporated into the site design as applicable:

- Site the proposed retention basins to avoid the towers, if possible, or construct a series of drywells so that water would be infiltrated deeper into the ground to avoid saturation of surface soils.
- Install a liner along the sideslope of the basin closest to the power line towers to prevent infiltration. (The liner would cover only a small portion of the infiltration basin.)

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4.10 RECREATION

4.10.1 Existing Setting

4.10.1.1 Master Plan Study Area

Regional Parks

There are four recreation areas of regional significance in the Master Plan area: Angeles National Forest, Santa Fe Dam Recreation Area, Whittier Narrows Recreation Area, and El Dorado Regional Park (see Figure M2-05, Chapter 2.3 of the Master Plan).

Angeles National Forest. The Angeles National Forest is managed by the U.S. Forest Service, and covers over 650,000 acres of the San Gabriel Mountains, including the headwaters of the San Gabriel River. It provides a wide range of recreational activities including hiking, backpacking, camping, picnicking, fishing, off-roading, gold-panning, swimming and other water sports. Within the Master Plan area, fishing is permitted from a limited portion of the shoreline of San Gabriel Reservoir (no watercraft access permitted) and on the West Fork and its tributaries (limited to “catch and release” from the second bridge upstream of Highway 39 to Cogswell Reservoir). Recreational access to Morris Reservoir and Cogswell Reservoir are currently not permitted.

Santa Fe Dam Recreation Area (Irwindale). The Santa Fe Dam Recreation Area is a 836-acre park operated by County of Los Angeles Department of Parks and Recreation. It includes a 70-acre lake for sailing, swimming, and fishing, biking and hiking trails, picnic areas, and campsites. North of the lake is a 400-acre natural area. The San Gabriel River Bike Trail runs through the park from the San Gabriel Mountains to the coast.

Whittier Narrows Recreation Area (South El Monte). Whittier Narrows Recreation Area is operated by the County of Los Angeles Department of Parks and Recreation and the City of Pico Rivera. The 1,400-acre park provides fishing lakes, picnic areas, playgrounds, an equestrian facility, trails, a multi-purpose athletic complex, a military museum, soccer fields, volleyball courts, and archery, skeet, pistol and trap ranges. The park also includes the 320-acre Whittier Narrows Nature Center, which consists of over 200 acres of natural woodland including four lakes that provide habitat for migrating waterfowl. The Nature Center building is located on a 0.5-acre parcel, and has a museum with displays of animal and plant life, a small gift shop and a library. The Nature Center staff conduct recreational and educational programs such as hay rides, lectures, ranger tours, and school field trips (LACDPR, 2003).

El Dorado Regional Park (Long Beach). El Dorado Regional Park is operated by the City of Long Beach. The 500-acre park is bordered on the west by the San Gabriel River and on the east by the 605 Freeway. The park includes the El Dorado Nature Center, community gardens, an archery range, six lakes and several man-made streams, picnic areas, play equipment, a campground, trails, a glider flying area, and a model sailboat area. The El Dorado Golf Course, also operated by the City, is located adjacent to the park.

San Gabriel River Bike Trail

The San Gabriel River Bike Trail (Bike Trail) is a 39-mile trail that extends along most of the San Gabriel River throughout the Master Plan study area from Azusa to Long Beach (see Figure M2-03, Chapter 2.3 of the Master Plan). There are over 30 access points to the Bike Trail, typically off of street intersections, bridge crossings or local parks (see Master Plan Chapter 2, Map 2-3). For the most part, the Bike Trail is separated from the river channel by a fence. In addition to recreational uses (hiking and biking), the Bike Trail is used by LADPW and other agencies as an access road for maintenance of facilities located in the river channel. In most areas, the paved Bike Trail is accompanied by a parallel unpaved trail used by equestrians and hikers; this trail (approximately 24 miles) is part of the County Department of Parks and Recreation System of Riding and Hiking Trails and is indicated as Trail No. 8, “San Gabriel River Trail” on the Riding and Hiking Trails map (LADPR, 2001). A 6-mile extension of this trail along the river from Azusa to Mount Baldy has been proposed by the County Department of Parks and Recreation (proposed trail No. 33) (T. Lay, pers. comm., 2004; LADPR, 2001).

The Los Angeles County Metropolitan Transportation Authority (MTA) is currently preparing a county-wide Bicycle Transportation Strategic Plan (BTSP), which is scheduled for completion in October 2005 (MTA, 2005). The BTSP will include regional policy recommendations for bicycle facilities and access improvements to transit, identification and evaluation of bike-transit hubs, Bike-Transit Access Plans, and identification of gaps in the regional bike path network (MTA, 2005). The San Gabriel River Bike Trail is considered to be a major regional transportation spine for the BTSP (R.G. Orpin, pers. comm., May 13, 2005 (Appendix F)).

The Bike Trail is connected to several other trails in the region, including: the Van Tassel Trail (connects at the north end of the Bike Trail in Azusa), the San Jose Creek Bike Trail (connects near the River confluence with San Jose Creek), the Schabarum Trail (connects at Whittier Narrows and extends eastward through Puente Hills), the Rio Hondo Trail (connects at Whittier Narrows and extends southwest to the Los Angeles River Bike Trail), and the Coyote Creek Bike Trail (connects near the River confluence with Coyote Creek and extends along the creek).

Local Parks and Other Recreational Facilities

Over 30 community and neighborhood parks are located within the Master Plan study area (see Figure M2-05, Chapter 2.3 of the Master Plan). Most of these parks are operated by local municipalities, and are less than 15 acres in size. Other recreational facilities in the Master Plan study area include golf courses and equestrian centers. Based on a comparative analysis of park distribution and population density, communities in the Master Plan study area that appear to have insufficient number of parks include Baldwin Park, El Monte, Pico Rivera, West Whittier-Los Nietos, Bellflower, and Long Beach (see Chapter 2.3.3 of the Master Plan).

4.10.1.2 Concept Design Study Sites

San Gabriel Canyon Spreading Grounds

The Concept Design Study site for the San Gabriel Canyon Spreading Grounds is located within the City of Azusa. The site currently includes public facilities (spreading grounds operated by

LADPW; water tanks, wells, and pumps operated by City of Azusa) and is bordered by a portion of the San Gabriel River Bike Trail to the northwest.

In June 2003, the City of Azusa published the Final Draft Recreation, Parks, Green Space, and Family Services Master Plan (Azusa Recreation Master Plan), which identifies the City's priorities for parks and recreation programs and facilities. The Plan is intended to be an implementation tool of the City of Azusa General Plan Update (currently in the draft stage), providing a guide for the development and/or management of recreation and community services, programs, and facilities for the City (City of Azusa, 2003b). The Draft General Plan Update establishes a goal of providing a minimum of 3.5 acres of local parkland per 1,000 residents. A comparative analysis of population and existing parks acreage shows that the City would require approximately 100 acres of additional park land to achieve this goal (City of Azusa, 2003b).

Two of the future recreation opportunities identified in the Azusa Recreation Master Plan are related to the Concept Design Study for the San Gabriel Canyon Spreading Grounds. One is the "Net Development Site," which is a City-owned 1-acre parcel of vacant land adjacent to the Concept Design Study site. The Azusa Recreation Master Plan identifies this site as a potential bicycle path rest area and trailhead park. The other is the "Reservoir area," which refers to the open space area surrounding the spreading grounds. Potential improvements identified in the Azusa Recreation Master Plan for this area include passive recreation opportunities such as trails, benches, interpretive plantings, and picnicking.

Woodland Duck Farm

The Concept Design Study site for the Woodland Duck Farm site includes currently vacant land (former duck farm site containing remnant structures) and the Rio San Gabriel Equestrian Center, which is used primarily for boarding horses. About one-third of the Woodland Duck Farm site is located within the City of Industry. The rest is in unincorporated Los Angeles County (community of Basset).

Since land uses in the City of Industry are primarily industrial, and the city has a very small residential population, the City currently has no plans to increase recreational areas within the city proper. However, the City supports efforts by the surrounding communities to provide additional recreational areas (J. Ballas, pers. comm., 2003).

As identified in the Los Angeles County General Plan, the County's overall goal with respect to recreation is "to improve opportunities for a variety of outdoor recreational experiences" (Los Angeles County, 1993a). Recreation policies outlined in the County General Plan are:

- Provide low intensity outdoor recreation in areas of scenic and ecological value compatible with protection of these natural resources.
- Develop local parks in urban areas as part of urban revitalization projects, wherever possible.
- Encourage improved public transportation to recreation sites.

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- Develop a system of bikeways, scenic highways, and riding and hiking trails; link recreational facilities where possible.
- Encourage safe conversion of sanitary landfills for recreational use when no longer needed for waste disposal.
- Support the provision of appropriate areas for off-road recreational vehicles, so as to reduce their impact on environmentally sensitive areas.
- Actively participate in the planning for acquisition and development of the Santa Monica Mountains National Recreation Area. Strongly encourage Congress to maintain a funding level adequate to meet the objectives of the National Recreation Area legislation.
- Support improved public access to coastal recreation areas, including the Channel Islands, consistent with protecting marine and land environments.

San Gabriel River Discovery Center at Whittier Narrows

The Concept Design Study site for the San Gabriel River Discovery Center is located in the Whittier Narrows Nature Center, which is part of the Whittier Narrows Dam Recreation Area. The Nature Center includes recreational/educational facilities and public facilities (Lario Creek, a water conveyance feature operated by LADPW). The project site is within unincorporated Los Angeles County. Therefore, the Los Angeles County General Plan recreation policies discussed above for the Woodland Duck Farm site also apply to these two Concept Design Studies.

Lario Creek

The Concept Design Study site for Lario Creek is located adjacent to the San Gabriel River Discovery Center project site discussed above. While it flows through the Whittier Narrows Nature Center, Lario Creek is a water conveyance feature used by LADPW to divert water from the San Gabriel River to the Rio Hondo, and is not a recreational facility.

El Dorado Regional Park

The Concept Design Study site for the El Dorado Regional Park is located in the City of Long Beach. The City of Long Beach General Plan Open Space and Recreation Element (City of Long Beach, 2002) establishes the City's recreation open space standard as 8 acres per 1,000 residents. Based on year 2000 census data and the existing acreage of recreation open space, the ratio of recreation open space acreage to population is 5.6 acres per 1,000 residents. To meet the target of 8 acres per 1,000 residents, the City needs approximately 1,080 acres of additional recreation open space (City of Long Beach, 2002).

