Silver Lake Reservoir Complex Storage Replacement Project Draft Environmental Impact Report

Prepared for

City of Los Angeles
Department of Water and Power

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Acronyms

°F	degrees Fahrenheit
3-D	three dimensional
ADT	average daily traffic
AP	Alquist-Priolo
AQMP	Air Quality Management Plan
ATSAC	Automated Traffic Surveillance and Control
BACT	Best Available Control Technology
Basin Plan	Water Quality Control Plan for the Los Angeles River Basin
bgs	below ground surface
bhp	brake horsepower
BMP	Best Management Practice
BOD	biochemical oxygen demand
BOS	City of Los Angeles Bureau of Sanitation
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
Calveno Remels	California Vehicle Noise Reference Energy Mean Emission Levels
CCR	California Code of Regulations
CDMG	California Department of Mines and Geology
CEQA	California Environmental Quality Act
CHP	California Highway Patrol
City	City of Los Angeles
CMA	critical movement analysis
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Data Base
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide

CPOR	Coalition to Preserve Open Reservoirs
CRHR	California Register of Historical Resources
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationship
dB	decibel
dBA	decibel A-weighted
DHS	California Department of Health Services
DSOD	California Division of Safety of Dams
DTSC	California Department of Toxic Substances Control
EIR	environmental impact report
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
fps	feet per second
FTIP	Freeway Terminus Improvement Project
GBIS	Glendale-Burbank Interceptor Sewer
General Permit	NPDES Municipal Stormwater General Construction Permit
General Plan	City of Los Angeles General Plan
HAA	halo acetic acid
HCM	Historic-Cultural Monument
HCP	Hollywood Community Plan
HWSG	Headworks Spreading Grounds
I	Interstate
IS	Initial Study
kV	kilovolt
kW	kilowatt
LA River	Los Angeles River
LACMTA	Los Angeles County Metropolitan Transportation Authority

LACMVP	Natural History Museum of Los Angeles County Vertebrate Paleontology Department
LADBS	Los Angeles Department of Building Safety
LADOT	Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
L_{eq}	equivalent sound level
LOS	level of service
LT2ESWTR	Long-Term 2 Enhanced Surface Water Treatment Rule
Master Plan	Silver Lake and Ivanhoe Reservoirs Master Plan
MCL	maximum contaminant limit
MG	million gallon
mg/L	milligrams per liter
mgd	million gallons per day
mph	miles per hour
msl	mean sea level
MTA	Metropolitan Transportation Authority
MW	megawatt
MWD	Metropolitan Water District
N	nitrogen
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRHP	National Register of Historic Places
O_3	ozone
OHWM	ordinary high water mark
OPR	Office of Planning and Research
OS	open space

OTSOC	Onsite Tank Storage with Operational Changes
P	phosphorus
Pb	lead
PCE	tetrachloroethene; passenger car equivalent
PM_{10}	particulate matter less than 10 microns
PMMP	Property Maintenance and Management Plan
ppb	parts per billion
ppm	parts per million
PRC	Public Resources Code
RI	remedial investigation
ROG	reactive organic gas
RSC	River Supply Conduit
RWQCB	Regional Water Quality Control Board
S2DBR	Stage 2 Disinfection By-Products Rule
SAA	Streambed Alteration Agreement
SAL	State Action Level
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SEA	Significant Ecological Area
SLEPCP	Silver Lake-Echo Park Community Plan
SLRA	Silver Lake Residents Association
SLRC	Silver Lake Reservoir Complex
SNA	Significant Natural Area
SO_2	sulfur dioxide
SO_x	sulfur oxide
SPT	standard penetration test
SR	State Route
SRP	Storage Replacement Project
SVA	Society of Vertebrate Paleontology
SWP	State Water Project

SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCE	trichloroethylene
TDS	total dissolved solids
THM	trihalomethane
TMDL	total maximum daily load
TSDF	transfer, storage, and disposal facility
ULARA	Upper Los Angeles River Area
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UV	ultraviolet
V/C	volume to capacity
VOC	volatile organic compound
vph	vehicles per hour

Executive Summary

Introduction

The Los Angeles Department of Water and Power (LADWP) has proposed the Silver Lake Reservoir Complex (SLRC) Storage Replacement Project (SRP) (Proposed Project) to address water quality objectives and comply with drinking water regulations. The SLRC consists of the open Ivanhoe and Silver Lake Reservoirs that are used for storage of drinking water and are connected directly to the LADWP municipal water distribution system.

The treated water that enters the reservoirs is drinking water quality, but water in the reservoirs is exposed to contamination from birds, insects, animals, and humans. Sunlight and elevated temperatures, especially during the summer months, contribute to the growth of algae that degrades water quality and increases taste and odor problems. Chlorine is used to treat algae in Ivanhoe and Silver Lake Reservoirs, but it also reacts with naturally occurring organic materials that produce trihalomethanes (THMs) and halo acetic acids (HAAs). The higher the level of algae and other organic material in the reservoirs, the greater the potential of THMs and HAAs. Both compounds are Cancer Group B carcinogens (shown to cause cancer in laboratory animals).

To comply with increasingly more stringent state and federal regulations, including those that address THMs and HAAs, LADWP must make major changes to its open reservoir system. These regulations include the Stage 2 Disinfection By-Products Rule and the Long-Term 2 Enhanced Surface Water Treatment Rule.

LADWP has investigated several onsite and offsite alternatives to address water quality objectives and regulations and has determined that offsite covered storage is a practicable alternative that achieves the objectives identified for the Proposed Project.

Purpose of this Document

This Draft Environmental Impact Report (EIR) addresses the potential environmental impacts that are anticipated to result from construction and operation of the Proposed Project. The Draft EIR has been prepared in accordance with the California Environmental Quality Act (CEQA). LADWP is the lead agency for the CEQA process and has independently evaluated, directed, and supervised the preparation of this document.

Description of Proposed Project

The Proposed Project would remove Silver Lake and Ivanhoe Reservoirs from direct service to the LADWP water distribution system. Water storage currently provided by SLRC would be replaced by a 110-million-gallon (MG) buried storage reservoir at the former Headworks Spreading Grounds (HWSG site) (see Figure ES-1 for a general site location map).

The 127-acre SLRC is located in the community of Silver Lake and consists primarily of LADWP-owned Silver Lake and Ivanhoe Reservoirs and related facilities. Silver Lake is 5 miles northwest of downtown Los Angeles and just east of Griffith Park. The community of Silver Lake surrounding the SLRC is generally bordered by Interstate 5 to the north, the Glendale Freeway and Glendale Boulevard to the east, Sunset Boulevard to the south, and Griffith Park Boulevard to the west. The HWSG site consists of 43 acres of undeveloped land adjacent to the Los Angeles River (LA River) and between the City of Burbank and Griffith Park. It is bounded on the north by the LA River and State Highway 134, and on the east and south by Forest Lawn Drive. The property is owned by the City of Los Angeles Department of Recreation and Parks, and LADWP retains an easement over the entire property.

The new water storage reservoir at the HWSG site would be accompanied by a 4-megawatt (MW) hydroelectric power generating facility to capture energy from the water pressure flowing into the reservoir. A new bypass pipeline around the SLRC and a regulating station at the southern end of the reservoir complex would convey water to existing service areas. Silver Lake and Ivanhoe Reservoirs would be removed from the LADWP water distribution system and maintained as nonoperating water system facilities.

Project Alternatives

This Draft EIR addresses two alternatives to the Proposed Project: the No Project Alternative and the Onsite Tank Storage with Operational Changes (OTSOC) Alternative.

The No Project Alternative would result in the continued operation of Silver Lake and Ivanhoe Reservoirs without significant operational changes and no action being taken by LADWP toward meeting water quality standards. The storage reservoir and hydroelectric plant would not be constructed at the HWSG site, and the bypass pipeline and regulating station would not be constructed at the SLRC. Silver Lake and Ivanhoe Reservoirs would not be removed from the water distribution system.

The OTSOC Alternative would involve construction of four underground storage tanks at the SLRC in the meadow area and part of Silver Lake Reservoir to provide 100 MG of regulatory water storage. Similar to the Proposed Project, Ivanhoe and Silver Lake Reservoirs would be removed from service to the water distribution system and maintained as nonoperating water system facilities.

Major Findings and Conclusions

All identified potential significant impacts resulting from operation of the Proposed Project can be mitigated to a less-than-significant level. However, there would be significant short-term impacts during the approximately 6.5-year construction period, some of which may not be completely mitigated. These potential impacts and proposed mitigation measures are summarized below. Detailed information regarding these potential impacts is available in Chapters 3 through 14 of this Draft EIR.

Source: The Thomas Guide: Los Angeles County 2003

Figure ES-1
SLRC SRP Draft EIR
Project Location Map

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Land Use

Both the HWSG site and the SLRC are zoned OS (Open Space). Facilities at the SLRC are allowed outright, while facilities at the HWSG site would require a Conditional Use Permit. No significant impacts to land use are anticipated from construction or operation of the Proposed Project.

Earth Resources

Construction activities at the HWSG site and the SLRC would require grading and excavation that would potentially result in soil erosion and runoff sedimentation. Facilities at both sites would be subject to geologic hazards. Potential impacts would be mitigated by utilizing approved engineering and construction techniques. Potential seismic impacts would be reduced to less-than-significant levels by designing structures according to seismic requirements and as determined by geotechnical and seismic hazard analyses.

Water Resources

Construction activities at the HWSG site and the SLRC would potentially impact surface water quality in the event of precipitation runoff and the presence of excavated and/or unprotected soil. Potential surface water quality impacts would be mitigated to a less-than-significant level by obtaining a National Pollutant Discharge Elimination System Municipal Stormwater General Construction Permit, developing and implementing a Storm Water Pollution Prevention Plan (SWPPP), and employing interim grading and other measures specified by the Los Angeles City erosion control ordinances.

Biological Resources

Construction activities for the Proposed Project could potentially result in the loss of riparian habitat along the south portion of the HWSG site; the loss of waters of the U.S. and California Department of Fish and Game (CDFG) jurisdictional streambed and bank at the HWSG site; and impacts to the following at the HWSG site and/or the SLRC: special-status plants, nesting birds of special concern, and special-status bats. Impacts to biological resources would be mitigated to less-than-significant levels by preconstruction surveys with subsequent detailed mitigation for special-status plants and wildlife and by replacement of waters of the U.S. and riparian areas.

Cultural Resources

The potential for discovery of prehistoric or historical archaeological sites at the HWSG site and the SLRC is considered to be low. However, in the event such sites are discovered, impacts would be mitigated to below the level of significance through recovery or treatment of archaeological resources. Construction activities at the SLRC would disturb vegetation that contributes to the historic character of the reservoir complex, which would constitute a significant impact. Impacts to vegetation would be reduced to a less-than-significant level by employing the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Cultural Landscapes* for landscape restoration following construction.

Paleontologic Resources

Earth-disturbing activities during construction at the HWSG site and the SLRC could potentially reveal paleontologic resources. Impacts to paleontologic resources would be mitigated to less-than-significant levels through construction monitoring and subsequent recovery and identification.

Traffic and Transportation

Construction traffic at the HWSG site may result in a significant impact at the intersection of Forest Lawn Drive and Zoo Drive that cannot be completely mitigated. Construction traffic at the SLRC may result in a significant impact at the intersections of Silver Lake Boulevard and Van Pelt Place and Riverside Drive and Fletcher Drive. Mitigation provided will ensure that the traffic impact at Riverside Drive and Fletcher Drive is less than significant, while the traffic impact at Silver Lake Boulevard and Van Pelt Place may remain significant after mitigation. In-street construction would be required for installation of a distribution line at the HWSG site and construction of the bypass pipeline at the SLRC; potentially adverse in-street impacts would be mitigated by preparation and implementation of site-specific transportation management plans.

Noise

Construction activities at both the HWSG site and the SLRC may result in a significant noise impact as a result of construction equipment that cannot be completely mitigated. Impacts associated with construction noise would be reduced by using properly maintained construction equipment with high-grade mufflers, shielding sensitive receptors from fixed-location machinery, minimizing the use of extreme noise producers, restricting work hours, and adhering to the City of Los Angeles Noise Ordinances. In addition, at the SLRC, construction areas will be shielded with noise control barriers. Also, a noise monitoring and mitigation program will be implemented at both project sites to continually assess construction noise impacts and implement additional mitigation when and where required. Unmitigated operation of the regulating station at the SLRC would likely result in a significant noise impact. However, LADWP will include technologically advanced sound-reduction measures in its detailed design of the regulation station equipment and/or enclosure materials to ensure that noise levels during operation of the regulating station are less than significant at the nearest residence.

Air Quality

Construction activities at the HWSG site and the SLRC would occur over approximately 6.5 years and include nine construction phases at the two sites. To minimize construction emissions, the Proposed Project would implement standard construction practices that would help minimize fugitive dust. Even with these practices, air emissions during construction are anticipated to exceed significance thresholds for reactive organic gas (ROG), nitrogen oxide (NO_x) and particulate matter with a diameter of less than 10 micrometers (PM_{10}) at the HWSG site and NO_x and PM_{10} at the SLRC. When construction emissions for both project sites are combined, construction emissions are anticipated to exceed significance thresholds for ROG, NO_x, and PM_{10}. Mitigation to reduce construction-related air quality impacts during construction would be implemented, but it is likely that impacts to air quality during construction would remain significant even after mitigation.

Public Services and Utilities

The Proposed Project would be constructed and operated within the existing capacity of fire, police and emergency medical services, community facilities, and utilities. The Proposed Project would generate approximately 4 MW of energy that would be conveyed through existing power lines. No significant impacts to public services and utilities are anticipated from construction or operation of the Proposed Project.

Hazardous Materials

Construction activities at the HWSG site and the SLRC would require the use of hazardous materials including gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. Acutely hazardous materials would not be used at either site. Quantities of hazardous materials that would be onsite would be small; and storage and use onsite would comply with applicable laws, ordinances, and regulations. No significant adverse impacts are anticipated from their use.

Visual Resources

The HWSG site would have a highly disrupted appearance during much of the construction period. Because the level of visual quality at the HWSG site is currently low, this disrupted appearance would not represent a significant impact to visual resources. Operation of the facilities at the HWSG site would generally result in an improvement of the appearance of the HWSG site. Construction activities at the SLRC would result in a temporary decrease in the overall level of visual quality for the disturbed areas. Operation of the proposed facilities at the SLRC is not anticipated to result in adverse impacts to visual resources.

Summary of Project Impacts and Mitigation

Table ES-1 briefly describes the potential significant impacts by resource area, identifies the mitigation measures to be implemented to reduce the impact below the level of significance, and shows the level of significance after mitigation. If a potential impact can be mitigated to a less-than-significant level, this is identified in the Level of Significance after Mitigation column with an "LS." If it is possible that a potential impact may remain significant after mitigation, this is identified with an "S" in the Level of Significance after Mitigation column.

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
Earth Resources (Chapter 4)			
Grading and excavation activities required for construction may result in soil erosion and sedimentation runoff that would have potentially significant impacts. These potential impacts would be mitigated by Mitigation Measure ER-1.	Excavation during construction activities and grading and soil storage at the construction staging area on the east side of Silver Lake Reservoir may potentially result in significant adverse impacts to soil resources, including soil erosion and runoff sedimentation. These potential impacts would be mitigated by Mitigation Measure ER-1.	**Mitigation Measure ER-1: Soil Resources** One or more of the following measures to control soil erosion and sedimentation will be implemented as feasible: • The area disturbed by clearing, grading, earth moving, or excavation operations will be as small as feasible to prevent excessive dust. • Pregrading/excavation activities will include watering the area to be graded or excavated before commencement of grading or excavation. Application of water will penetrate sufficiently to minimize fugitive dust during grading activities. • Trucks will be required to have their loads covered going offsite. • Graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved onsite roadways, will be treated to prevent fugitive dust. Treatment will include, but not be limited to, periodic watering and/or roll compaction as appropriate. Watering will be done at least twice daily. • Inactive graded and/or excavated areas will be monitored at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction will be periodically implemented over portions of the construction site that are inactive for over 4 days.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		• During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), clearing, grading, earth-moving, and excavation operations will be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard to offsite properties. • Adjacent streets and roads will be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads. • A Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented that will include Best Management Practices (BMPs) to minimize conveyance of sediment into waterways. The SWPPP may include some or all of the following or any other measure necessary: - V-ditches will be constructed above all cut or fill slopes to divert water from newly exposed slope faces. - Straw bale dikes or filter fabric barriers will be located downslope of disturbed areas to act as sediment traps. - Topsoil will be selectively removed, stockpiled, and replaced as a surface medium for revegetation. - Exposed slope faces will be revegetated as soon after construction as possible. - Temporary sedimentation basins will be constructed as necessary.	

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	SLRC		
Existing alluvial materials underlying the reservoir site may prove to be unsuitable foundation materials. Potential impacts would be mitigated by Mitigation Measure ER-2.	Numerous small faults and fractures may be encountered during excavation and tunneling activities at the SLRC. Potential impacts related to these faults would be mitigated by Mitigation Measure ER-2.	**Mitigation Measure ER-2: Geologic Hazards** The following measures will be implemented, as feasible, to mitigate potentially significant impacts resulting from geologic hazards to less-than-significant levels: • Facilities will be designed according to seismic standards as determined by geotechnical and seismic hazard analyses. The analyses will be based on site-specific subsurface investigations and ground motion design recommendations. • Appropriate geotechnical soil testing will be performed during the design phase so that the proposed grading and facilities can be properly designed to meet applicable structural and seismic requirements. • The foundation for the storage reservoir will be founded in competent materials at the site. The results of the site-specific design-level geotechnical and seismic hazard analysis noted above will assist in determining which foundation design and construction methods are implemented at the HWSG site.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	SLRC		
		• LADWP will file a geotechnical report with the California Division of Safety of Dams(DSOD) as part of the application process for construction of a new reservoir. During construction, both LADWP soils engineer and inspectors from DSOD will monitor progress. Field checking of foundation and geologic conditions during construction will also ensure that designs and grading accommodate any unusual conditions that may not have been previously discovered. • If adverse slopes are encountered, slope stability will be analyzed; and slope stabilization measures will be established during design to minimize the potential for landslide damage. • Cuts and fill slopes will not exceed a 2:1 (horizontal:vertical) ratio except for cuts directly into bedrock where steeper slopes may be safely obtained. • Analyses of slope stability will be made in areas where cuts into marginal or adversely dipping slopes are required for construction of proposed facilities to minimize the potential for landslide damage.	

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

<table>
<tr><th colspan="2">Potentially Significant Impact</th><th rowspan="2">Mitigation</th><th rowspan="2">Level of Significance after Mitigation</th></tr>
<tr><th>HWSG Site</th><th>SLRC</th></tr>
<tr><td colspan="4">Water Resources (Chapter 5)</td></tr>
<tr><td colspan="2">Short-term impacts to surface water quality could occur during construction at the HWSG site and the SLRC in the event of drainage from precipitation that would potentially result in substantial erosion. Changes in topography and the presence of excavated and/or unprotected soil could all affect stormwater runoff. These potential impacts would be mitigated by Mitigation Measure WR-1.</td><td>Mitigation Measure WR-1: Surface Water Quality
• The project would obtain an NPDES Municipal Stormwater General Construction Permit (General Permit), and comply with all permit requirements.
• An SWPPP will be developed and implemented that will include BMPs to minimize conveyance of sediment into waterways. The SWPPP may include some or all of the following or any other measure necessary:
- V-ditches will be constructed above all cut or fill slopes to divert water from newly exposed slope faces.
- Straw bale dikes or filter fabric barriers will be located downslope of disturbed areas to act as sediment traps.
- Topsoil will be selectively removed, stockpiled, and replaced as a surface medium for revegetation.
- Exposed slope faces will be revegetated as soon as possible after construction.
- Temporary sedimentation basins will be constructed as necessary.
• Interim grading and other measures specified by the Los Angeles City erosion control ordinances would be employed to mitigate any short-term flooding due to stormwater.</td><td>LS</td></tr>
</table>

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
Biological Resources (Chapter 6)			
Construction activities at the HWSG site would potentially result in the loss of the riparian community along the southern edge of the site. This potential impact would be mitigated by Mitigation Measure BR-1.		**Mitigation Measure BR-1: Riparian Habitat at the HWSG Site** To mitigate for the loss of riparian habitat along the south portion of the HWSG site, mitigation will be implemented that will include replacement of riparian areas consistent with anticipated requirements of federal Clean Water Act (CWA) permits and state Section 1600 agreements. Mitigation may be achieved through funding of existing mitigation banks, habitat restoration, or other means acceptable to resource agencies.	LS
Construction activities at the HWSG site would potentially result in the loss of waters of the U.S. and CDFG jurisdictional streambed and bank, which would represent a significant impact. This potential impact would be mitigated by Mitigation Measure BR-2.		**Mitigation Measure BR-2: Jurisdictional Waters** The Proposed Project will obtain and comply with conditions of permits issued from U.S. Army Corps of Engineers (USACE) (CWA, Section 404) and the CDFG (Streambed Alteration Agreement [SAA], Section 1603). The details of mitigation requirements for impacts to jurisdictional waters will be determined through continuing consultation with USACE and CDFG. Mitigation may be achieved through funding of existing mitigation banks, habitat restoration, or other means acceptable to resource agencies.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	SLRC		
Because portions of the HWSG site have been relatively undisturbed for many years and rare plants may have a reservoir/seed source in adjacent Griffith Park, special-status plant species may be present during areas to be disturbed for construction activities. Potential impacts to these special-status plant species would be mitigated by Mitigation Measure BR-3.		**Mitigation Measure BR-3: Special-Status Plants** Mitigation for potential impacts to special-status plants will include the following: • Preconstruction surveys will be conducted at the HWSG site prior to any ground-disturbing activities, and in the appropriate flowering season for special-status plants. • If rare plants are identified at the HWSG site, then detailed mitigation will be developed in coordination with the appropriate resource agency (CDFG or USFWS), which may potentially include the following: - Exclusion zones where practical to preclude impacts to rare plant - Translocation of seeds, topsoil, and/or plants to areas outside the disturbance footprint - Establishment of new populations in areas that will not be subject to future development, and where populations may be protected and managed in perpetuity - Investment in mitigation bank lands as appropriate to the specific species	LS
Nesting bird species of special concern, consisting of yellow-breasted chat, California horned lark, loggerhead shrike, and burrowing owl, have the potential to nest at the HWSG site and in limited areas at the SLRC. Additionally, ardeids may nest in tall trees at either site. Potential impacts to these species would be mitigated by Mitigation Measure BR-4.		**Mitigation Measure BR-4: Nesting Birds of Special Concern** Preconstruction surveys for nesting special-status birds will be conducted at the HWSG site and the SLRC prior to ground-disturbing activities. Depending on the results of these surveys, the following mitigation measures will be implemented: • All vegetation removal required for the Proposed Project will occur prior to the nesting season for most birds (February to August) to avoid direct impacts to nesting birds.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		• Where nests for special-status birds are established within 500 feet of construction activities, construction will be delayed until (a) fledglings leave the nest and are independent of adults or (b) it is determined by CDFG that no adverse effects are likely to occur to the nest or brood from adjacent construction activities, and a Biological Monitor is provided to conduct construction monitoring to ensure that effects on the nest site or brood do not reach adverse levels. • Construction adjacent to the known heron rookery at Silver Lake will be avoided during the nesting season for herons (February to August).	
Construction activities at the HWSG site and the SLRC may result in impacts to special-status bats when roost sites are located near construction disturbance areas. Potential impacts to these species would be mitigated by Mitigation Measure BR-5.		**Mitigation Measure BR-5: Special-Status Mammals (Bats)** Preconstruction surveys for bat roosts will be conducted at the HWSG site and the SLRC prior to ground-disturbing activities. Where active roosts are identified during these surveys, the following mitigation measures will be implemented: • Within 300 feet of the location of active roosts, ground disturbance and roost destruction would be avoided during the parturition period (March 15 through August 31). • Where this avoidance is not feasible, if potential roosts are identified prior to onset of parturition, roosts may be removed during the evening forage period (within 4 hours after dark) or fitted with one-way exit doors to effectively eliminate and exclude roost.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
Cultural Resources (Chapter 7)			
The potential for discovery of prehistoric or historical archaeological sites at the HWSG site and the SLRC is considered to be low; however, impacts may be potentially significant if sites are found. Potential impacts would be mitigated by Mitigation Measure CR-1.		**Mitigation Measure CR-1: Archaeological Resources** Potential impacts to cultural resources related directly or indirectly to Proposed Project-related activities shall be reduced to below the level of significance through recovery or treatment of archaeological resources encountered during archaeological site investigations or monitoring of ground-disturbing activities (construction) in areas with the potential to contain archaeological resources. When investigations identify unique archaeological resources as defined in Section 21083.2 of the Public Resources Code (PRC), the site shall be subject to specified requirements for treatment. Where elements of the Proposed Project are expected to require earthmoving, the following program shall be implemented and the requirement duly noted in Proposed Project plans and specifications: • Retain a qualified archaeologist to implement a monitoring and recovery program in any area identified as having the potential to contain unique archaeological resources. • A qualified archaeologist shall monitor earth-moving activities in areas that are likely to contain unique archaeological resources. The archaeologist shall be authorized to halt construction, if necessary, in the immediate area where buried cultural remains are encountered. Prior to the resumption of grading activities in the immediate vicinity of the cultural remains, the project proponent shall provide the archaeologist with the necessary resources to identify and implement a program for the appropriate disposition as specified by Section 15064.5(e) of the CEQA Guidelines.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		• The selected archaeologist shall be required to secure a written agreement with a recognized museum repository regarding the final disposition and permanent storage and maintenance of any unique archaeological resources recovered as a result of the archaeological monitoring. This would also include corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement for the disposition of recovered artifacts shall specify the level of treatment (preparation, identification, curation, cataloging) required before the collection would be accepted for storage. • The selected archaeologist shall attend a preconstruction meeting to provide information regarding regulatory requirements for the protection of unique archaeological resources. Construction personnel shall be trained on procedures to be followed in the event that a unique archaeological resource is encountered during construction. In addition, the archaeologist shall ensure that the preconstruction meeting participants are trained to notify the Los Angeles County Medical Examiner (coroner) within 24 hours of the discovery of human remains. Upon discovery of human remains, there shall be no further excavation or disturbance of the site or any reasonably nearby area suspected to overlie adjacent human remains until the following conditions are met: - The Los Angeles County Medical Examiner has been informed and has determined that no investigation of the cause of death is required; and, if the remains are of Native American origin, the descendants of the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98.	

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		If archaeological sites are encountered during construction of the Proposed Project, an evaluation of significance will be made by the selected archaeologist. Those sites that are determined eligible for listing in the California Register of Historical Resources (CRHR) shall be treated in accordance with one of the three feasible measures described in the "CEQA and Archaeological Resources," CEQA Technical Advice Series: • Capping (covering) the site with a level of soil prior to construction over the site • Incorporating into open space areas of the project site • Excavating where the first two measures are not feasible For eligible sites, the City of Los Angeles shall, prior to construction, implement the applicable treatment plan.	
	Areas at and surrounding the SLRC contain landscaping that contributes to the historic character of the SLRC that may be disturbed or removed during construction. Impacts to this landscaping would result in potentially significant impacts. Potential impacts would be mitigated by Mitigation Measure CR-2.	**Mitigation Measure CR-2: Historic Landscaping Restoration** Landscaping of the 30,000-square-foot, open, grassy area located at the southwest corner of the SLRC, the proposed location of a jacking pit, pipeline, concrete vaults for a regulating station, and other new facilities shall be returned to an appearance approximating preconstruction conditions, insofar as is possible, prior to removal of Ivanhoe and Silver Lake Reservoirs from service to the water distribution system. Where avoidance or transplantation of onsite trees and other vegetation is not possible, the proposed regulating station area (SLRC-2) should be landscaped with mature, healthy trees and plant material of comparable species, in keeping with the historic character and appearance of these portions of the reservoir complex.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		In areas where planting of trees and other large vegetation would impede operation of the new facilities, grass will be replanted over the buried structures, approximating the current appearance of the site inasmuch as that is practicable. Insofar as is possible, landforms shall be returned to their preconstruction topography. The *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Cultural Landscapes* should be employed to mitigate potential impacts to the existing landscaping resulting from construction activities. The same mitigation measure shall be employed for impacts related to the removal or degradation of landscaping in the area designated for equipment and material staging (SLRC-1), within the former East Cove area. Landscape rehabilitation will be performed in coordination with the Property Maintenance and Management Plan for the SLRC.	

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
Paleontologic Resources (Chapter 8)			
Earth-disturbing activities at both the HWSG site and the SLRC could potentially reveal paleontologic resources. Potential impacts to paleontologic resources would be mitigated by Mitigation Measures PR-1, PR-2, and PR-3.		**Mitigation Measure PR-1: Paleontologic Resources at HWSG Site and SLRC** Mitigation will include the following measures: • Earth-moving activities that have a potential for disturbing previously undisturbed strata identified as being paleontologically important will be monitored by a paleontologic construction monitor. If fossil remains are encountered, they will be recovered, along with associated specimen data and corresponding geologic and geographic site data. The level of monitoring will reflect the paleontologic importance/impact sensitivity of the rock unit underlying the area of disturbance and the type of earth-moving activity. • If fine-grained strata with a potential for containing microfossils or small fossil remains are encountered, rock/sediment samples will be collected and processed to allow for the recovery of these fossil remains. • If necessary, earth-moving activities will be diverted temporarily around a fossil/sampling locality until the fossil remains/sample has been removed. • If warranted, rock/sediment or fossil samples will be submitted to commercial laboratories for microfossil and pollen identification, or radiometric dating analysis.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		• Recovered fossil remains will be prepared to the point of identification, identified by knowledgeable paleontologists, curated, catalogued with Natural History Museum of Los Angeles Vertebrate Paleontology Department (LACMVP) fossil specimen and locality numbers, and transferred to the LACMVP for permanent storage. • A final technical report of results and findings will be prepared by the paleontologist. **Mitigation Measure PR-2: Paleontologic Resources at the HWSG Site** Monitoring at the HWSG site will be conducted on a spot-check basis once excavation for the reservoir and any ancillary facility has reached a depth 5 feet below grade in the stream channel deposits. If fossil remains are encountered by excavation, the monitoring level will be increased to full time. **Mitigation Measure PR-3: Paleontologic Resources at the SLRC** Paleontologic monitoring of construction at the SLRC will be conducted during the periods that ground-disturbing activities are ongoing at depths greater than 5 feet, and are occurring within Quaternary alluvium or Miocene marine sediments. With the exception of the excavations for the cut-and-plug operations, expected to occur only within artificial fill, all excavations to depths greater than 5 feet may affect paleontologically sensitive sediments. Therefore, these excavations will be monitored *except* in cases where it can be conclusively demonstrated that artificial fill occurs at depths exceeding 5 feet; and that the excavations are, therefore, occurring in sediments with no paleontologic sensitivity. Monitoring will be conducted by a trained paleontologic monitor under the direction of a professional paleontologist. Monitoring will consist of inspection of debris and backdirt generated by excavations, as well as exposed sediment profiles when safely accessible. Boring and drilling operations will be spot monitored at least once a day, and will be full-time monitored should fossils be encountered. All other excavations in paleontologically sensitive sediments will be subjected to full-time paleontologic monitoring.	

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
Traffic and Transportation (Chapter 9)			
Construction traffic at the HWSG site would potentially have a significant adverse impact at the intersection of Forest Lawn Drive and Zoo Drive. Potentially significant impacts would be mitigated by Mitigation Measure TT-1.		**Mitigation Measure TT-1: Forest Lawn Drive and Zoo Drive** The schedule of the construction workers will be staggered to minimize the impact at this location.	S
	At the SLRC, construction traffic would potentially have a significant adverse impact at the intersection of Silver Lake Boulevard and Van Pelt Place. Potentially significant impacts would be reduced by Mitigation Measure TT-2, but potentially significant impacts may remain after mitigation.	**Mitigation Measure TT-2: Silver Lake Boulevard and Van Pelt Place** Truck deliveries for materials or equipment will be scheduled so that none of the truck trips would arrive or depart the SLRC during the afternoon peak period between 4:00 p.m. and 6:00 p.m. Any truck deliveries will occur before the afternoon peak period.	S
	At the SLRC, construction traffic would potentially have a significant adverse impact at the intersection of Riverside Drive and Fletcher Drive. Potentially significant impacts would be mitigated by Mitigation Measure TT-2.	**Mitigation Measure TT-2: Riverside Drive and Fletcher Drive** Truck deliveries for materials or equipment will be scheduled so that none of the truck trips would arrive or depart the SLRC during the afternoon peak period between 4:00 p.m. and 6:00 p.m. Any truck deliveries will occur before the afternoon peak period.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
Construction activities at the HWSG site include in-street construction in Forest Lawn Drive for a water distribution line. At the SRC, in-street construction is required for the jacking and receiving pits for the bypass pipeline, for construction of the relief stations, and potentially for the regulating station trunk line. Potentially significant traffic impacts from this in-street construction would be mitigated by Mitigation Measure TT-3.		**Mitigation Measure TT-3: Transportation Management Plan** A site-specific transportation management plan (TMP) will be prepared for any stage of construction that may affect traffic flow in the surrounding street system. This plan may include some or all of the following: • Construction work traffic impacts and strategies, including detours and traffic handling. • Strategies for reducing worker trips, including carpooling and transit. • General access restrictions associated with the Proposed Project, including proper notification of affected residences, businesses, and other facilities prior to construction. Advance public notification will include posting of notices and appropriate signage of construction activity. The TMP must ensure adequate access to residences and facilities via existing roadway intersections and private driveways at all times or include alternate access, detours, or temporary mitigation to address access restrictions adequately. • Emergency access restrictions associated with the Proposed Project, including proper notification of emergency providers and provision of alternate routes, if necessary. All construction activities will be coordinated with local law enforcement, fire protection, and other emergency service providers. These entities will be notified of the timing, location, and duration of construction activities. • Where construction will result in temporary lane closures of sidewalks and other pedestrian facilities, the TMP would address temporary pedestrian access, through detours or safe areas alongside the construction zone. Any affected pedestrian facilities and alternative facilities or detours will be identified. The development of this plan will be coordinated with Los Angeles Department of Transportation (LADOT) and will require its approval prior to the implementation of any measures and activities that would affect traffic flow in the area.	LS

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
Noise (Chapter 10)			
Construction noise produced by onsite machinery may produce levels that exceed ambient noise levels by 5 decibels (dBs) at the HWSG site and at the SLRC, resulting in significant impacts. Potential impacts from construction-related noise at the HWSG site would be mitigated by Mitigation Measure N-1; potential construction-related noise impacts at the SLRC would be mitigated by Mitigation Measure N-2.		**Mitigation Measure N-1: Construction Noise at the HWSG Site** Measures to minimize noise from construction activities at the HWSG site include some or all of the following: • A noise monitoring and mitigation program at the HWSG site will be instituted to continuously assess construction noise impacts and implement mitigation when and where required. The program will account for perceived impacts as well as actual measured noise levels. • Use of extreme noise producers will be minimized as much as possible because aggregate noise levels are generally driven by a few loud machines. Activities such as rock crushing, which produces noises that are both loud and dissimilar to ambient noise, will be minimized. Every effort will be made to complete such activities as soon as possible, rather than extended over the duration of construction. When feasible, extreme noise producers will be shielded by a sound barrier and located as far as possible from noise-sensitive receivers. Where feasible, such activities will be conducted offsite at a nonsensitive location. • Fixed-location machinery, such as generators and compressors, will be shielded from sensitive receivers. Shielding may comprise any arrangement that produces substantial noise reductions including manufactured enclosures; plywood barriers; terrain (berms, dirt piles); and other large, fixed-location machinery. • Activities that may be performed at a fixed location (e.g., sawing lumber) will be shielded similar to the third measure, above. • Machinery will be equipped with high-performance mufflers and other noise-reducing equipment. Machinery will be maintained in good running condition, including frequent lubrication to minimize squealing and additional engine load, to reduce annoying noise emissions.	S

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		• Construction hours will be strictly enforced. Staging areas will be secured with a locked fence to prevent early startup or late-night maintenance.	
		Mitigation Measure N-2: Construction Noise at the SLRC Measures to minimize noise from construction activities at the SLRC include some or all of the following: • A noise monitoring and mitigation program at the SLRC will be instituted to continuously assess construction noise impacts and implement mitigation when and where required. The program will focus primarily on ensuring no hazardous noise levels exist at nearby residences. Long-term (all day) monitoring should be conducted to verify that noise levels at sensitive receptors do not exceed permissible limits as determined by the appropriate authority. • Construction areas will be shielded with noise control barriers, particularly the area surrounding the regulating station. Barriers may be of any configuration sufficient to control the immediate noise levels; specifically, they should be heavy, continuous (no gaps), and have a sound-absorptive surface on the construction side. Typical construction sound barriers include 3/4-inch plywood with a glass or mineral wool facing, commercially available post-and-panel noise-control fencing, and commercially available noise-control curtains. Barrier height will be as tall as can be practically and safely erected, but should be a minimum of 8 feet high. Entrances to the noise-controlled areas will be located away from sensitive receivers. If feasible, the entrance to the regulating station area will be to the east or southeast (facing the dog park).	S

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	**SLRC**		
		• Use of extreme noise producers will be minimized as much as possible because aggregate noise levels are generally driven by a few loud machines. Every effort will be made to complete such activities in a timely manner, rather than extending them over the duration of construction. Where feasible, they will be shielded by a sound barrier and located as far as possible from noise-sensitive receivers. Where feasible, such activities will be conducted offsite at a nonsensitive location. • Fixed-location machinery, such as generators and compressors, will be shielded from sensitive receivers. Shielding may comprise any arrangement that produces substantial noise reductions including manufactured enclosures; plywood barriers; terrain (berms, dirt piles); and other large, fixed-location machinery. • Activities that may be performed at a fixed location (e.g., sawing lumber) will be shielded similar to the fourth measure above. • Equipment maintenance and testing facilities at the staging area will be shielded similar to the second measure above. • Machinery will be equipped with high-performance mufflers and other noise-reducing equipment. Machinery will be maintained in good running condition, including frequent lubrication to minimize squealing and additional engine load, to reduce annoying noise emissions. • Loudest operations in the late afternoons and evenings, particularly after 7:00 p.m., will be avoided. • Noise-producing equipment maintenance and testing at the staging area in the evenings, particularly after 7:00 p.m., will be avoided. Testing of loud machinery will be scheduled to coincide with peak morning and afternoon traffic hours, if possible. • Unnecessary equipment will be shut down overnight (e.g., blowers or generators will not be left running unnecessarily). • Construction hours will be strictly enforced. The staging area will be secured with a locked fence to prevent early startup or late-night maintenance.	

TABLE ES-1
Summary of Project Impacts and Mitigation Measures

Potentially Significant Impact		Mitigation	Level of Significance after Mitigation
HWSG Site	SLRC		
	Noise produced by the regulating station at the SLRC is anticipated to exceed ambient noise levels by more than 5 dBs, resulting in a significant impact. This impact would be mitigated by Mitigation Measure N-3.	**Mitigation Measure N-3: Noise from Regulating Station at the SLRC** Sufficient technology currently exists to reduce noise levels from the regulating station to a less-than-significant level. However, given that project operation is not anticipated to begin until late 2013, identification of specific sound-reducing measures is not practical because sound-reduction technology is constantly evolving and advancing (i.e., more sophisticated sound-reduction technology is anticipated to be available in the future than is available today). LADWP will include technologically advanced sound-reduction measures in its detailed design of the regulating station equipment and/or enclosure materials to ensure that noise levels during operation of the regulating station are 40 dBA or less at the nearest residence.	LS
Air Quality (Chapter 11)			
Construction emissions are anticipated to exceed maximum daily levels for ROG, NO_x and PM_{10} at the HWSG site, and NO_x and PM_{10} at the SLRC. When construction emissions for both Proposed Project sites are combined, construction emissions are anticipated to exceed significance thresholds for ROG, NO_x, and PM_{10}. Mitigation to reduce significant air quality impacts would be provided by Mitigation Measure AQ-1.		**Mitigation Measure AQ-1: Construction** The following measures would be implemented to reduce construction-related air quality impacts during all nine phases of project construction: • Equipment idling time shall be minimized to the extent possible. • Equipment engines shall be maintained in good condition and in proper tune in accordance with manufacturer specifications. • Electricity from onsite power poles will be used, as feasible, in place of temporary diesel-powered generators. • All construction equipment shall utilize emulsified diesel fuel. The use of such fuel has been demonstrated by the California Air Resources Board to reduce NO_x by 14 percent and reduce PM_{10} (from engine combustion) by 63 percent.	S
Notes: LS = Less than Significant after Mitigation S = Potentially Significant Impact remains after Mitigation			

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1.0 Introduction

The Los Angeles Department of Water and Power (LADWP) has proposed the Silver Lake Reservoir Complex (SLRC) Storage Replacement Project (SRP) that includes the removal of Silver Lake and Ivanhoe Reservoirs from direct service to the LADWP water distribution system. Water storage currently provided by the SLRC would be replaced by a 110-million-gallon (MG) buried storage reservoir at the former Headworks Spreading Grounds (HWSG site) (see Figure 1-1 for a general site location map). The new water storage reservoir would be accompanied by a 4-megawatt (MW) hydroelectric power generating facility at the HWSG site to capture energy from the water pressure flowing into the reservoir. A regulating station at the southern end of the SLRC and a new bypass pipeline around the SLRC would convey water to existing service areas, while Silver Lake and Ivanhoe Reservoirs would be removed from the LADWP water distribution system and maintained as view lakes. Construction of the SLRC SRP is anticipated to require roughly 6.5 years to complete. The project elements summarized above and described in greater detail in Chapter 2 of this document represent the whole of the action being proposed by LADWP.

1.1 Project History and Regulatory Requirements

Open reservoirs in Los Angeles, including Silver Lake and Ivanhoe at the SLRC, store drinking water from the Los Angeles Aqueduct, Metropolitan Water District (MWD) and groundwater.

The treated water that enters the open reservoirs is drinking water quality, but water in an open storage reservoir is exposed to contamination from birds, insects, animals, and humans. Sunlight and elevated temperatures, especially during the summer months, contribute to the growth of algae that degrades water quality and increases taste and odor problems. Chlorine is effective at treating algae in open reservoirs such as Silver Lake and Ivanhoe, but it also reacts with naturally occurring organic materials that produce trihalomethanes (THMs) and halo acetic acids (HAAs). The higher the level of algae and other organic material in the reservoirs, the greater the potential of THMs and HAAs. Both compounds are Cancer Group B carcinogens (shown to cause cancer in laboratory animals).

To comply with increasingly more stringent state and federal regulations, including those that address THMs and HAAs, LADWP has been required to make major changes to its open reservoir system. These regulations include the Stage 2 Disinfection By-Products Rule (S2DBR) and the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR).

The S2DBR addresses maximum contaminant levels of THMs and HAAs. Compliance dates are as follows:

- June 1, 2008 - 120 parts per million (ppm) for THMs and 100 ppm for HAAs
- June 1, 2011 - 80 ppm for THMs and 60 ppm for HAAs

LT2ESWTR requires that all existing open, finished-water reservoirs be covered or meet 99.99 percent virus kill before the water enters the distribution system. Reservoirs in the LADWP system must comply with this regulation, which requires one of the following by June 2007:

- Cover the reservoir
- Provide 4-log virus inactivation (99.99 percent virus kill) at the outlet
- Implement measures to mitigate the risk of contamination to reservoir

LADWP has investigated several onsite and offsite alternatives to address meeting the above regulations and has determined that offsite covered storage is a practicable alternative that achieves the objectives identified for the Proposed Project (described in Section 1.3).

1.2 Environmental Document Required

The California Environmental Quality Act (CEQA) requires every proposed project in the State of California to be examined for potential effects on the environment. As the Lead Agency under CEQA, LADWP has determined that the SLRC SRP has the potential to have a significant effect on the environment. As such, this Draft Environmental Impact Report (EIR) has been prepared to provide objective information to public decisionmakers and the general public regarding potential environmental effects of the Proposed Project. Environmental impacts are measured against the baseline physical conditions (14 California Code of Regulations [CCR] § 15125[a]) and the No Action Alternative (14 CCR § 15126.6[d]).

1.3 Project Objectives

CEQA requires that an EIR include a statement of project objectives. The objectives will help LADWP to evaluate the Proposed Project and project alternatives and will help decisionmakers select a preferred alternative and determine how best to implement the action.

The objectives of the SLRC SRP are:

- To achieve compliance with current and anticipated drinking water regulations
- To secure water delivery to LADWP customers against naturally occurring and human-introduced contamination
- To provide for 110 MG of water storage to meet operational requirements for the SLRC service area
- To develop appropriate water storage and delivery infrastructure for service reliability and water quality improvement
- To meet customer expectations for high quality tap water, including taste, color, and odor
- To develop a cost-effective project for LADWP rate-payers
- To remain consistent with the community values set forth in the Silver Lake Master Plan

Source: The Thomas Guide: Los Angeles County 2003

Figure 1-1
SLRC SRP Draft EIR
Project Location Map

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1.4 Environmental Review Process

LADWP issued a CEQA Notice of Preparation (NOP) to the Governor's Office of Planning and Research (OPR) State Clearinghouse on August 22, 2003. In accordance with CEQA guidelines, a 30-day comment period (ending September 24, 2003) on the NOP (included in Appendix A) was established. During the 30-day comment period, LADWP held a public meeting to present information about the SLRC SRP to interested parties, to respond to informal questions, and to take formal comments to be addressed during preparation of the Draft EIR. The public meeting was held at Friendship Hall (generally located midway between the SLRC and the HWSG site) on September 17, 2003; approximately 150 people attended the meeting. A transcript of the public comment portion of the public meeting is included in Appendix A. Appendix A also contains a copy of written comments received during the comment period.

All comments received by LADWP during the public comment period have been considered during preparation of this Draft EIR.

This Draft EIR has been released for a 45-day review to the public, including interested individuals, organizations, government representatives, and agencies. LADWP provided notice of the availability of the Draft EIR with a Notice of Completion sent to the California OPR State Clearinghouse. Following the 45-day public review period, LADWP will prepare a Final EIR that will incorporate and respond to comments received as a result of public review of the Draft EIR.

1.5 Intended Uses of this EIR

This Draft EIR will be used by various local and state agencies (including LADWP) in their consideration of actions required to approve the Proposed Project. Also, construction and operation of the SLRC SRP would require certain state and local permits. Table 1-1 identifies these agencies and the potential permit or approval required.

TABLE 1-1
Permits or Approvals Anticipated to be Required in Association with the SLRC SRP

Agency	Permit or Approval	Activity Requiring Permit or Approval/Comment
Local		
City of Los Angeles Planning Commission	Approval of Conditional Use Permit	Construction of Proposed Project
City of Los Angeles Department of Water and Power	Board of Commissioners Approval	Construction of Proposed Project
City of Los Angeles Department of Building and Safety	Grading Plans Approval and Permits to Construct	Construction activities at the HWSG site and SLRC
City of Los Angeles Bureau of Sanitation	Sewer Discharge Permits	Construction activities at the HWSG site and SLRC
City of Los Angeles Bureau of Engineering	Excavation Permit	Construction of the bypass pipeline

TABLE 1-1
Permits or Approvals Anticipated to be Required in Association with the SLRC SRP

Agency	Permit or Approval	Activity Requiring Permit or Approval/Comment
Los Angeles County Department of Public Works	Flood Control Permits	Construction activities at the HWSG site and SLRC
South Coast Air Quality Management District	Authority to Construct, Permits to Operate, and Review and Comment on Air Quality Issues	Construction activities at the HWSG site and SLRC
State		
California Department of Health Services	Amended Domestic Water Supply Permit	Removal of Silver Lake and Ivanhoe Reservoirs from water distribution system
California Department of Fish and Game	Section 1600 Streambed Alteration Agreement	Construction activities at the HWSG site
California Department of Transportation	Encroachment Permit	Required for use of Caltrans road right-of-ways
	Construction Traffic Management Plan	Construction of facilities at the HWSG site and SLRC
California Department of Water Resources, Division of Safety of Dams	Construction Approval	Construction activities at the HWSG site and SLRC
California Regional Water Quality Control Board, Los Angeles Region	National Pollutant Discharge Elimination System (NPDES) Permit	Required for discharges to surface or groundwater
	Construction General Permit 99-08-DWQ	Required for projects that disturb more than 5 acres

1.6 Draft EIR Content and Organization

This Draft EIR comprises 18 chapters, organized as described below.

Chapter 2 provides a description of the proposed SLRC SRP, including the general project location and construction and operation activities to be conducted for Proposed Project facilities.

Chapters 3 through 15 describe individual resource areas potentially impacted by the Proposed Project, including regional and site-specific environmental setting, Project impacts, and proposed mitigation measures. Individual resource areas discussed in this Draft EIR are:

Chapter	Resource Area
3	Land Use
4	Earth Resources
5	Water Resources and Quality
6	Biological Resources

7	Cultural/Historical Resources
8	Paleontological Resources
9	Traffic and Transportation
10	Noise
11	Air Quality
12	Public Services and Utilities
13	Hazardous Materials and Waste
14	Visual Resources

Project Alternatives are addressed in Chapter 15, including the No Project Alternative and alternatives considered but eliminated.

Chapter 16 consists of other topics required by CEQA to be addressed in a Draft EIR, including an analysis of cumulative impacts that may occur as a result of construction and operation of the Proposed Project in conjunction with other area projects, and a discussion of growth-inducing impacts and significant irreversible environmental effects.

Chapter 17 provides a list of document preparers, and Chapter 18 includes references used in preparation of the Draft EIR.

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2.0 Project Description

2.1 Introduction

The Proposed Project was identified after conducting numerous preliminary analyses of various on- and offsite alternatives to meet water quality regulatory requirements and the project objectives identified in Chapter 1. This chapter provides a description of the Proposed Project that is used to assess potential environmental impacts in Chapters 3 through 16 of the Draft EIR.

2.2 Proposed Project

The Proposed Project would remove Silver Lake and Ivanhoe Reservoirs from direct service to the LADWP water distribution system. Water storage currently provided by SLRC would be replaced by a 110-MG buried storage reservoir at the former HWSG site (see Figure 1-1 for a general site location map). The new water storage reservoir would be accompanied by a 4-MW hydroelectric power generating facility at the HWSG site to capture energy from the water pressure flowing into the reservoir. A regulating station at the southern end of the SLRC and a new bypass pipeline around the reservoir complex would convey water to existing service areas, while Silver Lake and Ivanhoe Reservoirs would be removed from the LADWP water distribution system and maintained as nonoperating water system facilities.

Section 2.2.1 describes the general project location. Section 2.2.2 describes the construction and operation of facilities proposed at the HWSG site. Section 2.2.3 describes the construction and operation of facilities proposed at the SLRC, including removal of Silver Lake and Ivanhoe Reservoirs from direct service to the LADWP water distribution system.

2.2.1 Project Location

The Proposed Project would be located at the HWSG site and at the SLRC, as shown in Figure 1-1. The HWSG site consists of 43 acres of undeveloped land adjacent to the Los Angeles River (LA River) and between the City of Burbank and Griffith Park. It is bounded on the north by the LA River and the 134 Freeway, and on the east and south by Forest Lawn Drive. The property is owned by the City of Los Angeles Department of Recreation and Parks, and LADWP retains an easement over the entire property.

The 127-acre SLRC is located in the community of Silver Lake and consists primarily of LADWP-owned Silver Lake and Ivanhoe Reservoirs and related facilities. Silver Lake is 5 miles northwest of downtown Los Angeles and just east of Griffith Park. The community of Silver Lake surrounding the SLRC is generally bordered by Interstate 5 to the north, the Glendale Freeway and Glendale Boulevard to the east, Sunset Boulevard to the south, and Griffith Park Boulevard to the west.

2.2.2 HWSG Site Facilities

Facilities to be constructed and operated at the HWSG site include a 110-MG underground storage reservoir and a 4-MW hydroelectric plant, as shown in Figure 2-1. Construction working hours for all activities at the HWSG site would be between 7:00 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. Saturday, which would be within allowable hours for construction activities pursuant to Chapter 11 of the City Municipal Code. Construction and operation information for these facilities is described in detail below.

2.2.2.1 110-MG Underground Storage Reservoir

2.2.2.1.1 Overview

To replace the operational storage from Silver Lake and Ivanhoe Reservoirs, LADWP would construct a 110-MG buried reservoir at the HWSG site. The reservoir would occupy a total of approximately 19 acres and would be located on the east side of the HWSG site. The reservoir itself would be 10 acres in area and 40 feet high. Figure 2-1 shows the location of the reservoir within the HWSG site, while Figure 2-2 shows the elevation of the HWSG site before and after construction of the reservoir.

Inlets and outlets would connect the reservoir to the River Supply Conduit, requiring four vaults for inlet and outlet valves. The vaults would be located within the southern slope of the reservoir (Figure 2-1). Each valve vault would be approximately 22 feet by 19 feet and will be buried. Access to each vault would be from a steel hatch, approximately 3 feet by 3 feet. An access road along the southern slope of the reservoir with ingress and egress from Forest Lawn Drive would be constructed to provide access to the vaults. Two structures would be located on top of the reservoir to allow equipment and personnel access to the reservoir for maintenance. These structures would each be approximately 14 feet high, 25 feet wide and 125 feet long. The end of each structure would have a steel door and the structures would be buried. A maintenance road to the access structure openings would be constructed along the top of the reservoir, likely connecting to the intersection of Forest Lawn Drive and Zoo Drive. The top of the reservoir would also have six sampling hatches, each approximately 2 feet by 2 feet. Two of the hatches would be flush with the final grade; four hatches would be about 2.5 feet above the final grade.

A 24-inch water distribution line that currently crosses the HWSG site would be relocated to Forest Lawn Drive to provide water for reservoir maintenance and existing service to Forest Lawn and Mount Sinai cemeteries. This water distribution line would connect to the River Supply Conduit at the far west end of the HWSG site and extend east approximately 3,500 feet along Forest Lawn Drive to the storage reservoir.

2.2.2.1.2 Construction

Construction activities for the underground storage reservoir would include grading and reservoir site preparation, inlet/outlet and vault construction, construction of the reservoir storage structure, and burying the storage structure. Each of these activities is described in detail in the following sections.