4.10.2 Significance Criteria

Project impacts related to recreation would be considered significant if the project:

- Increases the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated

4.10.3 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals), set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.10.4**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.10-1**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts. Adverse impacts are associated with temporary closures or access restrictions at existing recreational facilities during construction of new facilities (e.g., stormwater retention basins) or modification of the recreational facilities proposed as part of projects implemented to meet the Master Plan goals. Site-specific impacts on existing recreational facilities would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.10.5**). Site-specific mitigation measures, if necessary, will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area. Overall, adoption of the Master Plan would result in beneficial impacts on recreation by promoting projects that include new or improved recreational facilities (e.g., parks, biking/hiking/equestrian trails, and new or improved access points to existing facilities).

Table 4.10-1
Impacts on Recreation from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Recreation	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	<p>Beneficial: Adoption of this element would encourage preservation and enhancement of open space, a beneficial impact on passive recreational activities such as bird watching and wildlife appreciation.</p> <p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on recreation (e.g., establishment of habitat area design standards and identification of indicator species).</p> <p>Potentially Adverse: Habitat enhancement that involves active restoration (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) in or near existing recreational facilities could temporarily reduce public access to the facilities. Implementation of MP-R1 would reduce this impact by modification of construction schedules to minimize the</p>	<p>Potentially significant for construction impacts at existing recreational facilities; less than significant with mitigation</p> <p>Beneficial for operations-related effects (no adverse impacts)</p>

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Master Plan Elements	Impacts on Recreation	Impact Summary
	duration of closure and/or to avoid peak use periods.	
Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses	<p>Beneficial: Adoption of this element would encourage development of and enhancement of recreational facilities and improve access to those facilities.</p> <p>Potentially Adverse: Projects that involve modifications of existing recreational facilities could temporarily reduce public access to the facilities. Implementation of MP-R1 would reduce this impact by modification of construction schedules to minimize the duration of closure and/or to avoid peak use periods.</p>	<p>Potentially significant for construction impacts at existing recreational facilities; less than significant with mitigation</p> <p>Beneficial for operations-related effects (no adverse impacts)</p>
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	<p>Beneficial: Preservation of existing open space areas that provide for active or passive recreational uses would have beneficial impacts on recreation.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on recreation (e.g., use of drought tolerant and native plants, best management practices that support habitat and water quality goals).</p> <p>Potentially Adverse: Projects that involve modification of open space areas with existing recreational facilities could temporarily reduce public access to the facilities. Implementation of MP-R1 would reduce this impact by modification of construction schedules to minimize the duration of closure and/or to avoid peak use periods.</p>	<p>Potentially significant for construction impacts at existing recreational facilities; less than significant with mitigation</p> <p>Beneficial for operations-related effects (no adverse impacts)</p>
Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.	<p>Beneficial: Maintenance of flood protection would have beneficial impacts on recreation (e.g., protection of recreational facilities from flood damage).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on recreation (e.g., ensures liability is not increased, coordination of maintenance of flood protection system with habitat needs).</p> <p>Potentially Adverse: Construction of new flood control facilities (e.g., stormwater detention areas) in or near existing recreational facilities could temporarily reduce public access to the facilities. Implementation of MP-R1 would reduce this impact by modification of construction schedules to minimize the duration of closure and/or to avoid peak use periods.</p>	<p>Potentially significant for construction impacts at existing recreational facilities; less than significant with mitigation</p> <p>Beneficial for operations-related effects (no adverse impacts)</p>
Water Supply and Water Quality Element: Maintain existing water and other rights while enhancing water quality, water supply,	Beneficial: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands) could provide new opportunities for passive recreational activities (e.g.,	Potentially significant for construction impacts at

Master Plan Elements	Impacts on Recreation	Impact Summary
groundwater recharge, and water conservation through the integration with recreation, open space and habitat systems.	bird watching and wildlife appreciation). Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on recreation (e.g., maintains conservation of local water). Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) in or near existing recreational facilities could temporarily reduce public access to the facilities. Implementation of MP-R1 would reduce this impact by modification of construction schedules to minimize the duration of closure and/or to avoid peak use periods.	existing recreational facilities; less than significant with mitigation Beneficial for operations-related effects (no adverse impacts)
Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.	Beneficial: Adoption of this element would result in beneficial impacts on recreation by encouraging development of trails to and along the waterways. Neutral: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. This element also includes objectives and performance criteria that are neutral with respect to impacts on recreation (e.g., education of participating landowners about potential liability and protective measures).	Beneficial (no adverse impacts)

4.10.4 Impacts of Implementing the Concept Design Studies

4.10.4.1 Construction Impacts

Three of the Master Plan Concept Design Studies (San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park) include construction at existing recreational facilities. Construction of proposed facilities would have temporary effects on the availability of existing onsite recreational facilities.

- **San Gabriel River Discovery Center and Lario Creek.** Both of these Concept Design Studies will be located within the 320-acre Whittier Narrows Nature Area. During construction of the Discovery Center building, the existing Nature Center building will be closed to visitors. In addition, up to approximately 20 acres of the Nature Center could be unavailable during construction of the proposed wetlands, modification of Lario Creek, and/or habitat restoration. If the construction activities for these two Concept Design Studies occurred in sequence, the total construction time could be up to approximately 8 months. During detailed design, a more detailed estimate of construction duration and phasing will be developed. If necessary, arrangements would be made for existing educational/recreational programs at the Nature Center to continue at an alternate location during project construction.

- **El Dorado Regional Park.** Up to approximately 10 acres of undeveloped areas of the 500-acre park could be unavailable during construction. The estimated construction time for this Concept Design Study is 2 months (excluding the potential future removal of concrete from the river channel).

The areas affected during specific stages of construction would be smaller than indicated above due to phasing of construction activities. Disturbance from construction at these project sites may result in temporary increases in the use of other existing recreational facilities in the area. However, due to the small acreage of disturbance relative to the total size of the parks, any increase in usage at other nearby recreational facilities would be short-term and minimal, and is not expected to cause or accelerate a substantial physical deterioration of those facilities. Construction-related impacts on recreation would be less than significant.

4.10.4.2 Operational Impacts

Implementation of the Concept Design Study for the Woodland Duck Farm would contribute up to approximately 57 acres of additional park land and open space to the Master Plan study area. The other Concept Design Studies also involve new or improved recreational facilities (e.g., parks, biking/hiking/equestrian trails, and new or improved access points to existing facilities). These new facilities and enhancements will improve the quality of riding, hiking, and other recreational experiences in the Master Plan study area. Therefore, the long-term impact of the Concept Design Studies on recreational resources is beneficial (no adverse impact).

4.10.5 Master Plan Program Mitigation Measures

Future projects that include modifications of existing recreational facilities will require an evaluation of the impacts of proposed actions on other nearby recreational facilities as described in program Mitigation Measure MP-R1:

MP-R1 For projects that include modifications of existing recreational facilities, the timing, duration and areal extent of disturbance that would occur during construction of the proposed facilities will be identified during facility design. If temporary closures of existing recreational facilities would be necessary, the potential increase in use of other nearby recreational facilities will be evaluated. Factors to be considered in the evaluation include the duration of the closure, acreage and type of facility that would be unavailable due to the closure, and existing usage levels at the relevant recreational facilities.

If the impacts on nearby recreational facilities are determined to be potentially significant, one or more of the following measures will be implemented:

- Minimize construction period
- Modify construction phasing to limit disturbance of existing recreational facilities
- Avoid construction during peak use periods

4.10.6 Mitigation Measures for Concept Design Studies

Since implementation of the Concept Design Studies would not result in significant impacts on recreation, no mitigation measures are proposed.

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4.11 TRAFFIC AND TRANSPORTATION

The following sections summarize the evaluation of the potential traffic/transportation impacts of the San Gabriel River Corridor Master Plan. First, the analysis methodology and the existing conditions are presented. This is followed by a description of the significance criteria, a presentation of the anticipated project construction and operational impacts, and a set of recommended mitigation measures. Finally, the process for evaluating the traffic/transportation impacts of future projects developed in a manner consistent with the Master Plan is outlined.

The analysis addresses the general programmatic impacts of implementing the Master Plan as well as the site-specific impacts associated with four of the five Concept Design Studies (San Gabriel Canyon Spreading Grounds, San Gabriel River Discovery Center, Lario Creek, and El Dorado Regional Park). Since the project sites for San Gabriel River Discovery Center and Lario Creek are contiguous, these two Concept Design Studies would affect the same surrounding streets. Therefore, these two Concept Design Studies were evaluated together for the purpose of this traffic impact analysis. The traffic evaluation conducted for the Woodland Duck Farm site as part of this Program EIR is based on the access analysis conducted by Kaku Associates (2003; see **Appendix E**). The description of the proposed improvements for the Woodland Duck Farm provided in **Section 3.3.3.2** of this Program EIR represents an initial concept for the project. WCA is undertaking a master plan for the site which involves all stakeholders. This planning effort will examine all potential uses of the site, and will include a CEQA process.

4.11.1 Traffic Analysis Methodology

The general objective of the traffic analysis is to evaluate the impacts of the proposed Master Plan on the streets and roadways in the overall study area and in the vicinity of each site for the Concept Design Studies. The traffic analysis addresses the short-term impacts associated with construction of the proposed Master Plan facilities as well as the long-range operational impacts associated with the complementary uses proposed at the selected project sites (e.g., recreational/park development and activities).

Two primary categories of traffic studies have been prepared for the Master Plan. The first category is an assessment of the impacts of construction traffic on the roadways that provide access to each project site. During construction activities, a number of vehicles would be traveling to and from each project site, including trucks delivering materials to the site, trucks transporting excavated or other waste material away from the site, and construction workers' vehicles commuting to and from the site. The traffic volumes associated with these construction activities have been estimated for each Master Plan site and the traffic impacts on the surrounding roadway network are evaluated.