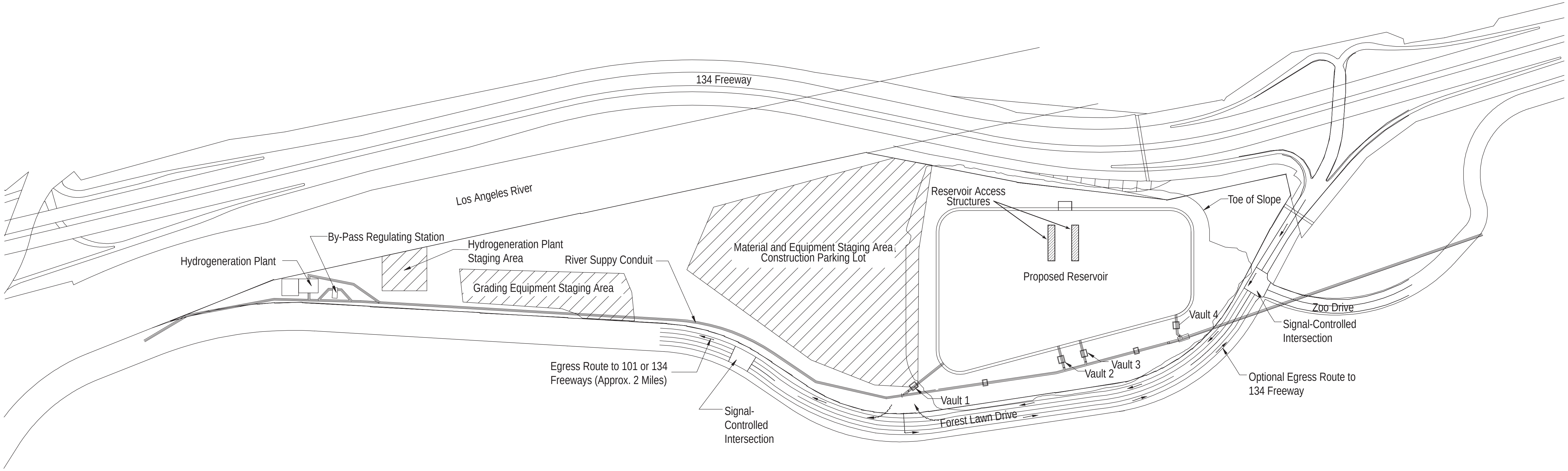

Figure 2-1
SLRC SRP Draft EIR
Proposed Facilities and Staging Areas at the HWSG Site
Draft Site Plan

CH2MHILL

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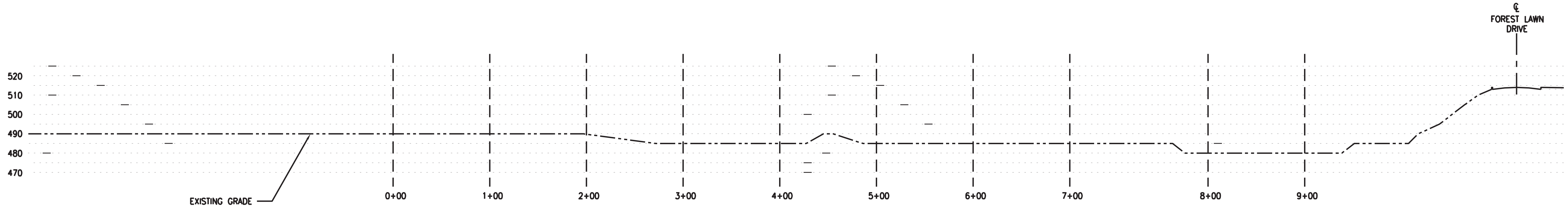
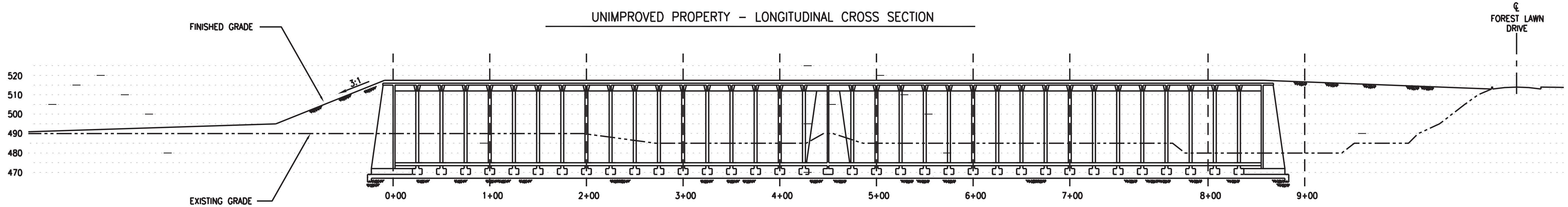
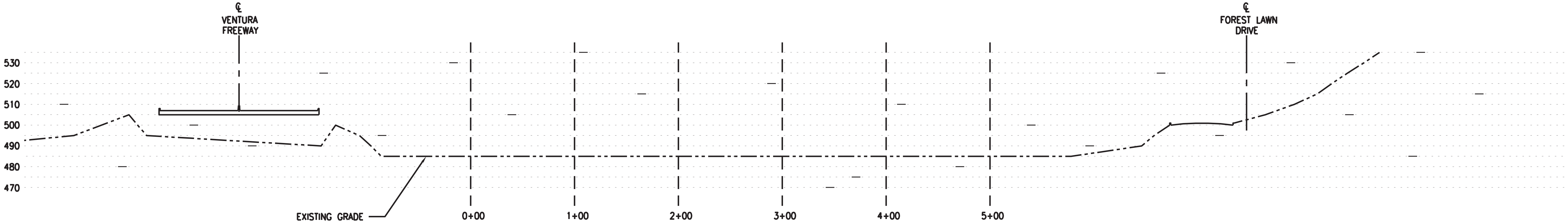


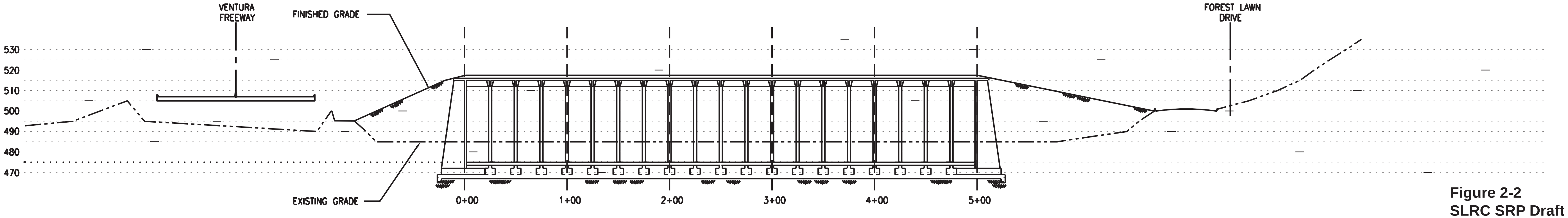
UNIMPROVED PROPERTY – LONGITUDINAL CROSS SECTION



COVERED STORAGE RESERVOIR – LONGITUDINAL CROSS SECTION



UNIMPROVED PROPERTY – TRANVERSE CROSS SECTION



COVERED STORAGE RESERVOIR – TRAVERSE CROSS SECTION

Figure 2-2
SLRC SRP Draft EIR
Proposed 110-MG Underground
Storage Reservoir
Draft Elevation View

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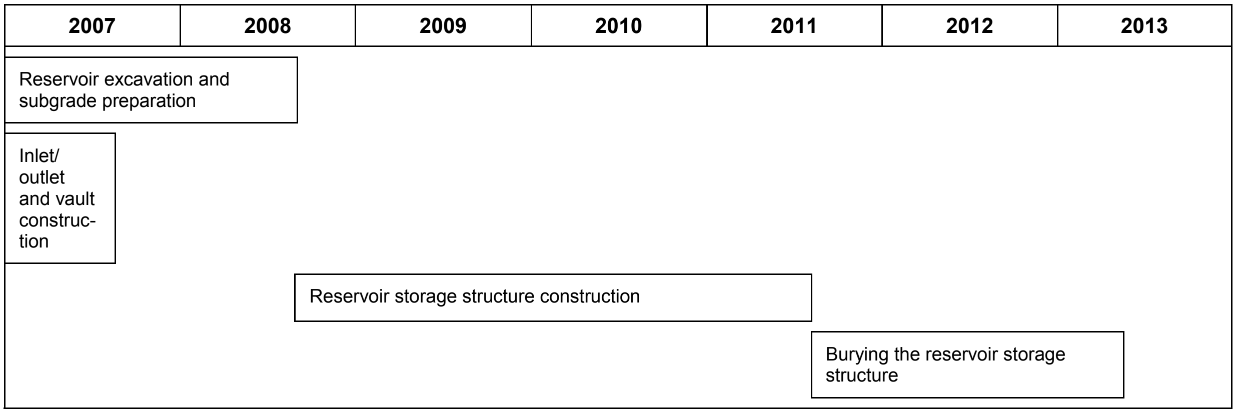
Construction of some of the above activities would overlap, as roughly shown below.



Reservoir Excavation and Subgrade Preparation

Excavation and subgrade preparation for the reservoir would take place approximately from January 2007 through September 2008.

Approximately 470,000 cubic yards of soil material would be excavated for the construction of the reservoir. Of the 470,000 cubic yards, approximately 5 percent, or 23,000 cubic yards, would be disposed offsite due to its unsuitability as fill material. Based on using 20-cubic-yard capacity dump trucks to export the soil material needed, a total of 30 truckloads per day for a duration of 40 days would be necessary to export 23,000 cubic yards of soil for a total of 1,200 truck trips during the period from May 2008 through July 2008.

Topsoil removed during reservoir excavation and subgrade preparation would be put aside and banked for replacement following construction.

Table 2-1 shows the type of equipment and the approximate number needed during the excavation and subgrade preparation phase of reservoir construction.

TABLE 2-1
110-MG Underground Storage Reservoir Construction
Estimated Equipment Requirements for Reservoir Excavation and Subgrade Preparation

Equipment	Approximate Number Required
400-hp, 23-cubic-yard, self-loading scrapers	4
340-hp D8 – Bulldozer	4
500-hp Excavator-Breaker	1
240-hp Motor Grader	2
230-hp, 4-cubic-yard Front-end Loader	1
5,000-gallon Water Truck	3
Grizzley-Classifier	2
Rock Crushing Plant	1
180-hp Compactor	4
Drill Rig and Augers	6
Water Tank	2
400-hp, 20-cubic-yard Dump Trucks	8

Material and equipment would be staged onsite, as shown in Figure 2-1. Approximately 28 to 63 laborers would be required onsite during the excavation and subgrade preparation phase of reservoir construction.

Inlet/Outlet and Vault Construction

Inlet/outlet and vault construction would take place approximately from January through August 2007. Excavation for the inlet/outlet and vault construction would be done as part of the grading and reservoir site preparation, as described above. Inlet/outlet and vault construction would require approximately 810 cubic yards of concrete. Approximately 41 trucks per day would deliver 410 cubic yards of concrete per day to the site for 2 days. Concrete would be obtained from the Southern California area, specifically Los Angeles and Orange Counties. Valves would be delivered on a flat-bed truck. Approximately one valve per day for 8 days would be delivered to the site.

Table 2-2 shows the equipment type and the approximate number required onsite for inlet/outlet and vault construction.

TABLE 2-2
110-MG Underground Storage Reservoir Construction
Estimated Equipment Requirements for Inlet/Outlet and Vault Construction

Equipment	Approximate Number Required
188-hp Excavator	1
196-hp Loader	1
345-hp Crane	2
600-hp Dump Truck	1
600-hp Tractor with End Dump	1
300-hp Utility Truck	2
340-hp Flatbed Truck	1
Welding Truck	1
Ventilation Blower	1
Generator	1
270-hp Water Truck	1
110-hp Backhoe	1
40-hp Hydraulic Power Unit	1
370-foot Augers	1
Concrete Pump	1
Pipe Carrier	1
112-hp Paver	1
Roller	1
145-hp Grader	1

Material and equipment would be staged onsite, as shown in Figure 2-1. Approximately 10 to 14 laborers would be required onsite during for inlet/outlet and vault construction.

Reservoir Construction

Reservoir construction activities include construction of the reservoir itself, construction of the reservoir access structures, and relocation of the 24-inch water distribution line to Forest Lawn Drive. Reservoir construction would take place approximately from September 2008 through August 2011. Construction of the approximately 3,500 feet of water distribution line in Forest Lawn Drive would take place during the last month of this construction period.

Materials required for reservoir construction include concrete and gravel. Approximately 98,686 cubic yards of concrete would be required. Approximately 15 trucks per day would deliver 135 cubic yards of concrete per day to the site. Approximately 18,336 cubic yards of gravel would be required. Approximately two trucks per day would deliver 36 cubic yards of gravel per day to the site. Concrete and gravel would be obtained from the Southern California area, specifically Los Angeles and Orange Counties.

Table 2-3 shows the type of equipment and the approximate maximum number needed during reservoir construction. The average number of pieces of equipment would be 14 per day. A peak of approximately 50 pieces of equipment would occur around April 2011 through July 2011.

TABLE 2-3
110-MG Underground Storage Reservoir Construction
Estimated Equipment Requirements for Reservoir Construction

Equipment	Approximate Maximum Number Required
16-ton Dump Trucks	40
0.75-cubic-yard Power Shovels with FE Attachment	4
300-hp Bulldozers	4
1.5-cubic-yard Front-end Loaders	4
40-ton Crawler Cranes	18
5,000-gallon Water Trucks	2
30,000-pound Grader	1
240-hp Tractor	1
Vibratory Roller	1

Material and equipment would be staged onsite as shown in Figure 2-1.

During the reservoir construction phase, the average number of laborers onsite would be approximately 80 per day. A peak of 180+ laborers per day for concrete work would occur around September through December 2009.

Construction of the water distribution line in Forest Lawn Drive would require an approximately 4-foot-wide open trench. The pipeline would be placed roughly south of the Forest Lawn Drive centerline, in the eastbound lanes. Construction would require closing one or two lanes of eastbound traffic for the approximately 1-month construction period. A 6- to 7-person crew is anticipated, using a backhoe, crane, compactor, dump truck, two pick-up trucks, welding truck, and water truck.

Burying the Reservoir

Activities related to burying the reservoir would occur from approximately August 2011 through April 2013.

Approximately 420,000 cubic yards of fill material would be required to bury the reservoir. Of this amount, 156,000 cubic yards would be obtained onsite from excavation of the reservoir pad; and 264,000 cubic yards would be imported. An estimated 80 truckloads per day for 166 days would be necessary to import all the soil material, resulting in a total of approximately 13,250 truck trips between August 2011 and March 2012. Approximately 320 cubic yards of concrete would be required to construct gutter drains around the reservoir. An estimated eight truckloads of concrete per day for 4 days would be required.

Following burying of the reservoir, banked topsoil would be uniformly distributed. The reservoir would be seeded with a mix of grassland and shrubland species native to the area.

Table 2-4 shows the type of equipment and the approximate number required to bury the reservoir.

TABLE 2-4
110-MG Underground Storage Reservoir Construction
Estimated Equipment Requirements to Bury the Reservoir

Equipment	Approximate Number Required
230-hp, 4-cubic-yard Front-end Loader	2
340-hp Bulldozer	6
240-hp Motor Grader	2
5,000-gallon Water Truck	3
180-hp Compactor	4
Water Tank	2
Pick-up Truck	3
400-hp, 20-cubic-yard Dump Truck	15

Approximately 19 to 42 laborers would be required onsite during the reservoir tank burying phase of construction.

2.2.2.1.3 Operation and Maintenance

Following construction, native vegetation would be planted on the side slopes and top of the reservoir. The remainder of the HWSG site that would be disturbed during construction would be decompacted and seeded with a mix of grassland and shrubland species native to the area.

During operation of the reservoir, Department staff would check the facility approximately once a week, while security would check the facility daily. The reservoir inlet/outlet valves would be checked once a year. The tanks that make up the reservoir require cleaning approximately once every 4 years. It is likely that the Department would stagger tank cleaning such that one tank is cleaned every 2 years. Tank cleaning takes approximately 1 week and requires a utility truck and possibly a dump truck if there is a significant amount of sand at the bottom of the reservoir. Trucks and personnel would access the reservoir through the access structures constructed on top of the reservoir. Water for reservoir cleaning would likely be provided by the 24-inch water distribution line in Forest Lawn Drive.

All reservoir hatches, vents, and accesses would have intrusion alarms and may be enclosed by fencing. In addition, a security camera would be installed that would be monitored remotely.

2.2.2.2 4-MW Hydroelectric Power Generating Facility

2.2.2.2.1 Overview

To capitalize on a green power opportunity and reduce the water pressure coming into the new storage reservoir, LADWP would construct a 4-MW hydroelectric plant at or near the HWSG site. The hydroelectric plant would require a powerhouse, connecting to the existing 34.5-kilovolt (kV) LADWP distribution system, outdoor substation, and backup emergency generator. Hydroelectric plant components are shown in Figure 2-3, Draft Plan View, and Figure 2-4, Draft Elevation View.

The powerhouse would house the turbine/generator, associated isolation valves, piping, electrical switchgear, controls, and instrumentation. The inlet pipeline connection would be approximately 56 inches in diameter, and the outlet would be approximately 68 inches in diameter. The powerhouse would be operated from a remote control center. The powerhouse would be constructed of reinforced concrete and would be approximately 50 feet wide by 70 feet long. The powerhouse would be approximately 30 feet high and would be partially buried, with the highest point roughly 18 feet above ground.

The hydroelectric-generated power would be connected to the existing 34.5-kV LADWP distribution system. The existing 34.5-kV overhead power line runs along the north side of Forest Lawn Drive. No new power poles would be needed to connect to the existing 34.5-kV line.

The outdoor substation would consist of a main transformer and related substation equipment and would require a switchyard with a chain-link fence enclosure approximately 60 feet by 60 feet. LADWP may decide to eliminate the outdoor substation, in which case the electrical equipment would be housed in the powerhouse. In that case, the powerhouse would be increased in size to approximately 50 feet wide by 86 feet long.

For backup station service power, an emergency generator of approximately 125-kW capacity would be housed in a separate enclosure from the powerhouse and switchyard. The enclosure would be either an outdoor metal shed type or a brick building roughly 30 feet wide by 25 feet long by 10 feet tall.

2.2.2.2.2 Construction

Construction of the hydroelectric plant would last approximately 18 months, from January 2010 to June 2011.

The hydroelectric plant would be constructed at the west end of the HWSG site, as shown in Figure 2-1. Approximately 2 acres would be disturbed during construction.

Approximately 6,000 cubic yards of soil material would be excavated for the construction of the hydroelectric plant. An estimated 2,600 cubic yards would be exported; and an estimated 3,400 cubic yards would be retained onsite for burial of the hydroelectric plant. Based on using 16-cubic-yard capacity dump trucks to export the soil material, a total of eight truckloads per day for a duration of 20 days would be necessary for a total of 160 truck trips between January and May 2010.

An estimated 960 cubic yards of concrete would be required during construction, which would require approximately 80 trips by a 12-cubic-yard concrete mixer between June and December 2010. Other equipment required for the facility would be delivered by tractor trailer and flat-bed truck. Approximately 312 tractor-trailer trips and 900 flat-bed trucks would be required over the duration of construction.

Table 2-5 shows the type of equipment and the approximate number required onsite to construct the hydroelectric plant.

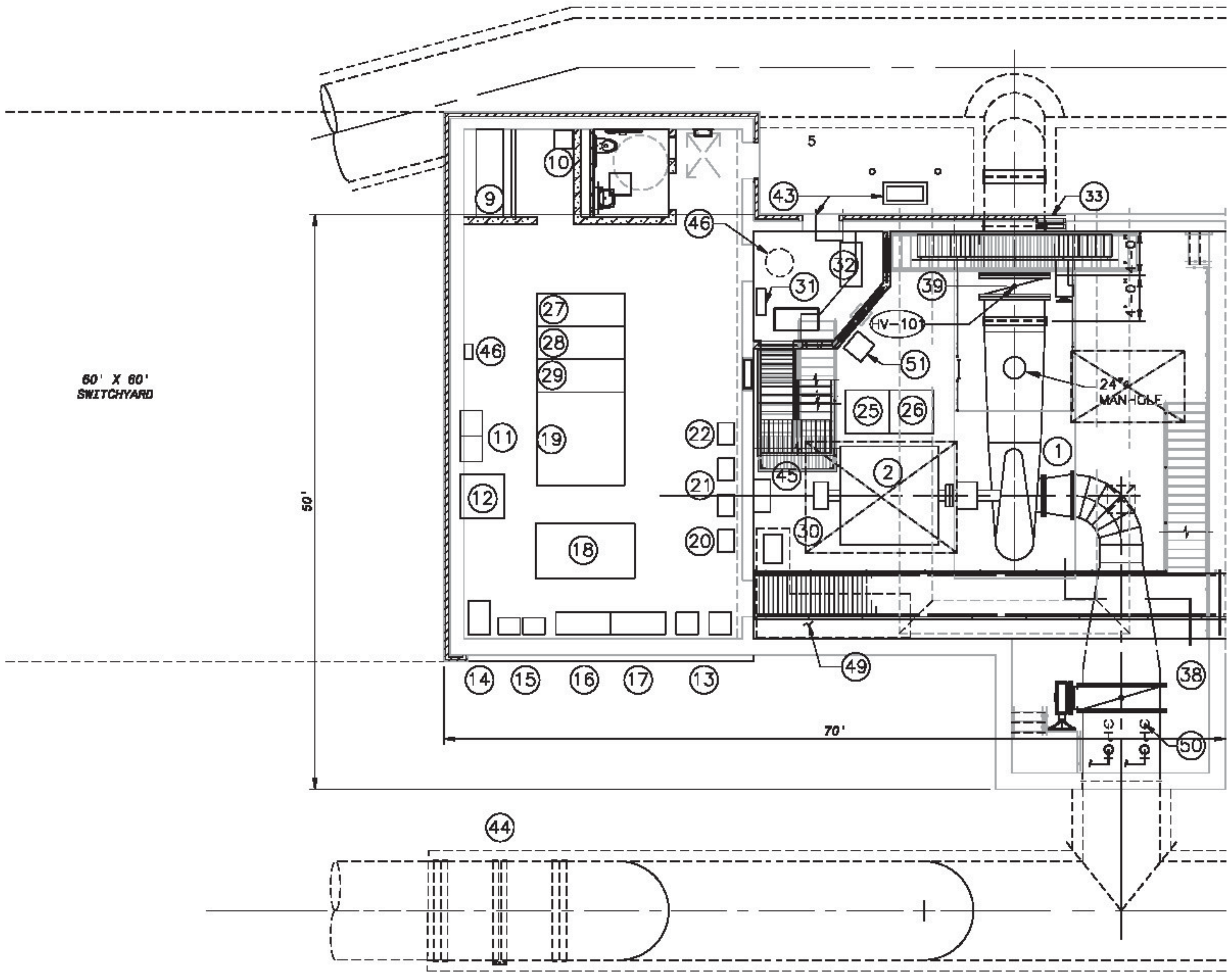
TABLE 2-5
Hydroelectric Plant
Estimated Construction Equipment Required Onsite

Equipment	Approximate Number Required
75-hp Bulldozer	1
200-hp Bulldozer	2
300-hp Bulldozer	1
30,000-lb Grader	4
11-cubic-yard Scraper	2
¾-cubic-yard Hyd. Excavator	1
Front-end Loader	1
Towed Sheep Foots Roller	1
Crane	3
Concrete Pumper	3
Water Truck	1
Fork Loader	8

An average of 40 laborers would be required onsite each day during construction.

2.2.2.2.3 Operation and Maintenance

The hydroelectric facility would not require staff onsite; rather, the facility would be operated remotely, from the LADWP area control center. An LADWP operator would visit the facility daily or weekly. Security would check the facility daily. The facility would have video surveillance cameras as well as other security features.



③ RESERVED
④ RESERVED
⑤ RESERVED
⑥ RESERVED
⑦ RESERVED
⑧ RESERVED
⑨ BATTERIES
⑩ EYE WASH/SHOWER STATION
⑪ BATTERY CHARGERS
⑫ UPS
⑬ LIGHTING TRANSFORMER
⑭ AUTOMATIC TRANSFER SWITCH
⑮ PANELBOARDS
⑯ ESSENTIAL MCC
⑰ NONESSENTIAL MCC
⑱ PLC, I/O RACK, AND COMMUNICATION CABINET
⑲ STATION AUXILIARY TRANSFORMER
⑳ UPS PANELBOARD
㉑ PANELBOARD
㉒ DISTRIBUTION PANEL
㉓ RESERVED
㉔ RESERVED
㉕ GENERATOR TERMINATION CUBICLE
㉖ GENERATOR NEUTRAL GROUNDING CUBICLE
㉗ OUTGOING FEEDER INTERFACE SWITCHGEAR
㉘ GENERATOR CIRCUIT BREAKER
㉙ STATION AUXILIARY TRANSFORMER CIRCUIT BREAKER
㉚ COOLING WATER PUMPS
㉛ FIRE ALARM PANEL
㉜ DESK
㉝ VENTILATION LOUVER (TYP 3 PLACES)
㉞ RESERVED
㉟ RESERVED
㊱ RESERVED
㊲ RESERVED
㊳ BUTTERFLY VALVE (MOTOR OPERATED)
㊴ TURBINE SHUTOFF VALVE (MOTOR OPERATED)
㊵ BLOWOFF ASSEMBLY
㊶ SANITARY DRAINAGE SUMP
㊷ AIR RELEASE / AIR VACUUM VALVE
㊸ HEAT PUMP & FAN COIL.
㊹ MONOLITHIC ISOLATING JOINT
㊺ EXCITATION PANEL
㊻ WATER HEATER (BELOW CONTROL ROOM)
㊼ RESERVED
㊽ RESERVED
㊾ COOLING WATER SYSTEM AS DESIGNATED BY GENERATOR SUPPLIER
㊿ COOLING WATER INLET AND DISCHARGE PORT (TYP OR 4)
(51) GENERATOR BRAKE AIR SYSTEM BY GENERATOR SUPPLIER
(52) RESERVED

Figure 2-3
SLRC SRP Draft EIR
Proposed 4-MW Hydroelectric Power Generating Facility
Draft Plan View

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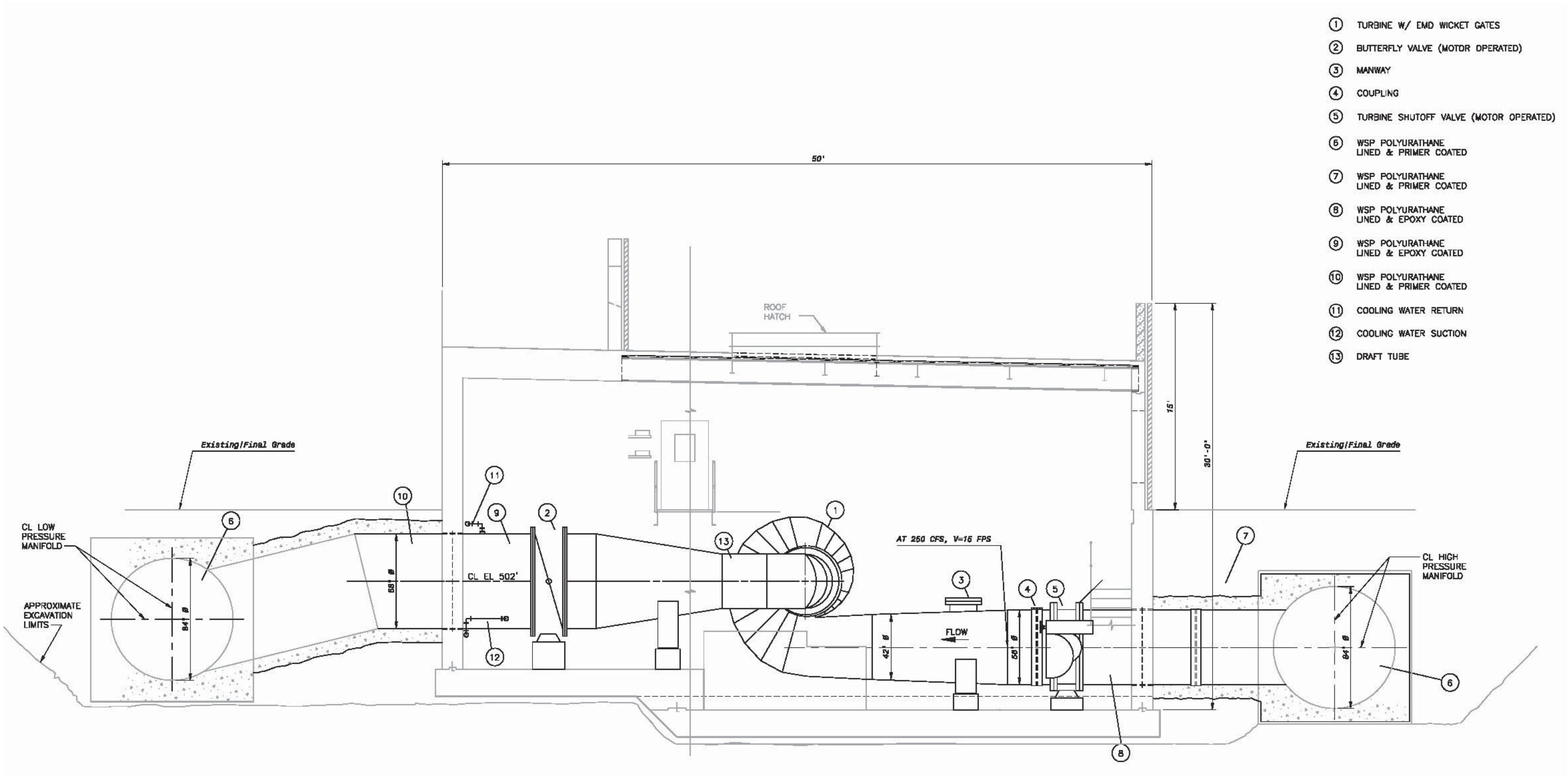

Figure 2-4
SLRC SRP Draft EIR
Proposed 4-MW Hydroelectric
Power Generating Facility
Draft Elevation View

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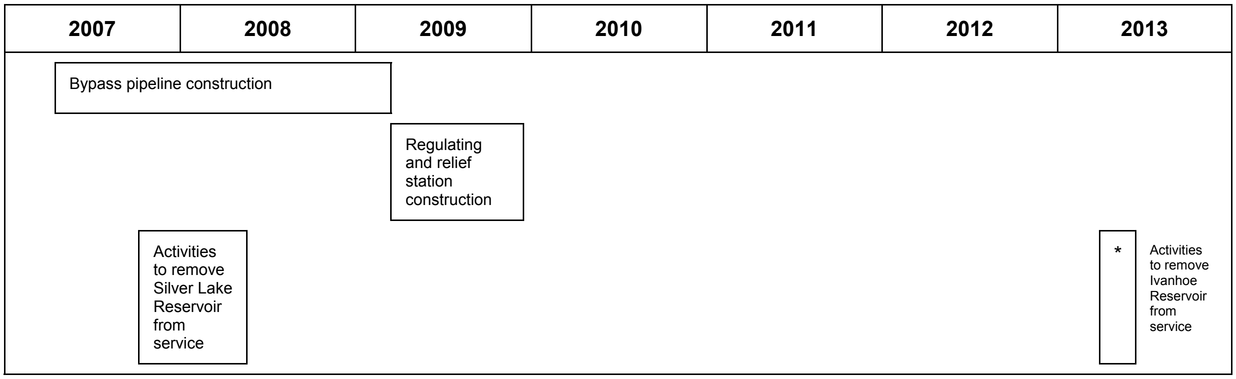
Quarterly preventative maintenance would be performed on the plant ancillary equipment (cooling water system, air compressor, electric motor actuators), requiring an estimated one service truck for 1 day. Once a year, the facility would be shut down for internal and external inspection. This maintenance activity would require an estimated three service trucks per day for 2 weeks. The facility would be shut down for overhaul approximately once every 5 years. This maintenance activity would require an estimated three service trucks and one crane per day for 4 weeks.

2.2.3 SLRC Facilities

Facilities to be constructed and operated at or near the SLRC include a bypass pipeline and a regulating station, as shown in Figure 2-5. Additionally, two relief stations to support the regulating station would be constructed, and activities necessary to remove Ivanhoe and Silver Lake Reservoirs from the distribution system would be conducted. Construction and operation information for these facilities and activities is described in detail below. Construction working hours for all activities would be between 7:00 a.m. and 8:00 p.m., Monday through Friday and 8:00 a.m. and 5:00 p.m. Saturday.

Construction of the bypass pipeline and regulating station are not anticipated to overlap, as roughly shown below. However, activities related to removal of Silver Lake Reservoir from service would overlap with bypass pipeline construction.



2.2.3.1 Bypass Pipeline

2.2.3.1.1 Overview

A bypass pipeline is needed to convey water through the SLRC to the rest of the system. The bypass pipeline would consist of approximately 4,900 linear feet long of 66-inch-diameter pipe.

The pipe would be tunneled beneath various streets, and is anticipated to begin at the intersection of West Silver Lake Drive and Armstrong Avenue running south on West Silver Lake Drive for approximately 3,800 feet; turning southeasterly on Redesdale Avenue for approximately 900 feet; turning southwesterly toward the grassy area south of Silver Lake Reservoir dam approximately 100 feet. Redesdale Avenue does not intersect West Silver Lake Drive; it is a paper street, and Redesdale Avenue is approximately 85 feet higher than West Silver Lake Drive.

Because the bypass line would need to be 30 to 40 feet deep, the method of construction is tunneling. For tunneling operations, jacking (entrance) and receiving (exit) pits would be needed at the ends of the pipe for equipment and to export materials. Figure 2-5 shows the expected location of the bypass pipeline, entrance and exit pits, and materials and equipment storage areas. The pipeline would be constructed of welded steel and the space between the tunnel and the steel pipe would be grouted.

2.2.3.1.2 Construction

Construction of the bypass pipeline would take place approximately from May 2007 through April 2009.

Jacking and receiving pits for bypass pipeline tunneling would likely be located in West Silver Lake Drive, as shown in Figure 2-5. Roughly 5 to 15 feet around each pit would be blocked off, and the traffic around each pit would be reduced to one lane in each direction. An additional jacking pit would likely be located in the grassy area south of Silver Lake Reservoir Dam. The portion of the bypass pipeline within the grassy area south of Silver Lake Reservoir dam would likely be constructed by trench method.

Approximately 6,625 cubic yards of soil would be removed during bypass pipeline construction. This soil would be exported to the HWSG site. Based on an estimate of 20 feet of tunneling per day and 10-cubic-yard capacity dump trucks, two to three truckloads of soil would be exported from the site each day for 278 days during the periods of June 2007 through February 2008 and October 2008 through February 2009.

Steel pipe would be delivered to the site on flat-bed trucks. Approximately six trucks per day would deliver 240 feet of pipe per day for approximately 21 days, staggered throughout the construction period. Approximately nine trucks per day would deliver 90 cubic yards of concrete per day to the site for approximately 31 days, for a total of roughly 2,542 cubic yards of concrete.

Table 2-6 shows the type of equipment and the estimated number required onsite to construct the bypass pipeline.

During bypass pipeline construction, the average number of laborers onsite would be an estimated 10 to 14 per day for open trench construction and 5 to 7 per day for tunneling construction.

2.2.3.1.3 Operation and Maintenance

The bypass pipeline would typically not require any maintenance during its lifespan.

2.2.3.2 Regulating Station and Relief Stations

2.2.3.2.1 Overview

A regulating station to control water pressure would likely be located at the SLRC in the grassy area just south of the Silver Lake Reservoir dam, as shown in Figure 2-6. A bypass valve and an isolation valve for the existing Silver Lake Reservoir outlet line would each be enclosed in buried vaults in the same location as the regulating station.

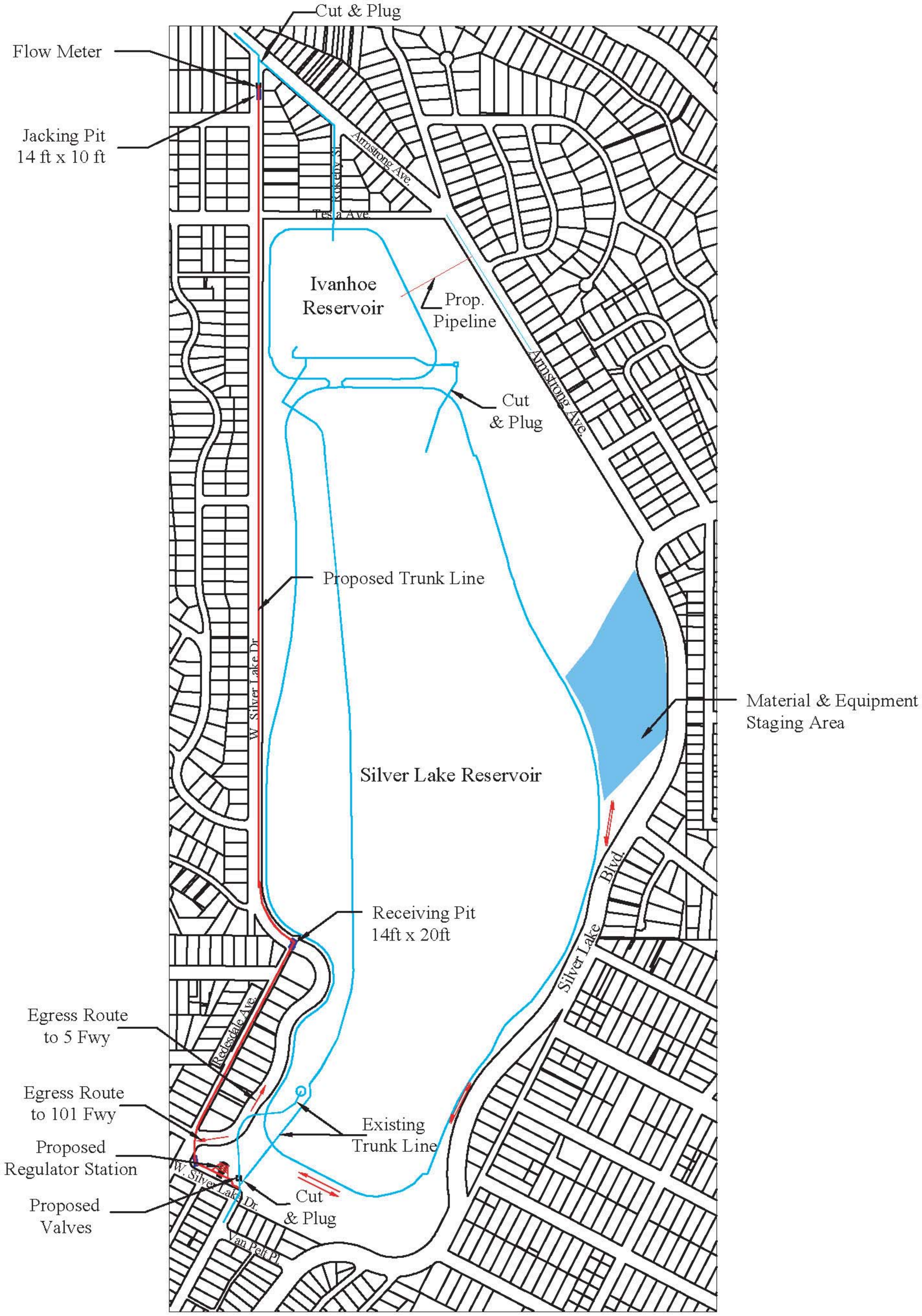


Figure 2-5
SLRC SRP Draft EIR
Proposed Facilities and Staging
Areas at the SLRC
Draft Site Plan

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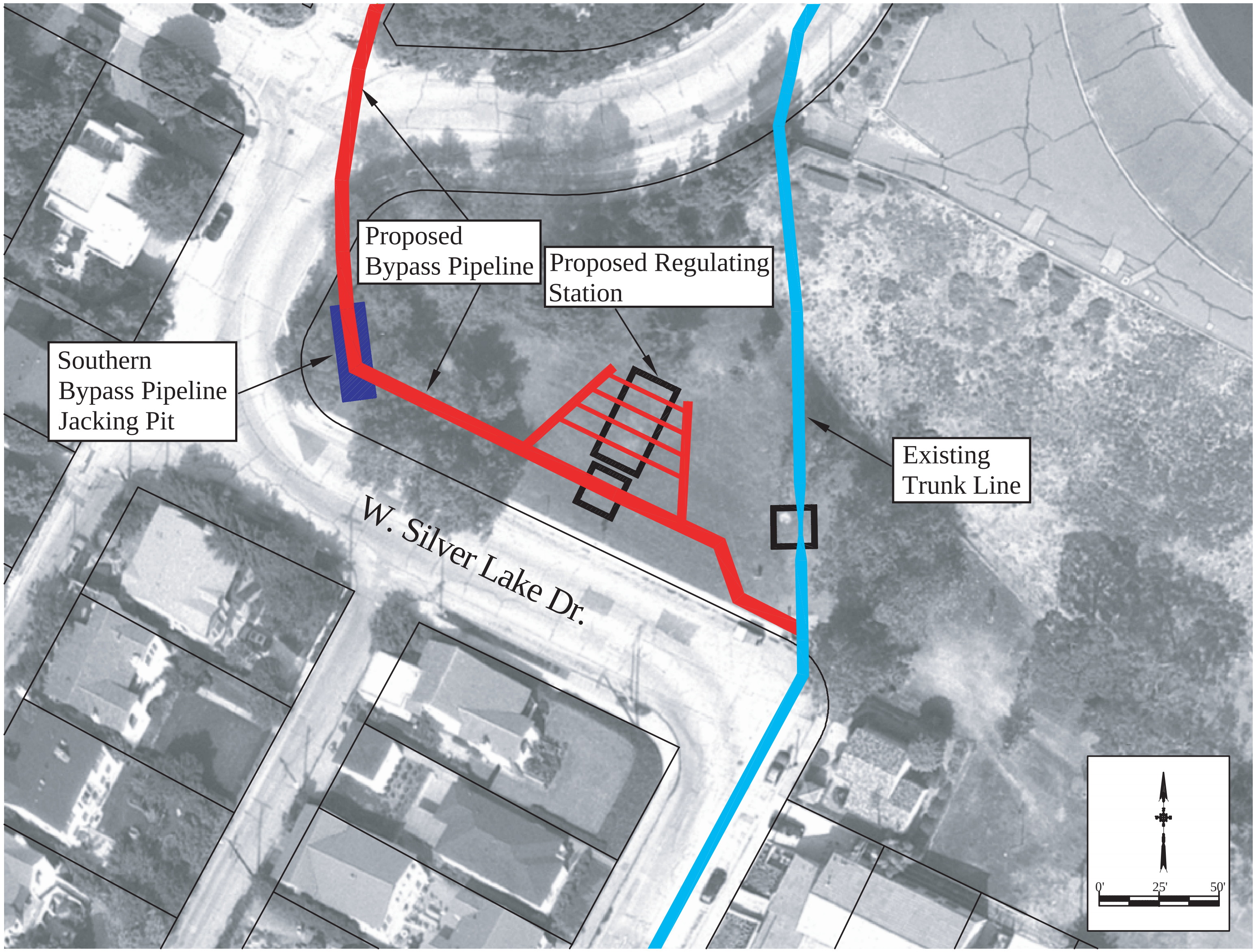

Figure 2-6
SLRC SRP Draft EIR
Proposed Regulating Station
Draft Site Plan

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TABLE 2-6
Bypass Pipeline
Estimated Construction Equipment Required Onsite

Equipment	Approximate Number Required
188-hp Excavator	1
196-hp Loader	1
345-hp Crane	2
600-hp Dump Truck	1
600-hp Tractor with End Dump	1
300-hp Utility Truck	2
340-hp Flat-bed Truck	1
Welding Truck	1
Ventilation Blower	1
Generator	1
275-hp Water Truck	1
Drill Rig	1
110-hp Backhoe	1
Tunnel Boring Machine	1
Hydraulic Boring Machine	1
40-hp Hydraulic Power Unit	1
370-foot Auger	1
Concrete Pump	1
Pipe Carrier	1
112-hp Paver	1
Roller	1
145-hp Grader	1

The regulating station would be housed in a vault approximately 45 feet long by 25 feet wide by 14 feet deep that would be buried and covered with grass. Access to the vault would be either from two 3-foot by 3-foot steel hatches or two 48-inch-diameter lids on each end of the vault. The bypass valve would be housed in a vault approximately 14 feet long by 15 feet wide by 12 feet deep. The isolation valve would be housed in a 14-foot by 15-foot by 12-foot vault. Access to each vault would be either through a 3-foot by 3-foot steel hatch or a 48-inch-diameter lid. In addition, there would be six valve actuators housed in a 48-inch-diameter by 14-foot-high can (cylinder structure) that is buried and has top access. All hatch/lid and vault dimensions are approximate.

Aboveground facilities anticipated include two ventilation hoods (4 feet in diameter and 3 feet high), four ventilation stand-pipes (1 foot in diameter and 3 feet high), and a control cabinet (4 feet square and 6 feet high). The control cabinet may be located near the existing chlorination building. All dimensions are approximate.

The regulating station and associated facilities would likely be constructed within a 30,000-square-foot area within the grassy area just south of Silver Lake Reservoir dam. However, it is possible that the trunk line for the regulating station would need to be constructed in West Silver Lake Drive adjacent to the grassy area. If the trunk line were to be constructed in West Silver Lake Drive, the construction duration would be roughly 2 weeks. Construction traffic for the regulating station would move between the regulating station site and the staging area in the meadow either within the property boundary of the SLRC, as indicated by the red arrows in Figure 2-5, or via surface streets (Silver Lake Boulevard, Van Pelt Place, and West Silver Lake Drive).

In addition to the regulating station, two relief stations would be constructed. The first one would likely be located at the northeast corner of West Silver Lake Drive and Silver Lake Boulevard, as shown in Figure 2-7, in an area of existing aboveground utilities. Facilities would include two buried vaults with top access to house the relief valve and the back-flow preventer. However, there is a possibility that the back-flow preventer could be an aboveground facility, approximately 8 feet long and 3 to 4 feet high. Approximately 100 feet of 12-inch pipe would be constructed by open-trench method crossing Silver Lake Boulevard. Construction of the first relief station would take approximately 6 to 7 weeks.

A second relief station would likely be located at London Avenue and Dillon Street (Figure 2-7). Facilities would include a buried vault with top access to house the relief valve. Construction includes possible relocation of existing substructures and realignment of the existing 60-inch trunk line. The realignment of the 60-inch trunk line would impact the parking lot at 3125 London Street. Construction of the second relief station would take approximately 11 weeks.

2.2.3.2.2 Construction

Construction of the regulating station and relief stations would take place approximately from April through November 2009.

Approximately 330 cubic yards of concrete would be required for construction of the regulating station. Approximately 5 to 15 trucks per day would deliver up to 130 cubic yards of concrete per day to the site for approximately 5 days. Concrete would be obtained from the Southern California area, specifically Los Angeles and Orange Counties.

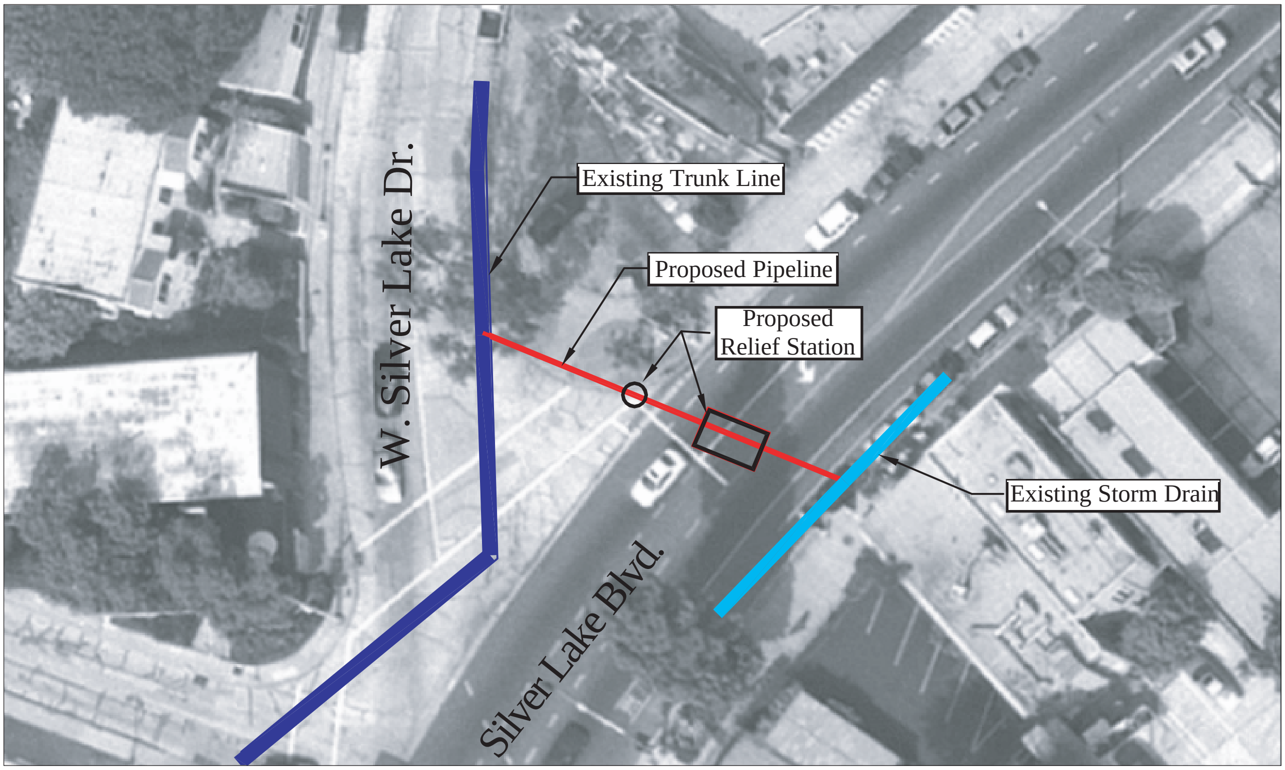
Table 2-7 shows the type of equipment and the estimated number required onsite to construct the regulating station and relief stations.

During regulating station and relief stations construction, the average number of laborers onsite would be approximately 10 to 14 per day.

2.2.3.2.3 Operation and Maintenance

During operation, the regulating station would normally run 24 hours per day. Maintenance of the regulating station would be performed periodically. Typical activities would include verifying valve settings, checking for debris in the lines, and cleaning the vault. Depending on the activity, maintenance would take approximately 2 to 8 hours.

Relief Station #1



Relief Station #2

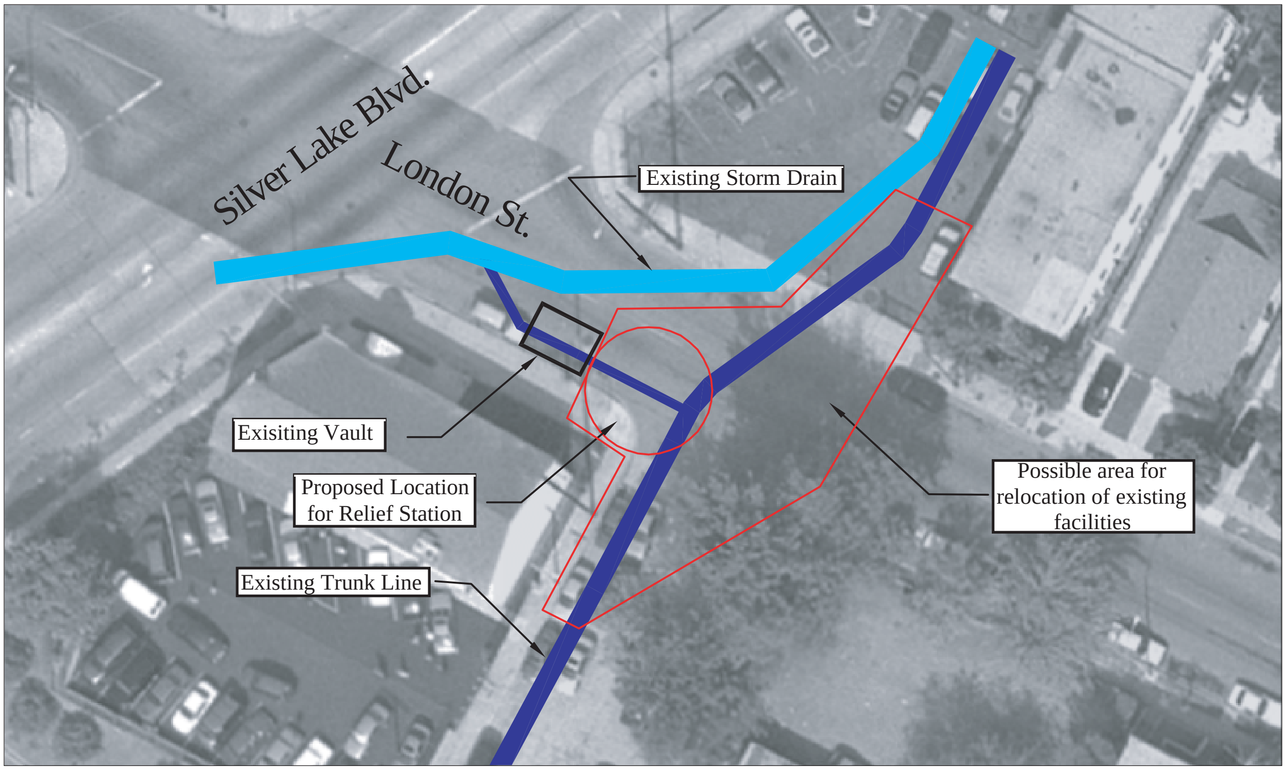


Figure 2-7
SLRC SRP Draft EIR
Proposed Relief Stations
Draft Site Plans

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The relief stations would operate only when the regulating station is not operating properly. The maintenance activities and schedule for the relief stations would be similar to that of the regulating station.

TABLE 2-7
Regulating Station and Relief Stations
Estimated Construction Equipment Required Onsite

Equipment	Approximate Number Required
188-hp Excavator	1
196-hp Loader	1
345-hp Crane	2
600-hp Dump Truck	1
600-hp Tractor with End Dump	1
300-hp Utility Truck	2
340-hp Flat-bed Truck	1
Welding Truck	1
Ventilation Blower	1
Generator	1
275-hp Water Truck	1
110-hp Backhoe	1
40-hp Hydraulic Power Unit	1
370-foot Auger	1
Concrete Pump	1
Pipe Carrier	1
112-hp Paver	1
Roller	1
145-hp Grader	1

2.2.3.3 Removal of Silver Lake and Ivanhoe Reservoirs from Service

Construction

Silver Lake Reservoir

To remove Silver Lake Reservoir from service, the water level for both reservoirs would be lowered temporarily to install valves and appurtenances required by the Department of Health Services (DHS) to permanently isolate the reservoirs from the drinking water distribution system. A 72-inch pipeline located at the northeast corner of Silver Lake Reservoir (inside the reservoir property) would be cut and plugged and valves would be installed on the existing outlet line just south of Silver Lake dam (near the regulating station).

The water level in Silver Lake Reservoir would be lowered approximately 16 feet, to an elevation of 435 feet. Typical operating levels for Silver Lake Reservoir are between 440 and 451 feet, although the elevation of Silver Lake Reservoir was at 437 feet as recently as December 2004. The water level in Ivanhoe Reservoir would be lowered approximately 18 feet to an elevation of 433 feet. Ivanhoe normally operates at full elevation of 451 feet.

Activities required to remove Silver Lake Reservoir from service would be conducted approximately between October 2007 and April 2008. It would take roughly 2 months for the reservoirs to be lowered, approximately 2 months for the valves and appurtenances to be installed, and roughly 2 months for reservoir elevation to return to operating levels. Construction would require the disturbance of less than an acre within the SLRC at the northeast corner of Silver Lake Reservoir and within the area where the regulating station would be constructed.

Table 2-8 shows the type of equipment and the estimated number required for construction activities related to taking Silver Lake Reservoir out of service. During construction related to taking Silver Lake Reservoir out of service, the average number of laborers required would be approximately 10 to 14 per day.

TABLE 2-8
Activities Related to Taking Silver Lake and Ivanhoe Reservoirs Out of Service
Estimated Construction Equipment Required

Equipment	Approximate Number Required
188-hp Excavator	1
196-hp Loader	1
345-hp Crane	2
600-hp Dump Truck	1
600-hp Tractor with End Dump	1
300-hp Utility Truck	2
340-hp Flat-bed Truck	1
Welding Truck	1
Ventilation Blower	1
Generator	1
275-hp Water Truck	1
Drill Rig	1
Backhoe	1
Concrete Pump	1
112-hp Paver	1
Roller	1
145-hp Grader	1

Ivanhoe Reservoir

To remove Ivanhoe Reservoir from service, the 60-inch pipeline on Armstrong Avenue at West Silver Lake Drive would be cut and plugged. The existing 60-inch line would then be abandoned and slurry filled. The pipeline may be backfilled either by using two existing access points, or a new access may be required. If a new access point is necessary, one would be located on Armstrong Avenue or Rokeby Street, which would require in-street construction that would disrupt street parking and one lane of traffic. The existing 60-inch Silver Lake bypass pipeline just south of Silver Lake Dam would also be cut and plugged. Construction would require the disturbance of the area just east of where the regulating station would be constructed.

When Ivanhoe Reservoir is removed from service, it would no longer be connected to the distribution system. To add make-up water to Ivanhoe Reservoir, a new conveyance pipe to the reservoir would be routed from an existing 16-inch pipe on Armstrong Avenue. The pipe would likely supply Ivanhoe Reservoir from above-surface elevation to comply with DHS regulations. Also required would be installation of valves and a vault within the SLRC, which would require the disturbance of less than 0.5 acre in the grassy area east of Ivanhoe Reservoir.

All of the above construction would take 2 to 3 months, estimated to be between May and July 2013. Table 2-8 shows the type of equipment and the estimated number required for construction activities related to taking Silver Lake Reservoir out of service. During construction related to taking Ivanhoe Reservoir out of service, the average number of laborers required would be approximately 10 to 14 per day.

Reservoir Operation/Maintenance

It is currently planned to remove Silver Lake Reservoir from service sometime in 2008-2009 while maintaining Ivanhoe Reservoir in service to feed the distribution system. Once removed from service, the water in Silver Lake Reservoir would be considered nonpotable; therefore, Silver Lake Reservoir would be maintained at a lower elevation than Ivanhoe to prevent cross contamination. Silver Lake Reservoir would continue to be maintained at historical operating levels (typically between 440 and 451 feet). Ivanhoe Reservoir would be removed from service approximately 2 months after the storage reservoir at the HWSG site is fully operational, estimated to be July 2013. When Ivanhoe is removed from service, make-up water would be added to Ivanhoe via the service line off the existing line on Armstrong Avenue, which would then flow into Silver Lake.

Silver Lake and Ivanhoe Reservoirs are in an urban setting and are eutrophic, as defined by existing nutrient concentrations. Currently, the reservoirs are managed by LADWP as drinking water reservoirs and are maintained in a mostly clear condition by the application of approved treatment chemicals, including chlorine. Following the removal of the reservoirs from water distribution system, the reservoirs would be allowed to revert to a more natural state. This would be accomplished by discontinuing the addition of water treatment chemicals. LADWP expects that, as a result, the water in the reservoirs would generally change from a clear appearance to a less transparent, green color. This change in color would be due to increased algal growth because of sufficient existing nutrient concentrations. It is not expected that the amount of algae would exceed that which has been experienced periodically in the past. LADWP has had positive water quality experiences at Hollywood and Encino Reservoirs since they were removed from service. It is expected that a series of changes would occur over time in the types of organisms present as the reservoir adapts to the new operating regimen. Because the two reservoirs would be removed from service to the distribution system at different times, there would be a period of approximately 4 to 5 years when the color of the water in Silver Lake Reservoir would change to green while the water in Ivanhoe Reservoir remains blue as a result of water-treatment chemicals.

LADWP proposes to follow an adaptive management plan whereby potential management tools will be evaluated after the reservoirs achieve a more natural condition. The plan includes semiannual monitoring for nutrients (nitrogen and phosphorous); bimonthly water quality surveys (algal count, chlorophyll, transparency); turning on the mixer as needed; and in-reservoir alum treatment in the unexpected event that algae reaches excessive levels.

The SLRC would be maintained consistent with the appearance and condition that LADWP has provided at this facility in recent years. Current maintenance of the SLRC consists of weed abatement, brush trimming, maintaining the meadow area, and relandscaping on an as-needed basis; these activities would continue into the future. When relandscaping is necessary, LADWP would attempt to follow water conservation principles in consultation with the Silver Lake community.

All of the above would be described in detail in a Property Maintenance and Management Plan (PMMP) for the SLRC. The PMMP would be developed in consultation with the Silver Lake community, and would ensure that the reservoir complex is maintained despite being a nonoperating facility, taking community values into account. At a minimum, the PMMP would address the following elements:

- Water quality
- Water level
- Landscaping
- Facility maintenance
- Vector/pest control

3.0 Land Use

3.1 Setting

3.1.1 Regional Environment

The Proposed Project is located in the City of Los Angeles (City) (Figure 3-1). The City is located, along with 87 other incorporated cities, within the County of Los Angeles. The City is approximately 469 square miles and is irregularly shaped. Terrain in the City ranges in elevation from 0 feet to 5,074 feet, and 214 square miles of the City is comprised of mountains and hills. Los Angeles experiences a mostly Mediterranean climate (dry summers and wet winters), with variation in temperature depending on location within the City. With a population of 3,694,820 in 2000 (Census, 2000), Los Angeles is the second largest city in the United States. Population density in the City is 7,877 persons per square mile, sixth of all major U.S. cities.

There are 379 parks in Los Angeles; of these, Griffith Park is the largest at 4,100 acres and is the largest municipal park and urban wilderness area in the United States. However, "the City of Los Angeles has the lowest percentage of public open space and park land of any major urban center in the nation; only 4 percent of the land in the city is devoted to public open space and parks – compared to 9 percent in Boston and 17 percent in New York City (LAR Master Plan)."

3.1.2 HWSG Site

The HWSG site consists of 43 acres of vacant land adjacent to the LA River and between the City of Burbank and Griffith Park, as shown in Figure 3-2. An aerial view of the HWSG site is shown in Figure 3-3. The site is bounded on the north by the LA River and State Highway 134, and on the east and south by Forest Lawn Drive. The property is owned by the City of Los Angeles Department of Recreation and Parks, and LADWP retains an easement over the entire property. The entire property is bounded by a chain-link fence, and no public access is permitted.

3.1.2.1 Historical Use

The HWSG site was used for spreading LA River water for groundwater recharge from approximately 1915 through 1983. While the site has not been used for spreading in over 20 years, the site still retains indications of its past use, including remnants of spreading basins. More information about the historical use of the HWSG site can be found in Chapter 5.0, Water Resources, and also in Appendix B.

3.1.2.2 Existing Onsite and Surrounding Land Uses

Land use immediately adjacent to the HWSG site is composed of the LA River, State Highway 134, parks, and cemeteries. The HWSG site is fronted on the south by Mount Sinai Memorial Park and Forest Lawn Memorial Park. Griffith Park lies to the southeast of the site. Immediately north of the site is the LA River channel, along with the transportation corridor for State Highway 134. To the north of the highway are residential neighborhoods; north and west of the site are the extensive complexes of NBC Studios, Disney Studios, and Warner Brothers Studios. To the northeast of the site is the Los Angeles Equestrian Center, and just east of the site is Travel Town Museum in Griffith Park. An equestrian trail traverses a portion of the HWSG site.

3.1.2.3 Land Use Plans

The HWSG site is located within the planning areas of the City of Los Angeles General Plan, Hollywood Community Plan (HCP) (the relevant Land Use Element of the General Plan), the Los Angeles River Master Plan, and the Griffith Park Master Plan.

General Plan

Land use within the City is directed by the Los Angeles General Plan (General Plan), which provides a long-range guideline for development within the City limits. The General Plan divides the City into four major regions:

- The Metro Region includes "Downtown" and its surrounding areas. Most older neighborhoods are within the Metro Region, and it is the area of highest residential and commercial density. The HWSG site and SLRC are located within the Metro Region.
- The Western Region is located west of downtown and extends to the Pacific Ocean.
- The San Fernando Region is located north of the Hollywood Hills and is considered to have a distinctive suburban character.
- The Harbor Region is located along the southern tip of the Los Angeles peninsula and is connected by a narrow strip of real estate to the rest of the City.

The Citywide General Plan Framework, an element of the General Plan, identifies in Chapter 3, Land Use, and Chapter 6, Open Space and Conservation, goals, objectives, and policies that are pertinent to the Proposed Project. These are identified in Table 3-1 and are abbreviated to include only those items specific to the SLRC SRP.

Hollywood Community Plan

The Land Use Element of the General Plan is made up of 35 local area plans known as Community Plans plus plans for the Los Angeles International Airport and the Port of Los Angeles. The HWSG site is subject to land use guidelines set forth in the HCP (adopted December 13, 1988, with subsequent amendments adopted by City Council).

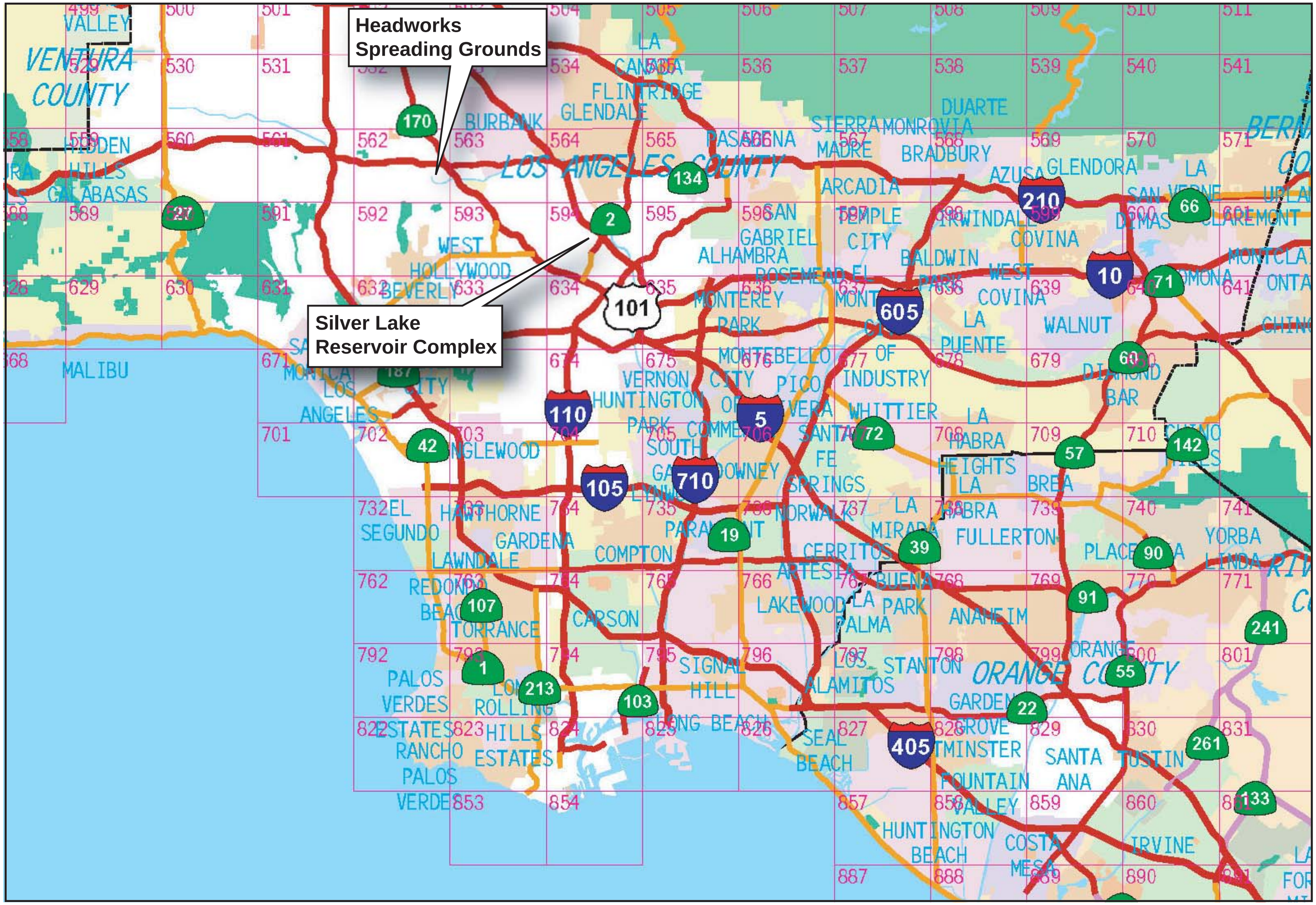

Figure 3-1
SLRC SRP Draft EIR
Project Vicinity

Source: Thomas Brothers, 2004.

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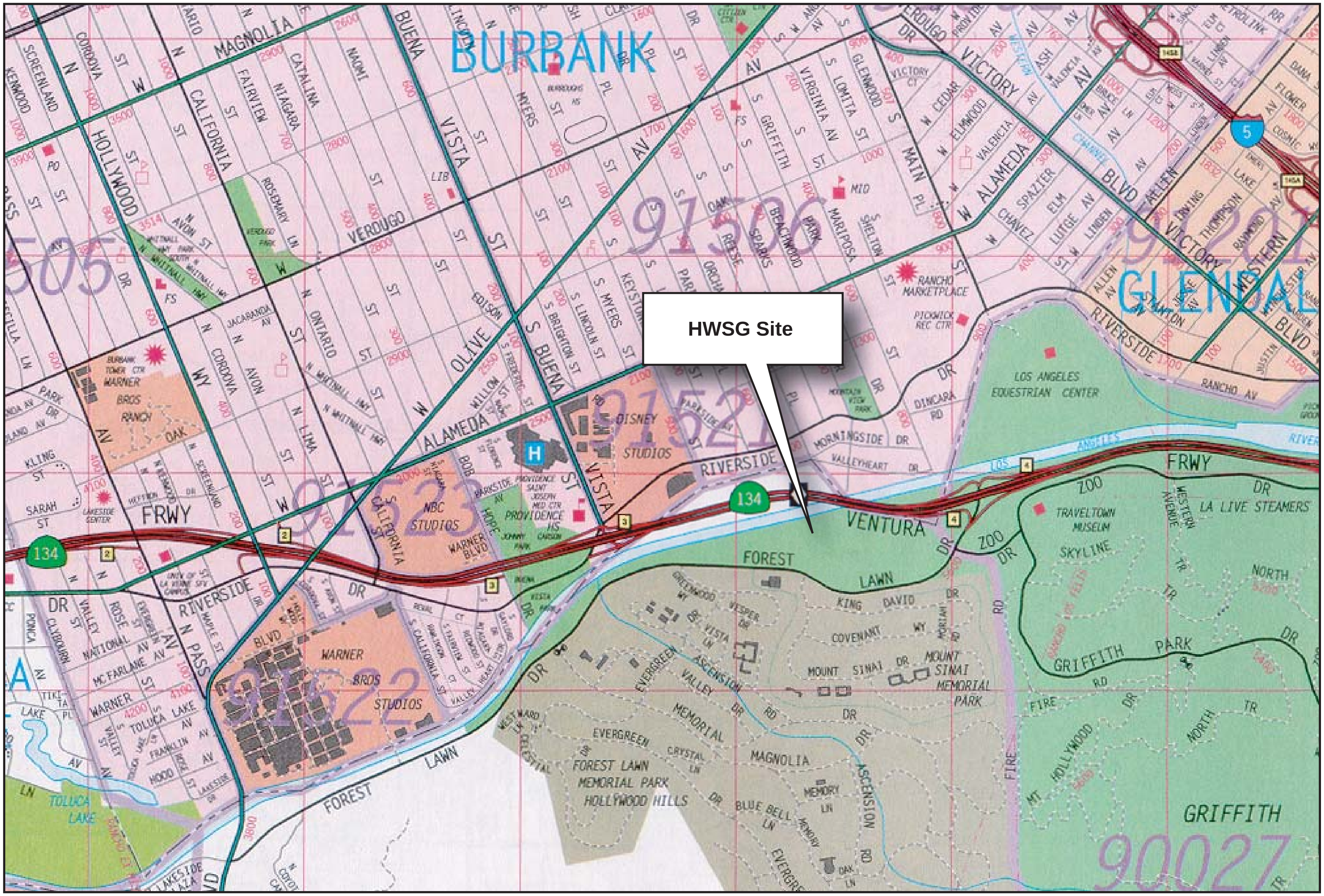

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Scale in Miles

Source: Thomas Brothers Los Angeles and Orange Counties, 2003.

Figure 3-2
SLRC SRP Draft EIR
Location of HWSG Site

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Figure 3-3
SLRC SRP Draft EIR
Aerial View of the HWSG Site

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TABLE 3-1
Land Use Issues, Goals, Objectives, and Policies from Citywide General Plan Framework
SLRC SRP

Goal	Objective	Policies
Chapter 1, Land Use		
3A: A physically balanced distribution of land uses that contributes towards and facilitates the: Provision of adequate infrastructure and public services Enhancement of recreation and open space opportunities	3.1: Accommodate a diversity of uses that support the needs of the City's existing and future residents, businesses, and visitors.	3.1.2: Allow for the provision of sufficient public infrastructure and services to support the projected needs of the City's population and businesses within the patterns of use established in the community plans as guided by the Framework Citywide Long-Range Land Use Diagram.
		3.1.3: Identify areas for the establishment of new open space opportunities to serve the needs of existing and future residents. These opportunities may include a citywide linear network of parklands and trails, neighborhood parks, and urban open spaces.
Chapter 6, Open Space and Conservation		
6A: An integrated citywide/regional public and private open space system that serves and is accessible by the City's population and is unthreatened by encroachment from other land uses.	6.2: Maximize the use of the City's existing open space network and recreation facilities by enhancing those facilities and providing connections, particularly from targeted growth areas, to the existing regional and community open space system.	6.2.2: Protect and expand equestrian resources, where feasible, and maintain safe links in major public open space areas such as Hansen Dam; Sepulveda Basin; Griffith Park; and the San Gabriel, Santa Susanna Mountains, and the Simi Hills.
	6.4: Ensure that the City's open spaces contribute positively to the stability of the communities and neighborhoods in which they are located or through which they pass.	6.4.8: Maximize the use of existing public open space resources at the neighborhood scale and seek new opportunities for private development to enhance the open space resources of the neighborhoods.

Figure 3-4 shows generalized land uses in the HCP area, and Figure 3-5 shows land use at the HWSG site and surrounding vicinity. The site is zoned OS (Open Space) and the General Plan Land Use is OS. The HWSG site is not within a special land use or zoning area. Below is a description of the OS Zone according to Section 12.04.05 of the City Planning and Zoning Code:

> It is the purpose of the "**OS**" Open Space Zone to provide regulations for publicly owned land in order to implement the City's adopted General Plan, including the recreation, parks and open space designations in the City's adopted district and community plans, and other relevant elements, including the Open Space, Conservation and Public Recreation Elements. Implementation of the General Plan will serve to protect and preserve natural resources and natural features of the environment; to provide outdoor recreation opportunities and advance the public

> health and welfare; to enhance environmental quality; to encourage the management of public lands in a manner which protects environmental characteristics; and to encourage the maintenance of open space uses on all publicly owned park and recreation land, and open space public land which is essentially unimproved.

Uses allowed in the OS Zone include public water supply reservoirs (uncovered) and accessory uses that are incidental to the operation and continued maintenance of such reservoirs.

The HCP Area comprises approximately 25.19 square miles, with an estimated 2002 population of 216,070 and population density of 8,578 persons per square mile.

The HCP includes four Specific or Redevelopment Plans: the Hollywood Specific Plan, the Mulholland Parkway Specific Plan (500-foot buffer), the Mulholland Parkway Specific Plan (0.5-mile buffer), and the Hollywood Redevelopment Plan. The HWSG site is not within or adjacent to any of these specific or redevelopment plans.

The HCP identifies approximate locations and dimensions for land use and is intended to be a guide for zoning. In addition to the issues, goals, objectives, and policies identified in the General Plan, the HCP identifies one general policy and one program that can be applied to the HWSG site. The general policy is that "…as much of the remaining undeveloped land as feasible is to be preserved for open space and recreational uses." The program, related to recreation, parks, and open space, is encouraging the "…creation of the Los Angeles River Greenbelt corridor which would be integrated with existing and proposed parks, bicycle paths, equestrian trails, and scenic routes."

Griffith Park, the largest municipal park and urban wilderness area in the United States, is located within the HCP area. Other parks and areas offering recreational activities in the HCP area include Runyon Canyon Park, Wattles Garden Park, Laurel Canyon Park, and the Hollywood Reservoir.

Los Angeles River Master Plan

As shown in Figures 3-2 and 3-3, the HWSG site is bounded on the north by the LA River. The Los Angeles County Departments of Public Works, Parks and Recreation, and Regional Planning jointly prepared a Master Plan for the LA River in 1996. The intent of the Master Plan was to provide guidance to "maintain the river as a resource that provides flood protection and opportunities for recreational and environmental enhancement, improves the aesthetics of the region, enriches the quality of life for residents, and helps sustain the economy of the region." The Los Angeles River Master Plan "covers the entire 51-mile length of the river and the 9-mile long Tujunga Wash which, between them, flow through 13 cities and nine Los Angeles City Council Districts." The HWSG site is located within Reach 4 (Glendale Narrows) of Los Angeles River Master Plan area. Figure 3-6 shows the location of the HWSG site along the LA River.

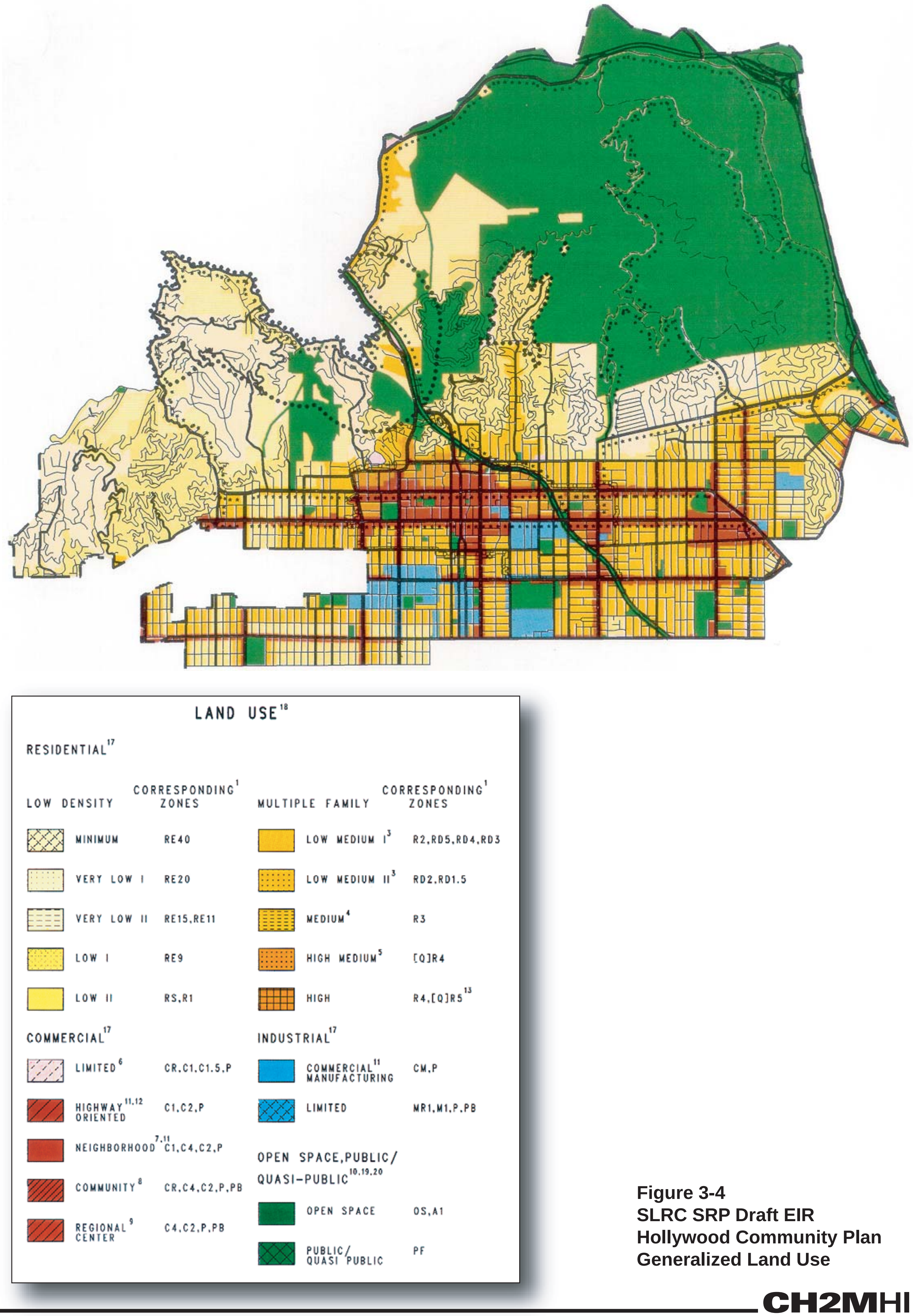

Figure 3-4
SLRC SRP Draft EIR
Hollywood Community Plan
Generalized Land Use

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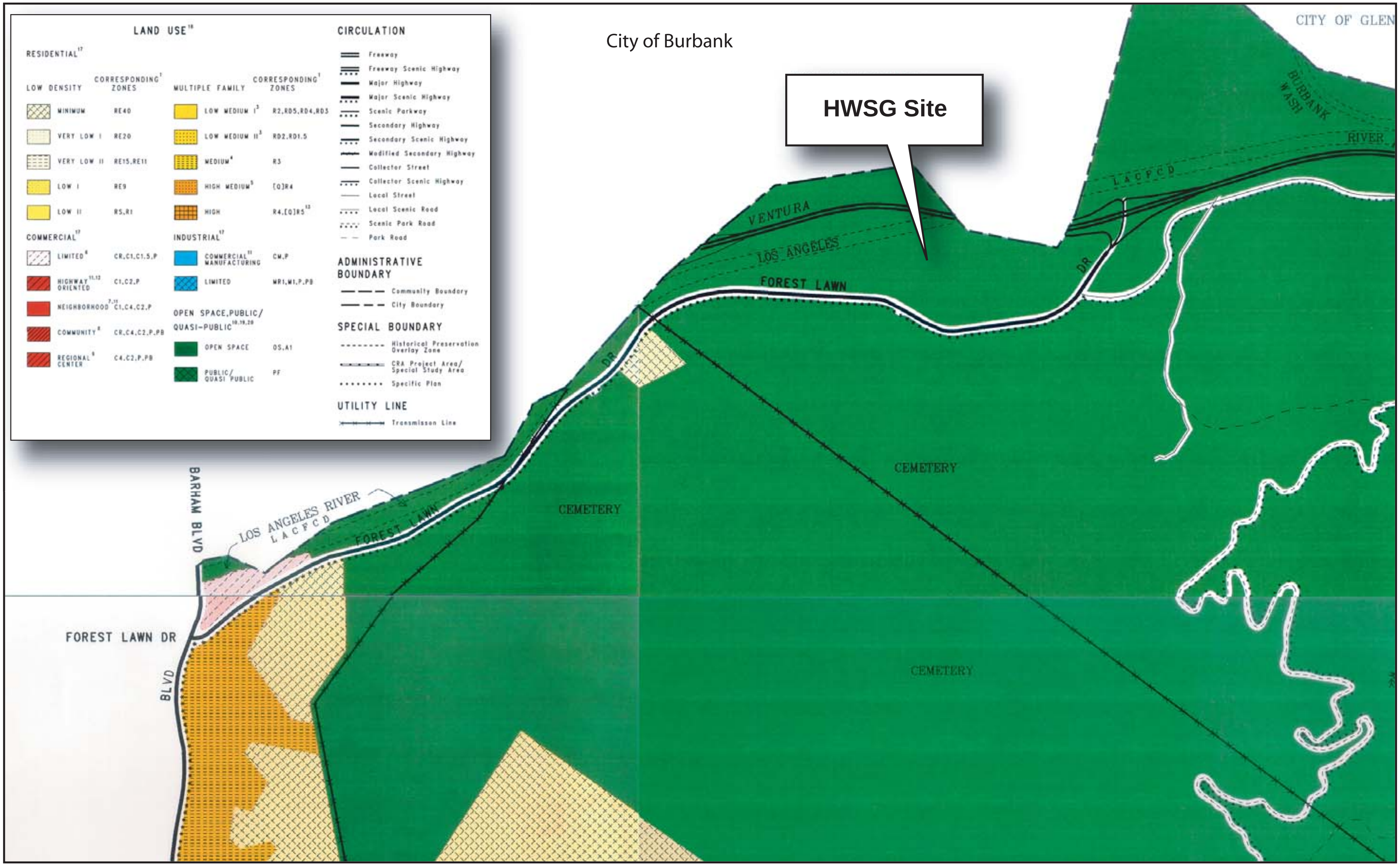

Figure 3-5
SLRC SRP Draft EIR
Hollywood Community Plan Land Use
At and Surrounding the HWSG Site

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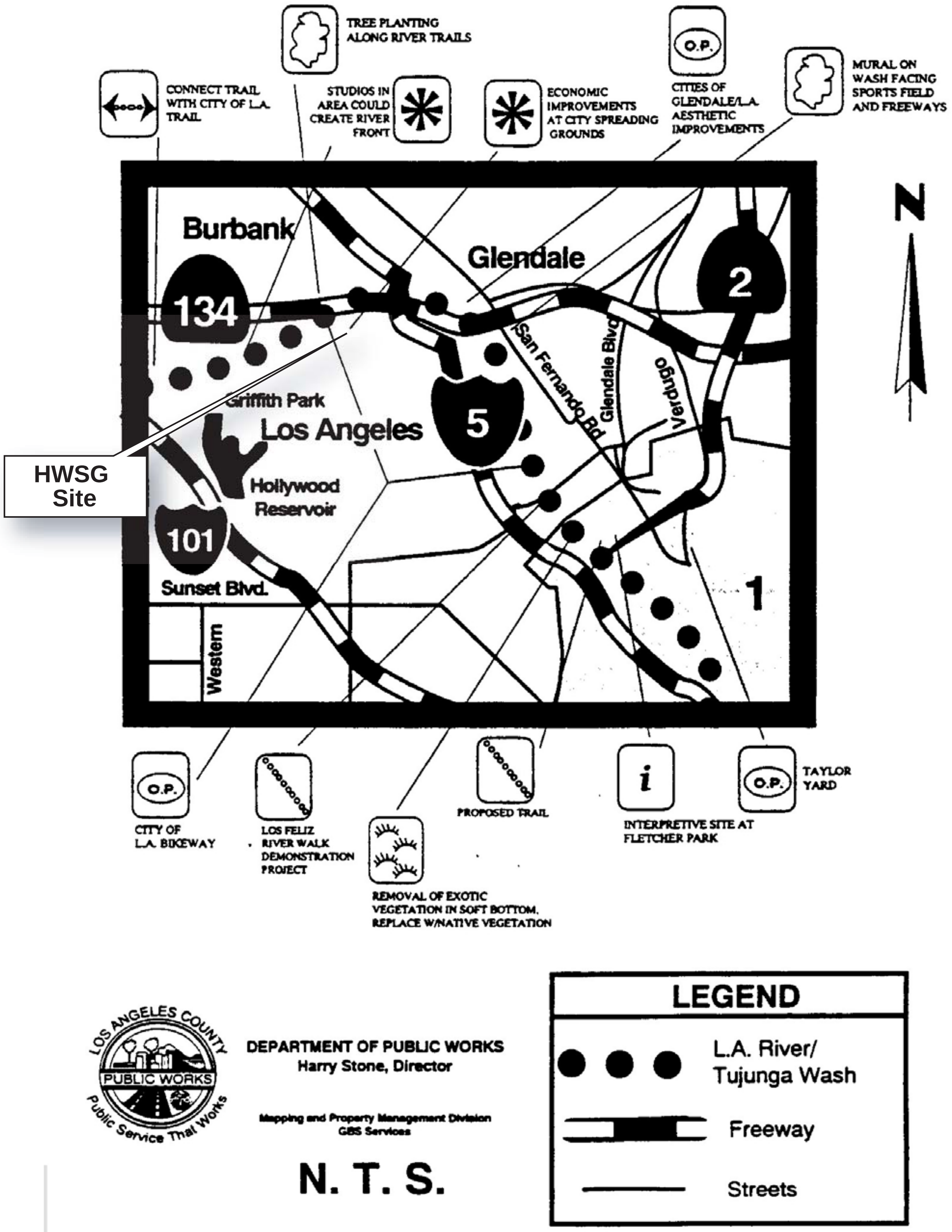

Figure 3-6
SLRC SRP Draft EIR
Location of the HWSG Site Relative to Los Angeles River Master Plan

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Key issues addressed in the Master Plan include aesthetics, economic development, environmental quality, flood management and water conservation, jurisdiction and public involvement, and recreation. Several of these topic areas include policy goals and related changes relevant to land use in the vicinity of the HWSG site, as described below.

Aesthetics. The Advisory Committee for Aesthetics identified goals and objectives that include the following:

- Improve the appearance of the river, encourage river cleanup, and promote beautification
- Provide interconnection between communities and recreation facilities
- Develop a greenbelt along the river

Changes in policy that support the above goals and objectives pertinent to the HWSG site include: "jurisdictions should consider incorporating aesthetic improvements in projects whenever possible to improve the appearance of the river."

Economic Development. The Advisory Committee for Economic Development identified goals and objectives that include the following:

- Promote the river as an economic asset to the surrounding communities

Changes in policy that support the above pertinent to the HWSG site include: "The City of Burbank has adopted a Redevelopment Project Area for the Media District, an area adjacent to the Los Angeles River at the southwestern corner of the city. The redevelopment plan calls for the establishment of policies which would direct development toward the river and provide development standards and design guidelines conducive for riverfront development." This policy may be considered relevant to the HWSG site in that the site is adjacent to this Redevelopment Project Area.

Recreation. "The Advisory Committee for Recreation has identified goals and objectives that include the following:

- Provide a safe environment and a variety of recreational opportunities along the river
- Ensure safe access to and compatibility between the river and other activity centers
- Ensure access and compatibility between the river and other activity centers
- Provide for a variety of active and passive recreation opportunities
- Ensure public safety and security along the river
- Expand open space

Changes in policy that support the above goals and objectives pertinent to the HWSG site include: "Agencies should coordinate their efforts by forming Agreements or Memoranda of Understanding for development, maintenance, and acquisition of recreational facilities."

Griffith Park Master Plan

The only available Griffith Park Master Plan was prepared in 1978. In 1978, the HWSG site was still being used for spreading of LA River water. As such, the Master Plan does not reference the site; and a review of the Master Plan does not reveal any plans or policies applicable to the HWSG site. Existing park facilities at the time of the Master Plan are shown in Figure 3-7. The Los Angeles Department of Recreation and Parks is currently finalizing an updated Griffith Park Master Plan. The updated Master Plan was not available for review at the time this Draft EIR was prepared. However, given that LADWP has an easement over the entire HWSG site, it is unlikely that any plans, policies, or programs contained in the updated Griffith Park Master Plan would conflict with the Proposed Project.

3.1.3 SLRC

The SLRC is located in the community of Silver Lake and consists of LADWP-owned Silver Lake and Ivanhoe Reservoirs and related facilities. Silver Lake is 5 miles northwest of downtown Los Angeles and just east of Griffith Park, as shown in Figure 3-8. An aerial view of the SLRC is shown in Figure 3-9. The community of Silver Lake surrounding the SLRC is generally bordered by Interstate (I) 5 to the north, the Glendale Freeway and Glendale Boulevard to the east, Sunset Boulevard to the south, and Griffith Park Boulevard to the west.

3.1.3.1 Historical Use

Ivanhoe and Silver Lake Reservoirs have been in operation since 1906 and 1907, respectively. Until 1921, the reservoirs were used for reserve supply. The reservoirs have been in constant use as water supply distribution reservoirs since 1921, with periodic temporary interruptions in use for construction and upgrades.

3.1.3.2 Existing Onsite and Surrounding Land Uses

The SLRC is 127 acres in size; of this area, 101 acres are used for Silver Lake and Ivanhoe Reservoirs and associated LADWP facilities. Two acres are leased to the Department of Recreation and Parks for the Silver Lake Recreation Center and dog park south of the Silver Lake Dam and 1 acre is occupied by the Silver Lake neighborhood nursery school.

Roughly 23 acres at the SLRC are landscaped grounds. Included in the landscaped area is a 6-acre grassy meadow, a heavily wooded knoll, and a eucalyptus grove. Figure 3-10 shows general uses at the SLRC.

The community of Silver Lake is one of the City's 10 original open-reservoir communities. Land use in Silver Lake immediately surrounding the SLRC is almost exclusively residential, with homes developed around the reservoir and oriented toward the SLRC. Commercial uses in the immediate vicinity are limited primarily to the major cross streets, including Silver Lake, Sunset, and Glendale Boulevards, and Rowena Avenue.

3.1.3.3 Land Use Plans

The SLRC is located within the planning areas of the City of Los Angeles General Plan, Silver Lake-Echo Park Community Plan (the relevant Land Use Element of the General Plan), and the Silver Lake Master Plan.

General Plan

Land use within the City is directed by the General Plan, which provides a long-range guideline for development within the City limits. Land use-related goals, objectives, and policies from the General Plan for the SLRC are identical to those described above in Section 3.1.2.3.

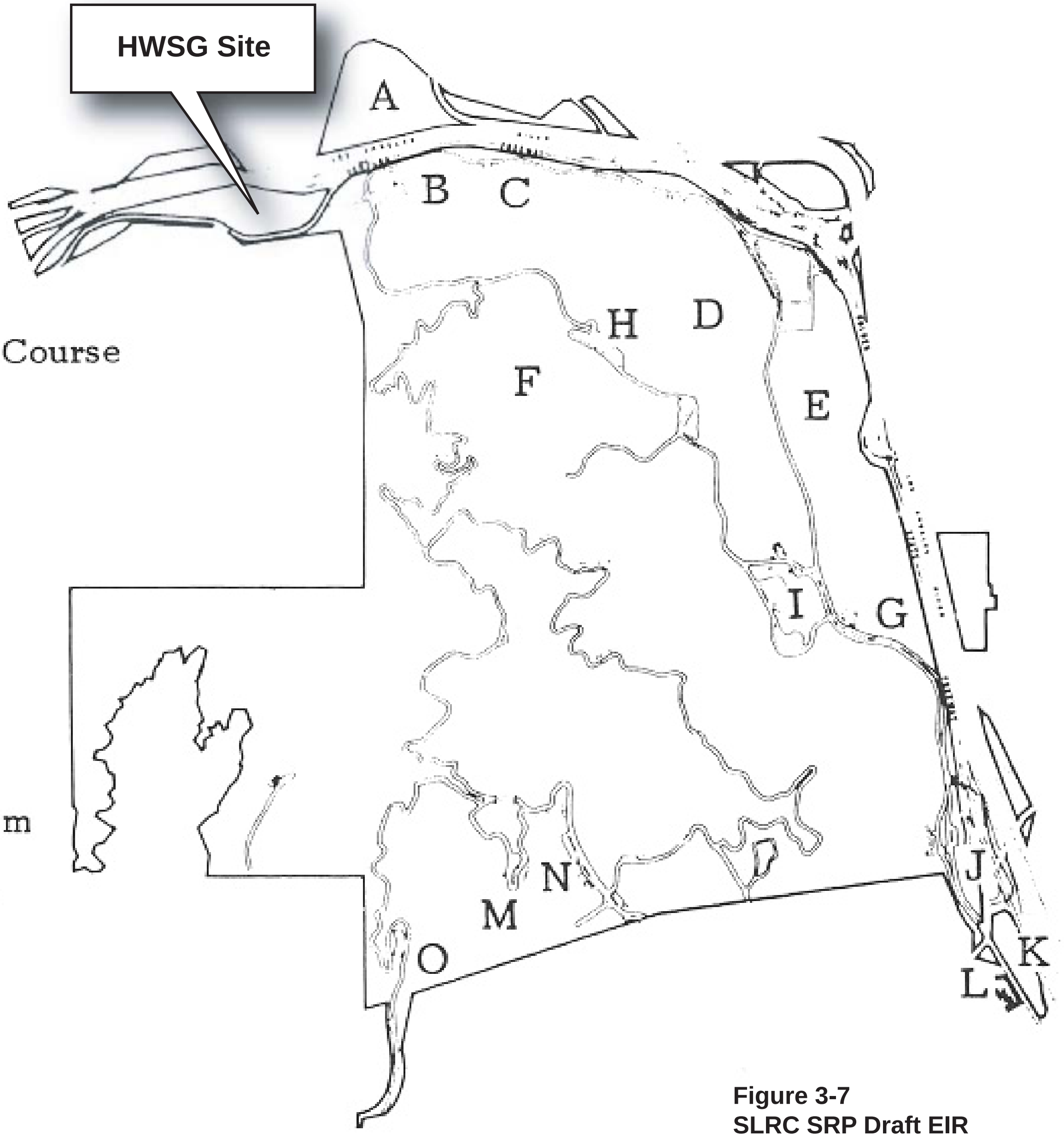

Figure 3-7
SLRC SRP Draft EIR
Existing Park Facilities as Shown in 1978 Griffith Park Master Plan

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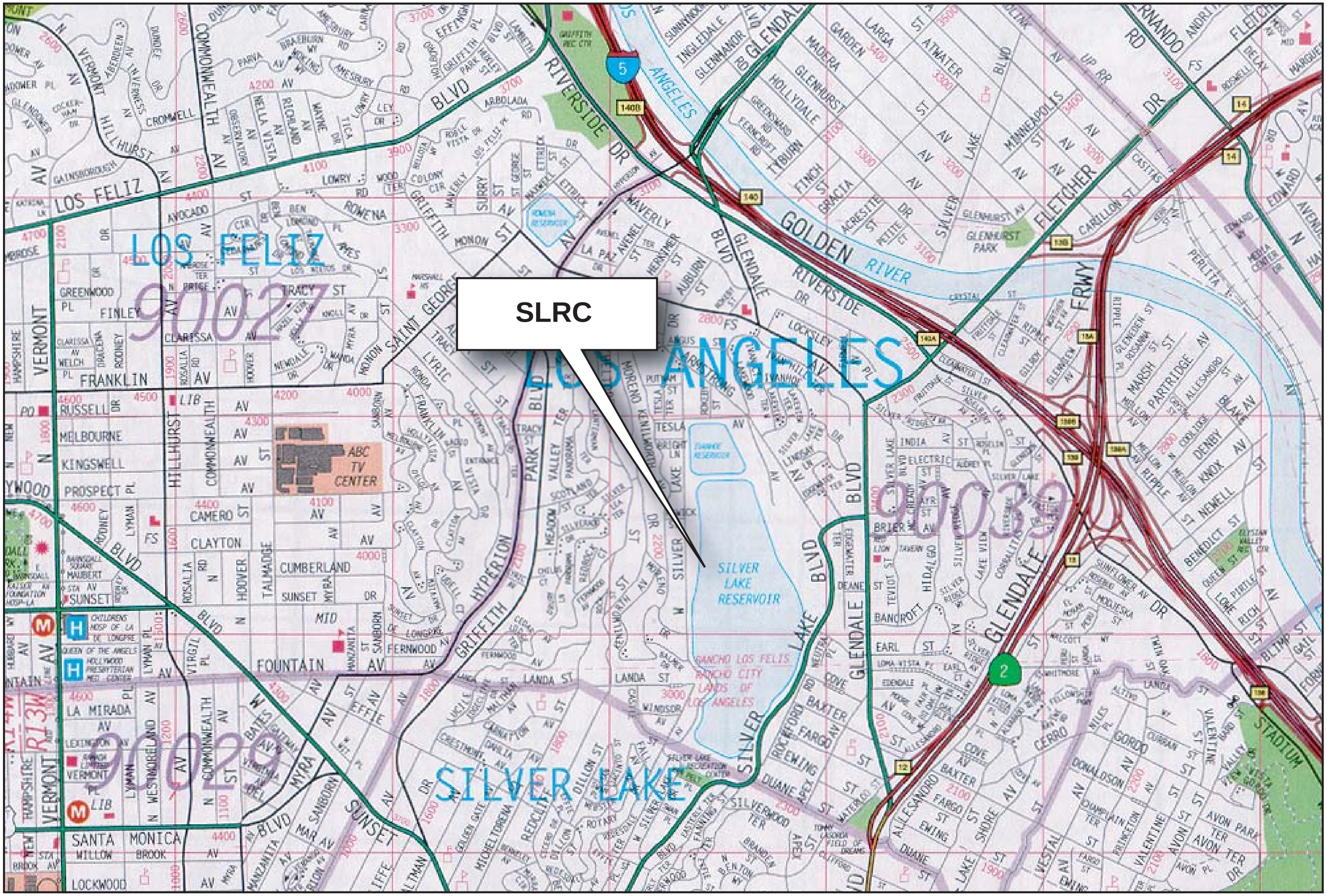

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Scale in Miles

Source: Thomas Brothers Los Angeles and Orange Counties, 2003.

Figure 3-8
SLRC SRP Draft EIR
Location of SLRC

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Figure 3-9
SLRC SRP Draft EIR
Aerial View of the SLRC

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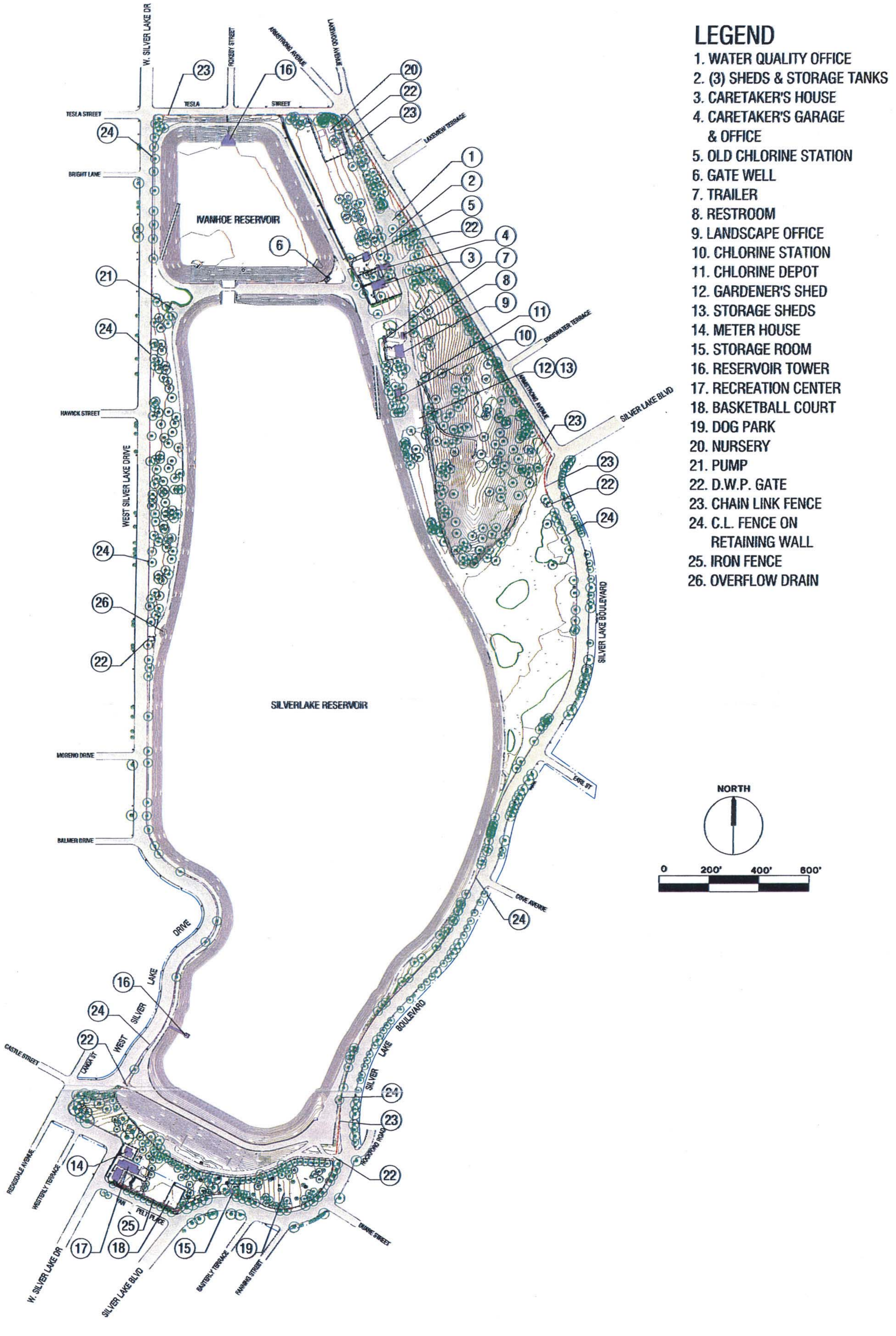

Figure 3-10
SLRC SRP Draft EIR
General Land Uses and Facilities at SLRC

Source: Silver Lake and Ivanhoe Reservoirs Master Plan

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Silver Lake-Echo Park Community Plan

The SLRC is subject to land use guidelines set forth in the newly updated Silver Lake-Echo Park Community Plan (SLEPCP) (adopted August 12, 2004).

Figure 3-11 shows generalized land uses in the SLEPCP area, and Figure 3-12 shows land use at the SLRC and surrounding vicinity.

The site is zoned OS, and the General Plan Land Use is OS. The SLRC is not within a special land use or zoning area. Uses allowed in the OS Zone include public water supply reservoirs (uncovered) and accessory uses that are incidental to the operation and continued maintenance of such reservoirs.

The SLEPCP area comprises approximately 7.26 square miles, with an estimated 2002 population of 78,988 and population density of 10,888 persons per square mile. Land use in the SLEPCP area is distributed roughly as follows: single-family residential, 9.7 percent; multifamily residential, 19.2 percent; commercial, 4.4 percent; industrial, 5.4 percent; open space and public facilities, 41.9 percent; public streets, 19.5 percent. Parks and other areas offering recreational activities and/or open space in the SLEPCP area include Elysian Park, Echo Park, Bellevue Park, Rowena Reservoir, and Dodger Stadium.

The SLEPCP identifies approximate locations and dimensions for land use and is intended to be a guide for zoning. In addition to the goals, objectives, and policies identified in the General Plan, Chapter 1 of the SLEPCP identifies significant planning and land use issues and opportunities; and Chapter 3 describes specific land use policies and programs that are or may be applicable to the SLRC SRP. These are identified in Tables 3-2 and 3-3, respectively.

TABLE 3-2
Silver Lake-Echo Park Community Plan Planning and Land Use Issues and Opportunities
SLRC SRP Draft EIR

Topic	Issue	Opportunity
Recreation, Parks, and Open Space	Need for parkland and open space for a variety of uses, including passive and active recreation. Need to preserve existing parkland and open space for park/open space uses and for public enjoyment.	Encourage, promote, and facilitate the implementation of Silver Lake Reservoir Master Plan concepts in ongoing planning of the reservoir as a valuable community and recreational asset.

TABLE 3-3
Silver Lake-Echo Park Community Plan Land Use Policies and Programs
SLRC SRP Draft EIR

Goal	Objective	Policy	Program
4: Adequate recreation and park facilities which meet the needs of the residents in the Plan area and create links to existing facilities to expand recreational opportunities citywide.	4-1: To conserve, maintain, and better use existing recreation and park facilities.	4-1.2: Preserve and encourage acquisition, development, and funding of new recreational facilities and park space with the goal of creating greenways and trail systems.	Encourage City departments to reuse and/or convert unused or underused publicly owned land and facilities for recreation and open space facilities, whenever feasible.

TABLE 3-3
Silver Lake-Echo Park Community Plan Land Use Policies and Programs
SLRC SRP Draft EIR

Goal	Objective	Policy	Program
			Encourage the reuse of obsolete or underused publicly owned properties for open space and recreational uses
		4-1.4: Implement plans to develop a dedicated running path around the Silver Lake Reservoir and other open space and recreational uses following the Silver Lake Reservoir Master Plan dated November 1, 2000.	
5: A community with sufficient open space in balance with new development to serve the recreational, environmental, and health needs of the community.	5-1: Preserve existing and develop new open space resources.	5-1.1: Encourage the retention of passive and visual open space that provides a balance to the urban development of the Plan area.	

Chapter 4 of the SLEPCP "identifies actions which are recommended to be promoted by the City." These include "objectives or goals that the Planning Department does not have control over, but which involve issues that should be identified in the community plan and which help to reinforce the intent of the goals and objectives found in Chapter 3." Actions that may be applicable to the SLRC SRP are identified in Table 3-4.

TABLE 3-4
Silver Lake-Echo Park Community Plan Public Agency Coordination Opportunities
SLRC SRP Draft EIR

Action Area	Action
Public Works	Encourage awareness of the importance of streetscape components in the communitywide urban design policies as well as all adopted streetscape plans, among the agencies responsible for construction and maintenance on public property, especially rights-of-way.
Recreation and Park Facilities and Open Space	Coordinate with City departments, neighboring cities, and county, state, and federal agencies to utilize existing public lands such as flood control channels; utility easements; and Department of Water and Power properties for such recreational uses as hiking, biking, and horseback riding, where possible.

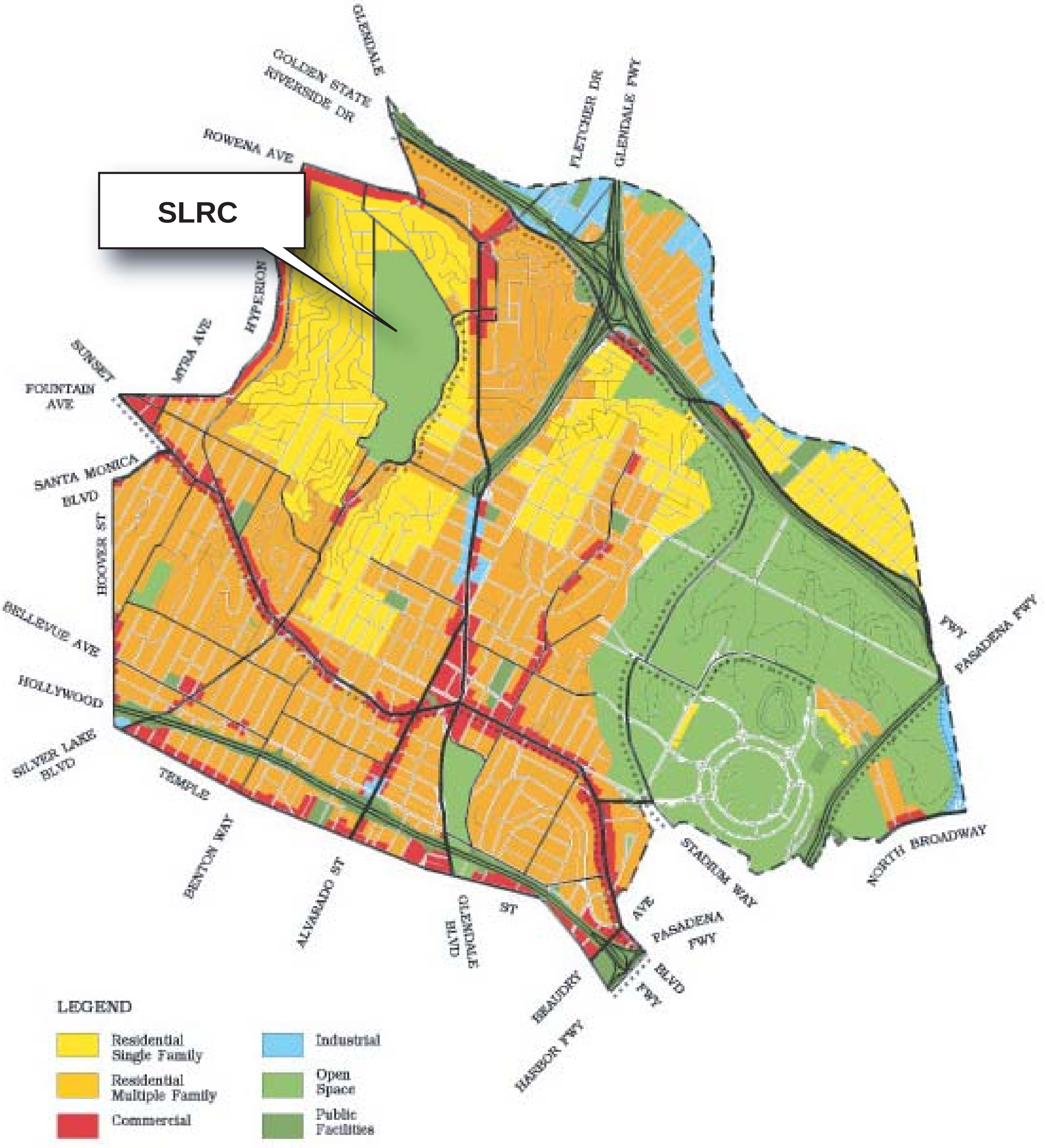

Figure 3-11
SLRC SRP Draft EIR
Silver Lake-Echo Park Community Plan Generalized Land Use

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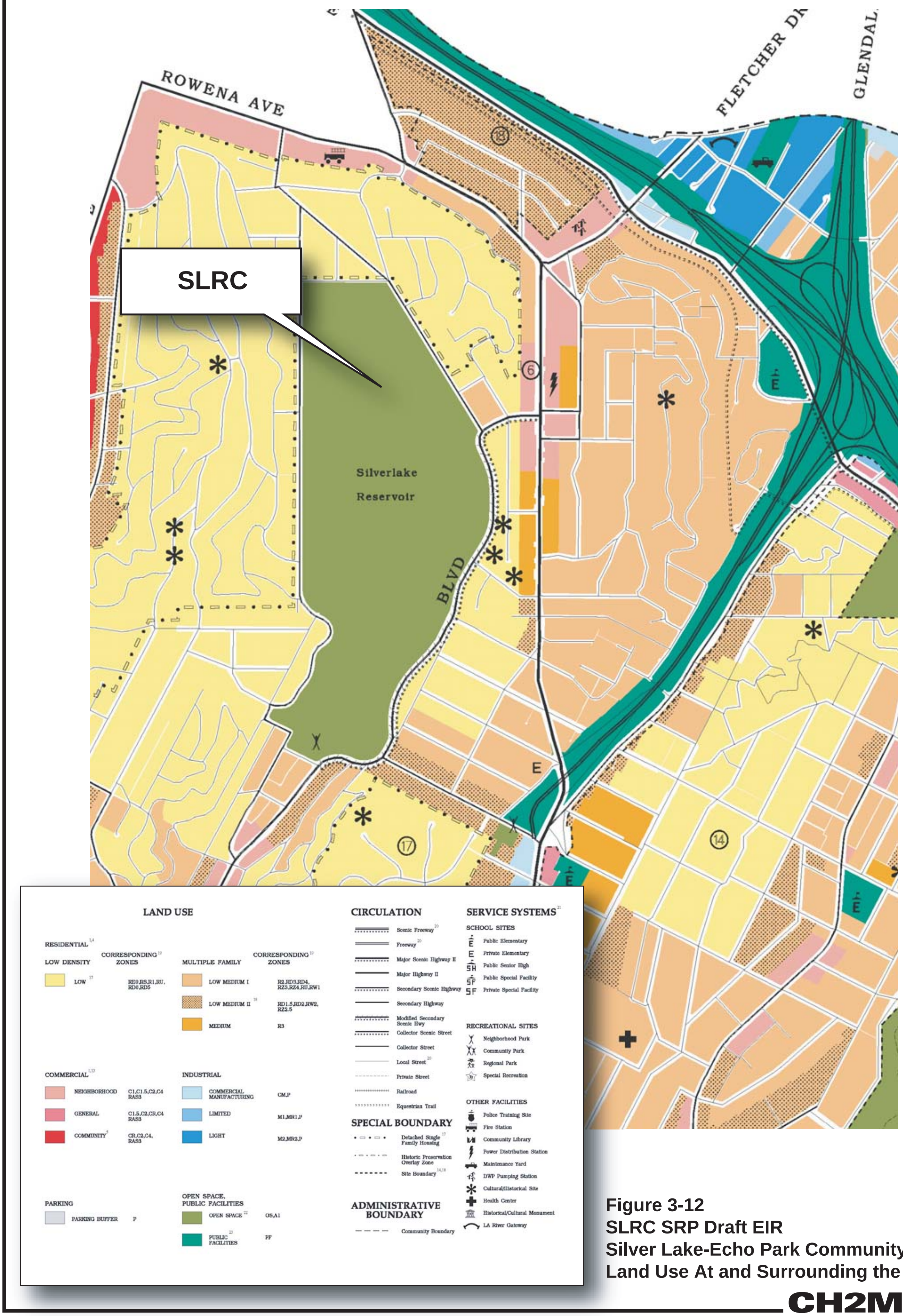

Figure 3-12
SLRC SRP Draft EIR
Silver Lake-Echo Park Community Plan
Land Use At and Surrounding the SLRC

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Chapter 5 of the SLEPCP discusses urban design, and states that the "general urban design guidelines and standards outlined in this chapter should be required by decision-makers when reviewing individual projects throughout the Silver Lake-Echo Park Community Plan Area." The guidelines and standards are intended to ensure that specific elements of good design are incorporated in projects, public spaces, and rights-of-way. Chapter 5 of the SLRPCP is applicable to the SLRC SRP in that the section addressing public open space and plazas within a discussion of community design and landscaping guidelines includes Silver Lake Reservoir Master Plan Design Guidelines. This section of the SLEPCP states that:

> The Silver Lake Reservoir Master Plan is a long-range planning tool for the reservoir and environs that aims to expand the recreational opportunities around the reservoir, enhance pedestrian amenities and safety and preserve the reservoir as an aesthetic resource in the community. It envisions incorporating the reservoir into a larger streetscape and capital improvement project that enhances and strengthens sense of community and identity through gateways and unifying streetscape elements. The plan, which was funded by the Department of Water and Power, resulted from community efforts to reserve the Silver Lake and Ivanhoe Reservoirs as open reservoirs. The board of the Department of Water and Power approved the plan in December 2000. The recommended improvements are estimated to cost approximately $12 million and are phased to allow opportunity to identify funds for the plan's implementation.