The second category for the traffic analysis is a quantification of the impacts associated with the permanent activities that would be developed at several of the Concept Design Study project sites, which includes possible park developments and minor operational activities at the Master Plan sites. The volumes of traffic that would be generated by these activities have been estimated for each site and the associated impacts on the surrounding roadway network are evaluated.

4.11.2 Existing Conditions

One of the initial tasks for the traffic analysis is to establish the existing baseline conditions on the regional access system (freeways) as well as the streets in the vicinity of each Concept Design Study site. The study area streets and highways have been inventoried with regard to physical characteristics such as number of lanes, on-street parking, sidewalks, and types of traffic control devices (stop signs and traffic signals). Traffic volume data were also collected for the roadways in the project area. This data collection effort included the freeways and the streets that would be used as primary access routes to and from each Concept Design Study project site. The existing conditions on the study area street network are described in the paragraphs below. A discussion of the freeway network is presented first, followed by a discussion of the local street system in the vicinity of each Concept Design Study site.

4.11.2.1 Regional Setting

The project area for the Master Plan is a north-south corridor in the southeastern region of Los Angeles County that lies generally along the alignment of the San Gabriel River Freeway (Interstate 605). The Master Plan area extends from the Angeles National Forest and the San Gabriel Wilderness Area on the north (in an unincorporated area of Los Angeles County north of the cities of Azusa and Glendora) to the mouth of the river at the Pacific Ocean on the south (at the border of Los Angeles and Orange Counties between the cities of Long Beach and Seal Beach).

The freeways that serve the project area include Interstate 605 and the freeways that intersect with I-605, which are the Foothill Freeway (Interstate 210), the San Bernardino Freeway (Interstate 10), the Pomona Freeway (State Route 60), the Santa Ana Freeway (Interstate 5), the Century Freeway (Interstate 105), the Artesia Freeway (State Route 91), and the San Diego Freeway (Interstate 405). A regional map showing the project area and the location of these freeways is shown on **Figure 3-1 (Section 3)**.

In addition to the freeways, the primary arterial route that provides access to the north end of the project area is San Gabriel Canyon Road (State Route 39), which is linked to the I-210 by San Gabriel Avenue and Azusa Avenue through the City of Azusa. The primary arterial route at the south end of the project area is Pacific Coast Highway (State Route 1).

The existing number of lanes on these freeways and arterial routes, the average daily traffic volumes, and the peak hour traffic volumes are shown in **Table 4.11-1**.

**Table 4.11-1
Existing Conditions on Regional Highway Network**

Roadway/Segment	Number of Lanes	Average Daily Traffic Volume	Peak Hour Traffic Volume
San Gabriel River Freeway (I-605)			
North of I-405 (Carson Street)	8	219,000	16,600
North of Route 91	12	307,000	22,300
North of I-5 (Telegraph Road)	8	249,000	16,400
North of Route 60	8	224,000	15,600
North of I-10 (Lower Azusa Road)	8	147,000	11,500
Foothill Freeway (I-210)			
West of I-605	10	245,000	19,000
East of I-605	8	223,000	16,700
San Bernardino Freeway (I-10)			
West of I-605	8	234,000	15,800
East of I-605	10	259,000	17,000
Pomona Freeway (SR 60)			
West of I-605	8	236,000	16,800
East of I-605	10	265,000	17,000
Santa Ana Freeway (I-5)			
South of I-605	8	199,000	13,300
North of I-605	8	239,000	15,000
Century Freeway (I-105)			
West of I-605	8	190,000	14,300
Artesia Freeway (SR 91)			
West of I-605	10	248,000	19,100
East of I-605	8	283,000	19,700
San Diego Freeway (I-405)			
Northwest of I-605	8	255,000	17,900
Southeast of I-605	12	318,000	23,000
San Gabriel Canyon Road (SR 39)			
At Morris Reservoir	2	2,000	530
Pacific Coast Highway (SR 1)			
At San Gabriel River	6	40,000	3,300

Source: Caltrans 2002 Traffic Volumes and 2004 Los Angeles County Congestion Management Program, MTA.
SR: State Route

4.11.2.2 Existing Setting for the Concept Design Study Sites

The existing conditions on the streets in the vicinity of each Concept Design Study site are described in the following sections.

San Gabriel Canyon Spreading Grounds

The streets that provide access to the San Gabriel Canyon Spreading Grounds site include San Gabriel Canyon Road, San Gabriel Avenue, Azusa Avenue, Sierra Madre Avenue, and Foothill Boulevard, all of which are located in the City of Azusa. San Gabriel Canyon Road abuts the northeast end of the spreading grounds site and provides direct access to the site. San Gabriel

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Avenue and Azusa Avenue provide a north-south link between the spreading grounds site and the Foothill Freeway (I-210). These parallel streets form a one-way couplet with Azusa Avenue carrying northbound traffic and San Gabriel Avenue carrying southbound traffic. Sierra Madre Avenue and Foothill Boulevard are east-west streets that intersect San Gabriel Avenue and Azusa Avenue south of the spreading grounds site. **Figure 4.11-1** illustrates the layout of these streets and shows the existing number of travel lanes on each street segment. Azusa Avenue has an interchange with the Foothill Freeway. Union Pacific and Metrolink railroad tracks run east-west through the study area between the spreading grounds site and the Foothill Freeway.

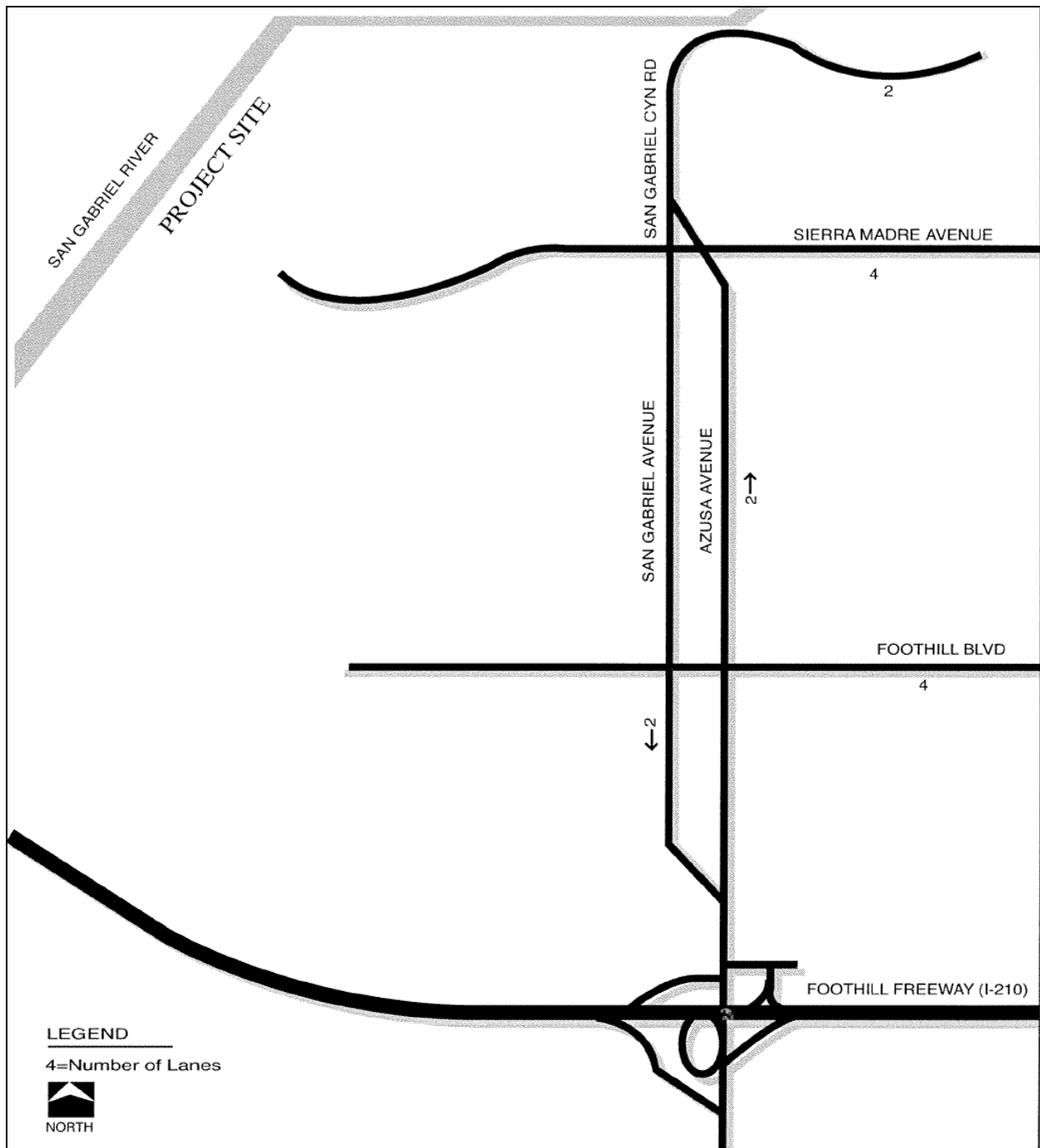
Table 4.11-2 shows the existing daily and peak hour traffic volumes and the number of travel lanes at representative locations on the streets in the San Gabriel Canyon Spreading Grounds vicinity. Also shown are the volume/capacity (V/C) ratios and levels of service (LOS) for the peak direction of travel on each street segment for the morning and afternoon peak hours. The V/C ratios are based on a capacity assumption of 800 vehicles per hour per lane (Los Angeles County, 2002).

Table 4.11-2
Existing Traffic Volumes & Levels of Service –
Streets in San Gabriel Canyon Spreading Grounds Vicinity

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
San Gabriel Canyon Rd At Project Site	2	2,000	120n/260s	340n/190s	0.33-A	0.43-A
San Gabriel Avenue At Foothill Blvd	2 SB	18,000	1210s	950s	0.76-C	0.59-A
Azusa Avenue At Foothill Blvd	2 NB	19,000	830n	1380n	0.52-A	0.86-D
Sierra Madre Avenue At Azusa Avenue	4	12,000	430e/580w	630e/490w	0.36-A	0.39-A
Foothill Boulevard At Azusa Avenue	4	25,000	740e/1030w	1180e/810w	0.64-B	0.74-C

Source: City of Azusa and Field Reconnaissance.