This section of Chapter 5 of the SLEPCP also includes recommendations and guidelines as outlined in the Master Plan that address views and viewsheds, landscape buffers, and community design.

Silver Lake and Ivanhoe Reservoirs Master Plan

As mentioned above, the Silver Lake and Ivanhoe Reservoirs Master Plan (Master Plan) was prepared in coordination with the Silver Lake community and LADWP and is intended to be long-range planning tool for the SLRC. Issues addressed in the Master Plan with associated goals include:

- Land use and zoning
- Water quality
- Recreation improvement
- Landscape and open space
- Pedestrian safety and traffic
- Community context and urban design

Because the Master Plan was prepared for the SLRC, all goals identified in the Master Plan are applicable to the portion of the project proposed at the SLRC. Under a discussion of implementation for the Master Plan, the Master Plan states that:

> For any project at the site, DWP, as owner of the property, will be the lead agency in terms of project approval for CEQA documents and will cooperate with other agencies or other organizations during their development of all environmental and construction documents for approved projects at the site. However, DWP will develop the required environmental and construction documents for community enhancements when they are used as mitigation for a department project.

> In the meantime, DWP is committed to providing ongoing upkeep and maintenance on its property as is the Department of Recreation and Parks for the areas it currently leases. If funding becomes available, improvements may be developed and managed by the Department of Recreation and Parks either through additional leases or other agreements.

At the time of this Draft EIR, activities related to development of a walking/jogging path around the reservoir complex are in progress consistent with the improvement goals identified in the Master Plan. Other improvements or developments may be considered at the SLRC by the Department of Recreation and Parks or any other agency.

3.2 Impacts

3.2.1 Thresholds of Significance

Land use impacts would be considered significant if the Proposed Project would:

- Conflict with existing land uses at the project site
- Disrupt or divide the physical arrangement of an existing community
- Conflict with applicable land use plans including the City General Plan
- Conflict with adopted environmental goals or policies contained in other applicable plans

Recreation impacts would be considered significant if the Proposed Project would:

- Restrict or prevent access to established recreational areas

- Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated

- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment

3.2.2 HWSG Site

3.2.2.1 Construction

Construction of the hydroelectric plant and reservoir storage facility at the HWSG site would take approximately 6 years. Construction activities would not conflict with existing land uses at the site, disrupt or divide the physical arrangement of an existing community, or conflict with adopted environmental goals or policies contained in applicable plans. Construction of the facilities would not conflict with applicable land use plans, but LADWP would be required to obtain a Conditional Use Permit for the proposed facilities pursuant to Section 12.24 of the City Planning and Zoning Code.

Construction of the reservoir storage facility may potentially disrupt the equestrian trail that traverses the northeast portion of the HWSG site if horses experience an adverse reaction to construction activities. Equestrian trail users typically use this portion of the trail to move between the Los Angeles Equestrian Center and Griffith Park, although alternate routes are available. Although the equestrian trail is outside the construction area and would not be closed as a result of construction, impacts to equestrian users of the trail are considered to be potentially significant. Mitigation Measure LU-1 has been identified to reduce potential impacts to equestrian trail users.

3.2.2.2 Operation

Operation of the water storage reservoir and hydroelectric plant at the HWSG site would add municipal water storage and ancillary facilities to an existing vacant parcel. The hydroelectric plant would be operated remotely, and the HWSG site would be checked by security daily. No onsite staff would be required. The addition of these facilities is consistent with historical use of the site for municipal water operations. The current use would change from vacant to water storage; the land use designation that allows these uses would remain OS.

The operation of these facilities would not disrupt or divide the physical arrangement of an existing community nor would operation conflict with the City of Los Angeles General Plan or the HCP. Additionally, the facilities would be consistent with goals, policies, and programs identified in the Griffith Park Master Plan and the Los Angeles River Master Plan.

Operation of the storage reservoir would result in 19 acres of open space that ultimately may be used for passive recreation (walking trails) that is not currently available for use. Given the lack of public open space in the City, this is considered to be a beneficial impact to recreation resulting from the Proposed Project.

3.2.3 SLRC

3.2.3.1 Construction

Construction of bypass pipeline and regulating station at the SLRC would take approximately 2.5 years. Construction activities limited to jacking and receiving pits in West Silver Lake Drive for the bypass pipeline and ground disturbance of approximately 1 acre in the grassy area south of the Silver Lake Reservoir Dam would not conflict with existing land uses at the site, disrupt or divide the physical arrangement of an existing community, or conflict with adopted environmental goals or policies contained in applicable plans. The proposed facilities are ancillary to the operation of an open reservoir, which is consistent with the OS land use designation of the SLRC.

Construction of the regulating station would temporarily restrict access to a portion of the grassy area south of Silver Lake Reservoir Dam and adjacent to the SLRC. Because construction activities are of a short duration and access to the area will be restored following construction, this is not considered to be a significant impact to recreation.

3.2.3.2 Operation

Operation of the bypass pipeline and regulating station, which are comprised of subterranean infrastructure, would be consistent with historical and current uses of the SLRC for water supply and distribution.

Operation of the subsurface bypass pipeline and regulating station would not conflict with existing land uses or disrupt or divide the physical arrangement of the Silver Lake community. The Proposed Project does not include opening up the SLRC to the public for active or passive recreational uses. However, the SLRC would remain capable of meeting the recreation goals identified in the General Plan and the SLEPCP; and no elements of the Proposed Project would prevent future recreational use of the site. Therefore, operation of the bypass pipeline and regulating station at the SLRC would not conflict with the City of Los Angeles General Plan or the SLEPCP.

The addition of the regulating facility in the grassy area south of Silver Lake Dam would add several small aboveground structures (ventilation hoods and stand-pipes and a control cabinet, as described in Chapter 2) in a park area. These structures would modify somewhat the existing character of the area, but would not take up a large amount of area and would only slightly decrease the area available for recreation. This impact is not considered to be significant.

Additionally, the facilities would be consistent with goals identified in the Silver Lake and Ivanhoe Reservoirs Master Plan. As described in Chapter 2, LADWP would prepare a Property Maintenance and Management Plan that would ensure the SLRC is maintained consistent with community values.

3.3 Mitigation Measures

The mitigation measure outlined below has been identified to mitigate potentially significant temporary impacts to the equestrian trail that traverses the northeast portion of the HWSG site.

Mitigation Measure LU-1: Equestrian Trail

LADWP will work with equestrian trail users before and during construction to identify specific measures that would reduce or eliminate the impact of construction noise and activity on horses. One of the following measures, developed in coordination with equestrian trail users, may be implemented:

- LADWP will post signage at the Los Angeles Equestrian Center and at points along the equestrian trail, in coordination with local equestrian users, to alert riders of the location of construction noise and to advise them of alternate routes. Noise and/or visual screening along the equestrian trail adjacent to the HWSG site may be installed.
- LADWP will coordinate with the Department of Recreation and Parks to close the portion of the equestrian trail that traverses the HWSG site. Riders would use alternate routes to move between the Equestrian Center and Griffith Park.

Optionally, LADWP and equestrian trail users may develop alternative measures to mitigate the impact of construction noise and activity on horses.

3.4 Significance After Mitigation

With implementation of Mitigation Measure LU-1, potentially adverse impacts to the equestrian trail that traverses the northeast portion of the HWSG site resulting from project construction would be reduced to a level that is less than significant.

4.0 Earth Resources

4.1 Setting

4.1.1 Regional

The HWSG site lies at the base of the Santa Monica Mountains adjacent to the southern edge of the San Fernando Valley. The SLRC site lies within the lower elevations of the Santa Monica Mountains northwest of downtown Los Angeles. Locations of the HWSG and SLRC sites are shown in Figure 1-1. The HWSG site is located in the San Fernando Valley Groundwater Basin. The Santa Monica Mountains are southernmost in a series of mountain ranges that comprise the east-west trending Transverse Ranges geomorphic province of Southern California. Extending from Point Mugu east to Griffith Park, the Santa Monica Mountains are 46 miles long with an average width of 7.5 miles. The Transverse Ranges are oblique to the normal northwest trend of mountains in Southern California and extend offshore from San Miguel, Santa Rosa, and Santa Cruz Islands in the west to the San Bernardino Mountains to the east. North-south compression has caused the formation of these mountains. In general, the Transverse Ranges contain great thicknesses of folded and faulted Cenozoic petroleum-rich sedimentary rocks. Coastal, valley, and mountainous landforms are found within this province. The coastal and mountainous areas are characterized by steep hillsides that descend abruptly into narrow canyons; the interior area is characterized by alluvial valleys and rolling hills generally devoted to urban development or agriculture.

4.1.2 HWSG Site

The HWSG site is located in the southeast portion of the San Fernando Valley Basin at the base of the Santa Monica Mountains, and consists of 43 acres of undeveloped land adjacent to the LA River (between the City of Burbank and Griffith Park). It is bounded on the north by the LA River and State Highway 134, and on the east and south by Forest Lawn Drive. Land use immediately adjacent to the HWSG site is composed of the LA River, State Highway 134, parks, and cemeteries. The HWSG site is fronted on the south by the Mount Sinai and Forest Lawn Cemeteries. Griffith Park lies to the southeast of the site. Immediately north of the site is the LA River channel, along with the transportation corridor for State Highway 134. To the north of the freeway are residential neighborhoods; and north and west of the site are the extensive complexes of NBC Studios, Disney Studios, and Warner Brothers Studios. The Los Angeles Equestrian Center is located northeast of the site, and Traveltown Museum in Griffith Park is located east of the site.

Geologic and soil conditions and geologic hazards at the HWSG site are described in the following sections.

4.1.2.1 Geology

A report summarizing the geologic conditions of the eastern portion of the site was completed by the LADWP in 2000 as part of its Headworks Well Field Remediation Project

Soil and Geology Report Groundwater Treatment Facility Site. As part of this study, LADWP reviewed existing geologic maps and the California Department of Mines and Geology (CDMG) Alquist-Priolo (AP) map for the area, completed geologic mapping, trench logging, drilling and soil sampling, soils testing, and completed a seismic refraction survey at the site.

Site geology reportedly consists of fresh and decomposed Mesozoic quartz diorite bedrock overlain by a combination of Quaternary alluvium and Recent fill material. In addition, buried riprap and fill material were observed beneath the site along the sides of the abandoned LA River Channel. The Army Corps of Engineers (USACE) reportedly channelized the LA River in 1937; and once the river had moved to its present-day position, the riprap and other features were buried by LA River alluvial sediments and fill materials emplaced during various projects.

Site geology as mapped by Dibblee on the Hollywood-Burbank (south half) quadrangles consists of Holocene age stream channel sand and gravel (Dibblee, 1991).

Alluvium observed at the site by LADWP consisted of approximately 20 to 30 feet of sand, gravel, and occasional cobbles. Decomposed granitic material was also observed but was thought to have been dumped onsite after being cut from neighboring hilltops (LADWP, 2000). Seismic velocities obtained at the site indicated P-wave velocities averaging 1,300 feet per second (fps) within alluvial materials above the groundwater table. Saturated alluvium and weathered bedrock reportedly had a P-wave velocity of approximately 5,000 to 6,000 fps.

Bedrock was generally encountered at a depth of approximately 28 to 35 feet below ground surface (bgs) across the site underlying the alluvium and fill materials. Bedrock observed at the site consisted of quartz diorite, composed of plagioclase feldspar in a matrix of weathered biotite and hornblende. Greenish brown fractured basalt dikes were observed to locally intrude and cross-cut the quartz diorite bedrock.

During LADWP geologic mapping, two small, parallel faults were observed in a quartz diorite outcrop just west of the intersection of Zoo Drive and Forest Lawn Drive. These two faults strike approximately N 75 W and dip 50 degrees to the southwest.

4.1.2.2 Soils

Soils at the site include Quaternary alluvium and Recent fill. The geologic map for the Hollywood-Burbank (south half) quadrangles indicates that the surficial sediments at the site are primarily Quaternary sand and gravel sourced from the LA River (Dibblee, 1991). At the time of the LADWP report (2000), groundwater was at an elevation of approximately 449 feet mean sea level (msl), approximately 26 feet below the existing grade.

4.1.2.3 Geologic Hazards

Seismic Hazards

Seismic hazards at this and any site are primarily related to the presence of active faults. Although regional shaking from a large earthquake can cause damage to structures located within the area of shaking, rupture of active faults directly beneath a site generally pose the greatest threat to structures at the site. Seismic analysis related to regional shaking is discussed in the following subsection. Active faults, as defined by the AP Earthquake Fault

Zoning Act of 1972 are faults that have been active during the Holocene period (during the last 11,000 years). Active faults represent most of the earthquake hazard. AP Special Studies Zone Maps delineate active and potentially active faults considered by the state to be "sufficiently active" and "well-defined" to be of concern to new construction. The site is not located in an AP Special Studies Zone.

LADWP performed geologic mapping to identify any site-specific fault hazards. During the LADWP geologic mapping of the site, two small, parallel faults were observed in a quartz diorite outcrop just west of the intersection of Zoo Drive and Forest Lawn Drive. The faults strike approximately N 75 W and dip 50 degrees to the southwest. LADWP reported that there was no indication that these faults were active (LADWP, 2000). The geologic map for the Hollywood-Burbank (south half) quadrangles indicates that the inferred trace of the Benedict Canyon fault passes through the northwest corner of the proposed reservoir and traverses the remainder of the site (Dibblee, 1991). The strike and location of the faults mapped by LADWP do not match the strike of the Benedict Canyon fault, but the strike does approximately match that of the Hollister fault, located approximately 400 feet south of the site (discussed below). LADWP reports that the Verdugo fault is located approximately 2.8 miles north of the site, the Hollywood fault is located 3.2 miles south of the site, and the Raymond fault is located approximately 3.6 miles south of the site (LADWP, 2000). In addition, CH2M HILL reviewed the geologic map for the Hollywood-Burbank (south half) and found that the west-northwest striking, north-northeast dipping Hollister fault is located approximately 400 feet away from the southwest portion of the site. The Hollister fault is not an AP Zone fault.

Seismic Analysis

LADWP performed a seismic analysis for the proposed Headworks Groundwater Treatment Plant. LADWP (2000) determined that the peak ground acceleration was 0.6g for a 10 percent probability of exceedence in 50 years. However, a new seismic analysis would be performed to meet the standards of the California Division of Safety of Dams (DSOD) required for the construction of a new reservoir.

Liquefaction and Landslides

The CDMG Seismic Hazards Zone Map indicates that the site is located in an area with the potential for permanent ground displacement caused by liquefaction but is not located in an area zoned as being susceptible to earthquake-induced landslides (CDMG, 1999a; CDMG, 1999b).

LADWP performed liquefaction assessments using standard penetration test (SPT) blow counts obtained during drilling at the proposed Headworks Groundwater Treatment Plant (LADWP, 2000). SPT blow counts for all soil samples below 15 feet bgs were greater than 30, indicating that liquefaction assessments were not required for these samples according to the $(N_1)_{60}$ screening criteria (Southern California Earthquake Center, 1999). Several samples from depths shallower than 15 feet bgs had $(N_1)_{60}$ values less than 30, indicating that these layers have the potential for liquefaction if they are below groundwater table. At the time of the LADWP report (2000), groundwater was at an elevation of approximately 449 feet msl, approximately 26 feet below the existing grade. Therefore, liquefaction is not an issue currently. However, historical groundwater was found to be at a level of 10 feet bgs, which is at or above the proposed foundation of the reservoir. Therefore, a new geotechnical investigation would be performed to determine if any remediation would be required.

Weak or Unstable Foundation Materials

The proposed 110-MG covered storage reservoir would be installed with its foundation at an elevation of approximately 467 feet msl. The finished grade top elevation will be approximately 512 feet msl. Bedrock at the site is encountered at an approximate elevation of 440 to 450 feet msl, and groundwater was encountered at an elevation of approximately 449 feet msl. The base of the reservoir would be constructed within alluvial soils (sand, silt, and gravel) above the water table and approximately 5 feet lower than soils that the LADWP classified as liquefiable (discussed above).

4.1.3 SLRC

The SLRC lies within the lower elevations of the Santa Monica Mountains northwest of downtown Los Angeles and is located within the community of Silver Lake. The site consists of LADWP-owned Silver Lake and Ivanhoe Reservoirs and related facilities. Silver Lake is located approximately 5 miles northwest of downtown Los Angeles, just east of Griffith Park. The community of Silver Lake surrounds SLRC and is bordered by I-5 to the north, State Highway 134 and Glendale Boulevard to the east, Sunset Boulevard to the south, and Griffith Park Boulevard to the west. Land use immediately surrounding SLRC is almost exclusively residential. Commercial uses in the immediate vicinity are primarily limited to the major cross streets, including Silver Lake, Sunset, and Glendale Boulevards, and Rowena Avenue.

Geologic and soil conditions and geologic hazards at the SLRC are described in the following sections.

4.1.3.1 Geology

The geology of the SLRC site was mapped as part of two reports completed by LADWP: a Silver Lake Reservoir Preliminary Geologic Report completed in 1973, and a Final Geologic Report completed in 1978. The site is located on the Geologic Map of the Burbank (south half) and Hollywood Quadrangles (Dibblee, 1991). The 1973 Preliminary Geologic Report summarizes all geologic exploration at the Silver Lake Reservoir up to that date, and the 1978 Final Geologic Report contains a description of the geology mapped during grading and excavation activities when the new dam was built at the Silver Lake Reservoir.

The 1991 Geologic Map of the Burbank (south half) and Hollywood Quadrangles

The 1991 Geologic Map of the Burbank (south half) and Hollywood Quadrangles indicates that the geology of the SLRC consists of Quaternary alluvium in the immediate vicinity of the reservoir, with the Miocene-age sandstone member of the Puente Formation surrounding the reservoir on the adjacent hills and on the embayment in the southwest corner of the reservoir. The Monterey Formation is described as a semifriable sandstone with thin interbeds of micaceous silty clayey shale (Dibblee, 1991). Artificial fill is mapped along the southern edge of the reservoir at the dam and just south of the dam.

Dibblee mapped the inferred trace of the Elysian Park anticline as passing approximately 4,000 feet northeast of the Silver Lake Dam and mapped an unnamed northwest-trending anticline approximately 3,000 feet south of the dam (Dibblee, 1991). This map also shows the location of the Santa Monica Fault Zone, consisting of three northeast-trending fault traces passing approximately 6,000 to 9,000 feet northwest of the Silver Lake Dam.

LADWP Preliminary Geologic Report, 1973

LADWP indicated that the Silver Lake Reservoir is located on the northwest-trending Elysian Park Anticline, with bedrock bedding dipping 23 to 37 degrees to the southwest in the site vicinity (LADWP, 1973a).

The 1″=2,000′ scale map of the LADWP Preliminary Geologic Report (Plate 3, LADWP, 1973) shows similar geology to that mapped by Dibblee (1991), although LADWP names the interbedded sandstone and siltstone bedrock at the site the Puente Formation and calls the Santa Monica Fault System the Hollywood Fault System. Differing from Dibblee (1991), this map also shows one syncline and one anticline on the east side of the reservoir, two anticlines and a fault on the west side of the reservoir, and the northwest-trending Elysian Park fault that ends approximately 2,000 feet east of the reservoir. The fault on the west side of the reservoir crosses the reservoir approximately 1,000 feet north of the dam axis (LADWP, 1973a). In addition, LADWP reported that a north-south striking fault was exposed approximately 700 feet south of the dam but could not be traced to the north.

The LADWP report indicates that up to 40 feet of alluvium was found on top of the Puente Formation at the new dam location. The Puente Formation is described as a fine- to medium-grained firm sandstone with interbedded, firm, locally diatomaceous shale and siltstone.

In 1973, LADWP also produced geologic maps at more detailed scales (1″=200′ and 1″=400′) that show sandstone bedrock along West Silver Lake Drive and Redesdale Drive dipping between 23 and 36 degrees to the southwest and west. In addition, approximately 100-feet of a fault is mapped at a location approximately 50 feet southeast of the intersection of Redesdale Drive and West Silver Lake Drive, southeast of the proposed location of the jacking pit. This fault dips 70 degrees to the northwest and strikes to the southwest (LADWP, 1973a).

LADWP Preliminary Geologic Report Supplement No. 1, 1974

Subsequent to the completion of the LADWP preliminary geologic report, a drilling and sampling program was conducted as part of a stability analysis study for the Silver Lake Dam (LADWP, 1974). Two bucket auger borings (CH-6 and CH-7) were completed in the area of a proposed new dam location. Boring CH-6 encountered silt and sand to a depth of 43 feet bgs, weathered bedrock from 43 to 47 feet bgs, and firm bedrock was encountered at 47 feet bgs. Groundwater was encountered at 25 feet bgs in CH-6. Total boring depth was 61 feet bgs. Boring CH-7 encountered weathered bedrock at 40 feet bgs and firm bedrock at 41 feet bgs and was completed to 48 feet bgs. No groundwater was noted on the log for boring CH-7.

As part of the construction of a new dam at the reservoir in 1975 and 1976, geologic mapping of the dam footprint excavation was conducted. This mapping revealed Puente Formation sandstone with interbedded siltstone and shale striking primarily N 25 W and dipping between 25 and 55 degrees to the southwest. Excavation activities also revealed several small faults with little to no space between them, the longest of which was exposed along the east abutment. This fault reportedly had a strike of N 40 E and dipped 77 to 90 degrees and was 350 feet long, and contained a zone of slickenslides up to 2 inches wide. On the west side of the new dam, LADWP reported that it observed a single fault that extended from the excavation for the tower site, into the trench for the outlet line, and into the area below the outlet line. This fault reportedly had approximately 7 feet of right-lateral offset. Several other small faults that could not be traced for more than a few feet were also exposed.

4.1.3.2 Soils

As discussed above, soils at the site consist of silty and sandy fill materials and Quaternary alluvium. During the LADWP site investigations in 1974 (discussed in previous subsection), alluvium at the dam site was encountered to a depth of approximately 40 to 43 feet bgs; and groundwater was encountered at a depth of approximately 25 feet bgs.

4.1.3.3 Geologic Hazards

Seismic Hazards

The SLRC site is not located in an AP Special Studies Zone. As part of dam construction in the mid-1970s, geologic mapping was conducted by the LADWP during grading and dam foundation excavation activities. As discussed in Section 4.1.3.1, several faults were exposed during the excavation and grading for the new dam. One north-northeast trending, 350-foot-long fault with approximately 7 feet of offset was exposed along the outlet line near the western dam abutment. It is unclear from the geologic map how close this fault is to the location of the proposed regulating station and bypass pipeline location south and west of the dam. LADWP reported that no evidence of recent fault movement was observed at the new dam site. As discussed earlier, an approximately 100-foot-long fault was mapped approximately 50 feet southeast of the intersection of Redesdale Drive and West Silver Lake Drive, southeast of the proposed location of the jacking pit of this project (LADWP, 1973a). Due to its southwest strike, this fault may project into the planned bypass pipeline alignment.

Seismic Analysis

LADWP reported that Woodward-McNeill and Associates prepared a seismic stability analysis for a new dam at the Silver Lake Reservoir and the details of their design earthquakes were approved by the State Division of Safety of Dams (LADWP, 1973a). Woodward-McNeill concluded that the existing dam would not perform satisfactorily during a postulated-capable earthquake. As a result, a new dam was constructed at the site between June 1975 and December 15, 1976.

Liquefaction and Landslides

The CDMG Seismic Hazards Zone Map indicates that the proposed jacking pit at the north end of the trunk line, the entire trunk line along West Silver Lake Drive, and the receiving pit at the south end of the trunk line are all located in an area with the potential for permanent ground displacement caused by liquefaction but are not located in an area zoned as being susceptible to earthquake-induced landslides (CDMG, 1999). The portion of the trunk line located below Redesdale Avenue is located upslope and adjacent to an area mapped by the CDMG as an area susceptible to earthquake-induced landslides (CDMG, 1991). A few hundred feet southwest of Redesdale Drive and West Silver Lake Drive, the trunk line crosses an area zoned as being susceptible to earthquake-induced landslides. The proposed regulating station and southernmost jacking pit are not located within any seismic hazard zones as mapped by the CDMG (CDMG, 1991).

Weak or Unstable Foundation Materials

Because the bypass pipeline will be constructed with tunneling methods approximately 40 feet below grade, the pipeline would be located within interbedded sandstone and siltstone bedrock that strikes to the north-northwest and dips shallowly to the southwest. No data are available regarding the strength of the bedrock along the proposed bypass line alignment or in the areas of new construction south of the dam.

The regulating station would be buried up to 14 feet deep within enclosed vaults south of the reservoir dam. According to LADWP geologic maps and cross sections, these vaults would be completed within old fill materials and/or alluvium. No data are available regarding the strength of these fill and alluvial materials.

During the Silver Lake Dam reconstruction in 1975 and 1976, groundwater seepage reportedly caused a minor slope failure in the north slope of the new dam. Similar conditions could be encountered during construction of the bypass pipeline or regulating station if groundwater is encountered.

4.2 Impacts

4.2.1 Thresholds of Significance

4.2.1.1 Geologic Resources

The Proposed Project would have a significant impact on geologic resources if it would:

- Destroy, cover, or modify any unique or historically significant geologic or physical features or limit access to those features. Such features may include, but are not limited to, hilltops, ridges, hill slopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands.

4.2.1.2 Soil Resources

The Proposed Project would have a significant impact on soil resources if it would:

- Result in substantial accelerated wind- or water-induced soil erosion during construction, operation, or maintenance, especially in areas of high erosion susceptibility
- Result in sedimentation runoff or deposition that could not be contained or controlled onsite

4.2.1.3 Geologic Hazards

The Proposed Project would have a significant impact if it would be substantially affected by geologic hazards or make current geologic hazards substantially worse, such that the project would result in any of the following:

- Present a significant risk to the health or safety of workers or members of the public
- Present substantial property damage in the project area
- Induce land subsidence
- Induce land failure or reduce slope stability

4.2.2 HWSG Site

4.2.2.1 Construction

Potential impacts to geologic or soil resources or related to geologic hazards from construction of facilities at the HWSG site are identified below.

Geologic Resources

The existing site is primarily level and has previously been disturbed by other construction projects. The site contains several rectangular areas of fill that are approximately 5 feet higher than the surrounding areas, and no major hillside grading or slope removal would be needed for construction. The excavation and removal of fill and alluvial materials at the site would not alter any unique or significant geologic features.

Soil Resources

Given the amount of grading and excavation required, soil erosion and sedimentation runoff during construction would have potentially significant impacts. Mitigation Measure ER-1 has been identified to reduce potential impacts to soil resources to less-than-significant levels.

Geologic Hazards

Construction activities would not adversely impact seismic conditions at the HWSG site and would not pose a threat to public safety. However, existing alluvial materials underlying the reservoir site may prove to be unsuitable foundation materials. Mitigation Measure ER-2 has been identified to reduce potential impacts resulting from geologic hazards to less-than-significant levels.

4.2.2.2 Operation and Maintenance

No impacts to earth resources are anticipated during routine operation and maintenance of the facilities at the HWSG site.

4.2.3 SLRC

4.2.3.1 Construction

Bypass Pipeline

Potential impacts to geologic or soil resources or related to geologic hazards from construction of the bypass pipeline are identified below.

Geologic Resources

No major hillside grading or slope removal would be needed for construction because the bypass pipeline would be contained in a tunnel and/or trench. The excavation and removal of fill materials at the site would not alter any unique or significant geologic features.

Soil Resources

Soil and vegetation removal would be minimal during pipeline construction, but grading and minimal soil storage may occur at the construction staging area on the east side of Silver Lake Reservoir. These activities may potentially result in significant adverse impacts to soil resources, including soil erosion and runoff sedimentation. Implementation of

Mitigation Measure ER-1 would ensure that impacts to soil resources are less than significant.

Geologic Hazards

Geologic mapping data show that there are no indications of large-scale, unstable slopes or landslides on the west side of Silver Lake Reservoir in the vicinity of the proposed bypass pipeline. As discussed previously, an approximately 100-foot-long fault was mapped approximately 50 feet southeast of the intersection of Redesdale Drive and West Silver Lake Drive, southeast of the proposed location of the southern jacking pit (LADWP, 1973). This fault may continue into the proposed pipeline alignment. Because the length of this fault is not great and it is not mentioned as an active fault in any of the publications examined, its effect on the planned tunnel alignment is expected to be minimal. However, Mitigation Measure ER-2 would be implemented to ensure that impacts related to geologic hazards are less than significant.

Regulating Station and Relief Stations

Potential impacts to geologic or soil resources or related to geologic hazards from construction of the regulating station and relief stations are identified below.

Geologic Resources

The regulating station would be installed within existing fill and/or alluvial materials, and no major hillside grading or slope removal would be required. The excavation and removal of fill materials at the site would not alter any unique or significant geologic features. The relief stations would be constructed within existing streets and would require the excavation and replacement of artificial fill material. No major grading or slope removal would be required, and the excavation and removal of fill material would not alter any unique or significant geologic features.

Soil Resources

Excavation for the regulating station would require the removal of existing grass and vegetation, potentially resulting in significant adverse impacts to soil resources, including soil erosion and runoff sedimentation. Implementation of Mitigation Measure ER-1 would ensure impacts to soil resources are less than significant. While excavation for the relief stations is not expected to result in adverse impacts to soil resources, Mitigation Measure ER-1 would be implemented to ensure that potential impacts are less than significant.

Geologic Hazards

A 350-foot-long fault was previously mapped by LADWP near the western dam abutment. It is unclear how close this fault is to the proposed regulating station. It is likely that numerous small faults and fractures would be encountered during excavation and tunneling activities at the regulating station site. Although no major through-going active faults have been mapped in the project vicinity, numerous small faults, some with vertical offset up to 7 feet are present in the immediate vicinity of the dam. To ensure that potential impacts related to geologic hazards are less than significant, Mitigation Measure ER-2 would be implemented. Significant impacts related to geologic hazards from construction of the relief station are not anticipated; however, Mitigation Measure ER-2 would be implemented.

Removal of Silver Lake and Ivanhoe Reservoirs from Service

Potential impacts to geologic or soil resources or related to geologic hazards from construction activities necessary to remove Silver Lake and Ivanhoe Reservoirs from service are identified below.

Geologic Resources

Construction activities related to removal of the reservoirs from service would occur within existing fill and/or alluvial materials, and no major hillside grading or slope removal would be required. The excavation and removal of fill materials at the site would not alter any unique or significant geologic features.

Soil Resources

Excavation required for piping or vaults for removal of the reservoirs from service would require the removal of small amounts of existing grass and vegetation, potentially resulting in adverse impacts to soil resources, including soil erosion and runoff sedimentation. Implementation of Mitigation Measure ER-1 would ensure impacts to soil resources are less than significant.

Geologic Hazards

Impacts from geologic hazards during construction activities to remove the reservoirs from service would be similar to those identified for construction of the regulating station. To ensure that potential impacts related to geologic hazards are less than significant, Mitigation Measure ER-2 would be implemented.

4.2.3.2 Operation

Normal operation of the bypass pipeline and the regulating station would not affect earth resources at the SLRC. The bypass pipeline would not require any maintenance and has a lifespan of approximately 100 years. In the unlikely event of a pipeline breakage, the repair work would be performed within the pipeline; and no excavation would be required. Maintenance of the regulating station would be performed quarterly, as described in the Project Description included in Chapter 2.

4.3 Mitigation Measures

The mitigation measures outlined below have been identified to mitigate potentially significant impact to soil resources or resulting from geologic hazards during construction activities at both the HWSG site and the SLRC. Following implementation of these mitigation measures, potentially significant adverse impacts would be reduced to less-than-significant levels.

4.3.1 Construction

Mitigation Measure ER-1: Soil Resources

One or more of the following measures to control soil erosion and sedimentation will be implemented as feasible:

- The area disturbed by clearing, grading, earth moving, or excavation operations will be as small as feasible to prevent excessive dust.

- Pregrading/excavation activities will include watering the area to be graded or excavated before commencement of grading or excavation. Application of water will penetrate sufficiently to minimize fugitive dust during grading activities.
- Trucks will be required to have their loads covered going offsite.
- Graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved onsite roadways, will be treated to prevent fugitive dust. Treatment will include, but not be limited to, periodic watering and/or roll compaction as appropriate. Watering will be done at least twice daily.
- Inactive graded and/or excavated areas will be monitored at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction, will be periodically implemented over portions of the construction site that are inactive for over 4 days.
- During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), clearing, grading, earth-moving, and excavation operations will be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard to offsite properties.
- Adjacent streets and roads will be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.
- A Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented that will include Best Management Practices (BMPs) to minimize conveyance of sediment into waterways. The SWPPP may include some or all of the following or any other measure necessary:
  - V-ditches will be constructed above all cut or fill slopes to divert water from newly exposed slope faces.
  - Straw bale dikes or filter fabric barriers will be located downslope of disturbed areas to act as sediment traps.
  - Topsoil will be selectively removed, stockpiled, and replaced as a surface medium for revegetation.
  - Exposed slope faces will be revegetated as soon after construction as possible.
  - Temporary sedimentation basins will be constructed as necessary.

Mitigation Measure ER-2: Geologic Hazards

The following measures will be implemented, as feasible, to mitigate potentially significant impacts resulting from geologic hazards to less-than-significant levels:

- Facilities will be designed according to seismic standards as determined by geotechnical and seismic hazard analyses. The analyses will be based on site-specific subsurface investigations and ground motion design recommendations.

- Appropriate geotechnical soil testing will be performed during the design phase so that the proposed grading and facilities can be properly designed to meet applicable structural and seismic requirements.
- The foundation for the storage reservoir will be founded in competent materials at the site. The results of the site-specific design-level geotechnical and seismic hazard analysis noted above will assist in determining which foundation design and construction methods are implemented at the HWSG site.
- LADWP will file a geotechnical report with the DSOD as part of the application process for construction of a new reservoir. During construction, both LADWP soils engineer and inspectors from DSOD will monitor progress. Field checking of foundation and geologic conditions during construction will also ensure that designs and grading accommodate any unusual conditions that may not have been previously discovered.
- If adverse slopes are encountered, slope stability will be analyzed; and slope stabilization measures will be established during design to minimize the potential for landslide damage.
- Cuts and fill slopes will not exceed a 2:1 (horizontal:vertical) ratio except for cuts directly into bedrock where steeper slopes may be safely obtained.
- Analyses of slope stability will be made in areas where cuts into marginal or adversely dipping slopes are required for construction of proposed facilities to minimize the potential for landslide damage.

4.3.2 Operation

Implementation of the above mitigation measures would reduce both temporary and permanent impacts to less-than-significant levels. Mitigation measures during operation are not required because no significant adverse impacts are expected.

4.4 Significance After Mitigation

With implementation of the above mitigation measures, potentially adverse impacts to soil resources and/or resulting from geologic hazards would be reduced to less-than-significant levels.

5.0 Water Resources

5.1 Setting

5.1.1 Regional

Both the HWSG site and the SLRC are located within the Santa Monica Mountains Physiographic Region. The HWSG site is located within the San Fernando Groundwater Basin and within the San Fernando Watershed, as defined by the Upper Los Angeles River Area (ULARA) Watermaster (ULARA, 2004). The SLRC is located adjacent to and west of the San Fernando Groundwater Basin near the Los Angeles River Narrows and within the San Fernando Watershed. The San Fernando Groundwater Basin is bounded on the east and northeast by the San Rafael Hills, Verdugo Mountains, and San Gabriel Mountains; on the north by the San Gabriel Mountains and the eroded limb of the Little Tujunga Syncline that separates it from the Sylmar Basin; on the northwest and west by the Santa Susana Mountains and Simi Hills; and on the south by the Santa Monica Mountains.

The climate in the vicinity of downtown Los Angeles and the HWSG and SLRC sites is normally mild, uniform, and semiarid. Temperatures seldom exceed 90 degrees Fahrenheit (ºF) or drop below 40°F (NOAA, 2004). Average high and low temperatures for Los Angeles over the period 1921 to 2002 were 74.3°F and 56.1°F, respectively (NOAA, 2004). Rainfall occurs primarily between November and April, and averages approximately 15 inches per year (NOAA, 2004).

5.1.2 HWSG Site

5.1.2.1 Surface Water

Resources

The site is located adjacent to the LA River channel, the only surface water body located in the vicinity of the HWSG site. Topographic contours on site maps provided by LADWP indicate that surface water runoff would generally flow north toward the river channel. Localized ponding during a rain event could possibly occur in low areas at the site. No Federal Emergency Management Agency (FEMA) flood insurance maps are available for the HWSG site to determine if the site is located within a 100-year flood plain.

Quality

Surface water quality of the LA River is affected by urban runoff and discharge by wastewater treatment facilities upstream of the HWSG site. The 1995 Water Quality Control Plan for the Los Angeles River Basin (Basin Plan) set forth objectives for various constituents of concern. In a document outlining the history of the HWSG site (LADWP, 2004), included in Appendix B, samples taken from the LA River at the HWSG intake reportedly contained chloride (126 milligrams per liter [mg/L]), total dissolved solids (TDS) (753 mg/L), nitrate and nitrite as nitrogen (4.4 mg/L), sulfate (197 mg/L), and boron (0.4-mg/L). The chloride and TDS concentrations reportedly exceeded the 1995 Water Quality Control Plan objectives. It should be noted that water quality changes with time and the concentrations noted above are only a snapshot from a limited set of water quality data.

ULARA Watermaster reported the general water quality data for the LA River (ULARA, 2004). The surface water runoff in the ULARA contains salts dissolved from rocks in the tributary areas and is sodium-calcium, sulfate-bicarbonate in nature. A sample collected from the LA River at Arroyo Seco reportedly contained a TDS concentration of 667 mg/L and hardness of 270 mg/L (ULARA, 2004).

History of Spreading Los Angeles River Water at the HWSG Site

The following information is summarized from a document summarizing the history of spreading LA River water at the HWSG site, included in Appendix B (LADWP, 2004).

In 1915, Deep Gallery Wells were installed at the HWSG site. LA River water that flowed into the HWSG site and percolated through the soil was collected through the Deep Gallery Wells and conveyed to the water distribution system. Groundwater extraction wells 2,500 to 3,000 feet northwest of the HWSG site were installed in 1929 and were collectively called the Headworks Well Field. In 1938, the portion of the LA River adjacent to the HWSG site was lined, and spreading of LA River water into basins constructed at the HWSG site began. The Deep Gallery Wells were decommissioned in 1972 due to water quality concerns, but spreading continued and the Headworks Well Field remained operational. Spreading of LA River water at the HWSG site continued until 1983, when the Donald C. Tillman Water Reclamation Plant (Tillman Plant) came online and began discharging treated wastewater into the LA River upstream of the HWSG site. At that time, the California Department of Health Services (DHS) prohibited the diversion of LA River water for recharge purposes due to water quality concerns associated with treated wastewater. Pumping ceased at the Headworks Well Field in 1986 when contamination, including trichlorethylene (TCE) and tetrachloroethene (PCE), was discovered within the San Fernando Groundwater Basin (see Section 5.1.2.2 for a discussion of groundwater quality in the San Fernando Groundwater Basin).

For spreading of LA River water to recommence at the HWSG site, DHS and Regional Water Quality Control Board (RWQCB) water quality requirements would need to be met. The current draft Groundwater Recharge Reused Regulation (Title 22, Division 4, Chapter 3) limits the percentage of recycled water contribution for spreading to 50 percent. The other 50 percent shall come from a “dilutent water” source that is not treated wastewater. Generally, water within the LA River near the HWSG site is comprised of recycled water and urban runoff. Therefore, potable water would need to be blended with LA River water so that no more than 50 percent of the water used for spreading was recycled water; and the water for spreading may require pre-treatment prior to spreading. Following spreading, water pumped out of the groundwater basin would require treatment because of the existing groundwater contamination. The cost of blending, pretreating, spreading, pumping, and treating LA River water at the HWSG site so that it could be served to the water distribution system is significantly greater than the cost of purchasing treated water from the MWD, which is the approach currently taken by LADWP. Consequently, LADWP has determined that, at least until groundwater contamination in the San Fernando Groundwater Basin is cleaned up, spreading of LA River water at the HWSG site is not feasible. However, spreading of LA River water at the HWSG site may be feasible in the future, depending on water quality regulations by DHS and RWQCB and would be evaluated along with alternative locations for spreading.

5.1.2.2 Groundwater

Resources

The HWSG site is located within and at the southern edge of the San Fernando Valley, according to figures provided in ULARA (2004). The San Fernando Groundwater Basin is adjudicated and overseen by the ULARA Watermaster. The HWSG site is adjacent to a portion of the San Fernando Basin that is impacted by TCE, PCE and other volatile organic compounds (VOCs), and is located approximately 0.8-mile south of the San Fernando Valley Area 2 National Priority List (NPL) site (EPA, 2004). There are several Operable Unit Sites within the San Fernando Basin, collectively called the San Fernando Valley Superfund Site.

In September 2003, groundwater in the shallow aquifer beneath the HWSG site flowed to the east-northeast and was at an elevation of approximately 460 feet msl (approximately 20 feet bgs) at the east end of the HWSG site and 465 feet msl (approximately 15 feet bgs) at the west end of the site (ULARA, 2004). Similar groundwater flow directions were reported by ULARA in its 1999 report. Depth to groundwater across the site in September 1998 was approximately 5 feet higher than in September 2003 (ULARA, 1999; 2003). LADWP reported that depth to water in April and May of 1999 was approximately 26 feet bgs within four monitoring wells at the HWSG site (LADWP, 2000).

Quality

The San Fernando Groundwater Basin, located adjacent to and north of the site, consists of approximately 112,000 acres and comprises 91.2 percent of the total San Fernando Valley (ULARA, 2004). In 1980, concentrations of VOCs, including TCE and PCE were found to be above federal Maximum Contaminant Levels (MCLs) and State Action Levels (SALs) in many City production wells. Many drinking water production wells were shut down as a result. A summary of groundwater quality is given in the UALRA Watermaster 2004 report. Groundwater in the ULARA is reportedly moderately hard to very hard; and, in the eastern portion of the basin, it is calcium bicarbonate rich, and often exceeds California Title 22 Drinking Water Standards where high concentrations of TCE, PCE, and nitrates are present.

Contaminated shallow groundwater with concentrations of TCE and PCE up to 5 parts per billion (ppb) is found approximately 4,000 feet north of the HWSG site (ULARA, 2004). Shallow groundwater with concentrations of nitrates above 45 ppm is located approximately 1,500 feet northeast of the site (ULARA, 2004). Groundwater in the San Fernando Valley Superfund Site is defined as shallow if the top of the well screen is less than 50 feet below the water table. Basinwide groundwater monitoring and sampling is periodically conducted using 87 groundwater monitoring wells that were installed as part of the San Fernando Valley Remedial Investigation (RI) initiated in July 1987 by the United States Environmental Protection Agency (EPA) (ULARA, 2004).

5.1.3 SLRC

5.1.3.1 Surface Water

Resources

The sloped areas around the SLRC are not in a 100-year floodplain area as defined by FEMA. However, the reservoir itself is designated as a 100-year floodplain.

Reservoirs

Silver Lake and Ivanhoe Reservoirs hold treated drinking water from the Los Angeles Aqueduct, Colorado River, Owens Valley, State Water Project, and local water wells that is conveyed to the SLRC via the River Supply Conduit (RSC). The water in these open reservoirs is part of the citywide potable water distribution system. Silver Lake Reservoir currently serves the water supply demands of portions of Central and East Los Angeles.

Silver Lake and Ivanhoe Reservoirs are capable of storing over 850 MG of water. Ivanhoe Reservoir acts primarily as a sedimentation basin for collection of large sand particles. The reservoir water is treated with chlorine and other chemicals to control algae and other contaminants.

Silver Lake and Ivanhoe Reservoirs have water surface areas of approximately 77 and 8 acres, respectively. Maximum depths are about 41 feet for Silver Lake and 30 feet for Ivanhoe Reservoir. Both reservoirs have steep concrete banks, and there is no shoreline or emergent vegetation within the SLRC. Silver Lake Reservoir has soil over most of the reservoir bottom. Ivanhoe Reservoir has a concrete bottom. At potable water reservoirs, influent water is chlorinated; additional chlorine is, or can be, added to both reservoirs.

Water flow-through rates are very high in both reservoirs. Turnover time for Silver Lake is typically from approximately 1 to 2 weeks; Ivanhoe Reservoir turnover time is as high as 1 day. The high flow-through precludes permanent stratification in either reservoir. Chlorine concentrations maintain water quality and water clarity, and preclude fish life. Excess influent water in Ivanhoe Reservoir overflows over a small spillway into Silver Lake. Excess inflow into Silver Lake is discharged into a storm drain. Storm runoff to both reservoirs is minimal because the “watersheds” for each are mostly confined to their respective surface areas.

Aside from the water stored in the reservoir, surface water resources at the site consist of episodic stormwater runoff caused by precipitation. However, to protect the water quality at the reservoirs, the reservoirs themselves are constructed and situated so that precipitation that falls outside the reservoir is routed away from the reservoir by means of surface drains located on the east and west sides of the reservoir (LADWP, 1973b). As stated above, stormwater runoff to both reservoirs is minimal because the watersheds for each are mostly confined to their respective surface areas. Rainfall that falls upstream and downstream of the reservoir is routed into stormwater catch basins and/or City of Los Angeles Storm Drains (LADWP, 1973b).

Quality

Based on field visits by STO Design Group in June 2002, the reservoirs indicated moderate nutrient enrichment (STO Design Group, 2002). Ivanhoe water was very clear (due to chlorination and high flow-through rates). There was considerable benthic algae due to both light penetration over much of the reservoir bottom and nutrients in the influent water. In some places, algae had detached and was floating on the surface. Invertebrate production was high, probably associated with nutrient-rich conditions and algae. Silver Lake exhibited less clarity and had a greenish tinge due to phytoplankton.

Natural accumulation of nutrients such as phosphorus (P) and nitrogen (N) in lakes is called eutrophication. Lakes can range from nutrient poor, clear lakes (oligotrophic) to moderate nutrient input (mesotrophic), to nutrient rich lakes (eutrophic to hypertrophic). With increasing eutrophication, water clarity is reduced; and algal concentrations, aquatic insect densities, and biochemical oxygen demand (BOD) become higher. If nutrient inputs are extreme, water becomes a dark green color; the water surface and water column are often clogged with floating or submerged algae; and odors, insect infestations, and fish kills can occur. This is generally undesirable for both aesthetic and biological reasons.

The field observations suggest that source waters for both Ivanhoe and Silver Lake have sufficient nutrient content to produce a mesotrophic state (moderate level) of eutrophication. Eutrophication is generally limited by both high flow-through rates, moderate nutrient input in source water, and the addition of chlorine to the water supply.

Water quality within the reservoirs is reflective of the water in the Los Angeles aqueduct, State Water Project (SWP), and local wells via the RSC.

Water quality is regulated under the Clean Water Act on the federal level, and by the Porter-Cologne Act on the state level. In California, EPA delegates the responsibility for Clean Water Act compliance to the State Water Resources Control Board (SWRCB), who sets statewide policies and develops regulations for implementation of water quality control programs. SWRCB, in turn, delegates regional responsibility to nine RWQCBs. The Los Angeles Regional Water Quality Control Board has prepared *Water Quality Control Plan Los Angeles Region: Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties (1994),* known as the Basin Plan, to preserve and enhance water quality and protect the beneficial uses of all regional waters (California RWQCB, 1994).

Beneficial uses are historical, existing, or potential uses of a body of water under the Federal Clean Water Act of 1972. Locally, the beneficial uses of a waterway or waterbody are determined by the RWQCB. In the Basin Plan, the RWQCB lists municipal drinking water supply as one of the beneficial uses for the Silver Lake Reservoir.

The plan notes that the existing beneficial use for the Silver Lake Reservoir as municipal drinking water supply is designated under SB88-63 and RB89-03 and may be considered for exemption at a later date. In addition, the plan notes that public access to the reservoir and its surrounding watershed is prohibited by LADWP.

The Basin Plan is reviewed and updated as necessary. Last prepared and approved in 1994, the plan has been amended numerous times. All total maximum daily load (TMDL) standards are amendments to the plan, as are changes (additions, deletions, or modifications) in designated beneficial uses. While the RWQCB has stated that “the non-degradation policy represents the single most important consideration in the establishment of the water quality objectives,” there is not a complete bar on reductions in water quality. Reductions can be made if it can be justified that such reductions are necessary to accommodate important social and economic development (Trim, 2001).

5.1.3.2 Groundwater

Resources

The SLRC is located within an upland basin. Local groundwater flow directions probably follow local topographic expression and flow towards the SLRC basin from the surrounding low hills. Overall, however, groundwater probably flows towards the lower-lying San Fernando Basin. During investigations at the SLRC by LADWP in 1974, groundwater was encountered at a depth of approximately 25 feet bgs.

Quality

Water quality data for groundwater beneath the site were not available at the time of this report.

5.2 Impacts

5.2.1 Thresholds of Significance

Surface Water

The Proposed Project would have a significant impact on surface water hydrology if the project would:

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources
- Change the amount of surface water in a water body in an amount sufficient to affect flood control for that water body
- Substantially reduce or increase the amount of surface water in a body of water
- Change the movement of surface water enough to produce a change in the current or direction of water flow
- Alter drainage patterns that would result in substantial erosion

The Proposed Project would have a significant impact on surface water quality if the project would:

- Cause significant degradation to reservoir water quality or cause applicable regulatory water quality standards to be violated
- Cause discharges that would create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code (below), or that violate the conditions of the applicable National Pollutant Discharge Elimination System (NPDES) stormwater permit or Water Quality Control Plan for the receiving water body

The California Water Code includes the following definitions.

Pollution – An alteration of the quality of the waters of the state to a degree that unreasonably affects either of the following: (1) the waters for beneficial use or (2) facilities that serve these beneficial uses. “Pollution” may include “contamination.”

Contamination – An impairment of the quality of the waters of the state by waste to a degree that creates a hazard to public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

Nuisance – Anything that meets the following requirements: (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; (3) occurs during, or as a result of, the treatment or disposal of wastes.

Groundwater

The Proposed Project would have a significant impact on groundwater levels if the project would:

- Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/winter peaking, or to respond to emergencies and drought
- Reduce yields of adjacent wells or wellfields (public or private)
- Adversely change the rate or direction of flow of groundwater
- Result in demonstrable and sustained reduction of groundwater recharge capacity

The Proposed Project would have a significant impact on groundwater quality if the project would:

- Affect the rate or change the direction of movement of existing contaminants
- Expand the area affected by contaminants
- Result in an increased level of groundwater contamination (including from direct percolation, injection, or salt water intrusion)
- Cause regulatory water quality standards at an existing production well to be violated, as defined in the CCR, Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act

5.2.2 HWSG Site

5.2.2.1 Construction

Surface Water

During construction, short-term impacts to surface water quality could occur at the site in the event of drainage from precipitation that would potentially result in substantial erosion. Changes in topography and the presence of excavated and/or unprotected soil could all affect stormwater runoff. Mitigation Measure WR-1 has been identified to reduce potential impacts to surface water quality to less than significant.

Groundwater

Construction activities at the HWSG site are not expected to result in adverse impacts to groundwater resources or quality.

5.2.2.2 Operation

Surface Water

Operation of facilities at the HWSG site would not cause flooding, change the amount of surface water in a body of water, or change the movement of surface water. The storage reservoir would permanently change site topography and consequently change drainage patterns at the site that would be controlled by the use of natural soil and plant cover on the sides and roof of the reservoir. In conjunction with existing storm drainage facilities, no flooding or erosion at the site is expected.

Groundwater

Operation of facilities at the HWSG site is not expected to result in adverse impacts to groundwater resources or quality. The water storage reservoir would occupy approximately 19 acres of the 43-acre HWSG site. If spreading of LA River water at the HWSG site were to become feasible in the future, the presence of the storage reservoir would not preclude spreading at the site. The remaining 24 acres could be used for spreading; and deep injection wells, if desired, could be used to deliver water beneath the reservoir.

5.2.3 SLRC

5.2.3.1 Construction

Surface Water

During construction, short-term impacts to surface water quality could occur at the site in the event of drainage from precipitation that would potentially result in erosion. Changes in topography and the presence of excavated and/or unprotected soil could all affect stormwater runoff. Mitigation Measure WR-1 has been identified to reduce potential impacts to surface water quality to less than significant.

The lowering of water levels within Ivanhoe and Silver Lake Reservoirs during construction activities to remove Silver Lake Reservoir from service would occur while the reservoirs are used to service customers, and existing LADWP procedures to maintain water quality would be employed during the temporary drawdown. Therefore, the quality of water delivered to LADWP customers would not be affected. To control algae growth and associated water quality impacts, lowering of the reservoir levels would coincide with cooler months. During the cooler months, algal blooms are likely to be reduced as a result of colder temperatures and less sunlight. Additionally, shore chlorination would be increased, as necessary; or copper sulfate would be utilized to prevent algae growth. Potential impacts to surface water quality during lowering of the water levels in the reservoirs are anticipated to be less than significant.

Groundwater

Construction of the Proposed Project would not result in significant adverse impacts to groundwater.

5.2.3.2 Operation

Surface Water

It is currently planned to remove Silver Lake Reservoir from service sometime in 2008-2009 while maintaining Ivanhoe Reservoir in service to feed the distribution system. Once removed from service, the water in Silver Lake Reservoir would be considered nonpotable; therefore, Silver Lake Reservoir would be maintained at a lower elevation than Ivanhoe to prevent cross-contamination. Silver Lake Reservoir would continue to be maintained at historical operating levels (typically between 440 and 451 feet). Ivanhoe Reservoir would be removed from service approximately 2 months after the storage reservoir at the HWSG site is fully operational, estimated to be July 2013.

Following the removal of the SLRC from the LADWP water distribution system, water contained in Ivanhoe and Silver Lake Reservoirs would be allowed to revert to a more natural state. This would be accomplished by discontinuing the addition of water treatment chemicals. LADWP expects that the water appearance in both reservoirs would generally change from a clear appearance to a less-transparent, green color that has characterized the Silver Lake Reservoir periodically over the years. This change in color would be due to increased algal growth because of sufficient existing nutrient concentrations. It is not expected that the amount of algae would exceed that which has been experienced periodically in the past. It is expected that a series of changes would occur over time in the types of organisms present as the reservoir adapts to the new operating regimen. Because the two reservoirs would be removed from service at different times, there would be a period of time, approximately 4 to 5 years, when the color of water in Silver Lake Reservoir would change to more of a greenish hue while the water in Ivanhoe Reservoir remains blue as a result of water-treatment chemicals. Changes in water appearance will also likely occur with the addition of water to maintain reservoir water levels.

Operation of the bypass pipeline and regulating station and removal of the reservoirs from the distribution system may potentially result in an adverse impact to surface water quality in the reservoirs. However, LADWP would follow an adaptive management plan whereby potential management tools would be evaluated after the reservoirs achieve a more natural condition, as described in Chapter 2. LADWP would also develop a PMMP that would address water quality. With the implementation of the adaptive management plan and PMMP, no significant adverse impact to water quality would occur.

While Ivanhoe and Silver Lake Reservoirs would revert to a more natural state, a change in designated beneficial use is not anticipated at this time.

Groundwater

Impervious surfaces from the Proposed Project (primarily the regulating station) would reduce the area available for aquifer recharge to the shallow aquifer (if still present) and/or deeper aquifer(s) beneath the site. Due to the small area being covered, the possibility of decreasing the aquifer recharge is not a significant impact. The groundwater underlying the proposed bypass tunnel alignment and regulating station is not a source of water supply for the SLRC.

5.3 Mitigation Measures

5.3.1 Construction

The mitigation measure outlined below has been identified to mitigate potentially significant impacts to surface water quality during construction at both the HWSG site and the SLRC. Following implementation of this mitigation measure, potentially significant adverse impacts would be reduced to less-than-significant levels.

Mitigation Measure WR-1: Surface Water Quality

- The project would obtain an NPDES Municipal Stormwater General Construction Permit (General Permit), and comply with all permit requirements.
- An SWPPP will be developed and implemented that will include BMPs to minimize conveyance of sediment into waterways. The SWPPP may include some or all of the following or any other measure necessary:
  - V-ditches will be constructed above all cut or fill slopes to divert water from newly exposed slope faces.
  - Straw bale dikes or filter fabric barriers will be located downslope of disturbed areas to act as sediment traps.
  - Topsoil will be selectively removed, stockpiled, and replaced as a surface medium for revegetation.
  - Exposed slope faces will be revegetated as soon as possible after construction.
  - Temporary sedimentation basins will be constructed as necessary.
- Interim grading and other measures specified by the Los Angeles City erosion control ordinances would be employed to mitigate any short-term flooding due to stormwater.

5.3.2 Operation

No significant adverse impacts to surface or groundwater resources or quality have been identified as a result of operation of the SLRC SRP. Consequently, no mitigation measures are required.

5.4 Significance After Mitigation

With implementation of the above mitigation measure, potentially adverse impacts to surface water quality resulting from project construction would be reduced to less-than-significant levels.

6.0 Biological Resources

6.1 Environmental Setting

The methodology for compiling information and conducting analysis in this section is described in the Biological Resources Technical Report included as Appendix C of this Draft EIR. Methodology for compiling information on existing biological resources included a review of existing biological resource databases and relevant literature or environmental reports, and field surveys and habitat evaluation. Databases reviewed included the California Natural Diversity Data Base (CNDDB) managed by the California Department of Fish and Game (CDFG, 2004a); the California Wildlife Habitat Relationship (CWHR) System (CDFG, 2004b); proposed or final Critical Habitat for species listed as "threatened" or "endangered" designated by the U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (FESA); Significant Ecological Areas (SEAs) as determined by the County of Los Angeles; and Significant Natural Areas (SNAs) as determined by CDFG.

6.1.1 General Setting

The HWSG site is located in a relatively flat parcel adjacent to the LA River, just below the easternmost spur of the Santa Monica Mountains. It is surrounded on most sides by developed areas, including residential or commercial areas; cemeteries; and recreational facilities, including Traveltown Museum and portions of Griffith Park. The LA River in this location is in a concrete-lined channel, with no developed riparian vegetation.

The SLRC is located in the hilly residential neighborhoods of the Silver Lake community. Surrounding land uses include residential and limited commercial. There is no natural land cover in the vicinity of SLRC; however, an area dominated by non-native species in a naturalized condition exists on the eastern shore of the SLRC.

6.1.2 Special Land Designations

6.1.2.1 Federal Critical Habitat

Under the FESA, the USFWS is required to designate Critical Habitat for species listed as endangered or threatened. No designated Critical Habitat is present at the Proposed Project sites, nor within 5 miles.

6.1.2.2 Significant Natural Areas

SNAs are established by the CDFG under the Fish and Game Code as areas that contain important examples of the biological diversity in California, including areas supporting rare species or habitats. There are no SNAs at the Proposed Project sites. Verdugo Mountain Park, located 4 miles to the north of the HWSG site, supports an SNA designated for a rare population of Davidson's bush mallow (*Malacothamnus davidsonii*). Ernest E. Debs Regional

Park along the Arroyo Seco, 4 miles east of the SLRC, supports rare California walnut (*Juglans californicus*) woodland.

6.1.2.3 Significant Ecological Areas

SEAs were established in 1976 by Los Angeles County to designate areas with sensitive environmental conditions and/or resources. The county developed the concept in conjunction with adopting the original County General Plan, and SEAs are defined and delineated in conjunction with Land Use and Open Space Elements for the County General Plan. The County of Los Angeles Department of Regional Planning is currently updating the SEA portion of the General Plan. Just to the south of the HWSG site, the Griffith Park SEA encompasses natural biotic communities within Griffith Park, which supports coastal sage scrub, chaparral, riparian, and southern oak woodland plant communities typical in interior and coastal mountain ranges of California. The Verdugo Mountains SEA lies 4 miles to the north of HWSG. It consists of an extensive, relatively undisturbed island on natural vegetation in an otherwise urbanized landscape; plant communities include coastal sage scrub, chaparral, and riparian woodland. This area may serve as the only remaining habitat link between the Santa Monica Mountains to the southwest and the San Gabriel Mountains to the northeast.

6.1.3 Plant and Wildlife Communities

Vegetative communities on the Proposed Project sites were characterized according to Holland (1986). Native vegetation communities were limited to the HWSG site, and the communities are sparse and patchy compared to typical representations of these communities where land disturbance has been less intense. Non-native vegetation both surrounds native plant communities and is interspersed throughout the communities.

Existing vegetation communities and wildlife species commonly associated with these communities at the project site are described below.

Southern Mixed Chaparral/Venturan Coastal Sage Scrub

Representatives from both these communities are found together in a scrub community with patchy occurrence on the HWSG site. The site consists of open to moderately dense woody vegetation, ranging from 4 to 12 feet in height, with understory varying from sparse to moderately dense, where non-native annual herbaceous vegetation is present. Dominant species include coyote bush (*Baccharis pilularis*), coffeeberry (*Rhamnus californica*), California buckwheat (*Eriogonum fasciculatum*), sugarbush (*Rhus ovata*), squaw bush (*Rhus trilobata*), poison oak (*Toxicodendron trilobata*), California bay (*Umbellularia californica*), and monkeyflower (*Diplacus* sp.). Non-native plants present include scotch broom (*Cytisus scoparius*), oleander (*Nerium oleander*), and castor bean (*Ricinus communis*).

Common wildlife species associated with this community at the project site include spotted towhee (*Pipilo erythrophthalmus*), mourning dove (*Zenaida macroura*), Allen's hummingbird (*Selasphorus sasin*), northern mockingbird (*Mimus polyglottos*), white-crowned sparrow (*Zonotrichia leucophrys*), scrub jay (*Aphelocoma coerulescens*), spotted towhee (*Pipilo maculatus*), California towhee (*Pipilo crissalis*), desert cottontail (*Sylvilagus audubonii*), coyote (*Canis latrans*), and western fence lizard (*Sceloporus occidentalis*).

Ruderal/Non-Native Grassland

The ruderal/non-native grassland is present throughout the Proposed Project at the HWSG site, on disturbed areas impacted by previous land development activities, including spreading basin construction and operation. This community contains dominant species of slender wild oat (*Avena barbata*), hare barley (*Hordeum leporinum*), red brome (*Bromus rubens*), and soft chess (*Bromus mollis*). Scattered shrubs may include tree tobacco (*Nicotine glauca*) and mulefat (*Baccharis salicifolia*).

Common wildlife species associated with this community at the project site include red-tailed hawk (*Buteo jamaicensis*), northern rough-winged swallow (*Stelgidopteryx serripennis*), Brewer's blackbird (*Euphagus cyanocephalus*), mourning dove, desert cottontail, and coyote.

Mulefat/Willow Scrub

There are two significant drainages within the Proposed Project site at the HWSG site; both are fed primarily from storm or nuisance flow runoff from the adjacent cemeteries. Mulefat/willow scrub has established along portions of the significant drainages, as well as in some locations along levees associated with the former spreading ground operations. Dense mulefat-dominated riparian scrub is located along the drainage on the southern portion of the site, extending up the slope where a storm drain enters. Other riparian plants, including arroyo willow (*Salix laevigata*), Goodding's black willow (*S. gooddingii*), Mexican elderberry (*Sambucus mexicana*), and box elder (*Acer negundo*) also are found in scattered occurrence within the mulefat scrub. In addition, a few small coast live oak (*Quercus agrifolia*) are associated with this community. Mulefat and other riparian species have established in some locations on the berms of former spreading basins and may be moderately dense in some places, but are generally only as wide as the basin.

A small retention basin on the eastern portion of the HWSG site has a small swale with limited wetland characteristics in its center; however, field sampling indicates it does not meet the criteria of a jurisdictional wetland as defined by the USACE. Specifically, wetland soils are not evident; and vegetation adapted to wetland conditions comprises less than 20 percent of the site cover.

Common wildlife species associated with the riparian community at the Proposed Project site include Black phoebe (*Sayornis nigra*). Other bird species observed utilizing the habitat are generalists that also utilize adjacent upland scrub and ruderal/grassland habitats.

Ornamental Landscaped

Ornamental landscaped vegetation is found on perimeter locations at the HWSG site along Forest Lawn Drive, and along State Highway 134 on the north of the site. Tree species present include acacia (*Acacia* sp.), poplar (*Populus* sp.), pines (*Pinus* spp.), and ash (*Fraxinus* spp.). Ornamental landscaped vegetation is also common around SLRC; in particular, extensive stands occur around the LADWP facilities on the eastern side of the complex, in parklands on the southern portion of the complex, and in other pockets around the perimeter of the concrete-lined reservoirs. The small grassy area south of the Silver Lake Dam at the SLRC supports landscaped areas with some native trees, including western sycamore (*Platanus racemosa*).

Ornamental landscaped vegetation supports a number of species of wildlife adapted to urban conditions. This includes house finch (*Carpodacus mexicanus*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), and northern mockingbird. In addition, ornamental trees may support nesting species, including nesting raptors such as red-tailed hawk, and nesting waterbirds such as great blue heron (*Ardea herodias*). Great blue heron nests in ornamental trees on the northwest side of Silver Lake.

The vegetation on the east side of LADWP at SLRC represents a naturalized community of predominantly non-native ornamental trees and shrubs, including eucalyptus (*Eucalyptus* spp.), hemlock (*Tsuga* sp.), cedar (*Cupressus* sp.), *Ficus* sp., pine (*Pinus* sp.), in a mix with some native trees including coast live oak and Mexican elderberry. The canopy coverage is moderate to dense, with an understory ranging from grassland to shrub. The naturalized community supports a variety of native and non-native wildlife.

Although specific focused surveys for coyotes at SLRC were not conducted, they are known to occur throughout Los Angeles County in open space and undeveloped parklands, such as Griffith Park near the SLRC, and possibly in naturalized areas of the SLRC itself. They reportedly use open habitats on SLRC. They may be seen from time to time traveling through residential neighborhoods, and have been known to forage on domestic animals. The County animal control department may address persistent problems with this species.

Aquatic Riverine

The LA River fronts the HWSG site along the northern boundary of the site. In this location, the river is confined to a concrete box channel, about 200 feet in width, and up to 20 feet deep. There is no riparian or emergent vegetated habitat developed or associated with the LA River in this location. However, substantial algae production occurs in the shallow sheet flow between storm flows; and a limited wildlife habitat is supported. Wildlife species observed included mallard (*Anas platyrhynchos*) and black phoebe.

Aquatic Lacustrine

The SLRC supports extensive open-water habitat. Silver Lake and Ivanhoe Reservoirs have water surface areas of approximately 72 and 8 acres, respectively. Maximum depths are about 41 feet for Silver Lake Reservoir and 30 feet for Ivanhoe Reservoir. Both reservoirs have steep concrete banks, and there is no shoreline or emergent vegetation within the SLRC. Silver Lake has soil over most of the reservoir bottom. Ivanhoe has a concrete bottom. As potable water reservoirs, influent water is chlorinated; plus additional chlorine is, or can be, added to both reservoirs.

Water flow-through rates are very high in both reservoirs; turnover time for Silver Lake Reservoir is from 1 to 2 weeks. Ivanhoe Reservoir is as high as 1 day. The high flow-through precludes permanent stratification in either reservoir. Chlorine concentrations maintain water quality and water clarity, and also preclude fish life. Excess influent water in Ivanhoe Reservoir overflows over a small waterfall into Silver Lake. Excess inflow into Silver Lake is discharged into a storm drain. Storm runoff to both reservoirs is minimal because the “watersheds” for each are mostly confined to their respective surface areas.

Based on field visits by STO Design Group in June 2002, the reservoirs indicated moderate nutrient enrichment (STO Design Group, 2002). Ivanhoe Reservoir water was very clear (due to chlorination and high flow-through rates). There was considerable benthic algae due to both light penetration over much of the reservoir bottom, and to nutrients in the influent water. In some places, algae had detached and was floating on the surface. Invertebrate production was high, probably associated with nutrient rich conditions and algae. Silver Lake Reservoir water exhibited less clarity, and had a greenish tinge due to phytoplankton.

Natural accumulation of nutrients such as phosphorus and nitrogen in lakes is called eutrophication. Lakes can range from nutrient-poor, clear lakes (oligotrophic) to moderate nutrient input (mesotrophic), to nutrient-rich lakes (eutrophic to hypertrophic). With increasing eutrophication, water clarity is reduced; and algal concentrations, aquatic insect densities, and BOD become higher. If nutrient inputs are extreme, water becomes a dark green color; the water surface and water column are often clogged with floating or submerged algae; and odors, insect infestations, and fish kills can occur. This is generally undesirable for both aesthetic and biological reasons.

The field observations suggest that source waters for both Ivanhoe and Silver Lake Reservoirs have sufficient nutrient content to produce a mesotrophic state (moderate level) of eutrophication. Eutrophication is generally limited by both high flow-through rates, moderate nutrient input in source water, and the addition of chlorine to the water supply.

There is sufficient invertebrate production to support a small resident waterfowl population, consisting of a few mallards, and small numbers of migrant waterfowl. Migrant birds observed on the SLRC include ruddy duck (*Oxyura jamaicensis*), eared grebe (*Podiceps nigricollis*), and bufflehead (*Bucephala albeola*); these species are known to forage on aquatic invertebrates. Canada goose (*Branta canadensis*) also has been observed at the SLRC, and may forage on aquatic or terrestrial plants. Gulls (*Larus* spp.) have been observed using the SLRC. The nesting herons do not forage at SLRC because there is a lack of shallow foraging habitat for these species.

Numbers of migrant and resident waterfowl observed on the SLRC on two separate dates are provided in Table 6-1.

TABLE 6-1
Waterfowl Numbers Observed at SLRC During 2004 Field Surveys

Species	April 6, 2004, Count	April 28, 2004, Count
Mallard *Anas platyrhynchos*	8	7
Ruddy duck *Oxyura jamaicensis*	199	36
Eared grebe *Podiceps nigricolli*	5	1
Canada goose *Branta canadensis*	2	0
Gulls spp. *Larus* spp.	6	1

6.1.4 Jurisdictional Waters

Pursuant to Section 404 of the CWA, the USACE regulates the discharge of dredged and/or fill material into "waters of the U.S." The limit of waters of the U.S. is generally identified as the limit of the ordinary high water mark (OHWM) of a stream or drainage as extended by any adjacent wetlands. The OHWM generally is considered to be the highest level to which water flows at least every other year (50 out of 100 years); wetlands include those areas that are inundated or saturated by surface or groundwater at a frequency and duration (wetland hydrology) sufficient to support wetland vegetation. Section 1600 of the California Fish and Game Code regulates activities that affect the bed or bank of drainages within the state. Jurisdiction is typically defined as the bed of a drainage and the bank up to the top of significant cut, extending to the outer limits of riparian vegetation where it occurs beyond the bank cut.

The location of waters of the U.S. and CDFG jurisdictional areas within the project sites were identified during field surveys. Riparian vegetation and distinct bed shelving were observed along the two major drainages at HWSG, indicating regular surface channel flow, and defining the major site drainages as jurisdictional waters of the U.S. In addition, CDFG jurisdiction is present along major channels within the HWSG, which support mulefat, Mexican elderberry, and some willows. Although some wetland vegetation within the detention basin at HWSG was identified, there was no evidence supporting a positive wetland determination. As defined in the 1987 *Wetland Delineation Manual*, a positive determinations requires evidence of a minimum of one positive wetland indicator from each of three parameters (hydrology, vegetation, and soil) (USACE, 1987).

6.1.5 Special-Status Species

The following section addresses special-status species observed, reported, or having the potential to occur at the Proposed Project sites or their immediate vicinity. Special-status species are defined to include those that are (1) listed or proposed for listing by state or federal agencies as rare, threatened, or endangered; (2) federal Species of Concern or state Species of Special Concern; (3) species listed by the California Native Plant Society (CNPS) with a designation of Category 2 (indicating species that are rare or endangered in California but more common elsewhere) or 1B (indicating species that are rare or endangered in California and elsewhere); or (4) species identified by biologists with regional knowledge as being of conservation concern or local interest.

Special-Status Plants

Table 6-2 identifies the special-status plant species that have the potential to occur in the general vicinity of the Proposed Project. Species descriptions and occurrence information were determined from the CNDDB (CDFG, 2004a), the CNPS Inventory of Rare and Endangered Plants (CNPS, 2004), and botanical literature (Hickman, 1993). A more detailed description of the life history requirements of these species, and local occurrence records, can be found in the Biological Resources Technical Report, found in Appendix C of this Draft EIR.

TABLE 6-2
Potential Special-Status Plant Species, Proposed Project

Species	Status[1] (Federal/ State/CNPS)	Potential for Occurrence in Area of Potential Effects/ Nearest Identified Occurrence[2]	Habitat Requirements
Nevin's Barberry *Berberis nevinii*	**FE/SE/1B**	Recorded in 1986 in Griffith Park near Vista del Valle Road; population probably planted after fire; low potential for occurrence on the Proposed Project site.	Chaparral, cismontane woodland, coastal scrub, riparian scrub.
Davidson's Bush Mallow *Malacothamnus davidsonii*	**SC/---/1B**	Recorded in 1987 in Cabrini Canyon near Burbank; site graded in 1999. Limited potential for occurrence.	Coastal scrub, riparian woodland and mulefat scrub, chaparral, sandy washes.
Slender Mariposa Lily *Calochortus clavatus* var. *gracilis*	**SC/---/1B**	No recent records for this species in the vicinity of the Proposed Project. Limited potential for occurrence in study area.	Chaparral, coastal scrub. Endemic to Los Angeles County.
Parish's Brittlescale *Atriplex parishii*	**---/---/1B**	Historically occurred in Santa Monica Mountains; recent records unknown, and not collected in state since 1974. Low potential for occurrence.	Alkali meadows, vernal pools, chenopod scrub, playas.
Parish's Gooseberry *Ribes divaricatum* var. *parishii*	**---/---/1B**	Historic collections in region, but no recent records; possibly extirpated. Low potential for occurrence.	Riparian woodland, *Salix* swales in riparian habitat.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	**---/---/1B**	Historically occurred in Los Angeles basin, but presumed extirpated. Low potential for occurrence.	Coastal bluff scrub, coastal scrub, alkaline soils.
Braunton's Milk Vetch *Astragalus brauntonii*	**FE/---/1B**	This species has historically occurred in Orange, Los Angeles, and Ventura Counties; however, there are no recent records near the Proposed Project site. Low potential for occurrence.	Chaparral, coastal sage scrub, grasslands; often associated with recent burns or disturbed areas.
Plummer's Mariposa Lily *Calochortus plummerae*	**SC/---/1B**	Historically documented in Santa Monica Mountains and Verdugo Canyon; no recent records. Low potential for occurrence.	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest.
Palmer's Grapplinghook *Harpagonella palmeri*	**---/---/2**	No occurrence records identified in the area, but potential for occurrence.	Grassland, sage scrub, and chaparral.
Prostrate navarretia *Navarretia prostrata*	**SC/---/1B**	Historically occurred in region, but no recent records. Low potential for occurrence.	Coastal scrub, valley and foothill grassland, vernal pools, alkaline soils in grassland.
San Fernando Valley Spineflower *Chorizanthe parryi* var. *fernandina*	**SC/SE/1A**	Historically occurred in vicinity, but no recent records. Low potential for occurrence in the Proposed Project site.	Coastal scrub. Formerly known from Southern California.

TABLE 6-2
Potential Special-Status Plant Species, Proposed Project

Species	Status[1] (Federal/ State/CNPS)	Potential for Occurrence in Area of Potential Effects/ Nearest Identified Occurrence[2]	Habitat Requirements
Los Angeles Sunflower *Helianthus nuttallii* ssp. *Parishii*	**---/---/1A**	Historically in Los Angeles County and range described in botanical literature, but presumed extinct.	Marshes and swamps, from 5 to 5,000 feet in Southern California.
Lyon's pentachaeta *Pentachaeta lyonii*	**FE/SE**	The nearest occurrence record is in the vicinity of Simi Valley, east of Highway 23, where two populations were recorded in 1991 and 1995. Not anticipated in project area.	Chaparral, clearings in chaparral, grasslands, firebreaks.
Many-stemmed Dudleya *Dudleya multicaulis*	**---/---/1B**	Historically mapped in vicinity of Hollywood Reservoir, but no recent records. Low potential for occurrence.	Chaparral, coastal scrub, valley and foothill grassland. In heavy, clay soils or grassy slopes.

Notes:
1- Key to Status Designations:

Federal Designations:

(FE) Federally Endangered, (FT) Federally Threatened, (FPE) Federally Proposed Endangered, (FPT) Federally Proposed Threatened, (FSC) Species of Concern, (FC) Candidate

State Designations:

(SE) State Endangered, (ST) State Threatened, (SR) State Rare, (CSC) Species of Special Concern, (CFP) Fully Protected Species

California Native Plant Society (CNPS) Designations:

(1A) Presumed extinct in California; (1B) Rare, threatened, or endangered in California and elsewhere; (2) Rare, threatened, or endangered in California, but more common elsewhere; (3) More information is needed; (4) Limited distribution

2- See text for sources.

Special-Status Wildlife

Table 6-3 identifies the special-status wildlife species that have the potential to occur in the general vicinity of the Proposed Project. This section provides species descriptions and provides additional information about occurrences in the Proposed Project area. A more detailed description of the life history requirements of these species, and local occurrence records, can be found in the Biological Resources Technical Report, found in Appendix C of this Draft EIR.

TABLE 6-3
Potential Special-Status Wildlife Species, Proposed Project

Species	Status[1] (Federal/State)	Potential for Occurrence in Area of Potential Effects	Nearest Identified Occurrence[2]	Habitat Requirements
<u>Birds</u>				
Great blue heron (nesting) *Ardea herodias*	**---/---**	Occurs; utilizes SLRC and adjacent trees for nesting/ roosting.	Nest regularly at SLRC; nesting in 2004.	Colonial nester in tall trees near marsh or lake foraging sites.
Great egret (nesting) *Ardea alba*	**---/---**	Moderate; may utilize SLRC and adjacent trees for nesting/roosting.	---	Colonial nester in tall trees near marsh or lake foraging sites.
Black-crowned night heron *Nycticorax nycticorax*	**---/---**	Moderate; may utilize SLRC and adjacent trees for nesting/roosting.	---	Colonial nester in trees or emergent vegetation near marshlands.
Burrowing Owl *Athene cunicularia*	**FSC/CSC**	Low; no burrows or individuals observed during field surveys at HWSG.	Historical occurrence in vicinity, but no recent records.	Open grasslands and agricultural fields with burrowing mammal populations.
California Gnatcatcher *Polioptila californica californica*	**FT/CSC**	No habitat in the Proposed Project site. Habitat for this species may exist in portions of Griffith Park.	Recent records (1991) from Verdugo Hills 4 miles north of project site.	Obligate, permanent resident of coastal sage scrub or chaparral in vicinity of coastal sage scrub.
California Horned Lark *Eremophila alpestris actia*	**---/CSC**	Moderate (nest, forage).	---	Open grasslands, agricultural fields, disturbed and barren areas.
California Yellow Warbler *Dendroica petechia brewsteri*	**---/CSC**	Moderate (transient).	---	Dense riparian woodland and scrub, including willows, cottonwoods, sycamores, and mulefat.
Coastal Cactus Wren *Campylorhynchus brunneicapillus couesi*	**---/CSC**	No habitat present in the Proposed Project vicinity.	---	Obligate, coastal sage scrub with extensive stands of *Opuntia* sp.
Cooper's Hawk *Accipiter cooperii*	**---/CSC**	High (forage).	---	Riparian woodland and forest, including willows, cottonwoods, and sycamores.
Golden Eagle *Aquila chrysaetos canadensis*	**---/CSC**	Moderate (forage).	---	Open country, rolling foothills, mountain areas and desert; breeds on overhanging ledges, high cliff sites, and large trees.
Loggerhead Shrike *Lanius ludovicianus*	**FSC/CSC**	Moderate – High.	---	Grasslands, sage scrub, chaparral, riparian, alluvial, and characterized by open scattered trees and shrubs.

TABLE 6-3
Potential Special-Status Wildlife Species, Proposed Project

Species	Status[1] (Federal/State)	Potential for Occurrence in Area of Potential Effects	Nearest Identified Occurrence[2]	Habitat Requirements
Northern Harrier *Circus cyaneus*	**---/CSC**	Unlikely.	---	Breeds in open country such as grasslands and agricultural fields near wetlands; prefers extensive grasslands.
Short-eared Owl *Asio flammeus*	**---/CSC**	Unlikely.	---	Areas with few trees such as grasslands, coastal estuaries and wetlands.
White-tailed Kite *Elanus leucurus*	**---/CFP**	Moderate.	---	Open country with trees such as oak, willow, and sycamore.
Yellow-breasted chat *Icteria virens*	**---/CSC**	Moderate.	---	Dense scrub and early seral stage riparian habitat including willow and mulefat thickets.
<u>Amphibians</u>				
Coast Range Newt *Taricha torosa torosa*	**---/CSC**	May occur in the area, but no habitat on the Proposed Project site.	---	Coastal drainages in Southern California; slow-moving streams and ponds with adjacent intact terrestrial vegetation.
Western Spadefoot *Scaphiopus hammondii*	**FSC/CSC**	May occur in the area, but no habitat on the Proposed Project site.	---	Seasonal pools lacking fish, bullfrogs, and crayfish for breeding; adjacent grasslands for foraging.
<u>Reptiles</u>				
Coastal Western Whiptail *Cnemidophorus tigris multiscutatus*	**---/CSC**	Moderate.	---	Open, arid rocky areas with sparse vegetation.
San Diego Horned Lizard *Phrynosoma coronatum blainvillei*	**---/CSC**	Moderate.	---	Open grassland, scrub, and chaparral with harvester ant mounds.
<u>Mammals</u>				
San Diego Black-tailed Jackrabbit *Lepus californicus bennettii*	**---/CSC**	Moderate.	---	Coastal sage brush, scrub, and grasslands.
California leaf-nosed bat *Macrotus californicus*	**---/CSC**	Low.	---	Desert riparian, succulent scrub, desert scrub, and other arid habitats; roosts in mines, caves far from human habitation.
Long-eared myotis *Myotis evotis*	**FSC/---**	Moderate.	Pasadena.	Scrub, chaparral, open areas; uses small caves and crevices for roosting.

TABLE 6-3
Potential Special-Status Wildlife Species, Proposed Project

Species	Status[1] (Federal/State)	Potential for Occurrence in Area of Potential Effects	Nearest Identified Occurrence[2]	Habitat Requirements
Long-legged myotis *Myotis volans*	**FSC/---**	Moderate.	Pasadena.	Coastal scrub, chaparral, woodlands; roosts in rock crevices, buildings, and under tree bark.
Mexican long-tongued bat *Choeronycteris mexicana*	**---/CSC**	Unlikely.	Ventura County.	Forages on nectar, pollen, and occasionally fruit; roosts in dimly lit buildings or caves.
Pallid Bat *Antrozous pallidus*	**---/CSC**	Low.	---	Forages close to ground in open areas; roosts in caves, rock crevices, mines, buildings, and hollow trees.
Big free-tailed bat *Nyctinomops macrotis*	**---/CSC**	Moderate.	Burbank, 1997.	Open or urban areas; rugged, rocky terrain.
Western mastiff bat *Eumops perotis californicu*s	**FSC/CSC**	Moderate.	Los Angeles County; nearby locations.	Roost in rock crevices on high cliff faces, high buildings, trees, and tunnels; forages over a variety of habitats including coastal scrub, and urban areas.
Yuma myotis *Myotis yumanensis*	**FSC/---**	Moderate.	---	Widespread in California; forages over water; roosts in buildings, mines, crevices.
Fish				
Arroyo chub *Gila orcutti*	**---/CSC**	Not likely to occur in adjacent Los Angeles River.	Upstream at Sepulveda Basin, 2001.	Cool perennial streams with riffles and pools, with sand and mud substrates, and dense riparian canopy.

Notes:
1- Key to status designations-
Federal Designations:
(FE) Federally Endangered, (FT) Federally Threatened, (FPE) Federally Proposed Endangered, (FPT) Federally Proposed Threatened, (FSC) Species of Concern, (FC) Candidate
State Designations:
(SE) State Endangered, (ST) State Threatened, (SR) State Rare, (CSC) Species of Special Concern, (CFP) Fully Protected Species

2- See text for sources

6.1.6 Special Habitat Features

Special habitat features may provide substantial benefit to wildlife populations, and potentially special-status species. Special habitat features that were identified on the Proposed Project site include utility towers at the HWSG site, and scattered tall trees at both sites, which may provide nesting locations for herons and egrets, or raptors. In addition, the extensive concrete structures associated with the LA River and the SLRC provide nesting surfaces for some swallows; and overhangs and crevices provide roosting opportunities for bats. The pump station at the southern end of Silver Lake supports a large colony of nesting northern rough-wing swallows.

6.1.7 Wildlife Movement Corridors

The HWSG site is not situated where it provides connectivity between other natural habitat areas and is not expected to be a significant wildlife movement corridor. It is surrounded by developed land on all four sides, and habitat on the site is generally degraded and less than optimal for native species.

The SLRC may provide some stopover for migratory waterfowl, as previously described. The site is limited as an optimal waterfowl resting area because invertebrate production is limited by the current operations that involve the addition of chlorine to the water; this practice also probably precludes fish from establishing in the reservoir. In addition, aquatic or emergent vegetation communities typically associated with waterfowl areas are absent at SLRC, limiting species to those that forage in deeper water without plant cover.

6.2 Impacts

Direct impacts occur when biological resources are altered, disturbed, destroyed, or removed during the course of project implementation, such as during construction, grading, and filling of habitats. Direct impacts can include the loss of individual species from habitat clearing or construction-related mortality; loss of foraging, nesting, or burrowing habitat for wildlife species; or alteration of substrates, which prevents re-establishment of native vegetation. Indirect impacts occur when project-related activities affect biological resources in a less overt manner, such as elevated noise and light levels, erosion of hillsides and/or sedimentation and siltation of aquatic habitats, and production of fugitive dust emissions.

6.2.1 Best Management Practices

Best Management Practices (BMPs) would be implemented as applicable during construction of the Proposed Project. These management practices would serve as Avoidance and Minimization Measures for reducing or eliminating impacts to biological resources. These measures would be a part of the Proposed Project, and are described in more detail below.

The HWSG site contains limited natural habitat that supports wildlife foraging and nesting. In addition, adjacent hillsides at Griffith Park support more extensive natural habitat. The SLRC supports lacustrine habitat (open lake) that is utilized by roosting waterfowl, primarily during the migratory season. To minimize construction impacts to these resources, the following measures would be implemented as applicable during construction.

1. Worker environmental awareness training for construction personnel would be provided to identify sensitive biological resources that may occur in construction areas, and identify measures required to minimize Proposed Project impacts during construction and operation. Ongoing environmental monitoring will be provided by LADWP to ensure compliance with environmental requirements throughout the construction phase of the Proposed Project.

2. Preconstruction surveys by qualified biologists would be implemented for special-status species in impact areas prior to beginning ground-disturbing activities; and, if necessary and feasible, resource relocation or exclusion would be implemented. Resource relocation would be conducted by qualified biologists in coordination with CDFG or USFWS. Exclusion zones would be implemented with fencing and/or signage that restricts access.
3. The boundaries of the construction area within the Proposed Project site would be marked with stakes and flags. No construction activities, vehicular access, equipment storage, stockpiling, or significant human intrusion would occur outside the designated construction area.
4. Proposed Project ingress and egress routes would be designated and flagged or staked, and vehicle traffic outside these routes would not be allowed. Vehicular traffic would adhere to a speed limit of 15 mph during construction to ensure avoidance of impacts to sensitive biological resources on access roads.
5. Lighting for construction activities conducted during nighttime hours would be minimized to the extent possible through the use of directional shading to protect nocturnal wildlife activities. Construction later than 8:00 p.m. is not anticipated for the Proposed Project.
6. Construction sites would be monitored daily to pick up trash and litter. Food-related trash and litter would be placed in closed containers and disposed of daily. Pets would be prohibited in the construction area.
7. Intentional killing or collection of either plants or wildlife at construction sites would be prohibited, except as necessary and/or addressed elsewhere in this document. Discharging of firearms would be prohibited on construction sites.
8. Only agency-approved pesticides, herbicides, fertilizers, dust suppressants, or other potentially harmful materials would be applied within the construction area, in accordance with relevant state and federal regulations.
9. Soil or invasive plant seed transfer from clothing, shoes, or equipment would be minimized through cleaning and monitoring of personnel or equipment transfers between sites, or prior to initial entry on the site, as necessary.
10. In habitats where nesting birds might occur, vegetation removal would occur outside the bird breeding season (February 1 to August 31), as feasible, to avoid take or disturbance that would cause abandonment of active nests containing eggs and/or young. If Proposed Project activities cannot avoid the bird breeding season, nest surveys will be conducted and active nests avoided and provided with a minimum buffer as determined by a biologist. For active raptor nests, this buffer will be a minimum of 500 feet.
11. In habitats where roosting bats might occur, ground disturbance and roost destruction would be avoided during the parturition period (March 15 through August 31). Where this is not feasible, exit surveys and/or roost surveys of potential roost sites would occur; and active roosts would be flagged. Construction activity within 300 feet of active roosts would be prohibited until the completion of parturition (end of August).

Alternatively, if potential roosts are identified prior to onset of parturition, roosts may be excluded during the evening forage period (within 4 hours after dark) or fitted with one-way exit doors to effectively eliminate and exclude roost.

12. A revegetation plan would be prepared for all areas where bare ground is left exposed by construction activities. The revegetation plan will consist of container stock and/or seed of plants native to historical conditions at the Proposed Project sites, including grassland, riparian, scrub, and woodland species native to the Santa Monica Mountains and/or LA River corridor. The plan would specify application methods and quantities, performance criteria, and monitoring requirements.
13. Only permitted, authorized construction vehicles that have been inspected to ensure fire safety requirements on the construction sites would be allowed. Vehicles would be equipped with catalytic converters with shielding or other acceptable fire prevention features. Camping, trash-burning fires, and warming fires would be prohibited in the construction area.
14. Equipment would not be operated in areas of ponded or flowing water, and no wet excavations would be performed during construction in ponds or stream beds. Stationary equipment such as motors, pumps, generators, and welders would be located a minimum of 200 feet outside CDFG and USACE jurisdictional drainages. Construction staging areas, stockpiling, and equipment storage would be located a minimum of 100 feet outside CDFG and USACE jurisdictional drainages.
15. Construction vehicles and equipment would be checked periodically to ensure that they are in proper working condition and that there would be no potential for fugitive emissions of oil and other hazardous products. Refueling or lubrication of vehicles and cleaning of equipment, or other activities that involve open use of fuels, lubricants, or solvents, would occur in upland locations at least 500 feet away from CDFG and USACE jurisdictional drainages, and at least 200 feet from other flagged, sensitive biological resources.
16. The Proposed Project would obtain an NPDES Municipal Stormwater General Construction Permit (General Permit), and comply with all permit requirements. As part of the permit requirements, an SWPPP would be prepared for the Proposed Project. The SWPPP would provide detailed descriptions of the various structural and nonstructural water quality management measures to be used, and may include construction BMPs; downstream water quality monitoring and use of permanent source-control BMPs; and treatment control BMPs, which may include installation of filters, straw bale barriers, silt fences, and treatment wetlands. These structures would be located outside CDFG and USACE jurisdictional drainages.
17. A Mitigation Monitoring Plan that outlines how LADWP would implement and monitor the mitigation measures specified herein would be prepared, and construction monitoring and compliance reports that analyze the effectiveness of the mitigation measures would be prepared.

6.2.2 Significance Criteria

A significant adverse impact is defined as one or more of the following:

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

6.2.3 Impacts to Vegetation Communities

6.2.3.1 HWSG Site

Direct impacts would occur to natural vegetation communities at the HWSG site. The primary footprint of both the proposed storage reservoir and the material and equipment staging area are within previously disturbed areas, including former spreading basins, currently dominated by non-native grassland. These areas vary from recently graded and disturbed areas to basins that have not been disturbed for many years since basins were operated. In some cases, the spreading basins have native riparian or scrub species, including mulefat, California coffeeberry, and arroyo willow, around perimeter berms; but these are generally not developed plant communities.

The channel on the south side of the HWSG site also would be impacted by the storage reservoir. This channel appears to flow intermittently. The corridor is marginal to well developed. Where it is developed, it is dominated by mulefat/willow scrub. Portions of this channel would be filled, and the riparian corridor is within the footprint of the reservoir. The material and equipment staging area would be adjacent to the riparian corridor and the channel, but the development of this area would be constrained to areas away from the riparian corridor and, as such, would not impact the community.

The material and equipment staging area, the hydroelectric plant staging area, and the hydroelectric plant are within areas of previous channel development or along other lands disturbed during construction of the site or from road construction of the nearby Forest

Lawn Drive. Portions of these areas are dominated by southern mixed chaparral and landscaped/ornamental communities, as well as the ruderal/non-native grassland community. The representation of southern mixed chaparral is generally not well developed, lacks density, and consists of some native shrubs interspersed with non-native vegetation and ornamental trees and shrubs. The staging areas would temporarily impact these communities, while the hydroelectric plant would result in permanent land conversion.

Ruderal/non-native grassland community is not recognized as a sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS. As such, the loss of this community would not represent a significant impact; and no mitigation is required.

The southern mixed chaparral community, while native, is not recognized as a sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS. In addition, the expression of the community at the HWSG site is not well developed, lacks density, and is interspersed with non-natives. As such, the temporary or permanent loss of this community would not represent a significant impact; and no mitigation is required.

Riparian communities are recognized as sensitive natural communities, and the loss of the riparian community along the southern edge of the site from the Proposed Reservoir construction would represent a significant impact. Mitigation Measure BR-1 has been identified to reduce impacts to the riparian community along the southern edge of the HWSG site to less-than-significant levels.

6.2.3.2 SLRC

No direct impacts or loss of native vegetation communities will occur as a result of the Proposed Project at SLRC. Construction is proposed for existing roadways, landscaped areas, and other developed areas. Landscaped areas proposed for construction include the following: (1) a portion of the grassy area just south of the Silver Lake Dam, where the southern jacking pit for the bypass pipeline and the regulating station would be located and (2) a large, open landscaped area (primarily grass) east of Silver Lake Reservoir, which would be used for equipment staging and storage. In landscaped areas, tree removal would be avoided where feasible. Because landscaped areas are not a native habitat, and generally only support wildlife species adapted to non-native environments, the temporary loss of these during construction activities would not represent a significant adverse impact.

6.2.4 Potential Impacts to CDFG and USACE Jurisdictional Areas

6.2.4.1 HWSG Site

Potential impacts to waters of the U.S. and CDFG jurisdictional streambed and bank would occur from construction of the storage reservoir at the HWSG site. Impacts would specifically occur along approximately 1,200 feet of the southern portion of the storage reservoir site where, as previously described, a channel under both CDFG and USACE jurisdiction would be impacted. Approximately 200 feet of this channel contains scattered riparian vegetation (i.e., mulefat scrub). The remaining 1,000 feet of channel area potentially impacted by the reservoir contains ruderal grass and other non-native vegetation.

The material and equipment staging area would be adjacent to the riparian corridor and the channel; but the development of this area would be constrained to areas at least 100 feet away from jurisdictional boundaries and, as such, would not impact the community.

The fill and permanent loss of waters of the U.S. and CDFG jurisdictional stream bed and bank would represent a significant impact. Mitigation Measure BR-2 has been identified to reduce impacts to CDFG and USACE jurisdictional areas at the HWSG site to less-than-significant levels.

6.2.4.2 SLRC

No jurisdictional waters of the U.S. or CDFG jurisdictional streambed would be impacted by the Proposed Project at the SLRC.

6.2.5 Potential Impacts to General Wildlife Species

6.2.5.1 HWSG Site

Common wildlife species that inhabit, move through, or forage within the habitats at the HWSG site, particularly small mammals, reptiles, amphibians, and other fauna of slow mobility would be subject to mortality or displacement. More mobile wildlife species and noise-sensitive species currently using these habitats would be expected to avoid the Proposed Project site and neighboring areas, with the initiation of construction activities. Impacts to special-status wildlife species are addressed below. Impacts to common wildlife species associated with the vegetation types discussed above would be reduced through implementation of good construction work practices. Although some impacts may occur from the Proposed Project, the minimal loss of wildlife would not reduce the populations of common wildlife species in the region below self-sustaining numbers; and impacts would be less than significant.

6.2.5.2 SLRC

Some noise disturbance may occur to aquatic lacustrine or ornamental landscaped habitats at the SLRC during active construction of the Proposed Project. More mobile wildlife species and noise-sensitive species currently using these habitats would be expected to avoid the Proposed Project site and neighboring areas, with the initiation of construction activities. Impacts to common wildlife species associated with the vegetation types discussed above would be reduced through implementation of good construction work practices, as described in Section 6.2.1, Best Management Practices. Although some disturbance would occur from the Proposed Project, the minimal loss of wildlife would not reduce the populations of common wildlife species in the region below self-sustaining numbers; and impacts would be less than significant.

6.2.6 Potential Impacts to Aquatic Communities

6.2.6.1 HWSG Site

Potential impacts to the LA River, which is adjacent to the HWSG site, may result from stormwater runoff during construction activities at the HWSG site where there is a reduction in water quality resulting from increased sedimentation or other contaminants. These water quality changes could potentially reduce the quality of aquatic habitats. To avoid impacts to downstream water quality, an SWPPP will be developed and implemented, and will include BMPs to minimize downstream effects of stormwater runoff or conveyance of sediment or other contaminants into waterways (see Water Resources, Chapter 5). With this avoidance measure, impacts would be less than significant; and no mitigation would be required.

6.2.6.2 SLRC

Silver Lake and Ivanhoe Reservoirs are in an urban setting and are eutrophic, as defined by existing nutrient concentrations. Currently, the SLRC is maintained in a mostly clear condition by the application of approved treatment chemicals, including chlorine. Additionally, limited areas of surrounding vegetation are treated with pesticides to reduce the number of adult midge flies.

The water levels in Silver Lake and Ivanhoe Reservoirs would be reduced for approximately 6 months during construction activities to remove Silver Lake Reservoir from service. Under normal conditions, reducing the depth of water bodies may result in greater primary productivity (i.e., increased algae production). This may, in turn, support more invertebrates and the wildlife that forage on them. However, the reservoirs are currently treated with approved chemicals to control algae production (primarily chlorine). The application of these chemicals limits primary productivity within the reservoirs, and would continue to do so while the level is reduced during construction. As such, no significant effect to biological resources would be anticipated by temporarily reducing the water level.

Following the removal of the SLRC as an integral part of the drinking water system as a part of the Proposed Project, the reservoirs would be allowed to revert to a more natural state. This would be accomplished by discontinuing the addition of water treatment chemicals. LADWP expects that, as a result, the water in the reservoir will generally change from a clear appearance to a less-transparent, green color. This change in color would be due to increased algal growth because of sufficient existing nutrient concentrations, but it is not expected that the amount of algae would exceed that which has been experienced periodically in the past.

The changes in aquatic habitat at the SLRC associated with the Proposed Project are not anticipated to adversely affect biological resources. In general, with the elimination or reduction in application of chlorine to the water supply, there may be an increase in invertebrate production; and fish such as mosquitofish (*Gambusia affinis*) may become established. This would result in an increase in forage supply for waterfowl and other waterbirds that utilize the SLRC, and would be a net benefit to biological resources. If conditions temporarily become eutrophic or hypertrophic, there would be a corresponding decline in dissolved oxygen; and this may limit invertebrate production or result in fish kills. However, conditions would not be expected to drop below the existing current baseline, where invertebrate production and fish are limited by the addition of chlorine to the system.

If emergent vegetation becomes established at the SLRC, the emergent wetland would represent a new habitat type not currently present, and would attract additional species of waterbirds and other wildlife, resulting in a net benefit to biological resources.

Impacts to aquatic habitat at the SLRC are not anticipated to be adverse, and no mitigation is required.

6.2.7 Potential Impacts to Special-Status Plant Species

6.2.7.1 HWSG Site

Special-status plant species that could occur at the HWSG site were described in Section 6.1. In general, the rarity of many of the special-status plants within the developed portions of the Santa Monica Mountains precludes the likelihood they would be found at the HWSG site. No recent records for special-status plants have been identified in the immediate area of the HWSG site. The site has been extensively disturbed during recent construction activities, as well as historically with operation of the spreading grounds. As such, the site is not expected to support special-status plant species. Nevertheless, portions of the site have been left relatively undisturbed for many years; and rare plants may have a reservoir/seed source in the nearby Griffith Park natural lands. Because the loss of special-status plants would represent a significant adverse impact, if special-status plants are present within the impact areas, mitigation would be required. Because of this, rare plant surveys would be conducted prior to ground-disturbing activities. Mitigation Measure BR-3 would be implemented if rare plants are identified within the Proposed Project footprint.

With mitigation, the impacts to special-status plant species would be less than significant.

6.2.7.2 SLRC

No direct impacts or loss of native vegetation communities will occur as a result of the Proposed Project at the SLRC. Construction is proposed for existing roadways, landscaped areas, and other developed areas. The landscaped, ornamental communities affected do not support special-status plants; and, as such, no impacts to these species are anticipated.

6.2.8 Potential Impacts to Special-Status Wildlife Species

A number of special-status species that may occur in the general Proposed Project vicinity are unlikely to occur within the area of potential effects for the Proposed Project, either on or near the Proposed Project site or along areas of potential downstream effects. These species are indicated in Table 6-3 as unlikely to occur within the area of potential effects. No impact is anticipated to these species from the Proposed Project, and they are not addressed further here.

The species addressed in the following sections have some potential to occur within the area of potential effects, either at the HWSG site or at the SLRC; and potential impacts from the Proposed Project are addressed here.

6.2.8.1 Federal- and State-Listed Wildlife Species

There is no habitat present for wildlife species listed as threatened or endangered under state or federal regulations, at either the HWSG site or the SLRC; and no impacts are anticipated. Therefore, no mitigation measures are required.

6.2.8.2 Reptile Species of Special Concern

The following special-status reptiles have the potential to occur in the project area: orange throated whiptail, coastal western whiptail, and San Diego horned lizard.

6.2.8.2.1 HWSG Site

Orange-Throated Whiptail, Coastal Western Whiptail. At the HWSG site, the coastal western whiptail is likely to be associated with the grassland, coastal scrub, and chaparral habitats; they prefer open rocky areas. The orange-throated whiptail may use areas with woody scrub or woodland vegetation. Habitat is, in general, marginal for these species; but there is some limited potential for occurrence. Direct, permanent loss of open grassland habitat and some limited scrubland habitat would occur from grading and filling activities. Although there is some potential loss of individuals and habitat of this species, the habitat is not optimal; and the species occurrence on the Proposed Project site has not been confirmed. It is likely that more favorable habitat for this species occurs in nearby Griffith Park, or in the Verdugo Hills to the north of the site. As such, the potential loss of this species or habitat would be less than significant.

San Diego Horned Lizard. This species may be associated with dry wash, coastal scrub, or chaparral habitats on the HWSG site, although focused surveys did not identify individuals or signs of this species. Some harvester ant mounds are present that provide forage for this species, and it may have gone undetected during surveys. In general, the previously disturbed habitat at HWSG is not optimal habitat. Direct, permanent loss of open grassland habitat and some limited scrubland habitat would occur from grading and filling activities. Although there is some potential loss of individuals and habitat of this species, the habitat is not optimal; and the species occurrence on the Proposed Project site has not been confirmed. It is likely that more favorable habitat for this species occurs in nearby Griffith Park, or in the Verdugo Hills to the north of the site. As such, the potential loss of this species or habitat would be less than significant.

6.2.8.2.2 SLRC

No direct impacts or loss of native vegetation communities will occur as a result of the Proposed Project at SLRC. Construction is proposed for existing roadways, landscaped areas, and other developed areas. The landscaped, ornamental communities affected do not support special-status reptiles; and, as such, no impacts to these species are anticipated.

6.2.8.3 Nesting Bird Species of Special Concern

Yellow-breasted chat, California yellow warbler, loggerhead shrike, California horned lark, golden eagle, white-tailed kite, prairie falcon, Cooper's hawk, northern harrier, burrowing owl, and short-eared owl are federal Species of Concern or state Species of Special Concern known to breed in the Proposed Project vicinity. Of these, only yellow-breasted chat, California horned lark, loggerhead shrike, and burrowing owl have potential to nest directly on the Proposed Project site at HWSG and in limited areas at SLRC. In addition, ardeids may nest in tall trees at either site.

6.2.8.3.1 HWSG Site

Yellow-Breasted Chat. Suitable breeding habitat for yellow-breasted chat, which requires dense riparian thickets of mulefat and willows and other brushy tangles near watercourses, is present in limited areas of the HWSG. The most sensitive of the riparian areas that would support this species lie adjacent to the Material and Equipment Staging Area, and direct impacts to riparian areas adjacent to this will be avoided. The presence of this species will be determined during preconstruction surveys of the HWSG site, prior to ground-disturbing activities. If the species is present, then construction noise and dust could disrupt breeding activities. Impact on breeding yellow-breasted chat would represent a significant adverse impact, requiring mitigation. Mitigation Measure BR-4 has been identified to reduce potential impacts to nesting birds of special concern to less-than-significant levels.

California Horned Lark, Loggerhead Shrike. The dry, open grassland areas at the HWSG site provide a suitable foraging and breeding habitat for the California horned lark and the loggerhead shrike. These species may occur throughout their range in Southern California. Potential for these species to occur and breed in open areas at the Proposed Project site is moderate. Construction activities involving grading and filling of the annual grasslands and the mixed grassland/shrub habitats would result in direct permanent loss of nesting and foraging habitat. Direct loss of nesting individuals of these species may also occur during construction activities, if the species are present, representing a significant adverse impact. The presence of these species will be determined during preconstruction surveys of the HWSG site prior to ground-disturbing activities. If the species is present, mitigation will be required. Mitigation Measure BR-4 has been identified to reduce potential impacts to nesting birds of special concern to less-than-significant levels.

Burrowing Owl. The grassland habitat on the HWSG site provides limited potential breeding and foraging habitat for this species. However, there are no known records of occurrence of this species in the Proposed Project vicinity; and the species was not observed during field surveys. Focused surveys for the species failed to detect any burrows or other sign of burrowing owl. As such, it is presumed absent from the Proposed Project site; and no impact is anticipated. To ensure no burrowing owls move into the site prior to construction, this species will be included in any preconstruction surveys. If it does occupy the site, impacts to breeding birds or habitat during construction would represent a significant impact, requiring mitigation. Mitigation Measure BR-4 has been identified to reduce potential impacts to nesting birds of special concern to less-than-significant levels.

6.2.8.3.2 SLRC

Nesting Ardeids. Nesting great blue heron is present at the SLRC in at least one nesting colony along the northwestern shore of Silver Lake. The colony is reported to have up to three nesting pairs. Other nesting ardeids (e.g., black-crowned night heron, snowy egret) may be present from time to time in this location or in other locations around the SLRC. While having no special federal or state designation, these species are of local interest and concern when present in nesting colonies. Impacts from construction noise and disturbance may occur from construction of the bypass and connection pipelines at Silver Lake, and other construction activities at the SLRC. The known nesting colony would be within 100 feet of some of the construction activities, particularly those along West Silver Lake Drive and any activities within the reservoir itself. Disruption to nesting great blue heron or other ardeids would represent a significant adverse impact, requiring mitigation. Mitigation Measure BR-4 has been identified to reduce potential impacts to nesting ardeids to less-than-significant levels.

Other Nesting Birds. Construction activities in or adjacent to the naturalized area in the northeast portion of the SLRC may cause disturbance to special-status bird species nesting in the naturalized woodland, such as yellow-breasted chat, white-tailed kite, and Cooper’s hawk. The presence of these species would be determined during preconstruction surveys of the SLRC site at this location, prior to ground-disturbing activities. If the species are present, then construction noise and dust could disrupt breeding activities. Impacts to breeding special-status birds would represent a significant adverse impact, requiring mitigation. Mitigation Measure BR-4 has been identified to reduce potential impacts to nesting birds to less-than-significant levels.

No other special-status bird species are known to nest in the vicinity of construction activities associated with the Proposed Project at the SLRC.

6.2.8.4 Foraging or Transient Bird Species of Special Concern (Passerines)

6.2.8.4.1 HWSG Site

California Yellow Warbler. Breeding habitat is not present on the HWSG site for this species. Transient birds may sometimes move through chaparral or mulefat habitats onsite. However, the site does not represent a substantial movement corridor; and the loss of this habitat for migrating individuals of this species would not represent a significant impact.

6.2.8.4.2 SLRC

Transient special-status birds may move through ornamental landscaped habitat at SLRC. However, construction activities from the Proposed Project are not expected to provide a significant disturbance to these species; and the impact would be less than significant.

6.2.8.5 Foraging or Transient Bird Species of Special Concern (Raptors)

6.2.8.5.1 HWSG Site

Golden Eagle, White-Tailed Kite. Golden eagle and white-tailed kite occur in the region and have the potential to forage over grasslands and open country at the Proposed Project site. Loss of grassland forage sites for these species has been occurring throughout Los Angeles County, and the species may be regionally declining for this reason (Harris, 2002). The Proposed Project includes seeding the HWSG site with grassland and shrubland species native to the area following construction. There would be no net loss of grassland forage habitat for these species once the grassland is restored, and the impact would be less than significant.

Cooper's Hawk. This species may forage on HWSG in chaparral or woodland habitats. The preferred forage habitat of this species is open woodlands, riparian woodlands, and occasionally chaparral. There would be little suitable foraging habitat lost from the Proposed Project at the HWSG site because the Proposed Project footprint is primarily in ruderal and disturbed grassland habitat. Because there are abundant other riparian and chaparral habitats in the nearby Griffith Park, the loss of a small amount of foraging habitat would not represent a significant adverse impact.

6.2.8.5.2 SLRC

Cooper's Hawk. This species may forage at the SLRC in naturalized woodland habitats. The preferred forage habitat of this species is open woodlands, riparian woodlands, and occasionally chaparral. The minimal construction disturbance at the SLRC of foraging habitat for this species would not represent a significant adverse impact.

6.2.8.6 Foraging or Transient Bird Species of Special Concern (Waterfowl)

6.2.8.6.1 HWSG Site

Some waterfowl species may utilize the LA River adjacent to the HWSG site as a transient stopover during migration. However, the LA River is not heavily used by migrating waterfowl; and construction disturbance of birds using the river is anticipated to be less than significant.

6.2.8.6.2 SLRC

Both Silver Lake and Ivanhoe Reservoirs generate sufficient invertebrate production to support a small population of migratory waterfowl. Birds identified as using the SLRC will forage on invertebrates as well as aquatic and terrestrial vegetation. No species that specialize on foraging on fish were observed at the SLRC. The current water supply to the SLRC is chlorinated to maintain clarity. Following the removal of the SLRC as an integral part of the drinking water system as a part of the Proposed Project, the reservoirs would be allowed to revert to a more natural state. This will be accomplished by discontinuing the addition of water treatment chemicals. It is anticipated that, as a result, increased algal growth would occur because of sufficient existing nutrient concentrations. However, it is not expected that the amount of algae would exceed that which has been experienced periodically in the past.

The changes in aquatic habitat at the SLRC associated with the Proposed Project are not anticipated to adversely affect migratory wildlife. In general, with the elimination or reduction in application of chlorine to the water supply, there may be an increase in invertebrate production; and fish such as mosquitofish may become established. This would be an increase in forage supply for migratory waterfowl, and would be a net benefit to these species. If conditions temporarily become eutrophic or hypertrophic, there would be a corresponding decline in dissolved oxygen; and this may limit invertebrate production or result in fish kills. However, conditions would not be expected to drop below the existing current baseline, where invertebrate production and fish are limited by the addition of chlorine to the system. For an additional discussion of surface water quality changes anticipated at the SLRC, see Chapter 5.0, Water Resources, Section 5.2.3.2.