Figure 4.11-1
Local Street Network – San Gabriel Canyon Spreading Grounds Vicinity



Source: Garland Associates
 Not to scale

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El Dorado Regional Park

The streets that provide access to the El Dorado Regional Park site include Wardlow Road, Spring Street, Willow Street, and Studebaker Road, all of which are located in the City of Long Beach. Wardlow Road, Spring Street and Willow Street are east-west roadways that traverse El Dorado Regional Park and provide direct access to the site. Willow Street has a full interchange with the I-605 Freeway, while Spring Street has a half interchange that provides freeway access only to and from the north. Park access gates are currently provided on Spring Street and Wardlow Road. Studebaker Road is a north-south street located approximately one-half mile west of El Dorado Park. It has a half interchange at the I-405 Freeway that provides freeway access only to and from the north. **Figure 4.11-2** illustrates the layout of these streets and shows the existing number of travel lanes on each street segment.

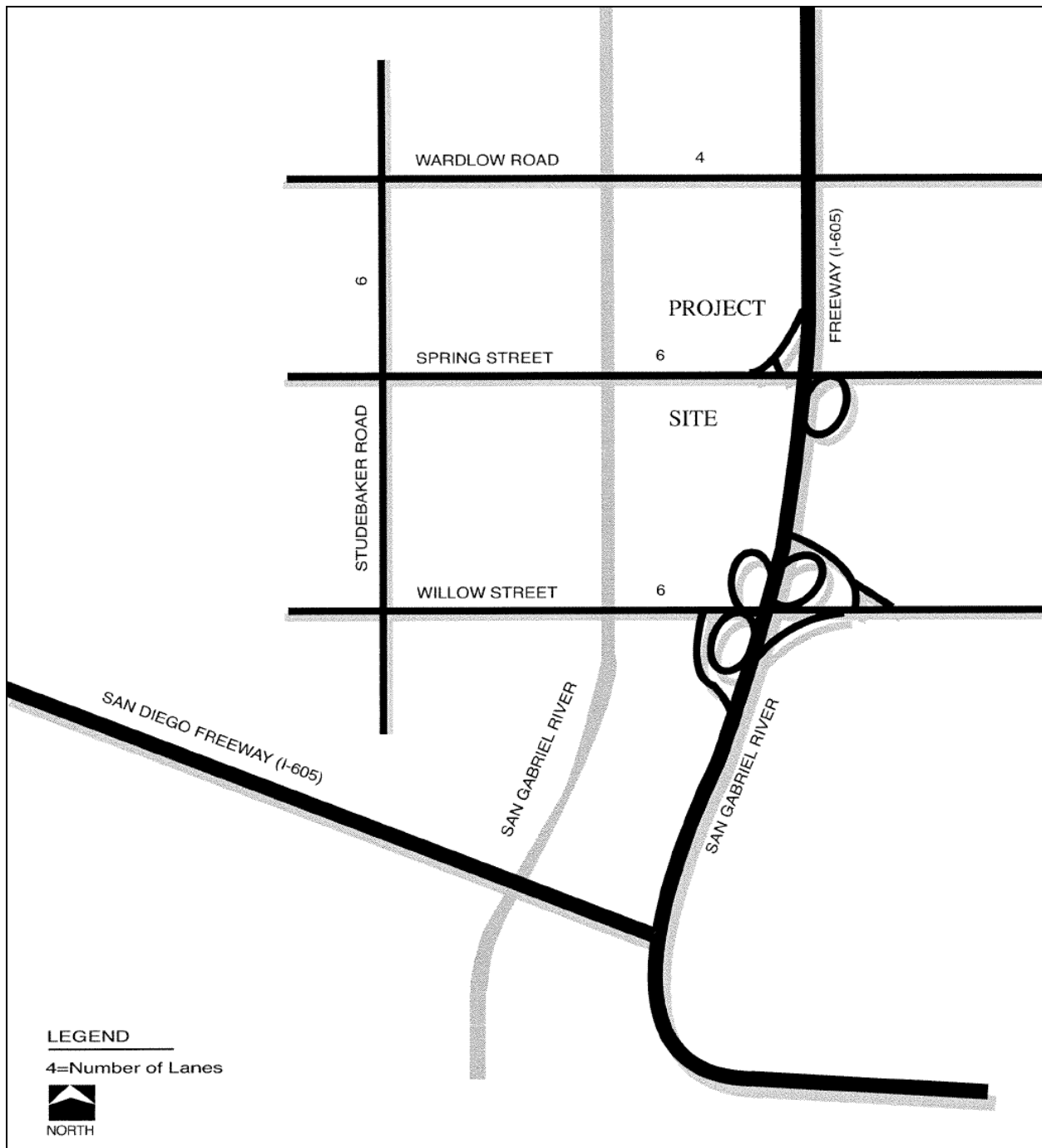
Table 4.11-3 shows the existing daily and peak hour traffic volumes and the number of travel lanes at representative locations on the streets in the vicinity of El Dorado Regional Park. Also shown are the V/C ratios and LOS for the peak direction of travel on each street segment for the morning and afternoon peak hours.

Table 4.11-3
Existing Traffic Volumes & Levels of Service –
Streets in El Dorado Regional Park Vicinity

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
Wardlow Road West of I-605 Frwy	4	21,000	530e/790w	830e/650w	0.49-A	0.52-A
Spring Street West of I-605 Frwy	6	31,000	1080e/1410w	1560e/1030w	0.59-A	0.65-B
Willow Street West of I-605 Frwy	6	34,000	1150e/1630w	1750e/1220w	0.68-B	0.73-C
Studebaker Road At Spring Street	6	28,000	960n/1090s	1370n/1020s	0.45-A	0.57-A

Source: City of Long Beach and Field Reconnaissance.

Figure 4.11-2
Local Street Network – El Dorado Regional Park Vicinity



Source: Garland Associates
Not to scale

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Lario Creek/San Gabriel River Discovery Center

The streets that provide access to the Lario Creek/San Gabriel River Discovery Center site include Durfee Avenue, Santa Anita Avenue, Peck Road, and Rosemead Boulevard, all of which are located partially in the City of South El Monte and partially in an unincorporated area of Los Angeles County. Durfee Avenue is an east-west street that abuts the north side of the project site and provides direct access to the site, which is within the Whittier Narrows Recreation Area. Santa Anita Avenue is a north-south street that provides a link between the project site and the Pomona Freeway (Route 60). Peck Road is a north-south street located at the northeast end of the project site and Rosemead Boulevard is a north-south street that abuts the west end of the project site. Peck Road, Santa Anita Avenue, and Rosemead Boulevard all have interchanges with the Pomona Freeway. **Figure 4.11-3** illustrates the layout of these streets and shows the existing number of travel lanes on each street segment.

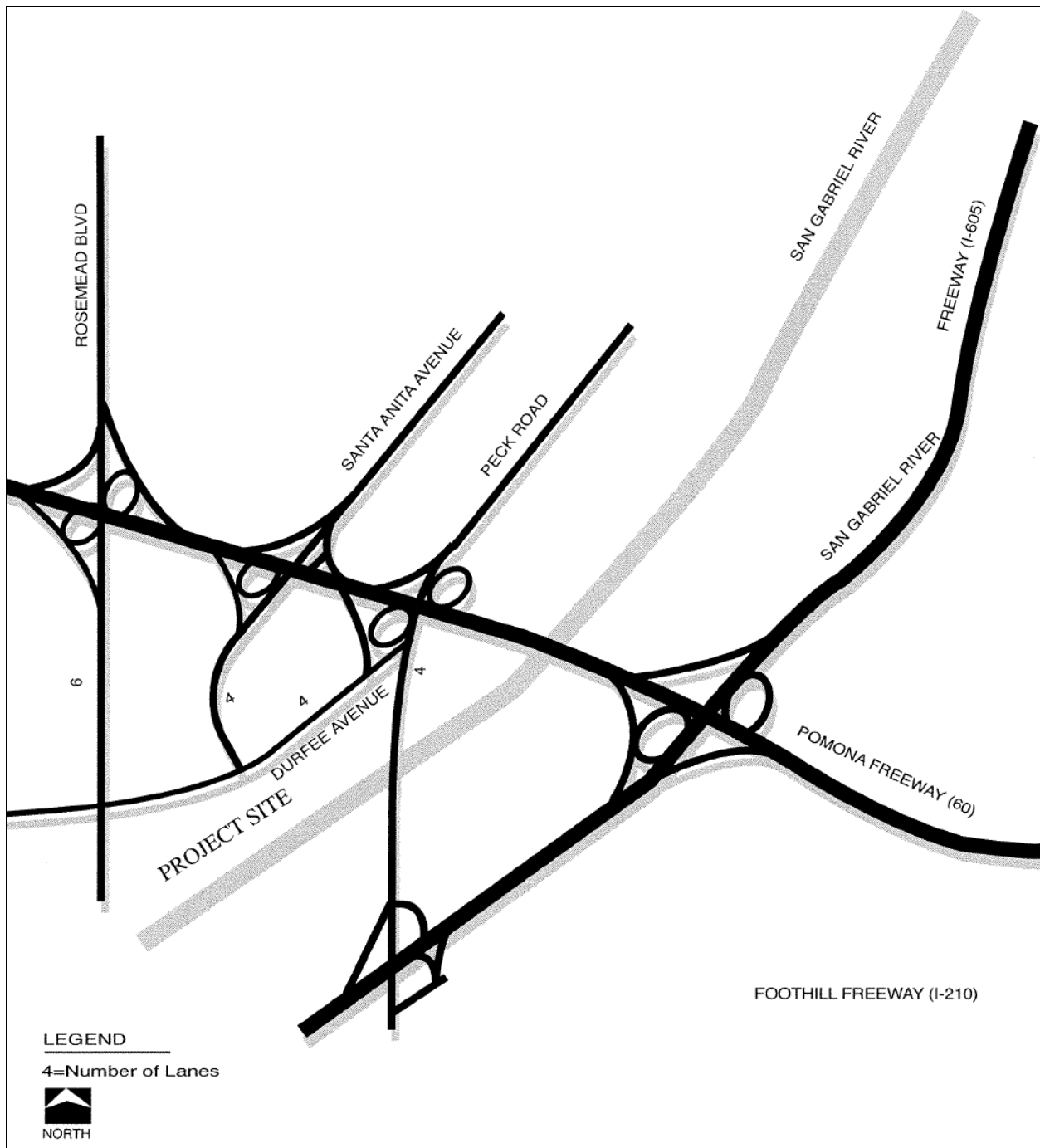
Table 4.11-4 shows the existing daily and peak hour traffic volumes and the number of travel lanes at representative locations on the streets in the vicinity of the Lario Creek/San Gabriel River Discovery Center site. Also shown are the V/C ratios and LOS for the peak direction of travel on each street segment for the morning and afternoon peak hours.