Some emergent vegetation may eventually become established at the SLRC. The emergent wetland would represent a new habitat type not currently present, and would attract additional species of waterfowl adapted to shallow marsh conditions, resulting in a net benefit to migratory waterfowl.

6.2.8.7 Special-Status Mammals (Excluding Bats)

6.2.8.7.1 HWSG Site

San Diego Black-Tailed Jackrabbit. This species has some potential for occurrence in grassland and shrub areas at the HWSG site. Grading and filling activities from Proposed Project implementation would result in direct permanent loss of habitat. Some direct mortality of these species may also occur during construction. These impacts, while considered adverse, are not expected to be significant, given that better representation of such habitats occurs nearby at Griffith Park. The proposed implementation of site revegetation and raptor set-asides would further reduce potential adverse effects to this species.

6.2.8.7.2 SLRC

No direct impacts or loss of native vegetation communities will occur as a result of the Proposed Project at the SLRC. Construction is proposed for existing roadways, landscaped areas, and other developed areas. The landscaped, ornamental communities affected do not support special-status mammals such as the black-tailed jackrabbit; and, as such, no impacts to these species are anticipated.

6.2.8.8 Special-Status Mammals (Bats)

6.2.8.8.1 HWSG Site

Long-Eared Myotis, Long-Legged Myotis, Yuma Myotis. These federal Species of Concern forage over scrub, chaparral, water, and other open habitats, and may roost in crevices or small caves on rocky cliffs or outcrops. There is good habitat at the HWSG site for foraging; limited habitat for roosting may occur in storm drains, under concrete structures, or in buildings. While the Proposed Project would result in some temporary loss of vegetation communities, aerial foraging habitats would still be available; and the impact on foraging bats is anticipated to be less than significant. Impacts to roosts may occur where roost sites are near construction disturbance areas. This would represent a significant adverse impact, requiring mitigation. Mitigation Measure BR-5 has been identified to reduce impacts to special-status mammals (bats) to less-than-significant levels.

Western Mastiff Bat, Big Free-Tailed Bat. These California Species of Special Concern forage over desert, scrub, chaparral, and other open habitats, and may roost in caves, crevices on low to high cliffs, buildings, or in rocky outcrops. There is good habitat at the HWSG site for foraging; limited habitat for roosting may occur in storm drains, under concrete structures, or in buildings. While the Proposed Project would result in some temporary loss of vegetation communities, aerial foraging habitats would still be available; and the impact on foraging bats is anticipated to be less than significant. Impacts to roosts may occur where roost sites are near construction disturbance areas. This would represent a significant adverse impact, requiring mitigation. Mitigation Measure BR-5 has been identified to reduce impacts to special-status mammals (bats) to less-than-significant levels.

6.2.8.8.2 SLRC

Long-Eared Myotis, Long-Legged Myotis, Yuma Myotis. There is good habitat at the SLRC for foraging; limited habitat for roosting may occur in storm drains, under concrete structures, or in buildings. Impacts to roosts may occur where roost sites are near construction disturbance areas. This would represent a significant adverse impact, requiring mitigation. Mitigation Measure BR-6 has been identified to reduce impacts to special-status mammals (bats) to less-than-significant levels.

Western Mastiff Bat, Big Free-Tailed Bat. There is good habitat at the SLRC for foraging; limited habitat for roosting may occur in storm drains, under concrete structures, or in buildings. Impacts to roosts may occur where roost sites are near construction disturbance areas. This would represent a significant adverse impact, requiring mitigation. Mitigation Measure BR-6 has been identified to reduce impacts to special-status mammals (bats) to less-than-significant levels.

6.2.9 Potential Impacts to Wildlife Movement Corridors

6.2.9.1 HWSG Site

The HWSG is not considered to be an important wildlife movement corridor, as previously described. As such, no significant adverse impact is anticipated.

6.2.9.2 SLRC

The SLRC may provide stopover to migratory waterfowl between breeding and wintering grounds. As previously described, the Proposed Project may result in changes to the aquatic habitat at the SLRC that may benefit waterfowl by increasing the abundance and diversity of forage for these species, and potentially increasing the diversity of habitats to include some emergent vegetation. The extent of the change may be a minor to modest increase in prey abundance and diversity. However, in general, conditions would not drop below the current baseline, which supports some invertebrate production that provides forage for a small number of migratory waterfowl. As such, no significant adverse impact is anticipated.

6.3 Mitigation Measures

6.3.1 Construction

The following mitigation measures were identified to reduce potential impacts to biological resources resulting from construction of the Proposed Project.

Mitigation Measure BR-1: Riparian Habitat at the HWSG Site

To mitigate for the loss of riparian habitat along the south portion of the HWSG site, mitigation will be implemented that will include replacement of riparian areas consistent with anticipated requirements of federal CWA permits and state Section 1600 agreements. Mitigation may be achieved through funding of existing mitigation banks, habitat restoration, or other means acceptable to resource agencies.

Mitigation Measure BR-2: Jurisdictional Waters

The Proposed Project will obtain and comply with conditions of permits issued from USACE (CWA, Section 404) and the CDFG (Streambed Alteration Agreement [SAA], Section 1603). The details of mitigation requirements for impacts to jurisdictional waters will be determined through continuing consultation with USACE and CDFG. Mitigation may be achieved through funding of existing mitigation banks, habitat restoration, or other means acceptable to resource agencies.

Mitigation Measure BR-3: Special-Status Plants

Mitigation for potential impacts to special-status plants will include the following:

1. Preconstruction surveys will be conducted at the HWSG site prior to any ground-disturbing activities, and in the appropriate flowering season for special-status plants.
2. If rare plants are identified at the HWSG site, then detailed mitigation will be developed in coordination with the appropriate resource agency (CDFG or USFWS), which may potentially include the following:

a. Exclusion zones where practical to preclude impacts to rare plant

b. Translocation of seeds, topsoil, and/or plants to areas outside the disturbance footprint

c. Establishment of new populations in areas that will not be subject to future development, and where populations may be protected and managed in perpetuity

d. Investment in mitigation bank lands as appropriate to the specific species

Mitigation Measure BR-4: Nesting Birds of Special Concern

Preconstruction surveys for nesting special-status birds will be conducted at the HWSG site and the SLRC prior to ground-disturbing activities. Depending on the results of these surveys, the following mitigation measures will be implemented:

1. All vegetation removal required for the Proposed Project will occur prior to the nesting season for most birds (February to August) to avoid direct impacts to nesting birds.
2. Where nests for special-status birds are established within 500 feet of construction activities, construction will be delayed until (a) fledglings leave the nest and are independent of adults or (b) it is determined by CDFG that no adverse effects are likely to occur to the nest or brood from adjacent construction activities, and a Biological Monitor is provided to conduct construction monitoring to ensure that effects on the nest site or brood do not reach adverse levels.
3. Construction adjacent to the known heron rookery at Silver Lake will be avoided during the nesting season for herons (February to August).

Mitigation Measure BR-5: Special-Status Mammals (Bats)

Preconstruction surveys for bat roosts will be conducted at the HWSG site and the SLRC prior to ground-disturbing activities. Where active roosts are identified during these surveys, the following mitigation measures will be implemented:

1. Within 300 feet of the location of active roosts, ground disturbance and roost destruction would be avoided during the parturition period (March 15 through August 31).
2. Where this avoidance is not feasible, if potential roosts are identified prior to onset of parturition, roosts may be removed during the evening forage period (within 4 hours after dark) or fitted with one-way exit doors to effectively eliminate and exclude roost.

6.3.2 Operation

No significant adverse impacts have been identified as a result of operation of the Proposed Project. Therefore, no mitigation is required.

6.4 Significance After Mitigation

With implementation of the above mitigation measures, potentially adverse impacts to biological resources resulting from project construction would be reduced to less-than-significant levels.

7.0 Cultural Resources

A cultural resources impact assessment was conducted for the proposed SLRC SRP that assessed the consequences of the Proposed Project on cultural resources, based on background research and field investigation. The Cultural Resources Assessment Report, contained in Appendix D, documents the results of the investigation and provides details in addition to the information provided in this chapter, including methodology, regional and site-specific prehistory and history, and photo documentation of historic resources.

7.1 Setting

The environmental setting for the HWSG site and the SLRC was determined through a literature review and a field investigation for each site. The results of each are described below.

7.1.1 HWSG Site

7.1.1.1 Literature Review

The record search revealed that three prior archaeological investigations have been conducted within a 0.5-mile radius of the Proposed Project area. One of these included a portion of the HWSG site (Beroza, 1980). That project reported no cultural resources of any kind within or adjacent to the HWSG Proposed Project area. The other two previous surveys encountered no significant cultural resources (McLean, 1998; Windmiller, 2001).

Two known historic properties are located within a 0.5-mile radius of the Proposed Project area. One of these, CA-LAN-22H (19-150414), is located on the north side of the LA River and State Highway 134, and will, therefore, not be impacted by work in the HWSG area. The other historic property, CA-LAN-23H (19-150415), is located within or immediately adjacent to the HWSG Proposed Project area.

CA-LAN-22H

The site of “Triunfo’s Adobe” was identified from a plat map for Rancho Providencia, surveyed in 1868. Recorded as the rancho house of Rancho Cahuenga, formerly occupied by the “Indian Jose Miguel Triunfo,” the structure was in ruins at the time of the survey. It was located approximately 0.25-mile northwest of the Proposed Project area, near the present site of Disney Studios (Edberg, 1978a).

CA-LAN-23H

Identified from a plat map of Rancho Providencia, surveyed in 1868, this is the site of the “Old House of Lopez.” Probably an adobe structure, it was recorded as occupied by a man named Lopez at the time of the survey. The site record places this structure in the extreme eastern portion of the HWSG area, although its location is not certain. The house appears to have been located on the north bank of the LA River and, therefore, beyond the limits of the current Proposed Project area. It is quite possible that it is immediately adjacent to or under State Highway 134 (Edberg, 1978b).

7.1.1.2 Field Investigation

7.1.1.2.1 Archaeological Resources

Because most of the HWSG site would be impacted by construction of proposed facilities and construction staging areas, the entire site was intensively surveyed for archaeological resources. The site is bounded on the northwest by the concrete channel of the LA River, and on the northeast by State Highway 134. The southern and eastern boundary of the site is Forest Lawn Drive, which bends southward near its midpoint, then northward as it meets the State Highway 134/Zoo Drive interchange. The HWSG site is located on the USGS Burbank Quadrangle 7.5' map.

The site is currently unmaintained, and is covered with a mixture of native and introduced grasses and shrubs. Visibility ranges from very good (>80 percent) to moderate (~30 percent). In general, surface visibility is adequate in this entire area to permit surface identification of archaeological remains. However, the entire area has been extensively modified with mechanical equipment. The HWSG area has the form of an elliptical bowl. The center is low, and surrounded on all sides by higher ground. The center (lower portion) of the area has been completely remodeled by earth-moving activity related to creation of the spreading grounds complex. Numerous traces of this remain, including cement-lined ponds and baffles, wells, and other features. The only relatively undisturbed areas of the HWSG are higher patches near the south, east, and west perimeter fences. Even these areas have been modified, however, most prominently by fill related to the construction of Forest Lawn Drive. In short, the entire HWSG area has been extensively disturbed; and the probability of encountering intact archaeological contexts or deposits of any kind is very low.

7.1.1.2.2 Historical Resources

The HWSG site encompasses a series of dry shallow basins situated beside the LA River, near the border between the Cities of Los Angeles and Burbank. The east-west oriented site is nearly 0.75-mile in length, and 0.20-mile across at its widest point. The spreading basins are depressed approximately 30 feet below the level of Forest Lawn Drive and are generally overgrown with low brush. The configuration of the spreading grounds includes an earthen banked channel roughly 15 feet deep, running east-west through the central section of the site. At the west end of this channel is a concrete gate structure that once allowed LA River water to flow onto the site. Currently, the channel is dry; and a large-diameter corrugated metal pipe runs within it. The eastern half to two-thirds of the site is occupied by the actual spreading basins. The westernmost basins are the largest, measuring roughly 500 feet across. The two basins are separated by a central, east-west earthen berm and have bottoms of native sand and gravel. A series of smaller basins to the east also is divided by earthen berms. The side walls of two small basins in the northeast section of the site are lined with gunnite. At the east end of the site, extensive filling has occurred, raising the ground level several feet above the level of the spreading basin berms.

Additional features of the site include a row of 18 well casings that protrude vertically roughly 3 feet above grade, located along the top of the berm between the two large western basins. These are 10 inches in diameter; and many are covered by conical caps, presumably to deflect rainwater. These are believed to date to the 1920-1940 period.

There are two small buildings on the site, both of recent construction. The first is a metal-clad shed containing electrical equipment located in the south-central section of the site. The second building is located near the west end of the spreading grounds site. It is roofless, with concrete walls that are stepped at the top on two sides, with small decorative penetrations. The structure contains equipment associated with an inflatable LA River dam. Other features of the site include a series of hand-operated, geared steel cranks along the top of the river channel, also at the west end of the site. These are thought to be associated with flood gates in the channel directly below. Also, a row of electrical transmission towers parallels the river channel along the north side of the site. These date to the mid-1950s or later.

7.1.2 SLRC

7.1.2.1 Literature Review

The record search revealed one prior cultural resources survey of the SLRC, and five previous archaeological surveys located within a 0.5-mile radius of the reservoirs. The previous survey of the reservoir complex itself observed some historic structures that seemed to date to the period of dam construction and artifacts (early 20th century glass) within the perimeter fence of the reservoir (Brown, 1990). The buildings and landscape features existing on the property have never been recorded in a systematic survey or individually assessed. No prehistoric sites or materials were reported. None of the five surveys within a 0.5-mile radius of the SLRC encountered archaeological sites or materials (Brechbiel, 1998; Duke, 1999; 2000; Kuta, 1998; Smith, 2000).

A number of historic resources were identified within a 0.5-mile radius of the SLRC. They include buildings and structures constructed in the first four decades of the twentieth century, as follows.

Garbutt House/Hathaway Mansion

A Mediterranean Revival-style structure built in 1926, the Garbutt House/Hathaway Mansion is located 0.25-mile southeast of Silver Lake Reservoir at 1809 Apex Avenue. It was added to the National Register of Historic Places (NRHP) in 1987 (19-166820).

Glendale-Hyperion Viaduct

The Glendale-Hyperion Viaduct is a concrete arch structure that spans the LA River, Riverside Drive, and the Golden State Freeway between Ettrick Street and Glendale Boulevard, approximately 0.5-mile north of the SLRC. Constructed by the City of Los Angeles in 1929, the viaduct was declared City Historic-Cultural Monument (HCM) No. 164 in 1976. It was determined NRHP-eligible in 1986.

Site of First Disney Studio

Declared City HCM No. 163 in 1976, the site of the first Walt Disney Studio is located 0.25-mile northwest of the SLRC at 2725 Hyperion Avenue.

Tierman House

Designed by acclaimed local Modern architect Gregory Ain and constructed in 1940, the Tiernam House stands 0.25-mile northwest of the SLRC, at 2323 Micheltorrena Street. It was declared City HCM No. 124 in 1974.

Mack Sennett Studios

One of the first motion picture studios in Los Angeles, the Mack Sennett Studios were built in 1912. Declared City HCM No. 256 in 1982, the structure is located 0.5-mile southeast of the SLRC at 1712 Glendale Boulevard.

Engine Company No. 56

Built in 1924, Engine Company No. 56 is one of the few remaining unaltered Mediterranean Revival-style engine houses in the City of Los Angeles. Located 0.25-mile northeast of the SLRC at 2838 Rowena Avenue, the structure was declared City HCM No. 337 in 1988.

Canfield-Moreno Estate

Also known as the Danziger House, and the Crestmount, this Mediterranean Revival-style country villa was designed by Robert Farquhar and constructed in 1923 for Daisy Canfield Danziger and her actor husband Antonio Moreno. Located at 1923 Micheltorena Street, 0.25-mile west of the SLRC, it was declared City HCM No. 391 in 1988.

Silver Lake and Ivanhoe Reservoirs

Silver Lake and Ivanhoe Reservoirs were designated City HCM No. 422 in March 1989. The nomination refers specifically to only the reservoirs and dams, noting their importance in the growth of the City and to its water system, declaring that “Silver Lake is as much a landmark as any structure of mortar or stucco” (Kanner, 1989).

VDL Research House

An International-style house designed by noted architect Richard Neutra and originally built in 1932, the house was destroyed by fire in 1963 and reconstructed by Neutra and his son, Dion. Located at 2300 Silver Lake Boulevard, adjacent to the east side of the SLRC, it was declared City HCM No. 640 in 1997.

Red Car Trestle Footings

The Red Car Trestle Footings were designated City HCM No. 770 in December 2003. Located above Fletcher Avenue and Riverside Drive, the Red Car Trestle Footings supported a portion of the historic Red Car electric trolley system that provided mass transit to Los Angeles from the late 1800s through the 1950s.

7.1.2.2 Field Investigation

7.1.2.2.1 Archaeological Resources

The Proposed Project vicinity has experienced extensive ground disturbance from past and ongoing municipal and residential development, construction of underground utilities, and road infrastructure improvements. The SLRC is located on the United States Geological Survey (USGS) Hollywood Quadrangle 7.5' map. The reservoirs are enclosed by a perimeter fence and bordered on the west by West Silver Lake Drive, on the south-southeast by Silver Lake Boulevard, on the northeast by Armstrong Avenue, and on the north by Tesla Avenue. Three areas of archaeological concern identified in the SLRC area have been given the following designations for ease of discussion: SLRC-1, -2, and -3. Their locations are indicated in Figure 7-1.

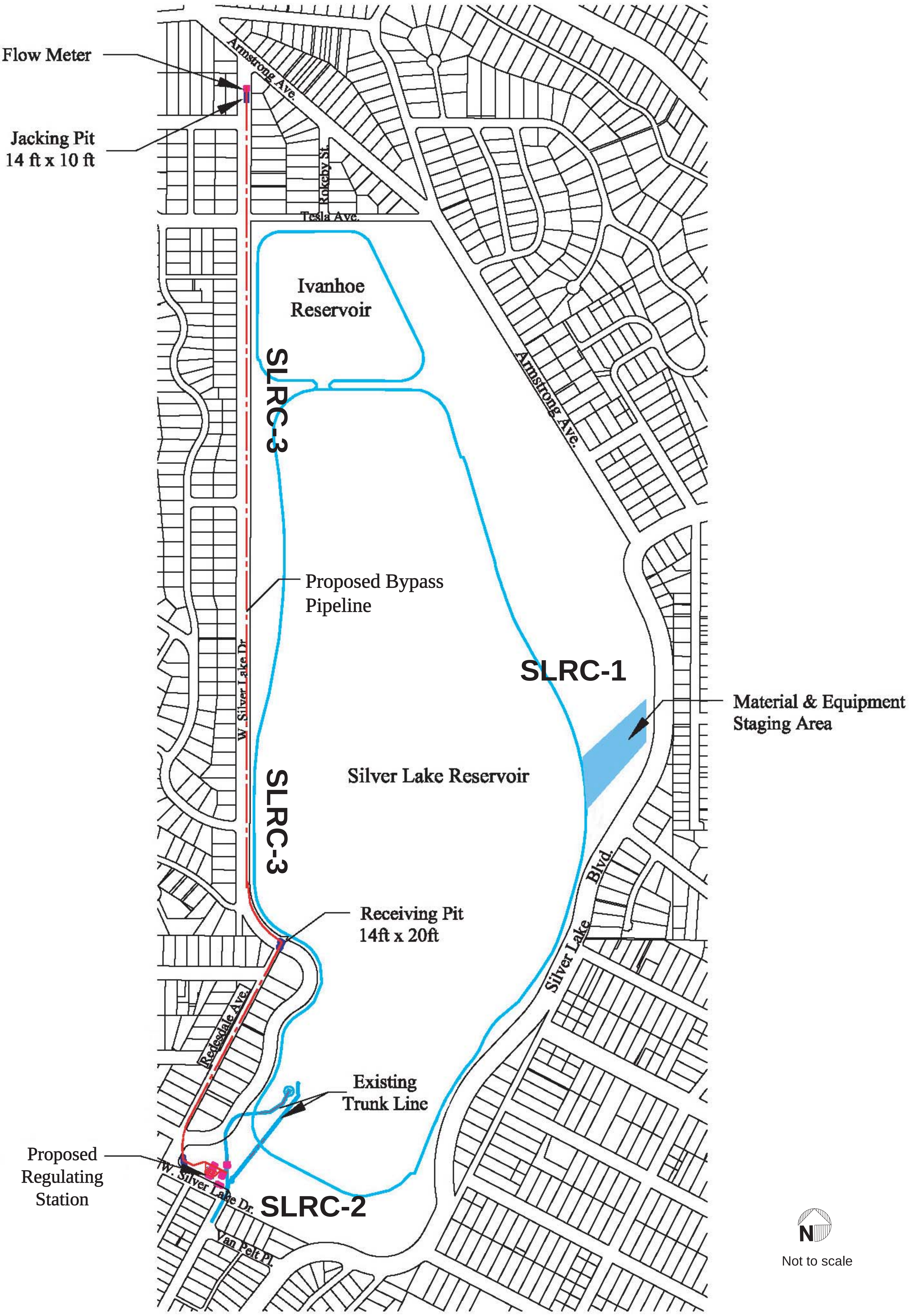

Figure 7-1
SLRC SRP Draft EIR
SLRC Archaeological
Areas of Study

CH2MHILL

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SLRC-1

This area is within the reservoir perimeter fence, east of the reservoir itself and south of the prominent landform known locally as "the Knoll." This broad, flat area is scheduled to be used as a staging area for construction materials and machinery. The area was once a part of the reservoir referred to as the East Cove, and seems to be composed primarily of deposits associated with filling completed in the 1950s. At present, it is planted in grass with landscaped islands of ornamental shrubbery. Surface visibility is generally poor (around 10 percent), being limited to bare patches in the grass and areas of rodent disturbance. The probability of archaeological sites existing near the surface in this area is extremely low. The only part of the SLRC-1 that is relatively undisturbed and is, therefore, potentially likely to have intact archaeological deposits is the base of the hill to the north (the "Knoll").

This area has been heavily disturbed in the historic period, and the modern surface seems to reflect extensive filling and grading dating to the 1950s. This area was inspected by conventional pedestrian survey techniques, with transects spaced at approximately 20-meter intervals. Surface visibility was not high but was adequate, and no materials or sites of historic or archaeological significance were observed.

SLRC-2

This open grassy area adjacent to, but outside, the reservoir perimeter fence, at the corner of West Silver Lake Drive, near the southwest corner of the reservoir itself, is the location of the proposed regulating station. It has been extensively landscaped and modified by mechanical means in the recent past. This area is planted with grass and a few trees. Visibility is slightly better than in SLRC-1, due to the higher rate of rodent activity, but remains low (around 15 percent). Most exposures are the result of rodent burrowing. The probability of encountering intact archaeological remains in SLRC-2 is very low, due to the extensive recent landscaping and other disturbance in this area.

This area has been extensively landscaped in its history as a public park. Further, its proximity to the face of the earthen Silver Lake Reservoir Dam suggests that it may have been subject to disturbance at the time the dam was constructed. It was inspected using judgmentally spaced transects located opportunistically to take advantage of patches of rodent disturbance or high surface visibility. Surface visibility was poor but generally adequate. No materials or sites of historic or archaeological significance were observed.

SLRC-3

A series of jacking and receiving associated with the bypass pipeline are scheduled for construction along the west edge of the SLRC area, on West Silver Lake Drive and Redesdale Avenue. This entire area is paved at present and surface visibility is zero. This being the case, it is impossible to evaluate the presence or absence of cultural resources.

7.1.2.2.2 Historical Resources

Ivanhoe Reservoir and Dam

Built at the summit of Ivanhoe Canyon in 1906, Ivanhoe Reservoir is of the double earthen-dam type. Its original capacity was about 154 acre-feet. In 1907, Silver Lake Reservoir was constructed directly south of Ivanhoe. The two reservoirs were originally connected by a 36-inch, cast-iron pipe beneath the fill of the separating dam. Somewhat west of center of the dam between the two reservoirs is a reinforced concrete spillway. Added in 1944, the open-channel type spillway is rectangular in section and measures 84 feet long and 53 feet wide. In 1952, Ivanhoe Reservoir was deepened 10 feet and paved with an asphaltic cement lining. Its present capacity is 174.78 acre-feet. In 1993, the reservoir was repaved; and a 72-inch bypass pipeline was installed in the south end of the reservoir. This bypass was installed to add the capability to bypass both Silver Lake and Ivanhoe Reservoirs concurrently. The Ivanhoe Reservoir has a capacity of 59 MG and covers an area of 7.84 acres. The top of the dam is 451 feet above sea level (LADWP, n.d.a).

Ivanhoe Reservoir Inlet Tower

Rising from the waters of the Ivanhoe Reservoir near the center of its north bank, the inlet tower is formed from a vertical, large-diameter steel pipe that is covered by a conical steel roof. A steel deck wraps the structure well above the high water line. It is accessed via a steel I-beam bridge with pipe railings. The inlet tower was constructed in 1933, concurrently with improvements to the River Supply Conduit. It is essentially unaltered and retains integrity of design.

Silver Lake Reservoir and Dam

Silver Lake Reservoir was constructed by the City of Los Angeles Water Department and placed in service in 1907. It was constructed at an initial cost of $115,547; however, considerable work was done on the reservoir in the years that followed, bringing the total investment by the end of the 1930s to $271,107. The reservoir is formed by two earth-fill dams: one at the south, and one at the north that separates it from Ivanhoe Reservoir. The irregularly shaped reservoir has a capacity 658 MG and covers an area of 78.2 acres. The Silver Lake dam is roughly 900 feet in length, and the dam crest is at an elevation of 451 feet above sea level. Asphaltic cement paving was applied to the steep sides of the reservoir in 1953, and a 20-foot-wide paved perimeter road encircles the structure (LADWP, n.d.b). The south face of the Silver Lake dam is planted in shrubs and ornamental grasses.

Silver Lake Outlet Tower

The outlet gate control tower for the Silver Lake Reservoir rises from the waters of the reservoir near its southwest corner. Constructed in 1937 in the Renaissance Revival style, the tower was extensively altered during reservoir renovations completed in the mid-1970s. The outlet tower is of cast-in-place reinforced concrete construction. It is square in plan and covered by a flat roof with overhanging eaves. At each corner of the control house is a buttress-like feature that rises to the roof of the structure. These are supported from below by brackets. Extending from the west shore to the tower is a steel plate girder bridge that provides the only access to the structure. At the end of the bridge is a steel double door with single-light glazing.

Silver Lake South Outlet Chlorination Station

Situated roughly 100 feet south of the toe of the Silver Lake dam, near its west end, is the Silver Lake South Outlet Chlorination Station. It is a single-story, Mediterranean Revival-style building with a front-gabled rectangular main block and a lower wing that wraps the south and east sides. The structure is covered by a red shingle tile roof, and the walls are smooth-finished stucco over cast-in-place reinforced concrete. Classical detailing includes narrow, molded, cornice trim beneath the closed eaves, with cornice returns at the gables and a molded water table. Impressions from the board formwork are visible in the area below the water table. The focus of the facade of the front gabled portion is a large multipaneled wooden garage door surmounted by a small, rectangular vent (now covered).

The principal entrance is located in the street facade of the shed wing. It features a molded, six-panel door with squared label mold trim incorporating a stylized keystone and corbel stops. Except for a small vent opening in the south elevation, the building is without windows. Designed by LADWP staff, the chlorination station was constructed in 1947 as a replacement for a 1920s structure at the opposite end of the dam. The structure is stylistically similar to many of the water system-related utilitarian facilities constructed by the LADWP during the 1910s through the 1940s. It is currently used by LADWP for storage.

Silver Lake Meter House

Standing off the southwest corner of the chlorination station, nearer the street, is the Silver Lake Meter House. The small, one-story Mediterranean Revival-style building corresponds architecturally with the adjacent chlorination station. It is square in footprint and covered by a pyramidal, hipped roof clad with red Spanish tiles. Of cast-in-place concrete construction, the walls are finished with rough-troweled stucco with a narrow, molded cornice beneath closed eaves. The windowless building is accessed by a steel clad door in its east elevation.

The meter house was designed by LADWP Bureau of Water Works and Supply staff and was likely completed in late 1927 or early 1928, about 20 years before the adjacent chlorination station. It originally contained a single outlet flowmeter. The exterior of the structure is essentially unaltered.

The chlorination station and meter house lot are enclosed by a low, chain-link fence and landscaped with ficus trees and topiary, ivy ground cover, yucca, and neatly trimmed holly shrubs.

Silver Lake Chemical/Chlorine Plant

Situated between Silver Lake Boulevard and the toe of the Silver Lake Dam near its eastern terminus, the Chlorine Plant is a small, 22- x 14-foot, rectangular, one-story building constructed of cast-in-place reinforced concrete with hip roof. The Renaissance Revival-style structure is typical of water system-related utilitarian buildings erected by LADWP during the 1910s through the 1930s. Characteristic of the style, the building displays symmetrical elevations with corner pilasters, water table, and simplified entablature that frame the wall planes. Its walls show the impressions left by the horizontal board concrete formwork. The street elevation features a centrally placed Classical entrance with squared pilasters supporting a stylized entablature. Flanking the entrance on either side are large rectangular window openings that are currently covered. The west elevation also displays two symmetrical window openings; both other elevations are without windows or doors. Red Spanish tiles cover the hip roof of the building, which has a slight eave overhang. Currently, the chlorine plant is used for equipment storage. The plant stands within the grounds of the reservoir complex amid landscaped lawn, trees, and bushes. Chain-link boundary fencing extends from either end of the façade of the building.

Referred to as a “Chemical Plant” on architectural drawings and a “Chlorine Plant” on other maps, the building is believed to have been erected around the time that the Silver Lake and Ivanhoe Reservoirs went into use for domestic water supply (1920). Plans dating to 1927 depict the building much as it currently appears, but with a glazed and paneled front door and 12-light sash windows. The structure was functionally replaced in 1947 by the chlorination station at the west end of the dam. It is currently used for storage.

Caretaker’s Residence

Located directly east of the Ivanhoe dam, the caretaker’s residence is thought to have been constructed around the time of completion of the Ivanhoe and Silver Lake Reservoirs, between 1906 and 1910. It is a modest, single-story, wood-frame vernacular cottage with a hip roof. Clad with false clapboard wooden siding accented with cornerboards, the dwelling is roughly rectangular in footprint with a partial-width enclosed porch projecting from the front (east) elevation. Its medium-pitched roof is clad with composition shingles and has moderately overhanging open eaves with rafter tails exposed beneath, and an extension of the principal roof shelters the front porch. Centered in the south wall is an external stucco-clad chimney. Fenestration is typically one-over-one, double-hung sash placed singly, paired, and in multiwindow groups. Several aluminum sliding sash windows have been added on the south and east sides, but these do not detract significantly from the overall historic character of the house. Other alterations include the addition of an entrance porch with a pipe-framed roof and concrete steps, and attic ventilators. Associated landscaping includes mature palm, olive, and willow trees, plus various ornamental bushes and vines.

Garage

Associated with the caretaker’s residence, the garage stands to the northeast of that structure, adjacent to the principal reservoir access road. A small bathroom building stands adjacent on the north. The garage is a vernacular, one-story, wood-frame building with a medium-pitched, front-gabled roof and a rectangular footprint. It appears somewhat later in its construction than the residence, perhaps dating to the 1920s (no permits or records were uncovered). Cut into the hill slope, it rests on a concrete foundation and has walls clad with horizontal channel, wooden drop siding. Composition shingles cover the roof, which has open overhanging eaves with rafter ends exposed. There is a single four-light wood casement window with plain, medium-width trim in either side elevation. The street facade features a large paneled metal overhead garage door, a recent modification. The door has wide lugged wood trim and is surmounted by a sunburst motif slatted vent opening in the gable peak.

Bathroom Building

Located immediately north of the garage, the bathroom building is a small, wood-frame structure, nearly square in plan, and covered by a medium-pitched, front-gabled roof. It rests on a concrete foundation and has a clapboard wall finish. The bathroom has a five-panel wooden door with medium-width lugged trim on the front (east) side, shielded by a latticework screen. A single, one-over-one, double-hung sash window in the north elevation, also with lugged trim, comprises the only fenestration. The roof is clad with composition shingles, and it displays moderately overhanging eaves with exposed rafter ends. It is believed to date to the 1906-1930 period.

Sheds

To the rear (west) of the garage and north of the caretaker’s residence, there are three, single-story, wood-framed sheds associated with the residence. The northernmost of these is recently constructed, with painted plywood walls and a shed roof. The two other sheds appear roughly contemporaneous with the garage, bathroom, and house. The easterly shed is rectangular in plan and has a medium-sloped gabled roof with open eaves and composition shingles, and walls sheathed with painted corrugated sheet metal panels. It rests on a concrete foundation. There is a two-over-two, double-hung sash window with lugged trim centered in the north elevation. Based on its size and placement, this shed may represent an earlier garage.

The smaller westerly shed is also rectangular in plan. It is sheltered by a shed roof covered with roll roofing, and its walls are finished with vertical tongue-and-groove planks. The single window visible has jalousie sash placed within the original window frame with lugged trim. It has a cast-in-place concrete foundation.

Landscape Building

The landscape building stands to the east of the Ivanhoe dam and approximately 300 feet south of the caretaker's residence, along the west side of the primary reservoir access road. It is a wood-frame, vernacular utility building with a side-gabled roof and redwood clapboard siding. The original portion of the building has a rectangular footprint. A full-width shed annex has been added to the rear (west) side. The structure is believed to have originally housed reservoir-related equipment and supplies, and dates to the 1906-1930 period. At the center of the principal (east) façade of the landscape building is a large sliding freight door with diagonal bracing. The open eaves of the composition, shingle-clad roof overhang considerably, and the eave above the freight door is raised to allow access to taller equipment. There is an original, four-panel personnel door with lugged trim to the left of the freight door. Two original windows in the south elevation are currently boarded; but plain, medium-width trim is visible. A pair of rectangular, louvered vents in the north gable end and a mushroom-type metal ventilator along the ridgeline appear original to the building. The structure rests on a cast-in-place concrete foundation. An office has been added within the north end of the building; and a modern door, aluminum sash windows, and a small louver-sided shed containing air-conditioning equipment have been installed in that area. Although the landscape building has had a number of modifications, it continues to manifest its historic character and the feeling of its period of significance.

Chlorination Station (Ivanhoe)

To the north of the caretaker's residence and its outbuildings, on the east side of the Ivanhoe Reservoir, is a former chlorination station. It is currently used by LADWP as a workshop. It is believed to date to ca. 1937, when a bypass pipeline was built from the Fletcher Drive pumping plant, northeast of the SLRC, to the reservoir. Displaying Art Moderne elements, it is a single-story, cast-in-place concrete structure with a two-level, parapeted flat roof. Its walls are exposed concrete with regularly spaced horizontal channels. A narrow, rectilinear cornice caps the roof parapet. There is a metal, roll-up door on the west elevation of the building, and a metal-clad personnel door on the south side. The exterior of the chlorination station appears to be unaltered.

Laboratory Building

The laboratory building stands to the east of the caretaker's residence, near Armstrong Avenue. Designed by LADWP staff in 1955, it is a Modern one-story, wood-frame structure, rectangular in plan, and covered by opposed two-level shed roofs. The structure is clad with wood weatherboards and rests on a concrete slab. Fenestration is typically one-over-one, double-hung sash.

Stone Retaining Walls

East of Ivanhoe Reservoir, adjacent to the east, uphill, side of the primary reservoir access road, and also along both sides of driveways extending from Armstrong Avenue to the perimeter road are low stone retaining walls. Typically between two and three feet in height, the walls are of mortared random rubble construction, incorporating both rough-dressed stone and natural cobbles. In one location, opposite the landscape building, a three-riser stone stair is cut into the wall. The stone retaining walls are thought to be early features of the reservoir complex, dating to the 1906-1940 period.

Concrete Retaining Walls

Following the conversion of the reservoir to use for domestic water supply in 1921, there was heightened awareness of the vulnerability of the facility to contamination from hillside runoff. To allay this problem, open perimeter ditches along the west and north sides of the site were constructed. These were replaced by the existing concrete retaining wall along West Silver Lake Drive in the 1930s. The walls are typically 2 feet high and topped by chain-link fencing.

Trees and Other Landscape Features

The intent of the designers of the Silver Lake and Ivanhoe Reservoirs was to create natural-looking bodies of water in a richly landscaped sylvan setting that would both attract development to the surrounding area and exist as a verdant enclave in the midst of the expanding city. To this end, portions of the reservoir property were left with their natural topography and vegetation, while other areas were planted in a naturalistic way with trees, shrubs, and other vegetation. Some alterations to the original landscaping were necessitated by the various reservoir improvement projects beginning in the 1930s and continuing through the present day. Reservoir improvements of the early 1950s, in particular, resulted in changes in the appearance of the reservoir and landscaping of directly adjacent areas. In-filling of the East Cove resulted in a substantial level area planted in lawn referred to as the “meadow.” Currently, the reservoir complex incorporates numerous mature trees of both native and introduced species, including live oak, eucalyptus, California sycamore, various species of pines, cedars, and palms, bottlebrush, olive, pepper, and magnolia. Additionally, the well-maintained, park-like setting is enhanced by areas of shrubs and bushes interspersed within expanses of open lawn and low vegetation such as the “meadow.” The Silver Lake south dam is also landscaped with ornamental grasses, wildflowers, and other ground cover.

7.2 Impacts

7.2.1 Standards of Significance

Adopted standards of significance that are applicable to cultural resources are provided in the CEQA Guidelines (2002) and the *Draft City of L.A. CEQA Thresholds Guide* (1998). Significance criteria considered for the cultural resources impact analysis are provided below.

Historical Resources

As defined by Section 15064.5(a) of the State CEQA Guidelines, the term “historical resource” includes the following:

- A resource listed in, or determined eligible for, listing in the California Register of Historical Resources (PRC Sections 5024.1).
- A resource included in a local register of historical resources, or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the PRC. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript 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, provided the lead agency's determination is supported by substantial evidence in light of the historical record.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (CRHR) (Public Resources Code [PRC] Section 5024.1[a]) including the following:

- It is associated with events that have made a significant contribution to the broad patterns of California history and cultural heritage.
- It is associated with the lives of persons important in our past.
- It 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.
- It yielded, or may be likely to yield, important information in prehistory or history.

Criteria presented in the *Draft City of L.A. CEQA Thresholds Guide* (1998) are consistent with state criteria noted above. Under the Draft L.A CEQA Thresholds, a project would have a significant impact on historical resources if it would result in a substantial adverse change in the significance of an historical resource. A substantial adverse change in significance occurs if the project involves:

- Demolition of a significant resource
- Relocation that does not maintain the integrity and significance of a significant resource
- Conversion, rehabilitation, or alteration of a significant resource that does not conform to the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*
- Construction that reduces the integrity or significance of important resources on the site or in the vicinity

Archaeological Resources

An archaeological resource shall be considered by the lead agency to be an "important" resource as defined by CEQA, if it:

- Is associated with an event or person of recognized importance in California or American prehistory or of recognized scientific importance in prehistory
- Can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions
- Has a special or particular quality, such as the oldest, best, largest, or last surviving example of its kind
- Is at least 100 years old and possesses substantial stratigraphic integrity
- Involves important research questions that historical research has shown can be answered only with archaeological methods

The Proposed Project would have a significant impact upon archaeological resources if it would disturb, damage, or degrade an important archaeological resource or its setting.

7.2.2 HWSG Site

7.2.2.1 Construction

Given the highly disturbed nature of the HWSG site, no impacts to historical resources associated with construction of the underground storage reservoir and hydroelectric plant at the HWSG site are anticipated.

The potential for discovery of prehistoric or historical archaeological sites on the parcel is considered to be low. However, Mitigation Measure CR-1 has been identified to ensure that potential impacts would be less than significant.

7.2.2.2 Operation

No impacts to archaeological or historical resources associated with operation of the underground storage reservoir and hydroelectric plant at the HWSG site are anticipated.

7.2.3 SLRC

7.2.3.1 Construction

SLRC-1

Implementation of the Proposed Project would entail storage of various construction materials and equipment on an approximately 5-acre area that is currently a well maintained grass lawn interspersed with banks of low shrubs and small trees. Use of the area for materials and equipment staging would result in removal and/or degradation of the existing landscaping. Dating to the early to mid-1950s when a portion of the reservoir that extended into this area was in-filled, the existing landscape features do not relate to the early development of the reservoir complex. However, the “meadow” has existed for 50 years or more, is in keeping with the historic landscaping of the reservoir complex that incorporates other areas of open lawn, and contributes to the overall historic character of the resource. Therefore, Proposed Project-related impacts to the area are considered potentially significant. These impacts would be reduced to a less-than-significant level through implementation of Mitigation Measure CR-2.

Ground-disturbing activities on the eastern side of Ivanhoe Reservoir and northeast of Silver Lake Reservoir related to removal of the reservoirs from service would have similar potential impacts to historical landscaping as those identified above. Potential impacts would be reduced to a less-than-significant level through implementation of Mitigation Measure CR-2. The potential for discovery of prehistoric or historical archaeological sites in this area is considered to be low. However, if encountered during construction, impacts would be significant. Mitigation Measure CR-1 would be implemented to ensure that impacts are less than significant.

SLRC-2

Construction of the regulating station would involve excavation and grading of an approximately 30,000-square-foot grassy area at the southwest corner of the SLRC property. This work would potentially result in the removal of grass and trees currently located within the construction site. The existing landscape features include approximately eight California sycamore trees, 10 to 18 inches in diameter, that are believed to date to LADWP improvements between 1951 and 1977. Several pine trees on the periphery of the site are considerably older. While not associated with the early development of the reservoir complex, the sycamore trees are in keeping with the character of the historic landscaping; and they contribute to the overall historic qualities of the reservoir complex. Removal of the sycamore trees and other landscape features would result in a potentially significant adverse impact to historical resources without mitigation. Implementation of Mitigation Measure CR-2 would reduce this impact to less than significant.

The potential for discovery of prehistoric or historical archaeological sites on the parcel is considered to be low. However, if encountered during construction, unavoidable impacts would be mitigated to a less-than-significant level by implementation of Mitigation Measure CR-1.

SLRC-3

Tunneling for the bypass pipeline at a depth of between 30 and 100 feet below grade and offset laterally from building footprints by a minimum of 30 feet would not result in noise or vibration levels likely to cause impacts to existing residential construction and related features along the west side of West Silver Lake Drive, along Redesdale Avenue, or to contributing elements of the SLRC. Further, none of the buildings located along West Silver Lake Drive adjacent to the tunnel alignment is now a locally, state, or federally designated historical resource.

Excavations for the north jacking pit and one receiving pit will be located within the travel lanes of the existing streets. A second jacking pit will be placed on a corner of the SLRC that is currently a landscaped open grassy area. Impacts related to these excavations will be temporary, and Proposed Project specifications call for restoration of affected areas to their preconstruction appearance.

Existing trees and other landscaping on SLRC property at the corner of West Silver Lake Drive and Redesdale Avenue are believed to date to the 1951-1977 period, with older (pine) trees located on the slope to the north. While generally not associated with the early development of the reservoir complex, the landscaping is in keeping with the historic character and function of this portion of the SLRC property and contributes to the historic resource. Impacts associated with removal of vegetation in this area are considered potentially significant without mitigation. Impacts would be reduced to less than significant with implementation of Mitigation Measure CR-2.

Because soils in these areas could not be examined, the potential for existence of archaeological resources could not be fully assessed. Potential impacts to cultural resources resulting from excavation/unanticipated discovery would be mitigated to insignificance through implementation of Mitigation Measure CR-1.

Relief Stations

The two separate relief stations would be constructed primarily below ground within existing streets; no historic buildings would be affected. Construction for the relief stations would be unlikely to result in adverse impacts to any archaeological resources that might be present because existing streets and underground utilities have likely already disturbed such resources. However, to ensure that impacts are less than significant, Mitigation Measure CR-1 would be implemented.

7.2.3.2 Operation

No adverse impacts to cultural resources are expected during operation of the bypass pipeline, regulating station, and relief stations or by the change in function of Silver Lake and Ivanhoe Reservoirs, provided that the SLRC is maintained consistently with the appearance and condition that LADWP has provided at this facility for several years.

7.3 Mitigation

7.3.1 Construction

Mitigation Measure CR-1: Archaeological Resources

Potential impacts to cultural resources related directly or indirectly to Proposed Project-related activities shall be reduced to below the level of significance through recovery or treatment of archaeological resources encountered during archaeological site investigations or monitoring of ground-disturbing activities (construction) in areas with the potential to contain archaeological resources.

When investigations identify unique archaeological resources as defined in Section 21083.2 of the PRC, the site shall be subject to specified requirements for treatment. Where elements of the Proposed Project are expected to require earthmoving, the following program shall be implemented and the requirement duly noted in Proposed Project plans and specifications:

- Retain a qualified archaeologist to implement a monitoring and recovery program in any area identified as having the potential to contain unique archaeological resources.
- A qualified archaeologist shall monitor earth-moving activities in areas that are likely to contain unique archaeological resources. The archaeologist shall be authorized to halt construction, if necessary, in the immediate area where buried cultural remains are encountered. Prior to the resumption of grading activities in the immediate vicinity of the cultural remains, the project proponent shall provide the archaeologist with the necessary resources to identify and implement a program for the appropriate disposition as specified by Section 15064.5(e) of the CEQA Guidelines.

- The selected archaeologist shall be required to secure a written agreement with a recognized museum repository regarding the final disposition and permanent storage and maintenance of any unique archaeological resources recovered as a result of the archaeological monitoring. This would also include corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement for the disposition of recovered artifacts shall specify the level of treatment (preparation, identification, curation, cataloging) required before the collection would be accepted for storage.

- The selected archaeologist shall attend a preconstruction meeting to provide information regarding regulatory requirements for the protection of unique archaeological resources. Construction personnel shall be trained on procedures to be followed in the event that a unique archaeological resource is encountered during construction. In addition, the archaeologist shall ensure that the preconstruction meeting participants are trained to notify the Los Angeles County Medical Examiner (coroner) within 24 hours of the discovery of human remains. Upon discovery of human remains, there shall be no further excavation or disturbance of the site or any reasonably nearby area suspected to overlie adjacent human remains until the following conditions are met:

  - The Los Angeles County Medical Examiner has been informed and has determined that no investigation of the cause of death is required; and, if the remains are of Native American origin, the descendants of the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98.

If archaeological sites are encountered during construction of the Proposed Project, an evaluation of significance will be made by the selected archaeologist. Those sites that are determined eligible for listing in the CRHR shall be treated in accordance with one of the three feasible measures described in the "CEQA and Archaeological Resources," CEQA Technical Advice Series:

- Capping (covering) the site with a level of soil prior to construction over the site
- Incorporation into open space areas of the project site
- Excavation where the first two measures are not feasible

For eligible sites, the City of Los Angeles shall, prior to construction, implement the applicable treatment plan.

Mitigation Measure CR-2: Historic Landscaping Restoration

Landscaping of the 30,000-square-foot, open, grassy area located at the southwest corner of the SLRC, the proposed location of a jacking pit, pipeline, concrete vaults for a regulating station, and other new facilities shall be returned to an appearance approximating preconstruction conditions, in so far as is possible, prior to removal of Ivanhoe and Silver Lake Reservoirs from service to the water distribution system. Where avoidance or transplantation of onsite trees and other vegetation is not possible, the proposed regulating station area (SLRC-2) should be landscaped with mature, healthy trees and plant material of comparable species, in keeping with the historic character and appearance of these portions of the reservoir complex. In areas where planting of trees and other large vegetation would impede operation of the new facilities, grass will be replanted over the buried structures, approximating the current appearance of the site in as much as that is practicable. Insofar as is possible, landforms shall be returned to their preconstruction topography. The *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Cultural Landscapes* should be employed to mitigate potential impacts to the existing landscaping resulting from construction activities.

The same mitigation measure shall be employed for impacts related to the removal or degradation of landscaping in the area designated for equipment and material staging (SLRC-1), within the former East Cove area. Landscape rehabilitation will be performed in coordination with the Property Maintenance and Management Plan for the SLRC.

7.3.2 Operation

No adverse impacts to cultural resources are expected to result from operation of the Proposed Project. As such, no mitigation is required.

7.4 Significance After Mitigation

With implementation of the above mitigation measures, potentially adverse impacts to cultural resources resulting from project construction would be reduced to less-than-significant levels.

8.0 Paleontologic Resources

The SLRC lies at the northern corner of the unnamed hills that lie immediately southeast of the southeastern corner of the Santa Monica Mountains and southwest of the Los Angeles River. The HWSG site lies between the northern edge of the Santa Monica Mountains and the LA River channel, both sites lying in Los Angeles (see Figure 1-1). Topographic map coverage of the SLRC and the HWSG site is provided at a scale of 1:24,000 by the USGS Hollywood (1966, photorevised 1981, minor revision 1994) and Burbank (1966, photorevised 1972, minor revision 1994) Quadrangles, California, 7.5-Minute Series (Topographic).

Paleontologic resources of the SLRC SRP sites include rock units that immediately underlie the surface and have a potential for yielding particular types of fossil remains because they have yielded similar fossil remains at previously recorded fossil localities near the Proposed Project sites. Fossils, the remains or indications of once-living organisms, are an important scientific resource because of their use in (1) documenting the evolution of particular groups of organisms, (2) reconstructing the environments in which they lived, and (3) determining the ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments constituting these strata.

A Paleontologic Resource Inventory/Impact Assessment was prepared for the Proposed Project and is included in Appendix E. This resource assessment contains detail in addition to that presented in this chapter, including methodology.

8.1 Setting

8.1.1 Regional

Regional surficial geologic mapping of the SLRC SRP sites and their vicinities is provided by Jennings and Strand (1969) at a scale of 1:250,000, while larger-scale (1:24,000) geologic mapping of the site and its immediate vicinity is provided by Dibblee (1991). The SLRC lies adjacent to the eastern end of the Santa Monica Mountains and is in an area in which mountains and hills are composed mostly of Mesozoic plutonic and consolidated Miocene marine sedimentary rock units that have been highly folded, faulted, and eroded. The valley floors are underlain mostly by unconsolidated and comparatively flat-lying, undisturbed, and undissected alluvial deposits (Dibblee, 1991).

An inventory of the paleontologic resources of the rock units exposed at the SLRC SRP sites is presented below, and the scientific importance of these resources is assessed. Although the literature review, archival search, and the field surveys conducted for this inventory did not document any previously recorded fossil locality as occurring at the Proposed Project sites, a number of previously recorded fossil localities was documented as occurring in areas mapped as being underlain by one or more these rock units near the Proposed Project sites. Surficial geologic maps of the SLRC SRP sites showing the paleontologic importance of each rock unit are presented in Figures 8-1 (HWSG site) and 8-2 (SLRC).

8.1.2 HWSG Site

Geologic mapping of the HWSG site by Dibblee indicates that virtually the entire site is underlain by Holocene stream channel deposits, which are composed of unconsolidated sand and gravel (Dibblee, 1991). As mapped by Dibblee, the embankment forming the southeastern periphery of the HWSG site north of (below) Forest Lawn Drive and west of Zoo Drive is composed of alluvium (Dibblee, 1991). However, an inspection of the embankment during the field survey of the site that was conducted in support of this paleontologic resource inventory indicates that much, if not all, of the embankment actually is composed of quartz diorite, an igneous rock type that also is exposed extensively along and above the southern side of Forest Lawn Drive.

8.1.2.1 Quartz Diorite

Because of its origin from a molten state deep in the crust of the earth, the quartz diorite is unfossiliferous and of no paleontologic importance.

8.1.2.2 Stream Channel Deposits

At and near the surface, the stream channel deposits probably are too young to contain remains old enough to be considered fossilized. Moreover, the deposits possibly are too coarse grained to contain any fossil remains. For these reasons, the stream channel deposits are considered to be of only low paleontologic importance because there probably is only a low potential for scientifically highly important fossil remains being encountered by earth-moving activities at previously unrecorded fossil localities.

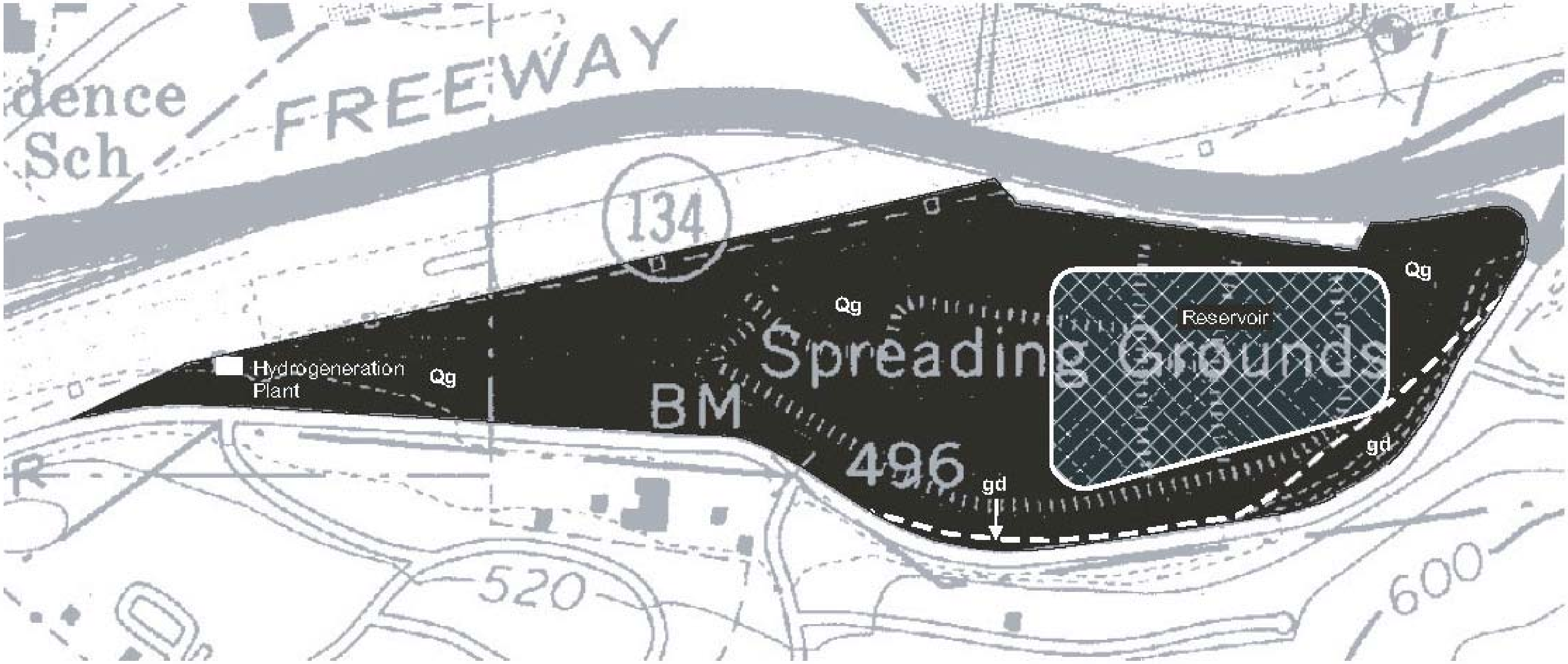
8.1.3 SLRC

Geologic mapping of the SLRC by Dibblee indicates that the site periphery is underlain by two late Cenozoic rock units, including the sandstone facies of the middle to late Miocene marine Monterey Formation (lower [member of] Modelo Formation of earlier workers in Santa Monica Mountains) and late Pleistocene to Holocene alluvium, while the dam is composed of historic artificial fill (Dibblee, 1991). The sandstone facies of the Monterey Formation consist mostly of light gray, semifriable sandstone layers interbedded with thin layers of micaceous silty clay shale that constitute the Elysian submarine fan. The alluvium is made up of clay, sand, and gravel, and the artificial fill is composed of sediments and debris substantially disturbed by human activity (Dibblee, 1991).

Boring for the trunk line will pass through the Monterey Formation and possibly alluvium. Excavation for the northern jacking pit, the flowmeter, and the receiving pit will encounter alluvium, but also might encounter the Monterey Formation at depth. Excavation for the southern jacking pit and the regulator station will encounter artificial fill, but also might encounter alluvium and/or the Monterey Formation at depth.

8.1.3.1 Monterey Formation

Although no previously recorded fossil locality is reported as occurring in the sandstone facies of the Monterey Formation at the SLRC, fossilized skeletons representing extinct species of marine fishes were recovered at previously recorded fossil localities in this rock unit approximately 1.2 to 2.2 miles southeast of the SLRC in Elysian Park



Legend

Qg Stream Channel Deposits (low importance/sensitvity)
gd Granodiorite (no importance/sensitvity)
— — Geologic Contact

Scale: 0.2 Mile

Contour Interval: 20 Feet
Supplementary Contour Interval: 10 Feet

Figure 8-1
SLRC SRP Draft EIR
Paleontologic Resource Assessment and Impact Sensitivity Map of HWSG Site

Source: Modified from Dibblee (1991)

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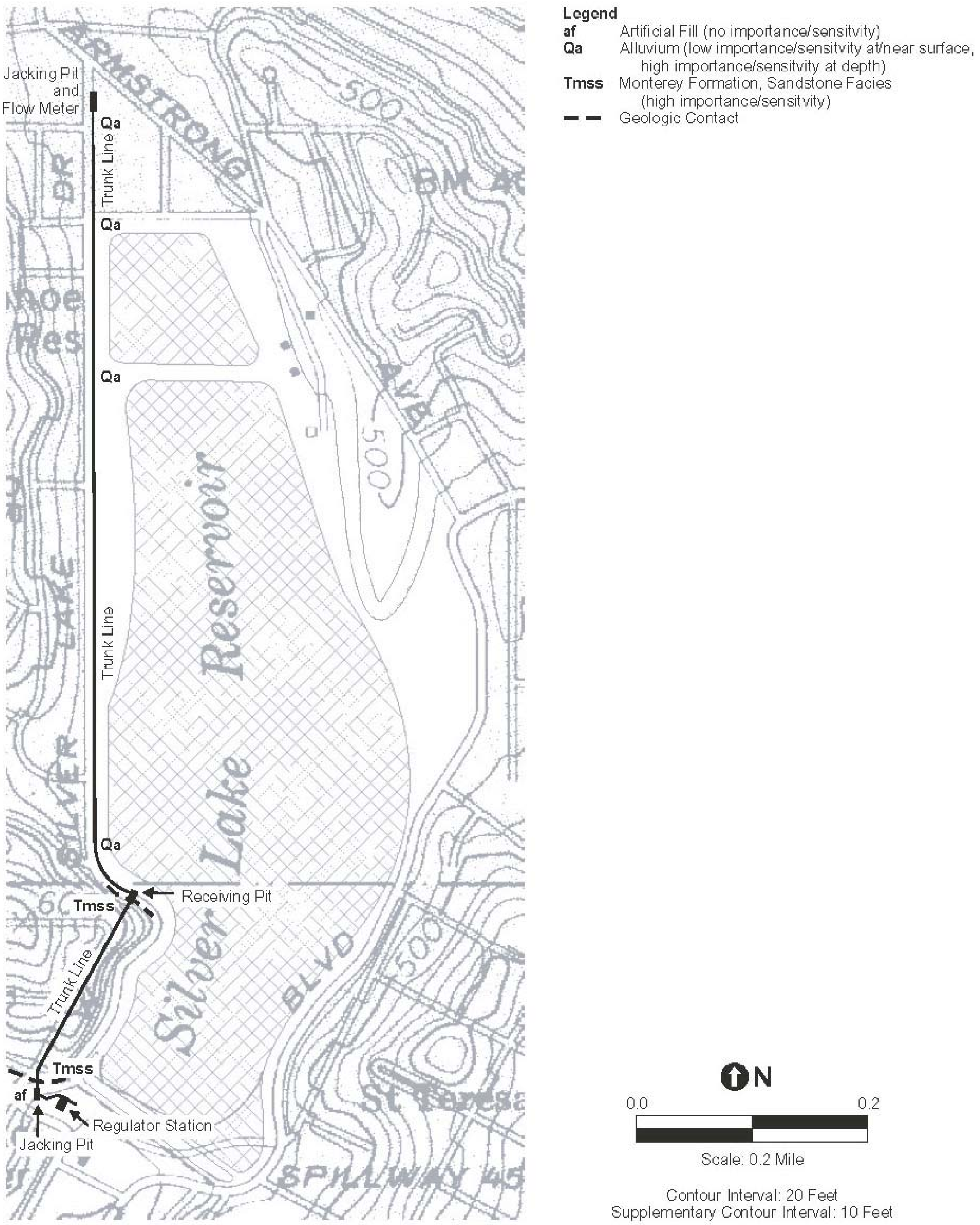

Figure 8-2
SLRC SRP Draft EIR
Paleontologic Resource Assessment and Impact Sensitivity Map of SLRC

Source: Dibblee (1991)

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(LACMVP locality 4967) and approximately 2.5 miles east of the SLRC on the southwestern side of Mount Washington (LACMVP locality 3320) (David, 1943). In the Santa Monica Mountains, the lower (member of the) Modelo Formation has yielded fish scales and skeletons, as well as fossilized tests representing extinct species of benthic marine foraminifers (shelled amoebae) assignable to the Mohnian Benthic Foraminiferal Stage (Hoots, 1931; David, 1943; Pierce, 1956; Blake, 1991).

The occurrence of a number of previously recorded fossil localities near the SLRC suggests that there is a high potential for additional similar, scientifically important fossil remains being encountered by earth-moving activities in the sandstone facies of the Monterey Formation, particularly in the clay shale layers. Identifiable fossil remains recovered from the sandstone facies at the SLRC would be particularly important if they represented a new or rare species; geologic (temporal) and/or geographic range extension; new taxonomic record for the formation; age-diagnostic and/or environmentally sensitive species; and/or a skeletal element different from, or a specimen more complete than those now available for its respective species. There is a potential for encountering remains representing species rarely, if ever, recorded from the sandstone facies at or in the vicinity of the SLRC. The recovery of remains representing age-diagnostic species would be critical in refining or corroborating previous estimates for the age of the sandstone facies. The recovery of remains representing environmentally sensitive species would be critical in paleoenvironmental reconstruction. Moreover, the remains would contribute to a more comprehensive documentation of the diversity of marine life that existed at and near the SLRC during the middle to late Miocene Epoch. Finally, marine vertebrate remains also are scientifically highly important because such remains are comparatively rare in the fossil record. For these reasons, the sandstone facies of the Monterey Formation is considered to be of high paleontologic importance.

8.1.3.2 Alluvium

At and near the surface, the alluvium probably is too young to contain remains old enough to be considered fossilized. For this reason, the alluvium is considered to be of only low paleontologic importance at shallower depths because there probably is only a low potential for scientifically highly important fossil remains being encountered by earth-moving activities at previously unrecorded fossil localities at depths less than 5 feet below grade in the alluvium.

The alluvium, however, has yielded a diversity of fossilized remains. These include the shells of freshwater snails and clams and land snail shells, freshwater ostracod (bivalved crustacean) valves, continental vertebrate bones and teeth, and the wood (including logs) and pollen of land plants. All of these were recovered at a number of fossil localities in the alluvium at depths approximately 45 to 60 feet below grade in the Metro Red Line Universal City station excavation as a result of a paleontologic monitoring program. On the basis of carbon-14 dating analysis, the wood was determined to be 7,850 to 10,500 years (early Holocene) in age (Lander, 2000). Additional fossilized wood was recovered from the alluvium at a depth 16 feet below grade at the Metro Red Line North Hollywood station site (Lander, 2000). Fossilized wood and pollen also were recovered from the alluvium at depths up to approximately 22 feet below grade at several localities in the Metropolitan

Water District of Southern California headquarters facility excavation at Union Station, as a result of a paleontologic monitoring program. On the basis of carbon-14 dating analysis, the wood was determined to be 5,020 years (middle Holocene) in age (Lander, 1997).

The occurrence of a number of previously recorded fossil localities near the SLRC suggests that there is a high potential for additional similar, scientifically important fossil remains being encountered at depth by earth-moving activities at previously unrecorded fossil localities in the alluvium. Identifiable fossil remains recovered from this rock unit at the SLRC would be particularly important if they represented a new or rare species; geologic (temporal) and/or geographic range extension; new taxonomic record for the rock unit; age-diagnostic and/or environmentally sensitive species; and/or a skeletal element different from, or a specimen more complete than, those now available for its respective species. There is a potential for encountering remains representing species rarely, if ever, recorded from the rock unit at or in the vicinity of the SLRC. The recovery of remains representing age-diagnostic species or whose age can be determined by carbon-14 dating analysis would be critical in refining or corroborating previous estimates for the age of the rock unit. The recovery of remains representing environmentally sensitive species would be critical in paleoenvironmental reconstruction. Moreover, the remains would contribute to a more comprehensive documentation of the diversity of life that existed at and near the SLRC during the earlier part of the Holocene Epoch. Finally, continental vertebrate and invertebrate and land plant remains also are scientifically highly important because such remains are comparatively rare in the fossil record. For these reasons, the alluvium is considered to be of high paleontologic importance at depths greater than 5 feet below grade.

8.1.3.3 Artificial Fill

Artificial fill is of no paleontologic importance because it consists of historic sediment substantially disturbed by human activity. Fossil remains in artificial fill lack associated data regarding their geologic or geographic provenance.

8.2 Impacts

8.2.1 Standards of Significance

Paleontologic resources, including fossil remains and fossil localities, associated specimen data, and corresponding geologic and geographic site data, could be adversely affected by (i.e., would be sensitive to) the significant direct and indirect environmental impacts resulting from earth-moving activities associated with the SLRC SRP.

Direct impacts would result mostly from earth-moving activities in previously undisturbed strata. Although earth-moving activities would be comparatively short term, the possible accompanying loss of some fossil remains, unrecorded fossil localities, associated specimen data and corresponding geologic and geographic site data, and fossil-bearing strata is a potentially significant long-term adverse environmental impact.

Easier access to fresh exposures of fossiliferous strata or to excavated debris, and the accompanying potential for unauthorized fossil collecting by construction personnel, rock hounds, and amateur and commercial fossil collectors, might result in the loss of some additional fossil remains, unrecorded fossil localities, and associated specimen data and corresponding geologic and geographic site data. The loss of these paleontologic resources is another potentially significant long-term environmental impact.

The paleontologic significance (high, low, none) of the potential adverse impacts of earth-moving activities on the paleontologic resources of each rock unit at the SLRC SRP sites was assessed. This assessment was conducted in compliance with SVP guidelines for assessing the significance of construction-related adverse environmental impacts on paleontologic resources, or the paleontologic sensitivity of a particular rock unit to adverse impacts (SVP, 1995). The assessment reflects the paleontologic importance/impact sensitivity of the rock unit, which, in turn, primarily reflects the potential for fossil remains and fossil localities being encountered by these activities. Any impact on a fossil locality and the fossil-bearing layer would be considered significant paleontologically, regardless of the paleontologic importance of the rock unit in which the locality and layer occur. A paleontologic resource impact sensitivity assessment of the SLRC SRP sites is presented below and on the surficial geologic maps of the Proposed Project sites that are presented as Figures 8-1 and 8-2.

8.2.2 HWSG Site

8.2.2.1 Construction

Construction impacts on the paleontologic resources of the HWSG site would result mostly from excavation for the reservoir in the stream channel deposits, and from excavation for valves and any other subsurface facility that might occur in these deposits. However, any such impact on paleontologic resources probably would be of low significance because the stream channel deposits probably are too coarse grained to contain fossil remains. At and near the surface, these deposits probably are too young to contain remains old enough to be considered fossilized.

There would be no impact on paleontologic resources if earth-moving activities encountered unfossiliferous quartz diorite.

Mitigation Measures PR-1 and PR-2 have been identified to ensure that potential significant adverse impacts to paleontologic resources at the HWSG site are reduced to less-than-significant levels.

8.2.2.2 Operation

No earth-moving activity would result from operation and maintenance of facilities at the HWSG site; therefore, there would be no significant adverse impacts on paleontologic resources.

8.2.3 SLRC

8.2.3.1 Construction

Construction impacts on the paleontologic resources of the SLRC would potentially result primarily from boring for the bypass pipeline, excavation for the jacking and receiving pits and the regulating station, installation of the pipeline east of Ivanhoe Reservoir, and excavations for the relief stations. Any impact on the paleontologic resources of the Monterey Formation as a result of boring for the trunk line and, if to a depth sufficient to encounter this formation below any alluvium or artificial fill, excavation for the jacking and receiving pits and regulating station, pipeline, or relief station excavations would be of high significance. This is because of the high potential for fossil remains being encountered by these activities.

At depths less than 5 feet below grade, any impact on the paleontologic resources of the alluvium as a result of excavation for the receiving and northern jacking pits would be of low significance. This is because, at and near the surface, the alluvium probably is too young to contain remains old enough to be considered fossilized. However, at depths greater than 5 feet below grade, the impact of excavation for these structures and, if to a depth sufficient to encounter this rock unit below any artificial fill, for the southern jacking pit and the regulating station, would be of high significance. This is because of the high potential for encountering remains old enough to be considered fossilized.

There would be no impact on paleontologic resources as a result of excavation for the southern jacking pit and the regulating station if this activity encountered only unfossiliferous artificial fill.

Mitigation Measures PR-1 and PR-3 have been identified to ensure that potential significant adverse impacts to paleontologic resources at the SLRC are reduced to less-than-significant levels.

8.2.3.2 Operation

No earth-moving activity would result from operation and maintenance of facilities at the SLRC; therefore, there would be no significant adverse impacts on paleontologic resources.

8.3 Mitigation Measures

8.3.1 Construction

The following measures constitute a monitoring program that, if implemented, would mitigate environmental impacts on paleontologic resources that would accompany earth-moving activities associated with the SLRC SRP. The program would be supervised by a qualified vertebrate paleontologist approved by the LADWP. This would allow for the recovery of some of the fossil remains that might be encountered by these earth-moving activities, for the recording of associated specimen data and corresponding geologic and geographic site data, their preservation at the LACMVP, and their availability for future study by qualified scientific investigators. Identifiable fossil remains would provide a more comprehensive paleontologic resource inventory of the Proposed Project sites and their vicinities than now is available or would have been available without the Proposed Project. Without mitigation, any such specimens and data would be lost to the earth-moving activities and to unauthorized fossil collecting. Specimen and data recovery would be a beneficial effect of the SLRC SRP and would be allowed under CEQA Appendix G (5.c). The monitoring program would be conducted in compliance with LADWP environmental guidelines and SVP (1995 and 1996) standard guidelines for mitigating adverse construction-related impacts on paleontologic resources, and with LACMVP requirements for the acceptance of a monitoring program fossil collection.

Mitigation Measure PR-1: Paleontologic Resources at HWSG Site and SLRC

Mitigation will include the following measures:

- Earth-moving activities that have a potential for disturbing previously undisturbed strata identified as being paleontologically important will be monitored by a paleontologic construction monitor. If fossil remains are encountered, they will be recovered, along with associated specimen data and corresponding geologic and geographic site data. The level of monitoring will reflect the paleontologic importance/impact sensitivity of the rock unit underlying the area of disturbance and the type of earth-moving activity (see Figures 8-1 and 8-2).
- If fine-grained strata with a potential for containing microfossils or small fossil remains are encountered, rock/sediment samples will be collected and processed to allow for the recovery of these fossil remains.
- If necessary, earth-moving activities will be diverted temporarily around a fossil/ sampling locality until the fossil remains/sample has been removed.
- If warranted, rock/sediment or fossil samples will be submitted to commercial laboratories for microfossil and pollen identification, or radiometric dating analysis.
- Recovered fossil remains will be prepared to the point of identification, identified by knowledgeable paleontologists, curated, catalogued with LACMVP fossil specimen and locality numbers, and transferred to the LACMVP for permanent storage.
- A final technical report of results and findings will be prepared by the paleontologist.

Mitigation Measure PR-2: Paleontologic Resources at the HWSG Site

Monitoring at the HWSG site will be conducted on a spot-check basis once excavation for the reservoir and any ancillary facility has reached a depth 5 feet below grade in the stream channel deposits. If fossil remains are encountered by excavation, the monitoring level will be increased to full time.

Mitigation Measure PR-3: Paleontologic Resources at the SLRC

Paleontologic monitoring of construction at the SLRC will be conducted during the periods that ground-disturbing activities are ongoing at depths greater than 5 feet, and are occurring within Quaternary alluvium or Miocene marine sediments. With the exception of the excavations for the cut-and-plug operations, expected to occur only within artificial fill, all excavations to depths greater than 5 feet may affect paleontologically sensitive sediments. Therefore, these excavations will be monitored *except* in cases where it can be conclusively demonstrated that artificial fill occurs at depths exceeding 5 feet, and that the excavations are, therefore, occurring in sediments with no paleontologic sensitivity.

Monitoring will be conducted by a trained paleontologic monitor under the direction of a professional paleontologist. Monitoring will consist of inspection of debris and backdirt generated by excavations, as well as exposed sediment profiles when safely accessible. Boring and drilling operations will be spot-monitored at least once a day, and will be full-time monitored should fossils be encountered. All other excavations in paleontologically sensitive sediments will be subjected to full-time paleontologic monitoring.

8.3.2 Operation

No significant adverse impacts to paleontologic resources resulting from operation of facilities at the HWSG site or the SLRC are anticipated; therefore, no mitigation measures are required.

8.4 Significance After Mitigation

With implementation of the above mitigation measures, potentially adverse impacts to paleontologic resources resulting from project construction would be reduced to less-than-significant levels.

9.0 Traffic and Transportation

The scope of work for a traffic and transportation study (Appendix F) to support the preparation of this Draft EIR chapter was developed in conjunction with the City of Los Angeles Department of Transportation (LADOT). The base assumptions and technical methodologies were discussed as part of the study approach. The study, which analyzes the potential Proposed Project-generated traffic impacts for the HWSG site and the SLRC on their adjacent street systems, anticipates that the Proposed Project will be completed by 2013. The analysis of future-year traffic forecasts is based on projected conditions in 2013 both with and without the addition of the Proposed Project traffic. The following traffic scenarios were developed and analyzed as part of this study.

Existing (2004) Conditions - The analysis of existing traffic conditions provides a basis for the remainder of the study. The existing conditions analysis includes an assessment of the street system serving the site, traffic volumes, and current operating conditions. Existing (2004) conditions are discussed in Section 9.1, Setting.

Cumulative Base (2013) Conditions - Future traffic conditions without the Proposed Project will be developed for the year 2013. The objective of this analysis is to project the future traffic growth and operating conditions that could be expected from regional growth and related projects in the vicinity of the project site by the year 2013. Although the Proposed Project would have multiple phases during construction, 2013 was chosen as the future baseline at any phase of the Proposed Project to be conservative. Cumulative base (2013) conditions are discussed in Section 9.2, Impacts.

Cumulative (2013) plus Project Conditions - This traffic scenario provides projected traffic volumes and an assessment of operating conditions under future conditions with the addition of project-generated traffic. The impacts of the proposed project on future traffic operating conditions were then identified. Cumulative (2013) plus project conditions are discussed in Section 9.2, Impacts.

LADOT identified 10 intersections to be analyzed as part of the SLRC SRP. The first five intersections are located adjacent to the SLRC, while the other five are located adjacent to the HWSG site.

SLRC Study Area

1. Silver Lake Boulevard and Van Pelt Place
2. Glendale Boulevard and State Route 2 southbound off-ramp/Waterloo Street/ Fargo Street
3. Glendale Boulevard and Silver Lake Boulevard
4. Glendale Boulevard and Fletcher Drive/Silver Ridge Avenue
5. Fletcher Drive and Riverside Drive

HWSG Study Area

6. Barham Boulevard and Forest Lawn Drive/Lakeside Plaza Drive
7. Forest Lawn Drive and Zoo Drive

8. Riverside Drive and Zoo Drive
9. Riverside Drive and State Route 134 eastbound off-ramp
10. Victory Boulevard and Western Avenue

The locations of these 10 study intersections are illustrated in Figure 9-1, which also shows the locations of the two separate sites in relation to their surrounding street systems.

After the completion of the original traffic and transportation study, changes to the project description necessitated an update to the traffic analysis. Appendix F includes a Traffic Study Addendum (CH2M HILL, April 2005) that addresses the new elements of the project and necessary changes to the original Traffic Study.

9.1 Setting

9.1.1 Existing Street System

The SLRC SRP has two sites (the HWSG site and the SLRC), which are separated by about 5 miles. The surrounding street system for each site is described below.

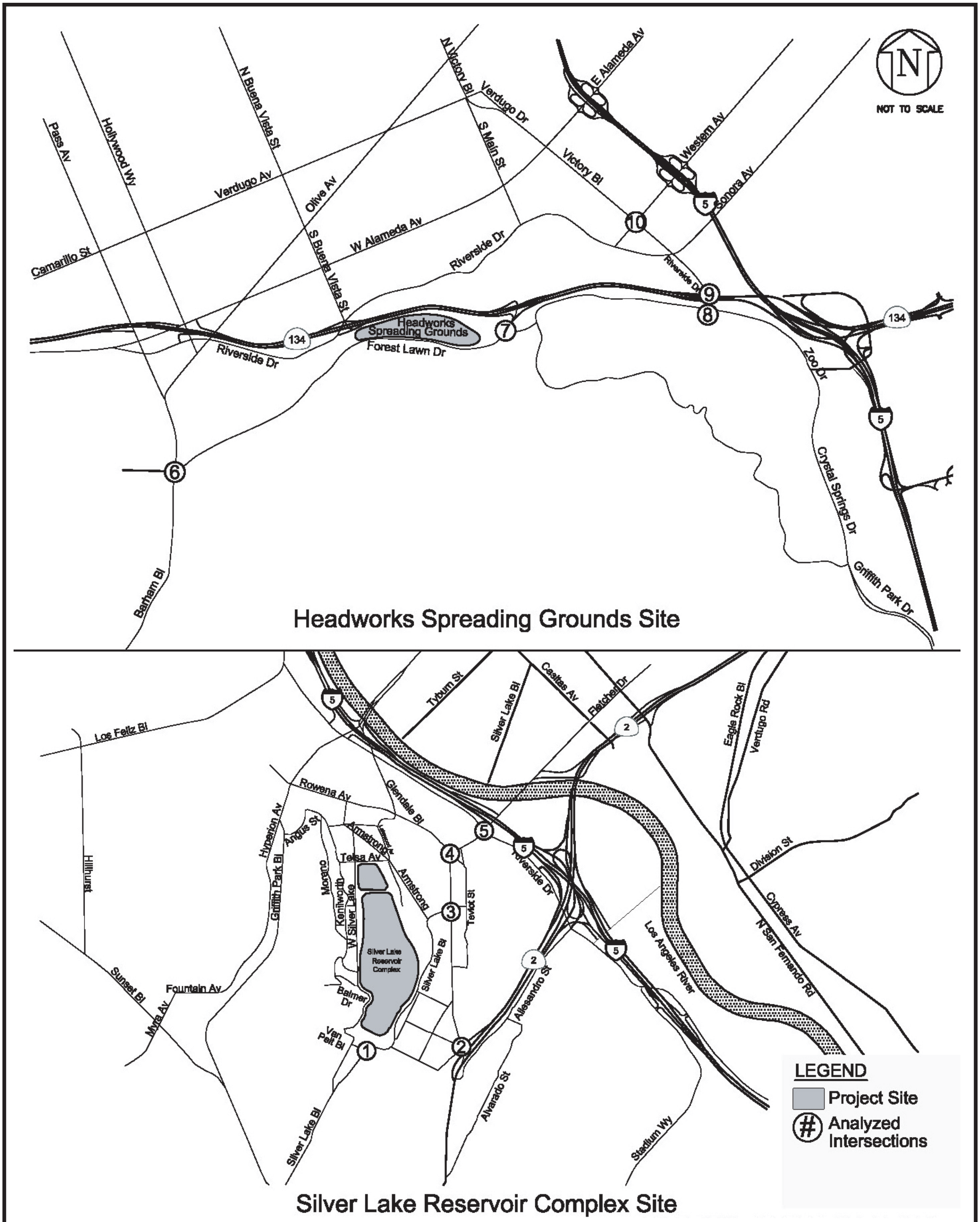
9.1.1.1 HWSG Site

The study area for the HWSG site is bounded by Alameda Avenue on the north, Golden State Freeway (I-5) on the east, Griffith Park on the south, and Barham Boulevard and Hollywood Way on the west. Access to the HWSG site would be provided at the southern slope of the property with ingress and egress from Forest Lawn Drive. Regional access to the site is provided by the I-5 Freeway and State Highway 134. The I-5 Freeway runs in a north-south direction east of the HWSG site, while State Highway 134 runs in an east-west direction along the north side of the site. Access to the HWSG site from the north I-5 would be via the I-5 ramp interchange at Western Avenue; otherwise HWSG can be accessed via State Highway 134 at Forest Lawn Drive.

The major streets serving the HWSG site are Forest Lawn Drive, Riverside Drive, Zoo Drive, Western Avenue, and Alameda Avenue in the east-west direction; and Barham Boulevard and Victory Boulevard in the north-south direction. The following is a brief description of the streets that serve the site.

Forest Lawn Drive - Forest Lawn Drive is a secondary east-west arterial. It mainly provides two travel lanes in the eastbound direction and two lanes in the westbound direction. It bends and travels in a north-south direction while connecting to Zoo Drive on the west, then narrows to one lane in each direction while connecting to State Highway 134. Forest Lawn Drive provides direct access to the HWSG site through the southern slope of the property. It also provides regional access via ramps at State Highway 134. Parking is restricted within the study area. The posted speed limit is 25 mph between Zoo Drive and State Highway 134, while it is 45 mph between Zoo Drive and Barham Boulevard.

Riverside Drive - Riverside Drive is a major east-west arterial within the study area. It provides two travel lanes in the eastbound direction and two lanes in the westbound direction. Riverside Drive turns to the north and south when it connects to the State Highway 134 ramps at Zoo Drive. Parking is allowed on both sides of the street within the study area. The posted speed limit is 35 mph.



Headworks Spreading Grounds Site

Silver Lake Reservoir Complex Site

Figure 9-1
SLRC SRP Draft EIR
Location of Study Area and Analyzed Intersections

Source: Kaku Associates (2004)

CH2MHILL

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Zoo Drive - Zoo Drive is a secondary east-west arterial. It provides one travel lane in each direction. Zoo Drive provides local access to the HWSG site, and parking is restricted is restricted on both sides of the street within the study area. The posted speed limit is 25 mph.

Western Avenue - Western Avenue is a secondary east-west arterial. It provides one travel lane in each direction between Victory Boulevard and Riverside Drive within the study area. Western Avenue provides regional access through a connection to I-5. Parking is allowed on both sides of the street in the study area, and the posted speed limit is 35 mph.

Alameda Avenue - Alameda Avenue is a major east-west arterial. It provides two travel lanes in each direction, and regional access through a connection to I-5. Parking is allowed on both sides of the street within the study area, and the posted speed limit is 35 mph.

Barham Boulevard - Barham Boulevard is a major north-south arterial. It mainly provides two travel lanes in the northbound direction and two lanes in the southbound direction. Barham Boulevard provides local access to the HWSG site. Parking is restricted on both sides of the street within the study area, and the posted speed limit is 35 mph.

Victory Boulevard - Victory Boulevard is a major north-south arterial. It provides two travel lanes in the northbound direction and two lanes in the southbound direction. Victory Boulevard provides regional access through a connection to the I-5 ramps via Western Avenue. Parking is limited on both sides of the street within the study area, and the posted speed limit is 35 mph.

Table 9-1 provides a description of these facilities, summarizing the physical characteristics of all key streets serving the HWSG site. Diagrams of the existing lane configurations at the five study intersections in the HWSG study area are illustrated in Appendix F-1.

9.1.1.2 SLRC

Construction activities at the SLRC would generally take place south of the Silver Lake Reservoir at the southern end of West Silver Lake Drive. In addition, a proposed bypass pipeline would be constructed primarily along West Silver Lake Drive through tunneling with jacking and receiving pits. Regional access to the SLRC site is provided by the Golden State Freeway (I-5) and Glendale Freeway (SR 2). The I-5 Freeway runs in a northwest-southeast direction to the northeast of the SLRC site, while the SR 2 runs in a north-south direction to the east of the site.

The major streets that serve the potential SLRC site are Glendale Boulevard, Fletcher Drive, Silver Lake Boulevard, and Hyperion Avenue in the north-south direction; and Riverside Drive, Van Pelt Place, and Rowena Avenue in the east-west direction. The following is a brief description of the streets that serve the site.

Glendale Boulevard - Glendale Boulevard is a major north-south arterial. It provides four travel lanes, two lanes in the northbound direction and two lanes in the southbound direction. Glendale Boulevard provides local access to the SLRC site through a connection to Silver Lake Boulevard, while it also provides regional access through a connection to both I-5 and SR 2. The posted speed limit is 35 mph.

TABLE 9-1
Existing Surface Street Characteristics – HWSG Site

Segment	From	To	Lane		Median Type	Parking Restrictions		Speed Limit
			NB/EB	SB/WB		NB/EB	SB/WB	
HWSG Site:								
Crystal Springs Dr.	Griffith Park Dr.	Western Heritage Way	1	1	SDY	NPAT	NPAT	25
	Western Heritage Way	N. Zoo Dr.	2	2	2LT	NSAT	NSAT	25
	N. Zoo Dr.	Riverside Dr.	1	1	DY	NSAT	NSAT	25
	Riverside Dr.	"Travel Town"	1	1	DY	NSAT / NP sunset to sunrise	NSAT / NP sunset to sunrise	25
	"Travel Town"	Zoo Dr.	1	1	DY	NP 8P-6A	NP 8P-6A	25
Zoo Dr.	Crystal Springs Dr.	Forest Lawn	1	1	2LT	NSAT	NSAT	25
Griffith Park Dr.	Zoo Dr.	Mineral Wells Tr.	1	1	SDY / DY	NPAT	NPAT	25
	Mineral Wells Tr.	Zoo Bypass	1	1	DY	NSAT	NSAT	25
Forest Lawn Dr.	134 Fwy.	Zoo Dr.	1	1	DY	NSAT	NSAT	25
	Zoo Dr.	Memorial Dr.	2	2	2LT	NSAT	NSAT	45
	Memorial Dr.	WBS Gate 8,7	2	2	2LT	NP 2A-4A nightly / PA	NSAT / PA	45
	WBS Gate 8, 7	Barham Blvd.	2	2	2LT	NP 2A-4A nightly / 2hr 8A-6P	NP 2A-4A nightly / 2hr 8A-6P	45
Barham Blvd.	Pass Ave.	Lakeside Dr.	3	3	RM	NSAT	NPAT	35
	Lakeside Dr.	Forest Lawn Dr.	3	3	2LT	NSAT	NSAT	35
	Forest Lawn Dr.	S. Coyote Cyn.	2	2	2LT	NSAT	NSAT	35
W. Olive Ave.	Pass Ave.	Hollywood Way	3	3	RM	NSAT	NP 7A-9A	35
	Hollywood Way	Riverside Dr.	3	3	RM	NSAT	NP 7A-9A, 30min PA	35
	Riverside Dr.	Lima St.	2	2	2LT	NP 3A-5A	2hr 8A-6P	35
	Lima St.	Alameda Ave.	2	2	2LT	NP 3A-5A	NP 3A-5A	35
Victory Blvd.	Crystal Springs Dr.	Sonora Ave.	2	2	DY	NSAT	NSAT	35
	Sonora Ave.	Justin Ave.	2	2	2LT	PA	PA	35
	Justin Ave.	Winchester Ave.	2	2	2LT	2hr 8A-6P	PA	35
	Winchester Ave.	Allen Ave.	2	2	2LT	PA	PA	35
	Allen Ave.	Linden Ave.	2	2	2LT	2hr 8A-6P	2hr 8A-6P, NP 3A-5A	35
	Linden Ave.	Elm Ave.	2	2	2LT	2hr 8A-6P	NP 3A-5A	35
	Elm Ave.	Alameda Ave.	2	2	2LT	PA	PA	35
	Alameda Ave.	Valencia Ave.	2	2	2LT	1hr 8A-6P	2hr 8A-6P	35
	Valencia Ave.	Ash Ave.	2	2	2LT	PA	PA	35
	Ash Ave.	Elmwood Ave.	2	2	2LT	NP 7A-3P	2hr 8A-6P	35
	Elmwood Ave.	Cedar Ave.	2	2	2LT	PA	1hr 8A-6P	35
	Cedar Ave.	Providencia Ave.	2	2	2LT	2hr 8A-6P	PA	35
Riverside Dr.	Pass Ave.	Maple St.	2	2	DY	1hr 8A-6P / 10 min 8A-6P	10 min 8A-6P / 1hr 8A-6P	30
	Maple St.	Screenland Dr.	2	2	DY	2hr 8A-6P	10 min 8A-6P / 1hr 8A-6P	30
	Screenland Dr.	Hollywood Way	2	2	2LT	NPAT	NSAT	30

TABLE 9-1
Existing Surface Street Characteristics – HWSG Site

Segment	From	To	Lane		Median Type	Parking Restrictions		Speed Limit
			NB/EB	SB/WB		NB/EB	SB/WB	
	Hollywood Way	Olive Ave.	2	2	DY	30 min 8A-6P	PA	30
	Olive Ave.	Avon St.	2	2	2LT	10 min 8A-6P	NP 3A-5A	30
	Avon St.	California St.	2	2	2LT	NSAT	NP 3A-5A	30
	California St.	Niagara St.	2	2	2LT	2hr 8A-6P	2hr 8A-6P	30
	Niagara St.	Bob Hope Dr.	2	2	2LT	PA	PA	30
	Bob Hope Dr.	134 Fwy.	2	2	DY	NP 11P-6A	NP 11P-6A	30
	134 Fwy.	Buena Vista St.	2	2	DY	NPAT	NP 11P-6A	30
	Buena Vista St.	Keystone St.	2 / 1	2	2LT	NPAT	NPAT	30
	Keystone St.	Parish Pl.	1	1	2LT	2hr 8A-6P	2hr 8A-6P	30
	Parish Pl.	Beachwood Dr.	1	1	2LT	PA	PA	30
	Beachwood Dr.	Griffith Park Dr.	1	1	2LT	2hr ANYTIME	PA	30
	Griffith Park Dr.	Mariposa St.	1	1	2LT	PA	PA	30
	Mariposa St.	Main St.	1	1	2LT	PA / NPAT (ex. By Permit)	PA	30
	Main St.	Allen Ave.	1	1	2LT	NPAT (ex. By Permit)	NPAT (ex. By Permit)	35
	Allen Ave.	Western Ave.	1	1	2LT	PA	PA	35
	Western Ave.	Victory Blvd.	1	1	2LT / DY	PA	PA	35
Sonora Ave.	Victory Blvd.	Garden St.	1	2	DY	RZ	PA	35
	Garden St.	Flower St.	2	2	DY	PA	PA	35
	Flower St.	Air Way	2	2	DY	PA	PA	35
	Air Way	San Fernando Rd.	2	2	RM / 2LT	RZ	NPAT	35
Alameda Ave.	Victory Blvd.	Lake St.	2	2	2LT	PA	PA	35
	Lake St.	Flower St.	2	2	RM	NSAT	NSAT	35
	Flower St.	San Fernando Rd.	2	2	RM / DY	NSAT	NSAT	35
Western Ave.	Riverside Dr.	Victory Blvd.	1	1	2LT	2hr 24/7	2hr 24/8	35
	Victory Blvd.	Lake St.	1	1	2LT	2hr 9A-6P	PA	35
	Lake St.	Flower St.	2	2	RM	NSAT	NSAT	35
	Flower St.	San Fernando Rd.	2	2	DY	NSAT	NSAT	35

Notes:
MEDIAN TYPE:
DY = Double Yellow Centerline
SDY = Single Dashed Yellow Centerline
2LT = Dual Left-Turn Centerline
RM = Raised Median
UD = Undivided Lane

PARKING:
PA = Parking Allowed
NSAT = No Stopping Anytime
NPAT = No Parking Anytime
GZ = Green zone - Passenger loading and unloading
RZ = Red zone - No parking allowed
LANES: # = Number of lanes

Fletcher Drive - Fletcher Drive is a major north-south arterial. It provides two lanes in the northbound direction and two lanes in the southbound direction. It provides local access and regional access through connections to SR 2. Parking is not allowed on either side of the street within the study area, and the posted speed limit is 35 mph.

West Silver Lake Drive - West Silver Lake Drive is a north-south roadway. It provides two travel lanes (one lane in each direction) and local access to the surrounding residential neighborhood. Parking is allowed on the western portion of the roadway; however, parking is prohibited on the eastern portion along the reservoirs.

Silver Lake Boulevard - Silver Lake Boulevard is a major north-south arterial. It provides one travel lane in each direction. Silver Lake bends and travels in an east-west direction while connecting to Glendale Boulevard. Silver Lake Boulevard provides direct access to the project site. Parking is limited on to the east side of the street within the study area, and the posted speed limit is 35 mph.

Riverside Drive - Riverside Drive is a major north-south arterial. It provides two travel lanes in the northbound direction and two lanes in the southbound direction. Riverside Drive provides local access and regional access through connections to I-5 and SR 2. Parking is limited on both sides of the street within the study area, and the posted speed limit is 35 mph.

Van Pelt Place - Van Pelt Place is an east-west roadway. It minimally provides one travel lane in each direction. Van Pelt Place provides direct access to the SLRC site. Parking is allowed on both sides of the street within the study area, and the posted speed limit is 25 miles per hour.

Rowena Avenue - Rowena Avenue is a secondary east-west arterial. It provides two travel lanes in the eastbound direction and two lanes in the westbound direction. Rowena Avenue provides local access to the SLRC site. Parking is allowed on both sides of the street within the study area, and the posted speed limit is 35 mph.

Hyperion Avenue - Hyperion Avenue is a secondary north-south arterial. It provides two travel lanes in the northbound direction and two lanes in the southbound direction. Hyperion Avenue provides local access to the SLRC site. Parking is allowed on both sides of the street within the study area, and the posted speed limit is 35 mph. Table 9-2 provides a description of these facilities, summarizing the physical characteristics of all key streets serving the SLRC. Diagrams of the existing lane configurations at the five study intersections in the SLRC study area are illustrated in Appendix F-1.

9.1.2 Existing Traffic Volumes and Levels of Service

This section presents the existing peak-hour turning movement traffic volumes for the intersections analyzed in the study, describes the methodology used to assess the traffic conditions at each intersection, and analyzes the resulting operating conditions at each in terms of volume to capacity (V/C) ratios and average control delay in seconds and the corresponding levels of service (LOS).

TABLE 9-2
Existing Surface Street Characteristics – SLRC Site

Segment	From	To	Lane		Median Type	Parking Restrictions		Speed Limit
			NB/EB	SB/WB		NB/EB	SB/WB	
SLRC Site								
Glendale Blvd.	Alvarado Blvd.	Berkeley Ave.	3	3	RM	NS 3-7P	NSAT	35
	Berkeley Ave.	Effie St.	3	3	RM	NS 3-7P	PA	35
	Effie St.	Clifford St.	3	3	2LT	NS 3-7P, 1hr 8A-3P	NSAT	35
	Clifford St.	Allesandro St.	3	3	DY	NS 3-7P, 1hr 8A-3P	NSAT	35
	Allesandro St.	Glendale Fwy.	3	2	2LT	NSAT	NSAT	35
	Glendale Fwy.	Waterloo / Fargo	2	2	RM	NSAT	NSAT	35
	Waterloo / Fargo	Baxter St.	2	2	2LT	NSAT	PA	35
	Baxter St.	Brier Ave.	2	2	DY	PA	PA	35
	Brier Ave.	Silver Lake Blvd.	2	2	DY	PA	RZ	35
	Silver Lake Blvd.	Fletcher Dr.	2	2	2LT	NS 4-6P	NS 7-9A	35
Rowena Ave.	Fletcher Dr.	Glendale Blvd.	2	2	DY	PA	PA	35
	Glendale Blvd.	Auburn St.	2	2	DY	PA	PA	35
	Auburn St.	W. Silver Lake Dr.	2	2	DY	RZ	PA	35
	W. Silver Lake Dr.	Herkimer St.	2	2	DY	PA	2hr 8A-6P	35
	Herkimer St.	Avenel St.	2	2	DY	2hr 8A-6P	2hr 8A-6P	35
	Avenel St.	Hyperion Ave.	2	2	DY	PA	2hr 8A-6P	35
	Hyperion Ave.	St George St.	1	1	DY	PA	PA	25
Allesandro St.	Glendale Blvd.	Ewing St.	1	1	DY	NSAT	NSAT	35
	Ewing St.	Baxter St.	1	1	DY	PA	NSAT	35
	Baxter St.	Riverside Dr.	1	1	2LT	PA	PA	35
Silver Lake Blvd.	Glendale Blvd.	Armstrong Ave.	1	1	DY	PA	PA	35
	Armstrong Ave.	Duane St.	1	1	DY	PA	NSAT	35
	Duane St.	Van Pelt Pl.	1	1	2LT	PA	NSAT	35
	Van Pelt Pl.	Swan Pl.	1	1	DY	PA	NP 11P-6A ex by permit	35
	Swan Pl.	Effie St.	1	1	DY	PA	PA	35
	Effie St.	Berkeley Ave.	1	1	DY	2hr 8A-6P	PA	35
	Berkeley Ave.	Reservoir St.	1	1	2LT	PA	PA	35
	Reservoir St.	Parkman Ave.	1	1	DY	PA	PA	35
	Parkman Ave.	Bellevue Ave.	2	2	DY	PA	PA	35
	Bellevue Ave.	London St.	2	2	DY	PA	NSAT	35
	London St.	Smilax St.	2	2	RM	NSAT	NSAT	35
	Smilax St.	Virgil Ave.	2	2	DY	NSAT	NSAT	35
Fletcher Dr.	Glendale Blvd.	Silver Lake Blvd.	2	2	DY	NSAT	NSAT	35
	Silver Lake Blvd.	Riverside Dr.	2	2	2LT	NSAT	NSAT	35
	Riverside Dr.	I-5 NB On-ramp	2	2	DY	1hr 8A-6P	NSAT	35
	I-5 NB On-ramp	Ripple St.	2	2	DY	PA	PA	35

TABLE 9-2
Existing Surface Street Characteristics – SLRC Site

Segment	From	To	Lane		Median Type	Parking Restrictions		Speed Limit
			NB/EB	SB/WB		NB/EB	SB/WB	
	Ripple St.	Larga Ave.	2	2	RM	NSAT	NSAT	35
	Larga Ave.	Atwater Ave.	2	2	DY	2hr 8A-6P	2hr 8A-6P	35
	Atwater Ave.	La Clede Ave.	2	2	DY	PA	PA	35
	La Clede Ave.	San Fernando	2	2	DY	NSAT	NSAT	35
Hyperion Ave.	Scotland St.	Tracy St.	2	2	DY	4hr 8A-6P	PA	35
	Tracy St.	Evans St.	2	2	DY	2hr 8A-6P	PA	35
	Evans St.	Griffith Park Blvd.	2	2	DY	2hr 8A-6P	2hr 8A-6P	35
	Griffith Park Blvd.	Rowena Ave.	2	2	2LT	2hr 8A-6P	NSAT	35
	Rowena Ave.	La Paz Dr.	2	2	DY	RZ	PA	35
	La Paz Dr.	Ettrick St.	2	2	2LT	PA	PA	35
	Ettrick St.	Glendale Blvd.	2	2	2LT / RM	NSAT	NSAT	35
Riverside Dr.	Glendale Blvd.	Fletcher Dr.	2	2	2LT	NSAT	PA	35
	Fletcher Dr.	Fruitdale St.	2	2	2LT	1hr 8A-4P, NS 4-6P	PA	35
	Fruitdale St.	Gleneden St.	2	2	2LT	PA	PA	35
	Gleneden St.	Riverside Terr.	2	2	2LT	PA	15 min 7A-5P	35
	Riverside Terr.	Newell St.	2	2	2LT	PA	PA	35
	Newell St.	Stadium Way	2	2	2LT	NSAT / PA	PA	35
	Stadium Way	Gail St.	2	2	RM	NSAT	NSAT	35
	Gail St.	Dorris Pl.	2	2	2LT	PA	NSAT	35
Stadium Way	Riverside Dr.	Landa St.	2	2	DY	NSAT	NSAT	35
	Landa St.	Elysian Park Dr.	3	3	DY	NSAT	NSAT	35

Notes:
MEDIAN TYPE:
DY = Double Yellow Centerline
SDY = Single Dashed Yellow Centerline
2LT = Dual Left-Turn Centerline
RM = Raised Median
UD = Undivided Lane

PARKING:
PA = Parking Allowed
NS = No Stopping
NSAT = No Stopping Anytime
GZ = Green zone - Passenger loading and unloading
RZ = Red zone - No parking allowed
LANES: # = Number of lanes

9.1.2.1 Existing Traffic Volumes

HWSG Site

Weekday morning and afternoon peak-hour traffic counts were conducted at the five study intersections for the HWSG site in May 2004. These weekday traffic volumes, which are illustrated in Figure 9-2, represent existing 2004 conditions for the purposes of this analysis. Appendix F-3 contains the detailed traffic count data.

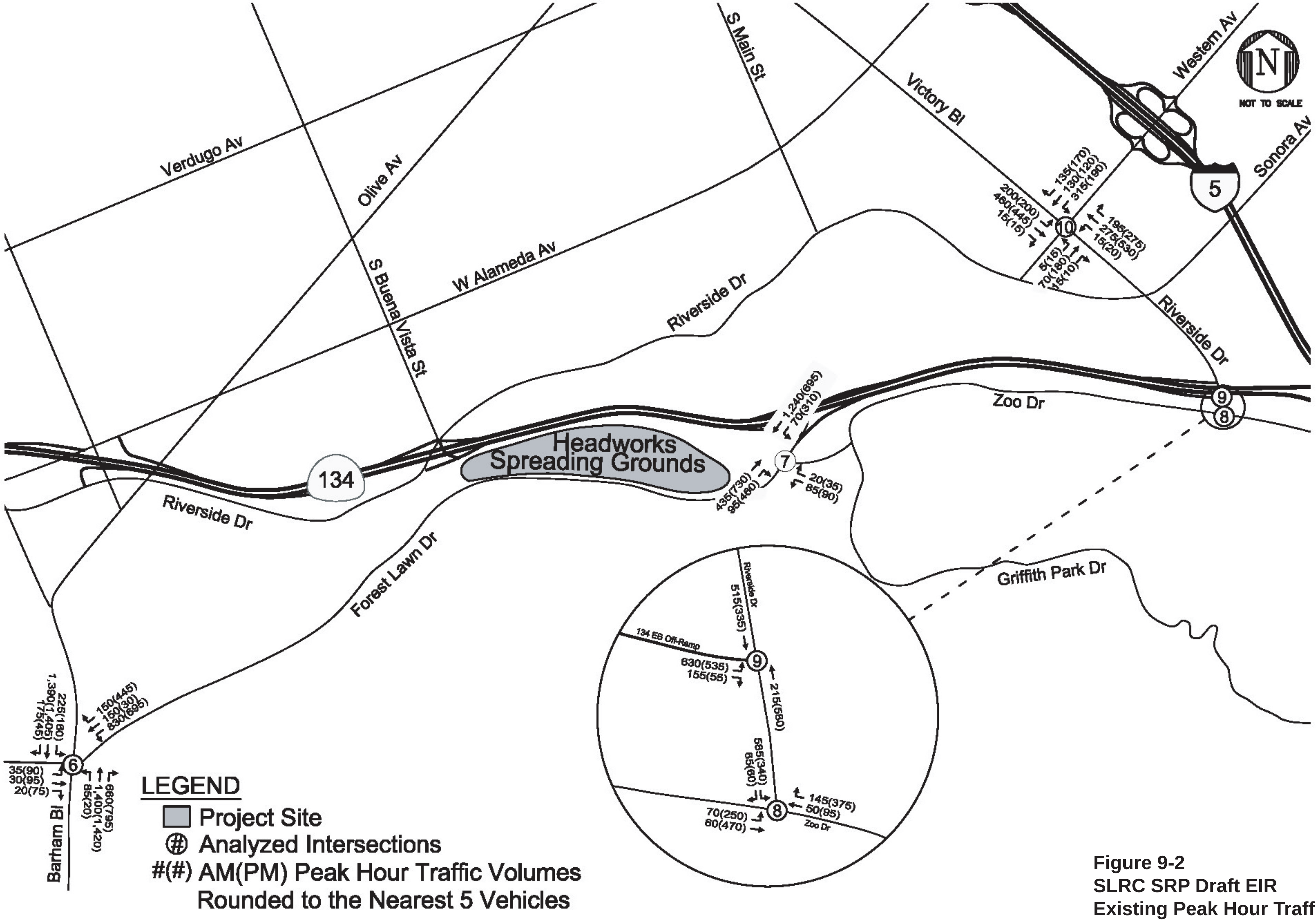

Figure 9-2
SLRC SRP Draft EIR
Existing Peak Hour Traffic
Volumes (HWSG Site)

Source: Kaku Associates (2004)

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SLRC

Weekday morning and afternoon peak-hour traffic counts were conducted at the five study intersections for the SLRC in May 2004. These weekday traffic volumes, which are illustrated in Figure 9-3, represent existing 2004 conditions for the purposes of this analysis. Appendix F-3 contains the detailed traffic count data.

9.1.2.2 Existing Level of Service

LOS is a qualitative measure used to describe the condition of traffic flow on the street system, ranging from excellent conditions at LOS A to overloaded conditions at LOS F. LOS D is typically recognized as the minimum acceptable level of service in urban areas. Level of service definitions are provided in Table 9-3 (for signalized intersections) and Table 9-4 (for stop-controlled intersections). Of the 10 analyzed intersections, 7 intersections are currently controlled by traffic signals. In the vicinity of the SLRC site, the intersection of Silver Lake Boulevard and Van Pelt Place is stop-controlled on the eastbound approach. The remaining stop-controlled intersections are located within the HWSG site and are the intersections of Riverside Drive and Zoo Drive and Riverside Drive and the State Highway 134 eastbound off-ramp.

The "Critical Movement Analysis-Planning" method of intersection capacity analysis was used to determine the intersection V/C ratio and corresponding LOS for the turning movements and intersection characteristics at the seven signalized study intersections (Transportation Research Board, 1980). The CALCADB software package developed by LADOT was used to implement the critical movement analysis (CMA) methodology. Table 9-3 defines the ranges of V/C ratios and corresponding levels of service for signalized intersections.

In addition, the “Two-Way Stop Controlled” methodology and the “All-Way Stop Controlled” methodology from the *2000 Highway Capacity Manual* was used to determine the average vehicle delay (in seconds) and the corresponding LOS for the three stop-controlled study intersections. The LOS definitions for the stop-controlled intersections are summarized in Table 9-4.

Four intersections within the two study areas are currently controlled by the City of Los Angeles’ Automated Traffic Surveillance and Control (ATSAC) system. These are:

- Glendale Boulevard and Silver Lake Boulevard
- Glendale Boulevard and Fletcher Drive/Silver Ridge Avenue
- Fletcher Drive and Riverside Drive
- Barham Boulevard and Forest Lawn Drive/Lakeside Plaza Drive

In accordance with LADOT procedures, a capacity increase of 7 percent (0.07 V/C adjustment) was applied to reflect the benefits of the ATSAC system at this intersection.

TABLE 9-3
Level of Service Definitions for Signalized Intersections

Level of Service	Volume/ Capacity Ratio (V/C)	Definition
A	< 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	> 0.600 < 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	> 0.700 < 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	> 0.800 < 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	> 0.900 < 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	Tremendous delays with continuously increasing queue lengths. FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches.

SOURCE: Transportation Research Board, *Transportation Research Circular No. 212, Interim Materials on Highway Capacity*, 1980.

TABLE 9-4
Level of Service Definitions for Stop-Controlled Intersections

Level of Service	Average Vehicle Delay (seconds)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	≤ 50.0

SOURCE: Transportation Research Board, *Highway Capacity Manual, 2000*.

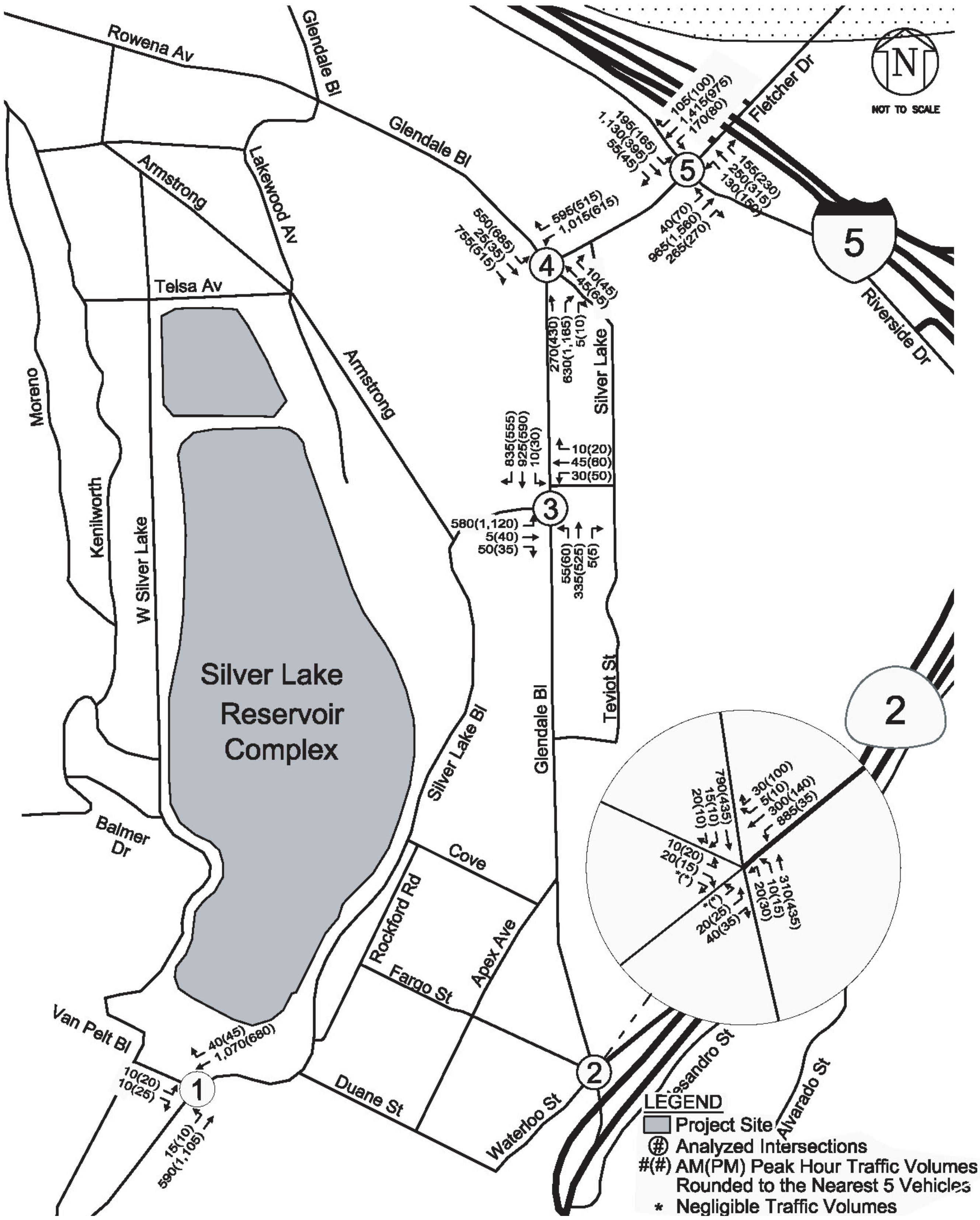

Figure 9-3
SLRC SRP Draft EIR
Existing Peak Traffic Volumes at SLRC

Source: Kaku Associates (2004)

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9.1.2.2.1 HWSG Site

The traffic volumes presented in Figure 9-2 were analyzed using the intersection capacity analysis methodology described above to determine the current operating conditions at the 10 intersections. Table 9-5 summarizes the results of this analysis indicating the existing morning and afternoon peak-hour V/C ratio and corresponding LOS at the analyzed intersections. As indicated in Table 9-5, two of the five study intersections are currently operating at an acceptable LOS during both the morning and afternoon peak hour. The remaining intersections of Barham Boulevard and Forrest Lawn Drive/Lakeside Plaza Drive, Riverside Drive/Zoo Drive, and Riverside Drive/State Highway 134 eastbound off-ramp are currently operating LOS E or worse during the morning and/or afternoon peak hours.

9.1.2.2.2 SLRC

The traffic volumes presented in Figure 9-3 were analyzed using the intersection capacity analysis methodology described above to determine the current operating conditions at the 10 intersections. Table 9-6 summarizes the results of this analysis indicating the existing morning and afternoon peak hour V/C ratio and corresponding LOS at the analyzed intersections. As indicated in the table, three out of five intersections in the vicinity of the SLRC are currently operating at an acceptable LOS, (i.e., LOS D or better) during both the morning and afternoon peak hours. The intersections of Silver Lake Boulevard/Van Pelt Place and Fletcher Drive/Riverside Drive are currently operating at an unacceptable LOS during the morning and/or afternoon peak hours.

9.1.3 Existing Transit Service

Five bus lines operated by the Los Angeles County Metropolitan Transportation Authority (LACMTA) currently serve the two project sites. These transit lines are described below.