Table 4.11-4
Existing Traffic Volumes & Levels of Service –
Streets in Lario Creek/San Gabriel River Discovery Center Vicinity

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
Durfee Avenue At Santa Anita Ave	4	16,000	680e/530w	650e/740w	0.43-A	0.46-A
Santa Anita Avenue At Durfee Avenue	4	22,000	970n/780s	850n/1030s	0.61-B	0.64-B
Peck Road At Durfee Avenue	4	25,000	1050n/930s	1040n/1250s	0.66-B	0.78-C
Rosemead Boulevard At Durfee Avenue	6	32,000	1690n/1490s	1540n/1950s	0.71-C	0.81-D

Source: City of South El Monte, Los Angeles County, and Field Reconnaissance.

Figure 4.11-3
Local Street Network – Lario Creek/San Gabriel River Discovery Center Vicinity



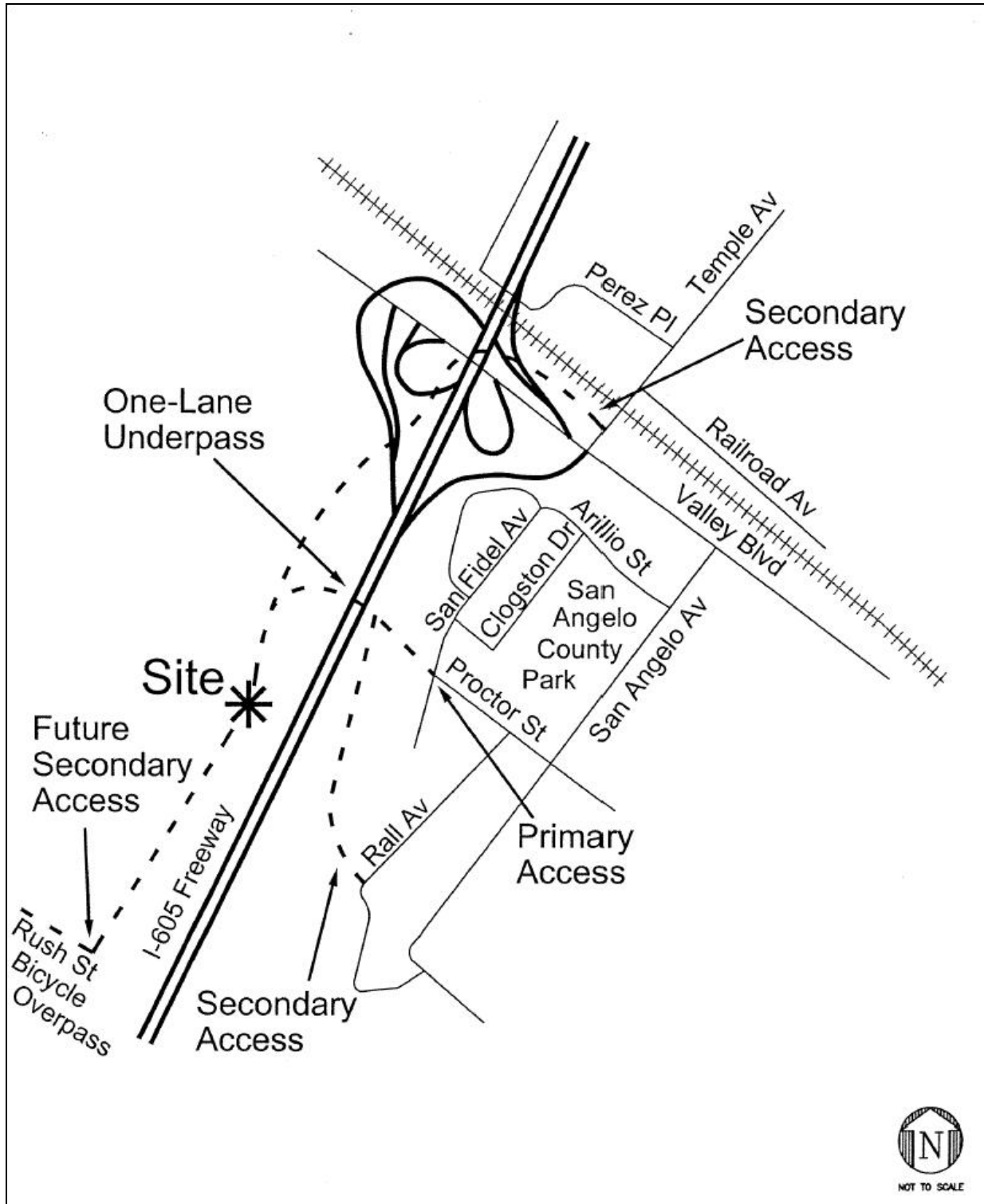
Source: Garland Associates
Not to scale

Woodland Duck Farm

The Woodland Duck Farm site is located along I-605 south of Valley Boulevard and is bordered by the River on the west. The site is divided into east and west portions by I-605. The existing access points to the site are: Proctor Street, Rall Avenue, and Temple Avenue (**Figure 4.11-4**). Proctor Street is a two-lane local street with residential units on the south side of the street and a Los Angeles County Park (San Angelo Park) on the north side. The results of the traffic counts conducted by Kaku Associates (2003) on April 10 and April 11, 2003 show that Proctor Street carries approximately 1,674 vehicles per day. During the morning and evening peak hours, Proctor Street has a total of 133 and 137 vehicles per hour, respectively. These traffic volumes are very low and are equivalent to LOS A. From the western end of Proctor Street, a driveway connects the east and west portions of the site via a one-lane underpass below I-605.

The access point off of Rall Avenue can be reached via Proctor Street or San Angelo Avenue. The Temple Avenue access point is located north of Valley Boulevard in the vicinity of the I-605/Valley Boulevard interchange. This access point is currently being used by Southern California Edison (trucks for maintenance of the power line located along I-605) and existing lease holders of the project site (trucks and autos used by a nursery and a tree trimming operation).

Figure 4.11-4
Local Street Network – Woodland Duck Farm Vicinity



Source: Kaku Associates, 2003
Not to scale

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4.11.3 Significance Criteria

The significance criteria used to evaluate the traffic impacts of the Master Plan are outlined below, first for construction impacts then for operational impacts.

4.11.3.1 Construction Thresholds

The impacts of the traffic that would be generated by construction activities within the Master Plan project areas would be considered significant if one or more of the following conditions were to occur.

With regard to the impacts of construction traffic, the project impacts would be considered significant if one or more of the following conditions were to occur.

- The project would result in an increase in the volume/capacity ratio on a street that is projected to operate at a volume/capacity ratio greater than 0.85 (Los Angeles County, 1993b).
- The project would result in an increase in the demand/capacity ratio of 0.02 or greater on a freeway segment that is projected to operate at LOS F and/or at a D/C ratio that is greater than 1.00 (Los Angeles County, 2002).

With regard to the impacts of pipeline construction, the project impacts would be considered significant if one or more of the following conditions were to occur:

- The installation of a pipeline or other project feature within, adjacent to, or across a roadway would reduce the number of travel lanes during the peak traffic periods, thereby resulting in a temporary disruption to traffic flow and increased traffic congestion.
- A major roadway would be closed to through traffic as a result of construction activities.
- Construction activities would restrict access to or from adjacent land uses with no suitable alternative access.
- Construction activities would restrict the movements of emergency vehicles (police vehicles, fire vehicles, and ambulance/paramedic units) and there would be no reasonable alternative access routes available.
- Construction activities would disrupt bus service and there would be no suitable alternative routes or bus stops.
- Construction activities would impede pedestrian movements in the construction area and there would be no suitable alternative pedestrian access routes.
- Construction activities would result in safety problems for vehicular traffic, pedestrians, or transit operations.

4.11.3.2 Operation Thresholds

The traffic impacts during operation of the Master Plan project areas would be considered significant if one or more of the following conditions were to occur.

- The project would result in an increase in the volume/capacity ratio on a street that is projected to operate at a volume/capacity ratio greater than 0.85 (Los Angeles County, 1993b).
- The project would result in an increase in the demand/capacity ratio of 0.02 or greater on a freeway segment that is projected to operate at LOS F and/or at a D/C ratio that is greater than 1.00 (Los Angeles County, 2002).
- The design and/or operation of the facilities would result in safety problems for vehicular traffic, pedestrians, or transit operations.
- The site would have inadequate parking facilities and the project-generated parking demand would result in a spillover of parked vehicles into a nearby neighborhood or adjacent land uses.

4.11.4 Impacts of Adopting the Master Plan Elements

The Master Plan includes six plan elements (also called Master Plan goals) set forth as the CEQA project objectives for the Master Plan. The plan elements are supported by objectives and performance criteria (see **Section 3.3.1**). The adoption of the Master Plan by the County of Los Angeles (and other municipalities in the study area) will promote implementation of projects that are consistent with these Master Plan goals. This section describes the overall Master Plan impacts based on a qualitative assessment of reasonably foreseeable effects of the adoption of the Master Plan. Since projects similar to the Concept Design Studies are proposed throughout the river corridor, the Concept Design Study impacts (**Section 4.11.5**) further illustrate the types of potential impacts expected from implementation of the overall Master Plan.

As described below in **Table 4.11-5**, adoption of the Master Plan could result in both beneficial and potentially adverse impacts. Adverse impacts are primarily associated with short-term increases in traffic volumes during construction of facilities proposed as part of future projects implemented to meet the Master Plan goals. Minor traffic impacts may also result from operation and maintenance of these facilities (e.g., vehicle trips from park visitors and maintenance crews). Traffic impacts that could result from adoption of the Master Plan cannot be specified with enough detail at this time to support site-specific mitigation measures. However, the Master Plan may have adverse traffic impacts at the program level, which will be discussed below. Site-specific traffic impacts would be addressed in second-tier CEQA documentation for future projects developed in a manner consistent with the Master Plan (see **Section 4.11.6**), and each project will be reviewed individually at such time that details are developed relative to the size, types of components, location, schedule, etc. This review process would involve the jurisdictions that are responsible for the affected streets and highways (i.e., Caltrans, Los Angeles County, and the incorporated cities). A detailed traffic impact study may then be required depending on the size and intensity of the project and the anticipated levels of traffic that would be generated. Since mitigation will reduce these impacts to less than

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significant levels (see **Table 4.11-5** and **Section 4.11.7**), the overall traffic impacts from adopting the Master Plan are considered less than significant. Site-specific mitigation measures will be identified and implemented by the specific lead agencies for each future project in the Master Plan study area.

Table 4.11-5
Impacts on Traffic and Transportation from Adopting the Master Plan Elements

Master Plan Elements	Impacts on Traffic and Transportation	Impact Summary
Habitat Element: Preserve and enhance habitat systems through public education, connectivity and balance with other uses	<p>Beneficial: Preservation of existing habitat areas would result in protection of currently undisturbed open space areas, which would have a beneficial impact by preventing traffic that would be generated from new residential, commercial, or industrial development.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on traffic (e.g., establishment of habitat area design standards and identification of indicator species).</p> <p>Potentially Adverse: Habitat enhancement that involves active restoration in undeveloped areas (e.g., extensive removal of existing vegetation and replanting with high-value, native vegetation) would result in construction traffic from transport of construction equipment and materials and worker commutes. Other activities associated with habitat enhancement (e.g., monitoring and maintenance activities or exotic species removal) could also result in minor traffic increases from worker vehicle trips. Implementation of MP-T1 would reduce these impacts to below a level of significance by requiring the evaluation of construction and operations-related traffic and implementation of traffic control measures such as installation of warning signs, lights, and barricades; restriction of lane closure hours; provision of alternative pedestrian and bicycle routes; and restriction of travel times during construction to avoid peak periods.</p>	<p>Potentially significant for construction-related traffic increases; less than significant with mitigation</p> <p>Less than significant for operations-related traffic increases</p>
Recreation Element: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses	<p>Beneficial: Preservation of existing undisturbed open space areas for passive recreational uses would result in protection of currently undisturbed open space areas, which would have a beneficial impact by preventing traffic that would be generated from new residential, commercial, or industrial development. New or improved bike trails would have a beneficial impact on transportation by promoting bicycling as an alternative to vehicles.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to traffic impacts (e.g., educating the public about catch and release fishing, establishing design standards for trails).</p> <p>Potentially Adverse: Construction of recreation related</p>	<p>Potentially significant for both construction- and operations-related traffic increases; less than significant with mitigation</p>

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Master Plan Elements	Impacts on Traffic and Transportation	Impact Summary
	facilities (e.g., interpretive centers, trails and trail amenities, signs, and kiosks) would temporarily increase traffic from transport of construction equipment and materials and worker commutes. Operation of recreational facilities would also result in generation of vehicle trips (new park visitors and workers for operation and maintenance of facilities). Implementation of MP-T1 would reduce these impacts to below a level of significance by requiring the evaluation of construction and operations-related traffic and implementation of traffic control measures such as installation of warning signs, lights, and barricades; restriction of lane closure hours; provision of alternative pedestrian and bicycle routes; and restriction of travel times during construction to avoid peak periods.	
Open Space Element: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.	<p>Beneficial: Preservation of existing open space areas (e.g., through land acquisition or conservation easements) could result in protection of currently undisturbed open space areas, which would have a beneficial impact by preventing traffic that would result from new residential, commercial, or industrial development.</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on traffic (e.g., use of drought tolerant and native plants).</p> <p>Potentially Adverse: Use of existing open space areas for recreational facilities and activities would result in traffic from construction of facilities (e.g., parking and sports fields) and vehicle trips from new recreational users. Implementation of MP-T1 would reduce these impacts to below a level of significance by requiring the evaluation of construction and operations-related traffic and implementation of traffic control measures such as installation of warning signs, lights, and barricades; restriction of lane closure hours; provision of alternative pedestrian and bicycle routes; and restriction of travel times during construction to avoid peak periods.</p>	Potentially significant for both construction- and operations-related traffic increases; less than significant with mitigation
Flood Protection Element: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space and habitat systems.	<p>Beneficial: Improving flood protection using natural processes (e.g., use of non-structural flood control) could have beneficial traffic impacts by minimizing the need for development of new structural flood control facilities (which would generate more traffic during construction).</p> <p>Neutral: This element also includes objectives and performance criteria that are neutral with respect to impacts on traffic (e.g., ensures liability is not increased, coordination of maintenance of flood protection system with habitat needs).</p> <p>Potentially Adverse: Construction of new flood control</p>	<p>Potentially significant for construction-related traffic increases; less than significant with mitigation</p> <p>Less than significant for operations-related traffic increases</p>

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Master Plan Elements	Impacts on Traffic and Transportation	Impact Summary
	<p>facilities (e.g., stormwater detention areas) would result in traffic generation from transport of construction equipment and worker commutes. Operation of flood control facilities would also result in minor traffic increases (vehicle trips by operations and maintenance crews). Implementation of MP-T1 would reduce these impacts to below a level of significance by requiring the evaluation of construction and operations-related traffic and implementation of traffic control measures such as installation of warning signs, lights, and barricades; restriction of lane closure hours; provision of alternative pedestrian and bicycle routes; and restriction of travel times during construction to avoid peak periods.</p>	
<p>Water Supply and Water Quality Element: 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.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on traffic (e.g., maintains conservation of local water).</p> <p>Potentially Adverse: Construction of new facilities for enhancing water quality and/or water supply (e.g., stormwater infiltration facilities, constructed wetlands, pipelines for reclaimed water distribution) would result in traffic generation from transport of construction equipment and materials and worker commutes. Operation of flood control facilities would also result in minor traffic increases (vehicle trips by operations and maintenance crews). Implementation of MP-T1 would reduce these impacts to below a level of significance by requiring the evaluation of construction and operations-related traffic and implementation of traffic control measures such as installation of warning signs, lights, and barricades; restriction of lane closure hours; provision of alternative pedestrian and bicycle routes; and restriction of travel times during construction to avoid peak periods.</p>	<p>Potentially significant for construction-related traffic increases; less than significant with mitigation</p> <p>Less than significant for operations-related traffic increases</p>
<p>Economic Development Element: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river.</p>	<p>Neutral: This element includes objectives and performance criteria that are neutral with respect to impacts on traffic (e.g., educates participating landowners about potential liability and protective measures).</p> <p>Potentially Adverse: This element promotes the pursuit of economic development opportunities which consider connectivity to the river corridor and establishment of development standards. Minor modifications of existing or new business development in the river corridor needed for consistency with Master Plan elements (e.g., trail connections and aesthetic features and compliance with design guidelines) are anticipated to have minimal or no impacts on traffic.</p>	<p>Less than significant</p>

4.11.5 Impacts of Implementing the Concept Design Studies

The following sections address the construction impacts and the operational impacts associated with the proposed Master Plan Concept Design Studies.

4.11.5.1 Construction Impacts

To address the construction impacts associated with the Concept Design Studies, each project site was evaluated by estimating the levels of traffic that would be generated by the construction activities, then quantifying the impacts of this additional traffic on the affected streets and highways. A comparative analysis of traffic volumes and levels of service with and without the proposed construction projects was conducted. Truck volumes as well as the volume of traffic generated by construction workers and miscellaneous trips were quantified. The trip generation characteristics were based on work force estimates and quantities of material that would be transported to and from the various sites on a typical day of construction activity.

While the target years of construction for the Concept Design Studies have not yet been determined, it is assumed that the construction activities would be completed within a 20-year time frame. Based on traffic data and projections in the Congestion Management Program for Los Angeles County (2002), the general traffic volume growth factors for the San Gabriel Valley and Gateway areas indicate that there would be approximately a 15 percent growth in traffic volumes over the next 20 years. The existing traffic volumes were, therefore, increased by a factor of 1.15 to estimate the future baseline traffic volumes. While the use of this overall growth factor may overestimate the baseline traffic volumes for the project components that would be constructed during a time frame that is less than 20 years, the standard rate has been used to establish a consistent baseline for the impact analysis, particularly since the actual years of construction are yet to be determined.

In addition to the impacts of construction traffic on the study area roadways, the construction activities may also result in physical impacts within the right-of-way of public streets, pedestrian facilities, and/or bikeways. Construction activities could result in traffic disruptions, lane blockages, and sidewalk blockages adjacent to the project site. The typical impacts associated with construction within public roadways include increased traffic congestion in the vicinity of the construction zone, temporary roadway closures at locations where sufficient right-of-way is not available to maintain travel lanes through the work zone, temporary elimination of on-street parking, blockages and disruption to pedestrian and bicycle circulation (sidewalks, crosswalks, bike lanes, etc.), increased safety risks, and disruption to public transit service (schedule delays and blocked bus stops).

The traffic impacts associated with the construction activities at each individual Concept Design Study project site are discussed in the following sections. The traffic generation estimates for each site are based on the anticipated number of truck trips for hauling equipment and materials and automobile/light-duty vehicle trips by the construction workers. While the number of construction-related trips would fluctuate from day to day and from week to week throughout the duration of a construction project, the traffic volumes used in the analysis represent the assumed levels of traffic that would occur during a relatively busy day of construction activity at each project site.

San Gabriel Canyon Spreading Grounds

Based on the conceptual project descriptions in the Master Plan, construction activities at the San Gabriel Canyon Spreading Grounds would involve only minor improvements to features such as fences and landscaping, and would also involve some habitat restoration activities. The volumes of site-generated traffic during construction would, therefore, be minimal (i.e., less than 20 vehicle trips on a typical day of activity and less than five trips during the peak hours). This increase in traffic volumes would have a less than significant impact on the streets in the project vicinity.

El Dorado Regional Park

Based on the conceptual project descriptions in the Master Plan, construction activities at the El Dorado Regional Park Concept Design Study project site would involve a maximum of 10 construction workers, up to 20 truck trips per day (round trips) for the delivery of materials and the hauling of excavated material away from the site, and other miscellaneous auto/light duty vehicle trips (inspectors, managers, lunch, etc.). The estimated volumes of traffic that would be generated on a typical day are shown in **Table 4.11-6**.

Table 4.11-6
Construction Traffic – El Dorado Regional Park

Construction Traffic Category	Daily Traffic	Peak Hour Traffic			
		AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
Trucks	40	5	5	5	5
Autos/Light-Duty Vehicles	40	10	2	2	10
TOTAL	80	15	7	7	15

The impacts of the construction-generated traffic on the study area roadways are summarized in **Table 4.11-7**. The numbers shown in parentheses after the name of each street represent an estimate of the percentage of the project traffic that would use the street as an access route. As shown, the construction project would not cause thresholds to be exceeded, and would therefore result in a less than significant impact on the affected roadways.

Table 4.11-7
Construction Traffic Impacts – Streets in the El Dorado Regional Park Vicinity

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
Wardlow Road (10%) Baseline Conditions With Project Traffic	4	24,000 24,010	610e/910w 611e/912w	950e/750w 952e/751w	0.57-A 0.57-A	0.59-A 0.59-A
Spring Street (80%) Baseline Conditions With Project Traffic	6	36,000 36,060	1240e/1620w 1246e/1632w	1790e/1180w 1802e/1186w	0.68-B 0.68-B	0.75-C 0.75-C
Willow Street (10%) Baseline Conditions With Project Traffic	6	39,000 39,010	1320e/1870w 1321e/1872w	2010e/1400w 2012e/1401w	0.78-C 0.78-C	0.84-D 0.84-D
Studebaker Road (25%) Baseline Conditions With Project Traffic	6	32,000 32,030	1100n/1250s 1102n/1254s	1580n/1170s 1584n/1172s	0.52-A 0.52-A	0.66-B 0.66-B

Lario Creek/San Gabriel River Discovery Center

Based on the conceptual project descriptions in the Master Plan, construction activities at the Lario Creek/San Gabriel River Discovery Center Concept Design Study project sites would involve a maximum of 20 construction workers, up to 40 truck trips per day (round trips) for the delivery of materials and the hauling of excavated material away from the site, and other miscellaneous auto/light duty vehicle trips (inspectors, managers, lunch, etc.). The estimated volumes of traffic that would be generated on a typical day are shown in **Table 4.11-8**.

Table 4.11-8
Construction Traffic – Lario Creek/San Gabriel River Discovery Center

Construction Traffic Category	Daily Traffic	Peak Hour Traffic			
		AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
Trucks	80	10	10	10	10
Autos/Light-Duty Vehicles	80	20	4	4	20
TOTAL	160	30	14	14	30

The impacts of the construction-generated traffic on the study area roadways are summarized in **Table 4.11-9**. As shown, the construction project would not exceed significance thresholds, and would therefore result in a less than significant impact on the affected roadways.

**Table 4.11-9
Construction Traffic Impacts – Streets in the Lario Creek/
San Gabriel River Discovery Center Vicinity**

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
Durfee Avenue (100%) Baseline Conditions With Project Traffic	4	18,000 18,160	780e/610w 810e/624w	750e/850w 764e/880w	0.49-A 0.51-A	0.53-A 0.55-A
Santa Anita Avenue (60%) Baseline Conditions With Project Traffic	4	25,000 25,100	1120n/900s 1128n/918s	980n/1180s 998n/1188s	0.70-C 0.71-C	0.74-C 0.74-C
Peck Road (20%) Baseline Conditions With Project Traffic	4	29,000 29,030	1210n/1070s 1216n/1073s	1200n/1440s 1203n/1446s	0.76-C 0.76-C	0.90-E 0.90-E
Rosemead Blvd (10%) Baseline Conditions With Project Traffic	6	37,000 37,020	1940n/1710s 1943n/1712s	1770n/2240s 1771n/2243s	0.81-D 0.81-D	0.93-E 0.93-E

4.11.5.2 Operational Impacts

For purposes of demonstration, site-specific impact analyses have been conducted for several Concept Design Studies that have been selected as components of the Master Plan. The traffic analyses for these projects are presented in the following sections. The issues addressed in these Concept Design Studies are typical of the projects that would be included in the Master Plan.

To address the operational impacts associated with the Concept Design Study projects, each site was evaluated by estimating the levels of traffic that would be generated by the anticipated operation and maintenance activities, then quantifying the impacts of this site-generated traffic on the affected streets and highways. A comparative analysis of traffic volumes and levels of service with and without each proposed project component was conducted. The primary factor used to estimate the site-generated traffic volumes was the size of each project site. A more definitive calculation of project generated traffic volumes cannot be made because specific development plans and uses have not yet been established. While each site would also generate minor traffic volumes associated with maintenance, cleaning, sediment removal, and inspection of the watershed management facilities, these traffic levels would be negligible (typically less than 10 vehicle trips per day on an active day, with no traffic on most days at each site).

While the target years for the completion of the proposed facilities have not yet been determined, it is assumed that all of the facilities would be completed within a 20-year time frame. Based on traffic data and projections in the Congestion Management Program for Los Angeles County (2002), the general traffic volume growth factors for the San Gabriel Valley and Gateway areas indicate that there would be approximately a 15 percent growth in traffic volumes over the next 20 years. The existing traffic volumes were, therefore, increased by a factor of 1.15 to estimate the future baseline traffic volumes. While the use of this overall growth factor may overestimate

the baseline traffic volumes for the project components that would be constructed during a time frame that is less than 20 years, the standard rate has been used to establish a consistent baseline for the impact analysis.

The traffic impacts associated with the operation of the facilities proposed at each individual Concept Design Study project site are discussed in the following sections. The traffic generation estimates for each project site are based on trip rates from the Institute of Transportation Engineers *Trip Generation* manual (6th Edition, 1997) for the County Park land use category. For a project site that would be converted to a new park (i.e., San Gabriel Canyon Spreading Grounds), the average rate from the manual was used for the traffic projections. For a project site where an existing park is already in place (i.e., El Dorado Park and Lario Creek/San Gabriel River Discovery Center), it is assumed that the additional activities associated with the concept design would generate traffic at 25 percent of the average rate for the County Park category in the manual.

San Gabriel Canyon Spreading Grounds

It is estimated that a park of approximately 45 acres in size could be developed at the San Gabriel Canyon Spreading Grounds site. The estimated volumes of traffic that would be generated on a typical day are shown in **Table 4.11-10**.

Table 4.11-10
Operation Traffic – San Gabriel Canyon Spreading Grounds

Proposed Use: Park	Daily Traffic	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Trip Generation Rates (vehicle trips per acre)	2.28	0.52	71%	29%	0.59	35%	65%
Generated Traffic (45 Acres)	100	24	17	7	27	9	18

The impacts of the site-generated traffic on the study area roadways are summarized in **Table 4.11-11**. As shown, the project would result in a less than significant traffic impact.

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Table 4.11-11
Operation Traffic Impacts –
Streets in the San Gabriel Canyon Spreading Grounds Vicinity

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
San Gabriel Cyn Rd (100%) Baseline Conditions With Project Traffic	2	2,300 2,400	140n/300s 157n/307s	390n/220s 399n/238s	0.38-A 0.38-A	0.49-A 0.50-A
San Gabriel Ave (90%) Baseline Conditions With Project Traffic	2 SB	21,000 21,050	1390s 1396s	1090s 1106s	0.87-D 0.87-D	0.68-B 0.69-B
Azusa Avenue (90%) Baseline Conditions With Project Traffic	2 NB	22,000 22,050	950n 965n	1590n 1598n	0.59-A 0.60-B	0.99-E 0.99-E
Sierra Madre Ave (10%) Baseline Conditions With Project Traffic	4	14,000 14,010	490e/670w 491e/672w	720e/560w 722e/561w	0.42-A 0.42-A	0.45-A 0.45-A
Foothill Blvd (10%) Baseline Conditions With Project Traffic	4	29,900 29,010	850e/1180w 851e/1182w	1360e/930w 1362e/931w	0.74-C 0.74-C	0.85-D 0.85-D

El Dorado Regional Park

It is estimated that approximately 520 acres of the existing El Dorado Regional Park would be included in the Concept Design Study project site. The estimated volumes of additional traffic that would be generated on a typical day are shown in **Table 4.11-12**.

Table 4.11-12
Operation Traffic – El Dorado Regional Park

Proposed Use: Park	Daily Traffic	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Trip Generation Rates (vehicle trips per acre)	0.57	0.13	71%	29%	0.15	35%	65%
Generated Traffic (520 Acres)	300	68	48	20	78	27	51

The impacts of the additional site-generated traffic on the study area roadways are summarized in **Table 4.11-13**. As shown, the project would result in a less than significant traffic impact.

Table 4.11-13
Operation Traffic Impacts – Streets in the El Dorado Regional Park Vicinity

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
Wardlow Road (10%) Baseline Conditions With Project Traffic	4	24,000 24,030	610e/910w 612e/915w	950e/750w 955e/753w	0.57-A 0.57-A	0.59-A 0.59-A
Spring Street (80%) Baseline Conditions With Project Traffic	6	36,000 36,240	1240e/1620w 1256e/1658w	1790e/1180w 1831e/1202w	0.68-B 0.69-B	0.75-C 0.76-C
Willow Street (10%) Baseline Conditions With Project Traffic	6	39,000 39,030	1320e/1870w 1322e/1875w	2010e/1400w 2015e/1403w	0.78-C 0.78-C	0.84-D 0.84-D
Studebaker Road (25%) Baseline Conditions With Project Traffic	6	32,000 32,080	1100n/1250s 1105n/1262s	1580n/1170s 1593n/1177s	0.52-A 0.53-A	0.66-B 0.66-B

Lario Creek/San Gabriel River Discovery Center

It is estimated that approximately 330 acres of the existing Whittier Narrows Recreation Area would be included in the Concept Design Studies for the Lario Creek/San Gabriel River Discovery Center project sites. The estimated volumes of additional traffic that would be generated on a typical day are shown in **Table 4.11-14**.

Table 4.11-14
Operation Traffic – Lario Creek/San Gabriel River Discovery Center

Proposed Use: Park	Daily Traffic	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Trip Generation Rates (vehicle trips per acre)	0.57	0.13	71%	29%	0.15	35%	65%
Generated Traffic (330 Acres)	190	43	31	12	50	17	33

The impacts of the additional site-generated traffic on the study area roadways are summarized in **Table 4.11-15**. As shown, the project would result in a less than significant traffic impact.

Table 4.11-15
**Operation Traffic Impacts – Streets in the Lario Creek/
San Gabriel River Discovery Center Vicinity**

Street/ Location	No. of Lanes	Daily Traffic Volume	Peak Hour Traffic		V/C Ratio & LOS	
			AM	PM	AM Peak	PM Peak
Durfee Avenue (75%) Baseline Conditions With Project Traffic	4	18,000 18,140	780e/610w 803e/619w	750e/850w 763e/875w	0.49-A 0.50-A	0.53-A 0.55-A
Santa Anita Avenue (60%) Baseline Conditions With Project Traffic	4	25,000 25,110	1120n/900s 1127n/919s	980n/1180s 1000n/1190s	0.70-C 0.70-C	0.74-C 0.74-C
Peck Road (20%) Baseline Conditions With Project Traffic	4	29,000 29,040	1210n/1070s 1216n/1072s	1200n/1440s 1203n/1447s	0.76-C 0.76-C	0.90-E 0.90-E
Rosemead Blvd (10%) Baseline Conditions With Project Traffic	6	37,000 37,020	1940n/1710s 1943n/1711s	1770n/2240s 1772n/2243s	0.81-D 0.81-D	0.93-E 0.93-E

Woodland Duck Farm

The description of the proposed improvements for the Woodland Duck Farm provided in **Section 3.3.3.2** of this Program EIR represents an initial concept for the project. WCA is undertaking a master plan for the site involving all stakeholders. For the purpose of the traffic access analysis conducted by Kaku Associates (2003), a development of a 100-space parking lot was assumed.

The primary access point to the project site would be Proctor Street, which is a two-lane local street located on the east side of the site. From the western end of Proctor Street, a driveway connects the east and west portions of the site via a one-lane underpass below I-605. One lane of a roadway has the capacity to accommodate a maximum of 1,800 vehicles per hour per direction of travel. In the case of the one-lane underpass, the eastbound and westbound traffic would share the same roadway; therefore, the underpass would have a capacity of 900 vehicles per hour (450 vehicles per direction). Even if 50 percent of the parking spaces turned over in an hour (i.e., 50 vehicles in and 50 vehicles out), the existing underpass would have enough capacity to accommodate the resulting traffic. However, because the existing underpass provides only one lane of travel, the access analysis recommends implementation of a system of assigning right-of-way in the underpass (e.g., installation of a traffic signal at both entrances to the underpass) (Kaku Associates, 2003).

As described in **Section 4.11.2.2**, Proctor Street is currently operating at LOS A, and during the morning and evening peak hours, has a total of 133 and 137 vehicles per hour, respectively. Assuming that 50 percent of the parking spaces turned over in an hour, this would be equivalent to 50 vehicles in and 50 vehicles out, or approximately one vehicle per minute in each direction. Kaku Associates (2003) has concluded that this increase in traffic level will not change the residential character of Proctor Street. Therefore, operation of the Woodland Duck Farm project would result in a less than significant impact on traffic.

Emergency access to the site would be provided by Proctor Street as well as the two secondary access points (Rall Avenue and Temple Avenue). The Los Angeles County Fire Department typically requires two points of emergency access to every development or public assembly place. The access off Temple Avenue to the west side of the site is currently accommodating trucks accessing the nursery and tree trimming operation as well as SCE maintenance trucks, and can be used for emergency access. Since the underpass connecting the east and west sides of the site cannot accommodate large emergency vehicles due to height constraints of the underpass, Temple Avenue is the only access point to the west side of the site that is capable of accommodating large trucks. However, the land area along the driveway off of Temple Avenue is wide enough that it would be unlikely for the entire driveway to be blocked. Thus, this access point would provide sufficient emergency vehicle access to the west part of the site. Currently, Los Angeles County is planning a bicycle/pedestrian bridge over the San Gabriel River at Rush Street. The bridge project is scheduled to be constructed and open by 2006. The access analysis report recommends that the Rush Street overpass be designed to accommodate emergency vehicles to provide a second emergency access route to the west side of the project site.

Both the Proctor Street and Rall Avenue access points can also be used for emergency access to the east side of the site. Driveways off of Proctor Street and Rall Avenue can accommodate emergency vehicles. Therefore, there would be two emergency access points to the west side of the site in compliance with the Fire Department standard.

As described above, the existing access points to the project site would provide sufficient emergency vehicle access to the site. Therefore, operation of the Woodland Duck Farm project would result in a less than significant impact on emergency vehicle access.

4.11.6 Master Plan Program Mitigation Measures

As identified above in **Section 4.11.5**, implementation of projects developed in a manner consistent with the Master Plan have the potential for adverse impacts on transportation/traffic from 1) construction vehicle trips, 2) construction within the right-of-way of public streets/bikeways, and/or 3) vehicle trips generated by operation of the proposed facilities (e.g., ongoing maintenance activities and/or visitors to recreational or educational facilities). For these types of projects, a site-specific evaluation of traffic impacts as described in program Mitigation Measure MP-T1 will be conducted:

MP-T1 A traffic impact study will be prepared for any Master Plan project that is projected to meet or exceed the site-generated traffic volume thresholds cited in the Los Angeles County Congestion Management Program “Guidelines for CMP Transportation Impact Analysis.” The guidelines indicate that a study is required if a project would add 50 or more vehicle trips during either the a.m. or p.m. weekday peak hours to a CMP arterial monitoring intersection or freeway on- or off-ramp. An analysis will be conducted if the project would add 150 or more trips in either direction to a mainline freeway during either the a.m. or p.m. weekday peak hours. A traffic study will also be prepared if the project meets the criteria for the municipality in which the project site is located (i.e., an incorporated city, County of Los Angeles, or County of Orange). If the project would result

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in significant traffic impacts, one or more of the following measures will be implemented as applicable.

- A construction traffic management plan shall be developed for each project site that will include but not be limited to such measures as designated haul routes for construction-related traffic (e.g., construction equipment, pickup and dump trucks, and other material delivery trucks), travel time restrictions for construction-related traffic to avoid weekday peak periods on selected roadways, designated site access locations, driveway turning restrictions, temporary traffic controls and/or flaggers, and designated parking/staging locations for workers and equipment.
- A construction area traffic control plan and/or detour plan shall be prepared for any location where construction activities would encroach into the right-of-way of a public roadway. The plan would include, but not be limited to such features as warning signs, lights, barricades, cones, lane closures, and restricted hours during which lane closures would not be allowed (e.g., 6:00 to 9:00 a.m. and 3:00 to 6:00 p.m., or as directed by the affected public agency).
- Provide advance notification to affected property owners, businesses, residents, etc. of possible driveway blockages or other access obstructions and implement alternate access and parking provisions where necessary.
- Provide alternative pedestrian and bicycle access/circulation routes if existing facilities such as sidewalks, crosswalks, and bike lanes would be obstructed to ensure safe pedestrian/bicycle travel.
- Coordinate with emergency service providers (police, fire, and ambulance/paramedic agencies) prior to construction to provide information regarding lane closures, construction schedules, driveway blockages, etc., if any, and develop a plan to maintain or accommodate essential emergency access routes (e.g., plating over excavations and use of detours).
- Coordinate with public transit agencies (e.g., MTA) to provide information regarding lane closures, bus stop disruptions, etc. so that MTA or relevant agency can designate alternate pick-up/drop-off locations, if appropriate, and provide for uninterrupted service.
- As necessary, obtain a transportation permit from Caltrans for transportation of heavy construction equipment and/or materials which requires the use of oversized-transport vehicles on State highways.
- Other relevant traffic control measures.

4.11.7 Mitigation Measures for Concept Design Studies

As identified above in **Section 4.11.5**, the traffic analyses for the Concept Design Study projects indicate that neither the construction activities nor the operational aspects at the project sites would result in a significant traffic impact.

The following mitigation measures shall be implemented for all five Concept Design Studies to further reduce the impacts associated with construction traffic and/or construction activities within the right-of-way of public streets and/or bikeways.

CD-T1 A construction traffic management plan shall be developed for each project site that shall include but not be limited to such measures as designated haul routes for construction-related traffic (e.g., construction equipment, pickup and dump trucks, and other material delivery trucks), travel time restrictions for construction-related traffic to avoid weekday peak periods on selected roadways, designated site access locations, driveway turning restrictions, temporary traffic controls and/or flaggers, and designated parking/staging locations for workers and equipment.

CD-T2 A construction area traffic control plan and/or detour plan shall be prepared for any location where construction activities would encroach into the right-of-way of a public roadway. The plan would include, but not be limited to such features as warning signs, lights, barricades, cones, lane closures, and restricted hours during which lane closures would not be allowed (e.g., 6:00 to 9:00 a.m. and 3:00 to 6:00 p.m., or as directed by the affected public agency).

CD-T3 Provide advance notification to affected property owners, businesses, residents, etc. of possible driveway blockages or other access obstructions and implement alternate access and parking provisions where necessary.

CD-T4 Provide alternative pedestrian and bicycle access/circulation routes if existing facilities such as sidewalks, crosswalks, and bike lanes would be obstructed to ensure safe pedestrian/bicycle travel.

CD-T5 Coordinate with emergency service providers (police, fire, and ambulance/paramedic agencies) prior to construction to provide information regarding lane closures, construction schedules, driveway blockages, etc., if any, and develop a plan to maintain or accommodate essential emergency access routes (e.g., plating over excavations and use of detours).

CD-T6 Coordinate with public transit agencies (e.g., MTA) to provide information regarding lane closures, bus stop disruptions, etc. so that MTA or relevant agency can designate alternate pick-up/drop-off locations, if appropriate, and provide for uninterrupted service.

CD-T7 As necessary, obtain a transportation permit from Caltrans for transportation of heavy construction equipment and/or materials which requires the use of oversized-transport vehicles on State highways.