LACMTA 92 - Line 92 is a regional northwest/southeast line that travels from Metrolink Sylmar/San Fernando Station to downtown Los Angeles. This line provides service to Sylmar, Pacoima, Sun Valley, Burbank Regional Transportation Center, Glendale, and Civic Center in downtown Los Angeles. This line mainly travels along Glenoaks Boulevard and Glendale Boulevard.

LACMTA 96 - Line 96 is a regional northwest/southeast line that travels from Sherman Oaks to downtown Los Angeles. This line provides service to Valley Village, Studio City, North Hollywood, Universal City, Toluca Lake, Burbank, Griffith Park, Silver Lake, Glassell Park, Cypress Park, the Burbank Regional Transportation Center, the Los Angeles Zoo, and Universal Studios. This line mainly travels along Riverside Drive, Olive Avenue, Victory Boulevard, Griffith Park Drive, and Stadium Way.

LACMTA 163 - Line 163 is a regional line that travels from West Hills to Hollywood. This live provides service to Canoga Park, Reseda, Valley Glen, North Hollywood, Metrolink Burbank Airport station, Toluca Lake, Universal City, and the Hollywood/Vine Station of the Metro Red Line. It mainly runs on Sherman Way on the east-west direction between West Hills and North Hollywood, and becomes north-south direction on Hollywood Way and Barham Boulevard.

TABLE 9-5
Year 2004 Existing Conditions Intersection Levels of Service (HWSG Site)

	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
Intersection	V/C or Delay	LOS	V/C or Delay	LOS
HWSG Site:				
1. Barham Blvd. and Forest Lawn Dr./Lakeside Plaza Drive	0.963	E	0.905	E
2. Forest Lawn Dr. and Zoo Dr.	0.885	D	0.754	C
3. Riverside Dr. and Zoo Dr. [1]	39	E	25	D
4. Riverside Dr. and State Highway 134 EB off-ramp [1]	37	E	49	F
5. Victory Blvd. and Western Ave.	0.553	A	0.656	B

Notes:

[1] Intersection is controlled by stop signs on the minor approaches. Average vehicle delay in seconds is reported rather than V/C ratio.

TABLE 9-6
Year 2004 Existing Conditions Intersection Levels of Service (SLRC Site)

	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
Intersection	V/C or Delay	LOS	V/C or Delay	LOS
SLRC Site:				
1. Silver Lake Blvd. and Van Pelt Pl. [1]	38	E	45	E
2. Glendale Blvd. and SR 2 SB-off ramp/Waterloo St./ Fargo St.	0.830	D	0.441	A
3. Glendale Blvd. and Sliver Lake Blvd.	0.615	B	0.679	B
4. Fletcher Dr./Glendale Blvd. and Silver Ridge Ave./ Rowena Ave. (Glendale Blvd.)	0.738	C	0.796	C
5. Fletcher Dr. and Riverside Dr.	0.945	E	0.884	D

Notes:

[1] Intersection is controlled by stop signs on the minor approaches. Average vehicle delay in seconds is reported rather than V/C ratio.

LACMTA 603 - Line 603 is a local north/south line that travels from Glendale to downtown Los Angeles. This line provides service to the Glendale Galleria, the Grand Station of the Metro Blue Line, and the Westlake Station of the Metro Red Line. It travels mainly on San Fernando Road, Fletcher Drive, and Glendale Boulevard. It has stops on Riverside Drive and Glendale Boulevard to connect to the SLRC site.

LACMTA 201 - Line 201 is a local northeast-southwest line that travels from Glendale to Koreatown. It provides service to Glendale Galleria, Atwater Village, Silver Lake, and the Wilshire/Vermont Station of the Metro Red Line. It travels mainly on Glenoaks Boulevard, Atwater Avenue, Fletcher Drive, West Silver Lake Drive, and Silver Lake Boulevard. It has stops on West Silver Lake Drive adjacent to the SLRC site.

9.2 Impacts

9.2.1 Future (Year 2013) Traffic Projections

Estimates of future traffic conditions both with and without the Proposed Project were developed to evaluate the potential impacts of the Proposed Project on the local street system. Future traffic volumes without the Proposed Project were first estimated, representing the cumulative base conditions. The traffic generated by the Proposed Project was then estimated and separately assigned to the surrounding street system. The sum of the cumulative base and Proposed Project-generated traffic represents the cumulative plus Proposed Project conditions.

9.2.1.1 Cumulative Base Traffic Projections

The cumulative base traffic projections reflect growth in traffic from two primary sources. The first source is background or ambient growth in the existing traffic volumes, which reflects the effects of overall regional growth both in and outside the study area. The second source is traffic generated by specific projects located within, or in the vicinity of, the study area. These factors are described below.

9.2.1.1.1 Areawide Traffic Growth

The traffic in the vicinity of the study area has been estimated to increase historically at a rate of about 1 percent per year. Future increases in the background traffic volumes due to regional growth and development are expected to continue at this rate. With the assumed completion date of 2013, the existing 2004 traffic volumes were adjusted upward by a factor of 9 percent to reflect this areawide regional growth. The resulting existing plus ambient growth traffic volumes are illustrated in Figure 9-4 for the HWSG site and Figure 9-5 for the SLRC.

9.2.1.1.2 Cumulative Project Traffic Generation and Assignment

As indicated, the second major source of traffic growth in the study area is expected from other future development projects in the area. These related projects or "cumulative projects" are those planned developments expected to be completed within the same timeframe as the Proposed Project construction plan. Data describing cumulative projects in the area were obtained from LADOT. In addition, cumulative projects within the City of Glendale and Burbank were obtained from recent traffic studies completed within the HWSG study area. Seventeen cumulative projects were identified within the study areas, and their locations are shown in Figure 9-6.

Trip Generation

Trip generation estimates for each of the cumulative projects were obtained from the LADOT in May 2004. These estimates were developed using trip-generation rates contained in *Trip Generation, 6th Edition* (Institute of Transportation Engineers, 1997). As summarized in Table 9-7, the 17 cumulative projects are expected to generate a total of 164,482 daily trips, of which 13,403 vehicles per hour (vph) would occur during the morning peak hour, and 14,765 vph would occur during the afternoon peak hour.

Trip Distribution

The geographic distribution of the traffic generated by the cumulative projects depends on several factors. These factors include the type and density of the proposed land uses, the geographic distribution of population from which the employees and potential patrons of the proposed developments are drawn, and the location of the projects in relation to the surrounding street system. Using the factors mentioned, the distribution patterns were developed and used for the cumulative projects.

Traffic Assignment

Using the trip generation estimates and trip distribution patterns described above, traffic generated by the cumulative projects was assigned to the street network. The resulting related Proposed Project-only traffic volumes are illustrated in Figures 9-7 and 9-8 for the two project sites. These volumes were then added to the existing traffic volumes after the adjustment for areawide growth shown in Figures 9-4 and 9-5 to represent cumulative base conditions (i.e., future conditions without the Proposed Project), which are illustrated in Figures 9-9 and 9-10.

9.2.1.2 Project Traffic Volumes

The development of traffic-generation estimates for the Proposed Project involves the use of a three-step process similar to that discussed above for the cumulative projects, including traffic generation, trip distribution, and traffic assignment.

9.2.1.2.1 Project Traffic Generation

The Proposed Project would involve short-term construction activities at both the HWSG site and the SLRC. Proposed Project construction would occur in several phases where the number of trips to be generated depends on the number of construction workers and trucks needed at each phase. Thus, the Proposed Project trips were estimated using the maximum number of workers and trucks expected to be present at any stage of the construction. LADWP developed and provided the truck and employee information for both sites for each phase of the Proposed Project.

HWSG Site

Five major construction activities are scheduled at the HWSG site between January 2007 and April 2013, which include the following:

- Reservoir grading and site preparation (January 2007 to August 2008)
- Inlet/outlet vault construction (January to August 2007)
- Reservoir storage structure construction (September 2008 to August 2011)
- Burying the reservoir storage structure (September 2011 to April 2013)
- Hydroelectric power generating facility construction (January 2010 to June 2011)

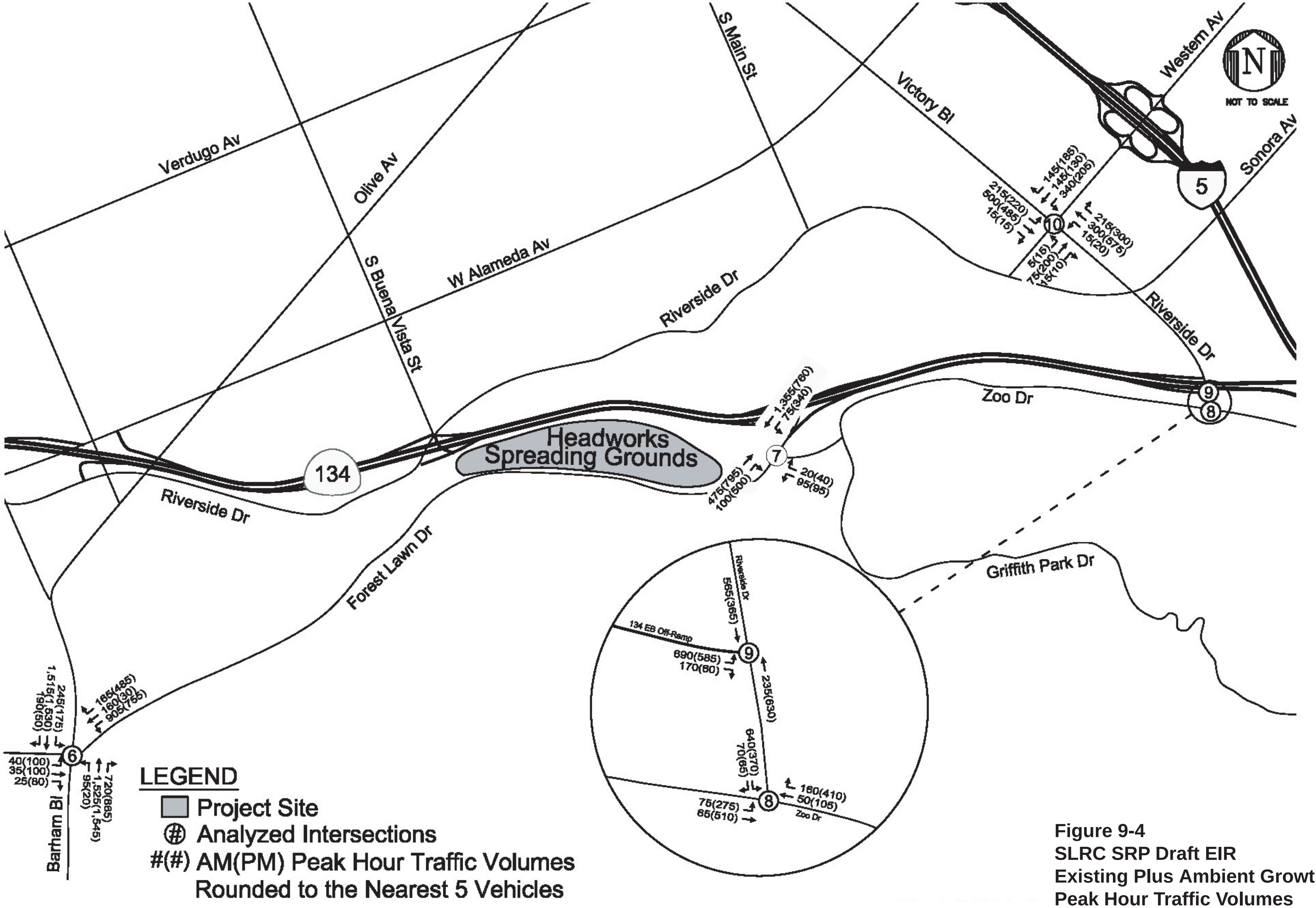

Figure 9-4
SLRC SRP Draft EIR
Existing Plus Ambient Growth
Peak Hour Traffic Volumes
(HWSG Site)

Source: Kaku Associates (2004)

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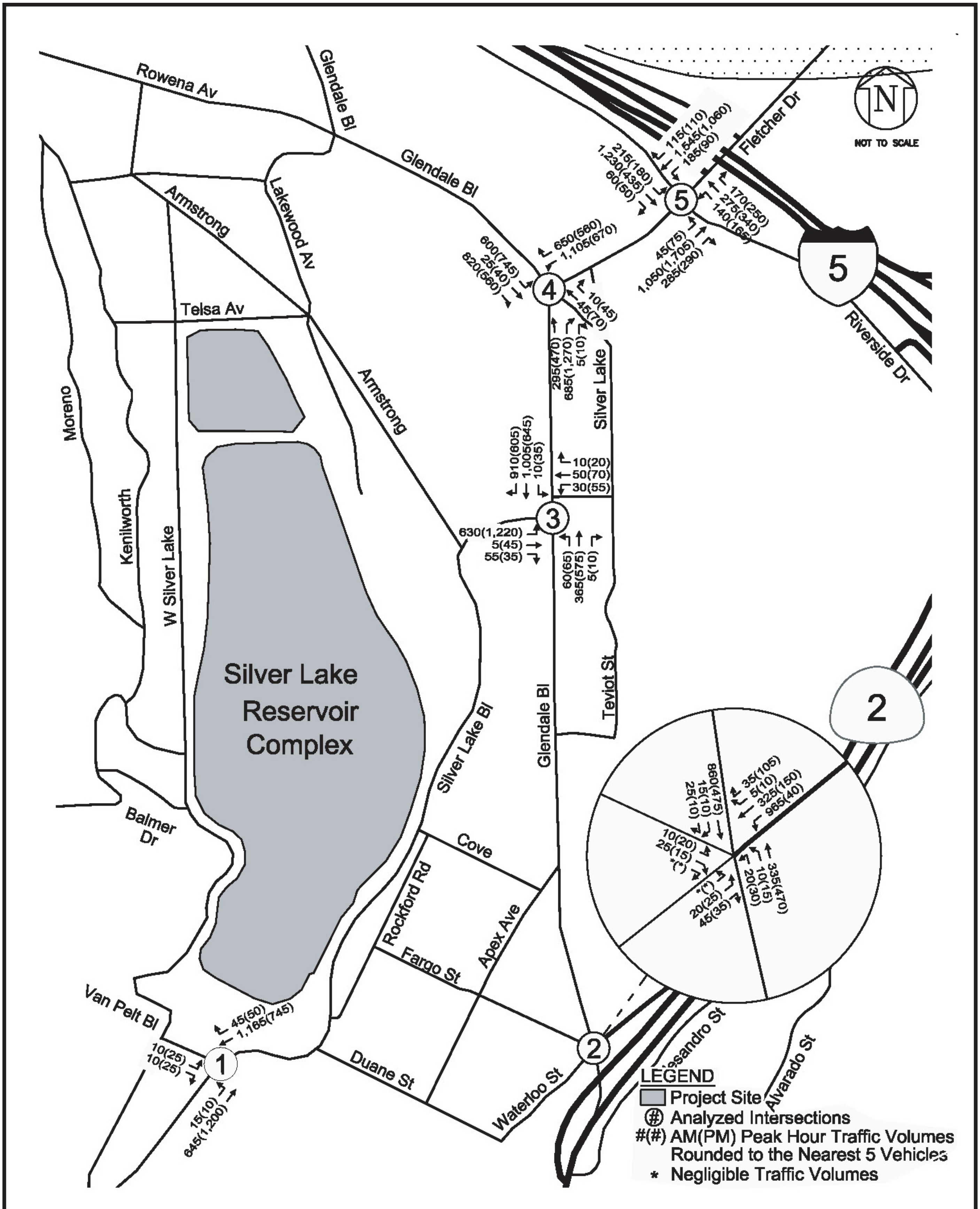

Figure 9-5
SLRC SRP Draft EIR
Existing Plus Ambient Growth Peak Hour Traffic Volumes (SLRC Site)

Source: Kaku Associates (2004)

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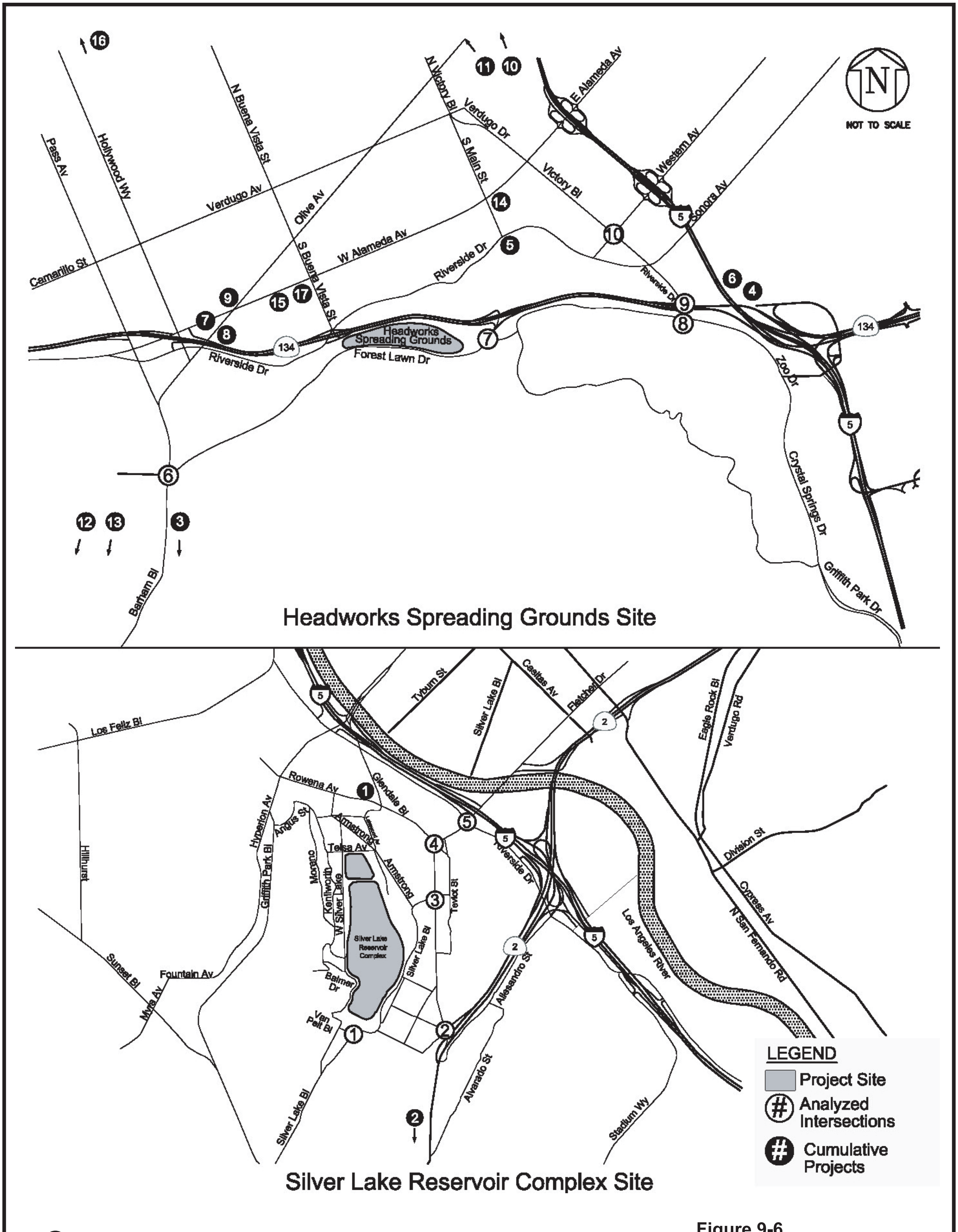

● = Refers to projects described in Table 9-7

Figure 9-6
SLRC SRP Draft EIR
Related Projects Location

Source: Kaku Associates (2004)

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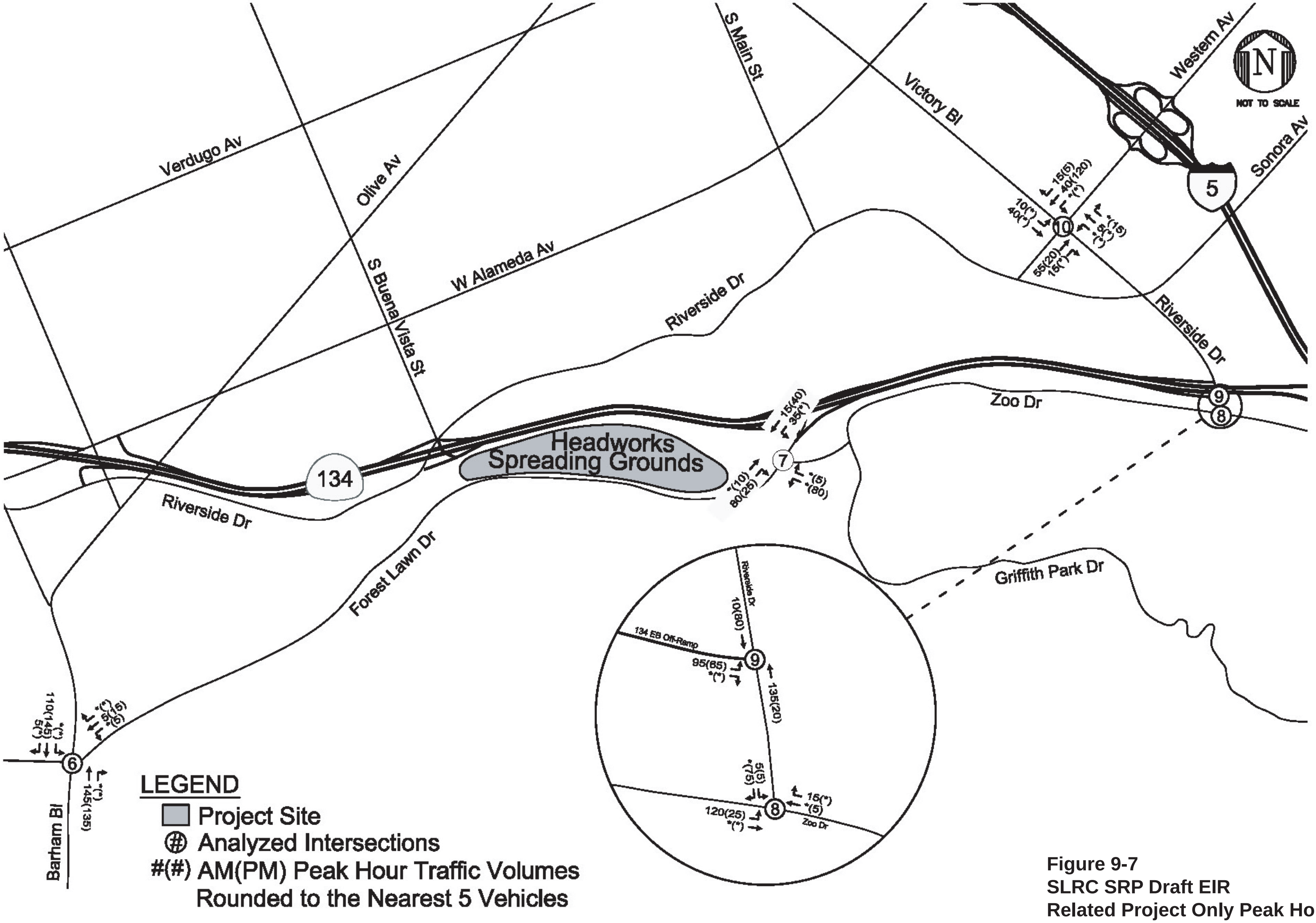

Figure 9-7
SLRC SRP Draft EIR
Related Project Only Peak Hour Traffic Volumes (HWSG Site)

Source: Kaku Associates (2004)

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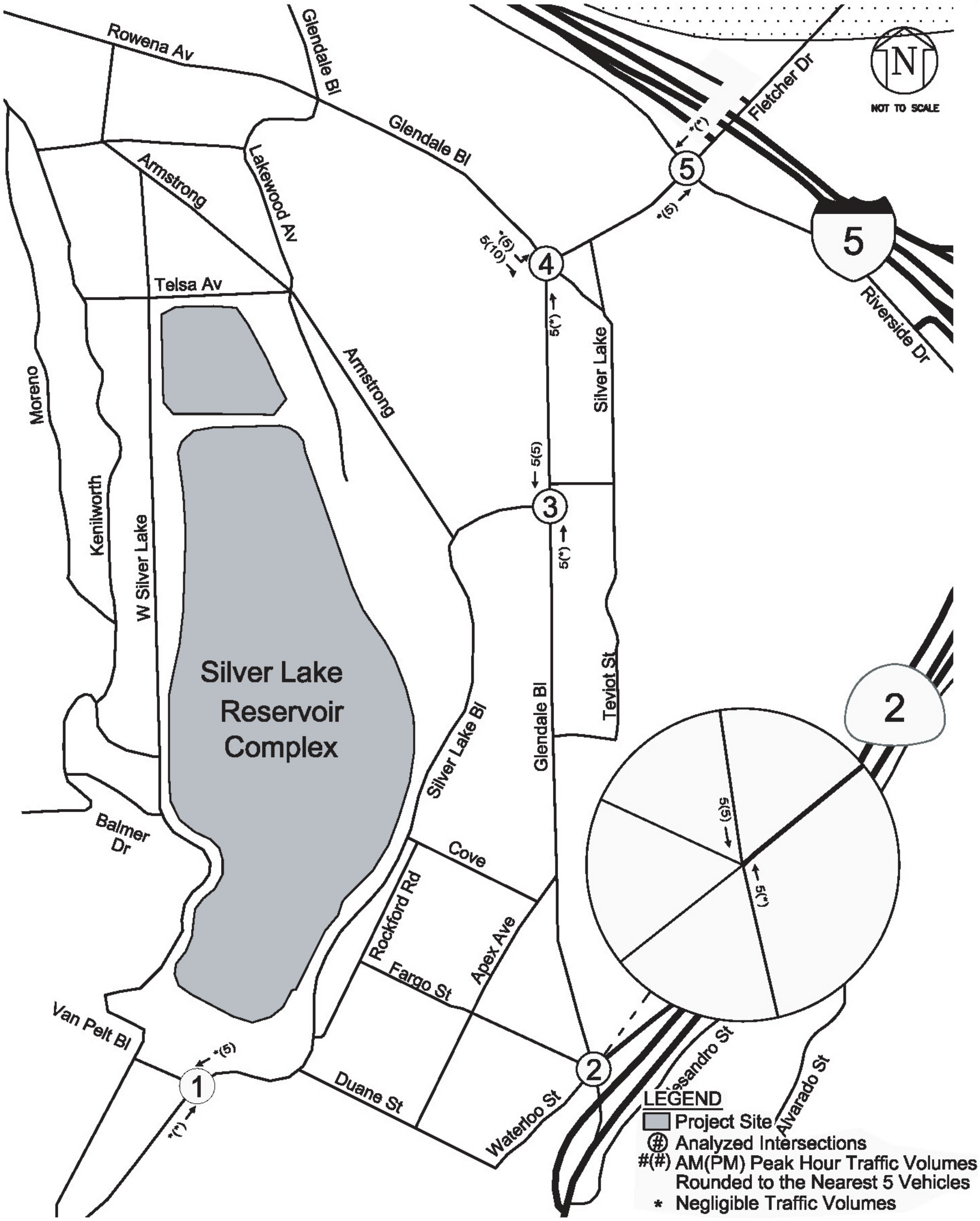

Figure 9-8
SLRC SRP Draft EIR
Related Projects Only Peak Hour Traffic Volumes (SLRC Site)

Source: Kaku Associates (2004)

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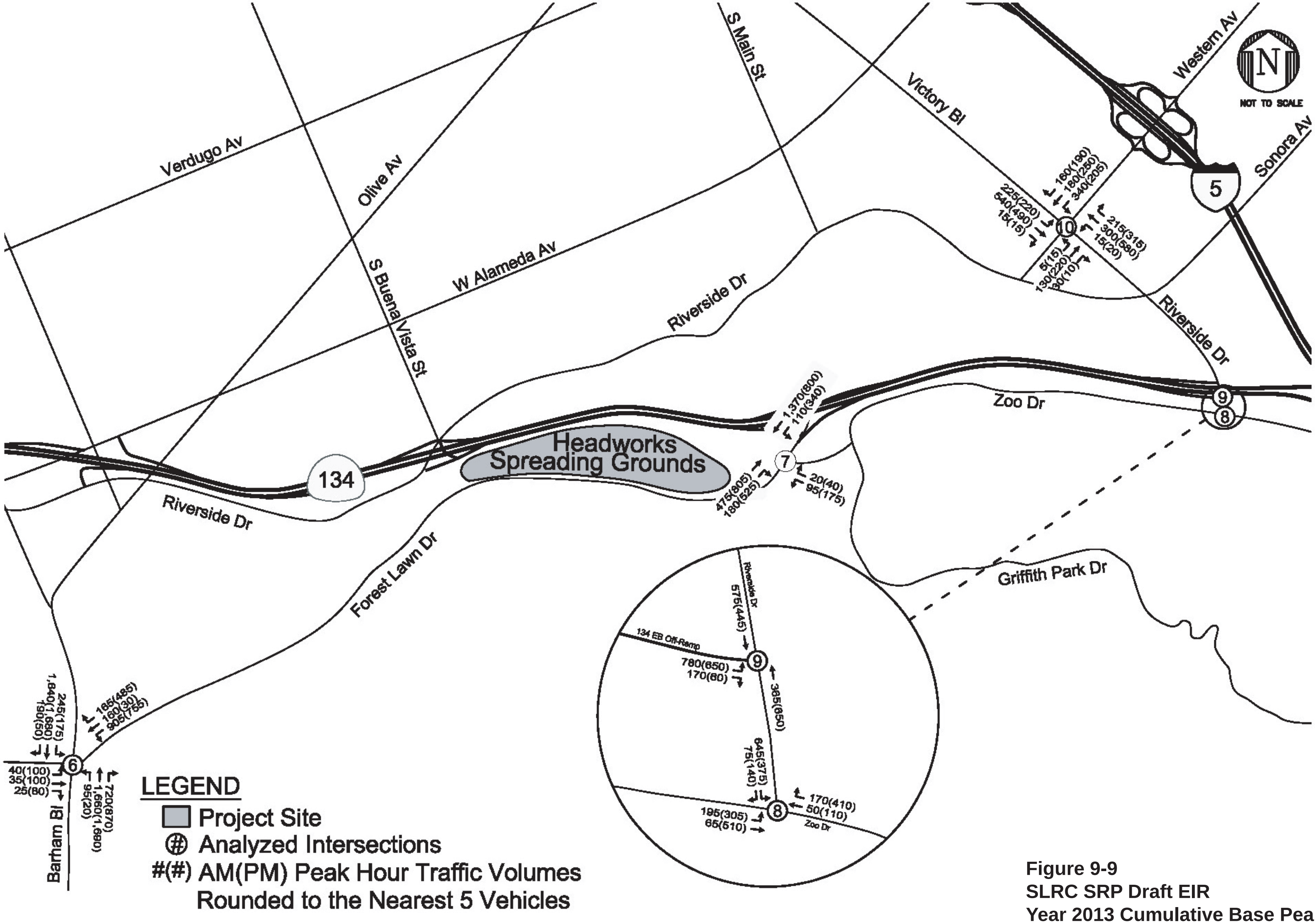

Figure 9-9
SLRC SRP Draft EIR
Year 2013 Cumulative Base Peak Hour Traffic Volumes (HWSG Site)

Source: Kaku Associates (2004)

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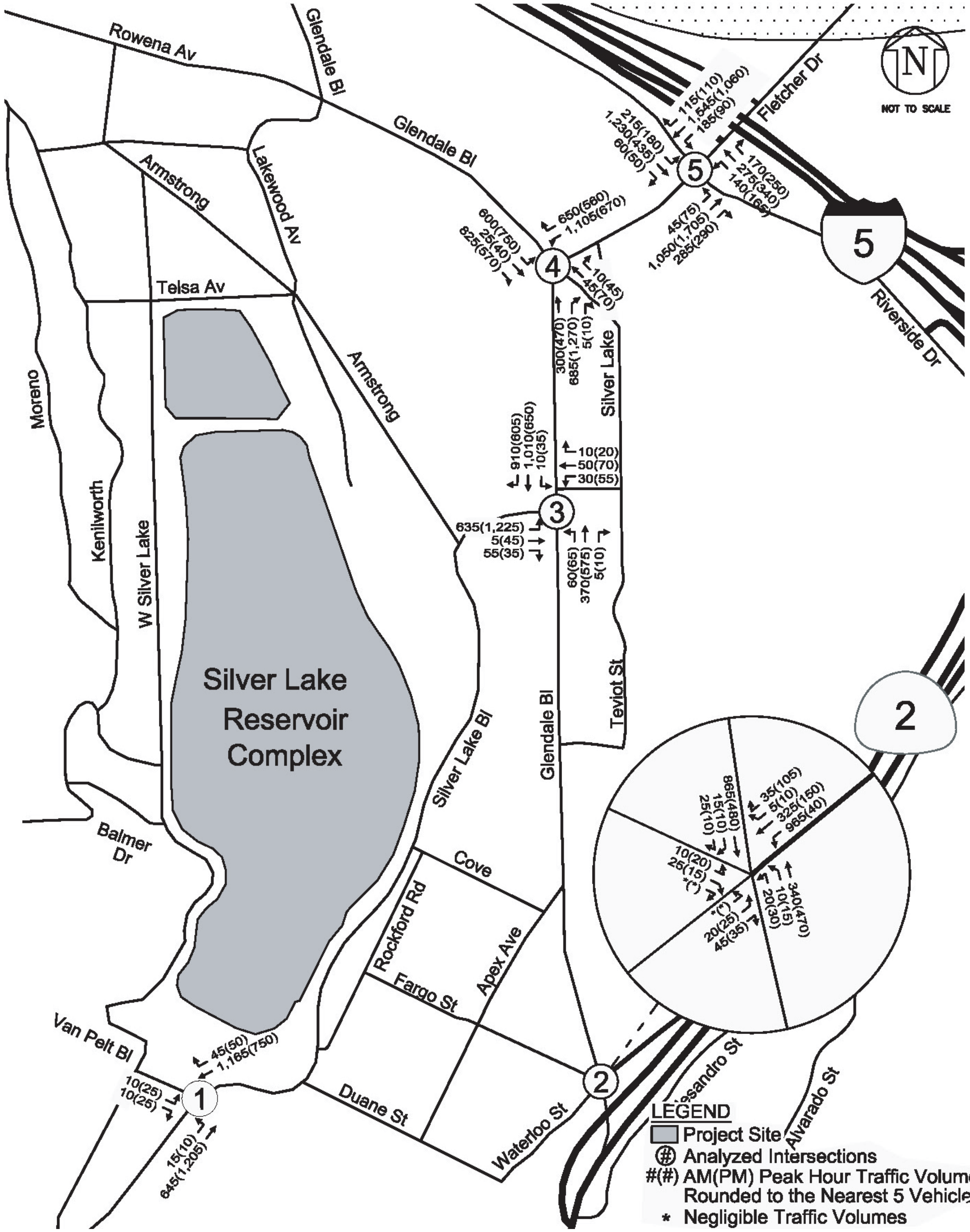

Figure 9-10
SLRC SRP Draft EIR
Year 2013 Cumulative Base Peak Hour Traffic Volumes (SLRC Site)

Source: Kaku Associates (2004)

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TABLE 9-7
Related Projects Trip-Generation Estimates

No.	Project	Project Description	City	Location	Size	Trip-Generation Estimates		
						Net Daily	**Net AM Peak Hour**	**Net PM Peak Hour**
1	Restaurant and Bar [a]	Restaurant & bar w/ live entertainment	Los Angeles	Rowena Ave. and Rokeby St.	5.055 KSF	455	4	38
2	Belmont New Primary Center No. 12 [a]	New Primary school to accommodate max. daily enrollment of 380 students w/36 parking spaces	Los Angeles	Lake St and Beverly Blvd.	380 students	340	70	0
3	Self Storage/ Warehouse/ General Office/ Tenant Office [a]	Self-storage General Office Bldg. Tenant Office	Los Angeles	Cahuenga Blvd. and Universal Center Dr.	110.146.KSF 36.649 KSF 16.385 KSF	679	74	84
4	Grand Central Creative Campus (GC3) [b]	Disney campus	Glendale	San Fernando Rd/Western Ave./Flower St.	3,565,022 GSF	27,800	3,111	1,540
5	LA Equestrian Center [c]	Alternative 3	Glendale	Riverside Dr. and Main St.	n/a	5,076	564	1,128
6	Dreamworks (office) [c]	Office, Phase II	Glendale	San Fernando Rd./Flower St.	136 KSF	1,681	238	232
7	Burbank Media Center [d]	Scenario 1 (General Office) Building/Health Club/Retail/ Restaurant)	Burbank	Lima St. and Olive Ave.	Scenario 1	5,880	622	649
8	Bob Hope Office/ Live Theater [e]	Office/Theatre	Burbank	SEC Olive and Lima	n/a	1,755	157	194
9	Pinnacle Project Phase 1 [e] Pinnacle Project Phase 2 [e]	Phase I, 85% complete Phase II	Burbank	Olive and Alameda	385 KSF 200 KSF Subtotal	581 2,260 **2,841**	82 324 **406**	77 303 **380**
10	Family Housing [e]	Multifamily Housing	Burbank	Southside of Olive Ave. at 3rd St.	140 DU	970	73	94
11	Empire Center [e]	Mixed-used Office/Retail	Burbank	n/a	300 KSF	53,452	3,308	5,009
12	Warner Brothers Main Campus [e]	Main Campus	Burbank	4000 Warner Blvd.	520.885 KSF	6,678	553	497
13	Warner Brothers Ranch [e]	Ranch	Burbank	4000 Warner Blvd.	287,738 KSF	3,505	320	283
14	Disney Studios [e]	Disney Studios	Burbank	500 S. Buena Vista Street	291.396 KSF	2,441	285	184

TABLE 9-7
Related Projects Trip-Generation Estimates

						Trip-Generation Estimates		
No.	Project	Project Description	City	Location	Size	Net Daily	Net AM Peak Hour	Net PM Peak Hour
15	NBC [e]	NBC	Burbank	3000 W. Alameda Ave.	479.280 KSF	5,137	562	504
16	Burbank Airport [e]	n/a	Burbank	2627 Hollywood Way	6 MAP	34,992	2,329	2854
17	Saint Joseph Medical Center [e]	Medical Office Building	Burbank	Buena Vista and Alameda Ave.	299 KSF	10,800	727	1,095
					Total	**164,482**	**13,403**	**14,765**

Notes:

[a] Trip Generation Estimates were provided by LADOT staff (including daily trips and total peak-hour trips).

[b] Source of Trip Generation Estimates: Kaku Associates, June 2000 Transportation/Circulation and Parking Technical Report for the Grand Central Creative Campus (GC3).

[c] Source of Trip Generation Estimates: Crain & Associates, March 2003 Home Depot Traffic Study.

[d] Source of Trip Generation Estimates: Kaku Associates, February 2004 Traffic Impact Study for the Burbank Media Center Platt Project.

[e] Source of Trip Generation Estimates: Crain & Associates, March 2003 Home Depot Traffic Study & City of Burbank Planning Department.

KSF = 1,000 square feet

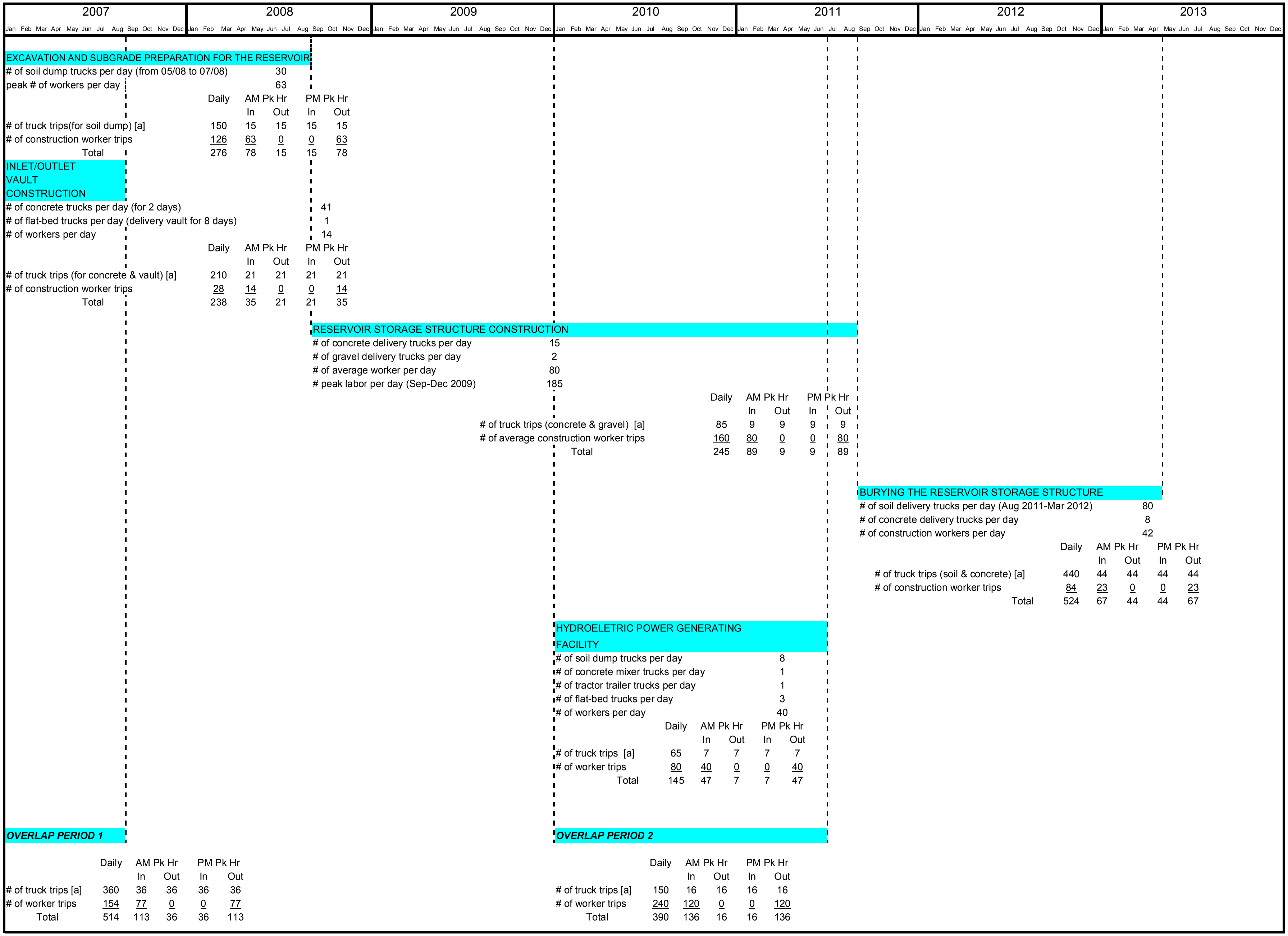
GSF = gross square feet

MAP = million annual passengers

In estimating the peak hour project trip generation, 10 percent of the daily truck trips were estimated to arrive and leave the site during the morning and afternoon peak hours. The daily truck trips were then converted to passenger car equivalent (PCE) of 2.5 because trucks would create a greater impact at the capacity of the intersections compared to a typical automobile. The number of daily truck trips was estimated using PCE factors for each of the five major construction activities at the HWSG site. Table 9-8 shows that the peak estimates of trip generation would occur during the 18-month overlapped period of reservoir storage structure construction and hydroelectric power generating facility construction, from January 2010 to June 2011. Approximately 150 total daily truck trips (in PCE) would occur during this period, of which 10 percent of these trips (16 trips) were estimated to arrive and leave during the morning peak hour and the afternoon peak hour. In addition, 120 construction workers were estimated to be onsite during construction, which would generate a total of 240 daily trips (120 inbound trips during the morning peak hour and 120 outbound trips during the afternoon peak hour). The overlapped period would generate approximately 390 daily trips, of which 152 trips would occur during the morning peak hour (136 inbound and 16 outbound) and 152 trips during the afternoon peak hour (16 inbound and 136 outbound). As shown in Table 9-9, the trip estimates for the overlapped period were thus used as the project trip generation at the HWSG site for the purpose of this analysis. Appendix F-4 provides the summary of required truckloads estimates for these activities.

TABLE 9-8

Project Schedule and Derivation of Trip-Generation Estimates - HWSG Site



EXCAVATION AND SUBGRADE PREPARATION FOR THE RESERVOIR

# of soil dump trucks per day (from 05/08 to 07/08)	30
peak # of workers per day	63

	Daily	AM Pk Hr In	AM Pk Hr Out	PM Pk Hr In	PM Pk Hr Out
# of truck trips(for soil dump) [a]	150	15	15	15	15
# of construction worker trips	126	63	0	0	63
Total	276	78	15	15	78

INLET/OUTLET VAULT CONSTRUCTION

# of concrete trucks per day (for 2 days)	41
# of flat-bed trucks per day (delivery vault for 8 days)	1
# of workers per day	14

	Daily	AM Pk Hr In	AM Pk Hr Out	PM Pk Hr In	PM Pk Hr Out
# of truck trips (for concrete & vault) [a]	210	21	21	21	21
# of construction worker trips	28	14	0	0	14
Total	238	35	21	21	35

RESERVOIR STORAGE STRUCTURE CONSTRUCTION

# of concrete delivery trucks per day	15
# of gravel delivery trucks per day	2
# of average worker per day	80
# peak labor per day (Sep-Dec 2009)	185

	Daily	AM Pk Hr In	AM Pk Hr Out	PM Pk Hr In	PM Pk Hr Out
# of truck trips (concrete & gravel) [a]	85	9	9	9	9
# of average construction worker trips	160	80	0	0	80
Total	245	89	9	9	89

BURYING THE RESERVOIR STORAGE STRUCTURE

# of soil delivery trucks per day (Aug 2011-Mar 2012)	80
# of concrete delivery trucks per day	8
# of construction workers per day	42

	Daily	AM Pk Hr In	AM Pk Hr Out	PM Pk Hr In	PM Pk Hr Out
# of truck trips (soil & concrete) [a]	440	44	44	44	44
# of construction worker trips	84	23	0	0	23
Total	524	67	44	44	67

HYDROELETRIC POWER GENERATING FACILITY

# of soil dump trucks per day	8
# of concrete mixer trucks per day	1
# of tractor trailer trucks per day	1
# of flat-bed trucks per day	3
# of workers per day	40

	Daily	AM Pk Hr In	AM Pk Hr Out	PM Pk Hr In	PM Pk Hr Out
# of truck trips [a]	65	7	7	7	7
# of worker trips	80	40	0	0	40
Total	145	47	7	7	47

OVERLAP PERIOD 1

	Daily	AM Pk Hr In	AM Pk Hr Out	PM Pk Hr In	PM Pk Hr Out
# of truck trips [a]	360	36	36	36	36
# of worker trips	154	77	0	0	77
Total	514	113	36	36	113

OVERLAP PERIOD 2

	Daily	AM Pk Hr In	AM Pk Hr Out	PM Pk Hr In	PM Pk Hr Out
# of truck trips [a]	150	16	16	16	16
# of worker trips	240	120	0	0	120
Total	390	136	16	16	136

Note: [a] Truck trip assumes 2.5 passenger car equivalent (PCE)

TABLE 9-9
Project Trip-Generation Estimates (Periods of Maximum Trips)

Site	Location	Trip Types	Daily Trips	Trip Generation Estimates [a] AM Peak Hour In	Out	Total	PM Peak Hour In	Out	Total
HWSG Site	Forest Lawn Drive	Truck Deliveries [a]	150	16	16	32	16	16	32
		Construction Workers	240	120	0	120	0	120	120
		Total	**390**	**136**	**16**	**152**	**16**	**136**	**152**
SLRC Site	Silver Lake Boulevard	Truck Deliveries [a]	120	12	12	24	12	12	24
		Construction Workers	70	35	0	35	0	35	35
		Total	**190**	**47**	**12**	**59**	**12**	**47**	**59**

Note:
[a] Truck trip assumes 2.5 passenger car equivalent (PCE).

SLRC

Table 9-10 illustrates the number of trips estimated during each stage of the construction at the SLRC. As shown, four major construction activities are scheduled for the SLRC. Bypass pipeline construction is scheduled to occur from May 2007 until April 2009. During this period, there will be an overlapping activity to remove the Silver Lake Reservoir from service (between October 2007 and April 2008). The two other construction activities are regulating station and relief station construction (April 2009 to November 2010) and construction activities to remove Ivanhoe Reservoir from service (May to July 2013).

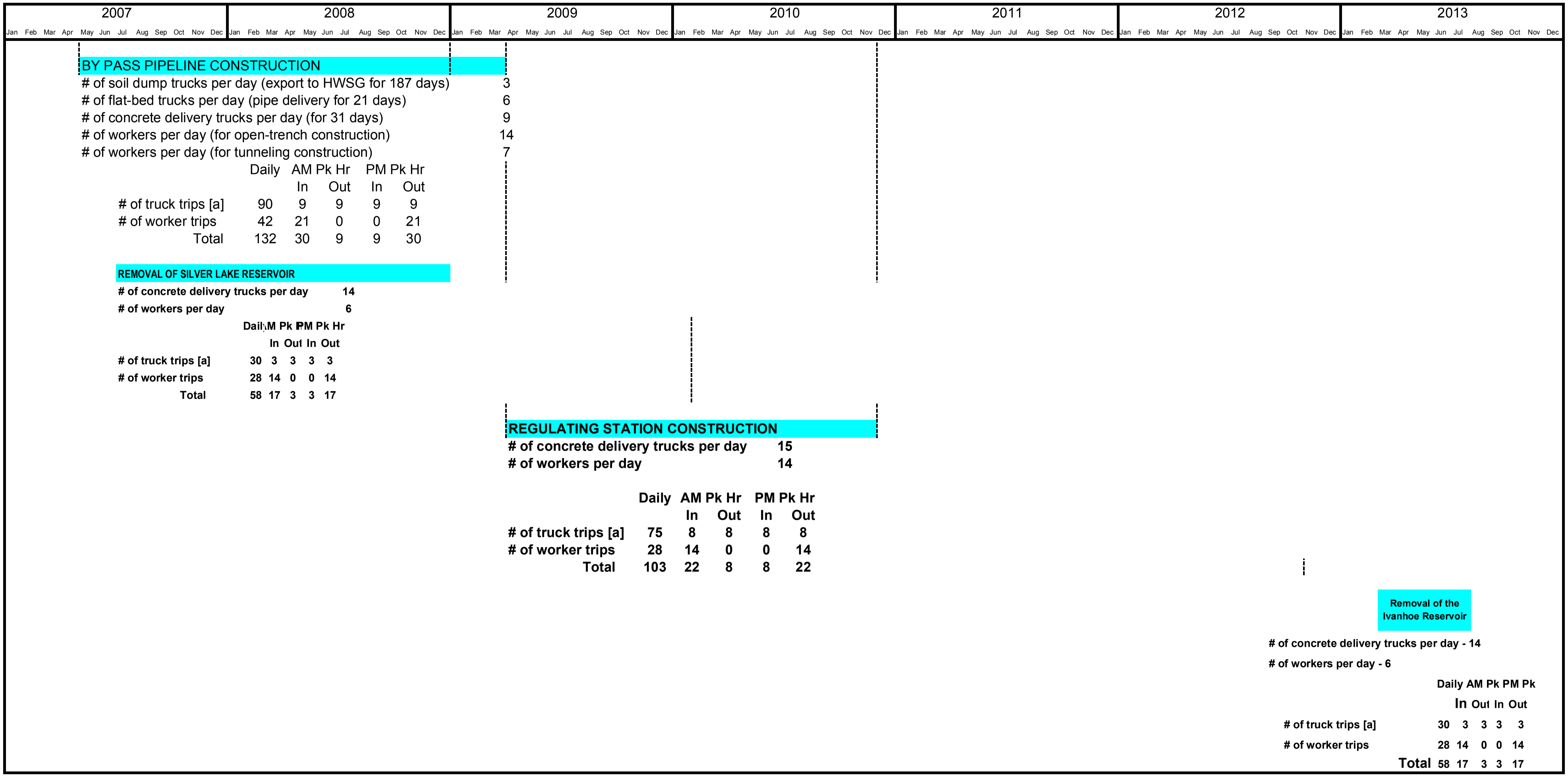
The most intensive period of work will be from October 2007 to April 2008, which includes bypass pipeline construction and construction activities related to removing Silver Lake Reservoir from service. For bypass pipeline construction, materials (concrete, soil, pipe, etc.) as well as equipment (crane, augers, pavers, etc.) would be delivered to the SLRC either by regular trucks or by flat-bed trucks. Given the required amount of materials and equipment and the capacities of delivery trucks, the number of truckloads was identified for each subactivity (e.g., concrete delivery). Approximately 18 trucks daily and 21 construction workers would be needed. The overlapping activities to remove the Silver Lake Reservoir will add approximately 10 to 14 more labors and 6 more trucks per day between October 2007 and April 2008.

Construction traffic would be less during the other two major construction periods. For the regulating station construction period, approximately 15 concrete delivery trucks and 14 construction workers would be needed on a daily basis. For removal of Ivanhoe Reservoir from service, approximately 14 concrete delivery trucks and 6 construction workers would be needed on a daily basis.

Using the same trip generation methodology described for the HWSG site (Section 9.1.2.1), the number of daily truck trips was estimated using PCE factors for the construction period from October 2007 to April 2008. During this period, approximately 132 daily trips in PCE are anticipated, of which nine inbound and nine outbound truck trips (in PCEs) would occur during the morning and afternoon peak hours. Assuming all 35 construction workers would arrive during the morning peak hour and leave during the afternoon peak hour, the SLRC site is projected to generate a maximum of 47 trips during the morning and afternoon peak hours.

TABLE 9-10

Project Schedule and Derivation of Trip-Generation Estimates - SLRC Site



BY PASS PIPELINE CONSTRUCTION

# of soil dump trucks per day (export to HWSG for 187 days)	3
# of flat-bed trucks per day (pipe delivery for 21 days)	6
# of concrete delivery trucks per day (for 31 days)	9
# of workers per day (for open-trench construction)	14
# of workers per day (for tunneling construction)	7

	Daily	AM Pk Hr		PM Pk Hr	
		In	Out	In	Out
# of truck trips [a]	90	9	9	9	9
# of worker trips	42	21	0	0	21
Total	132	30	9	9	30

REMOVAL OF SILVER LAKE RESERVOIR

# of concrete delivery trucks per day	**14**
# of workers per day	**6**

	Daily	AM Pk Hr		PM Pk Hr	
		In	Out	In	Out
# of truck trips [a]	**30**	**3**	**3**	**3**	**3**
# of worker trips	**28**	**14**	**0**	**0**	**14**
Total	**58**	**17**	**3**	**3**	**17**

REGULATING STATION CONSTRUCTION

# of concrete delivery trucks per day	**15**
# of workers per day	**14**

	Daily	AM Pk Hr		PM Pk Hr	
		In	Out	In	Out
# of truck trips [a]	**75**	**8**	**8**	**8**	**8**
# of worker trips	**28**	**14**	**0**	**0**	**14**
Total	**103**	**22**	**8**	**8**	**22**

Removal of the Ivanhoe Reservoir

# of concrete delivery trucks per day - 14

# of workers per day - 6

	Daily	AM Pk		PM Pk	
		In	Out	In	Out
# of truck trips [a]	**30**	**3**	**3**	**3**	**3**
# of worker trips	**28**	**14**	**0**	**0**	**14**
Total	**58**	**17**	**3**	**3**	**17**

Note: [a] Truck trip assumes 2.5 passenger car equivalent (PCE)

Table 9-9 summarizes the trip generation estimates for the SLRC. Appendix F-4 provides the summary of required truckloads estimates for these activities.

9.2.1.2.2 Project Traffic Distribution

The geographic distribution of the traffic generated by the Proposed Project depends on several factors. These factors include the type and density of the proposed land uses, the geographic distribution of population from which the construction workers are drawn, the locations of the construction material suppliers and soil dump sites, and the locations of the two project sites in relation to their surrounding street systems and available access to the regional freeway system. Based on the above factors, the overall trip distribution was developed in consultation with LADOT.

Because the construction material suppliers of concrete and gravel and soil dump sites are located in the Southern California area, specifically Los Angeles and Orange Counties, all truck deliveries would travel on the regional freeway networks and connect to the Proposed Project sites from the adjacent freeway ramps. As for the construction workers, most of them would travel on the regional freeway network, while some portion of them would arrive from local street network. Given the difference between the distribution of construction workers and that of truck trips, the specific distribution patterns for this project were developed for both the construction worker commute trips and the truck delivery trips, respectively. These distribution patterns are illustrated in Figures 9-11 and 9-12 for the HWSG site and in Figures 9-13 and 9-14 for the SLRC.

9.2.1.2.3 Project Traffic Assignment

The traffic expected to be generated by the Proposed Project was assigned to the street network using the distribution patterns described in Figures 9-11 and 9-12 for the HWSG site and in Figures 9-13 and 9-14 for the SLRC. Figures 9-15 and 9-16 illustrate the assignment of this traffic for the 10 intersections analyzed in this study.

9.2.1.3 Cumulative Plus Project Traffic Projections

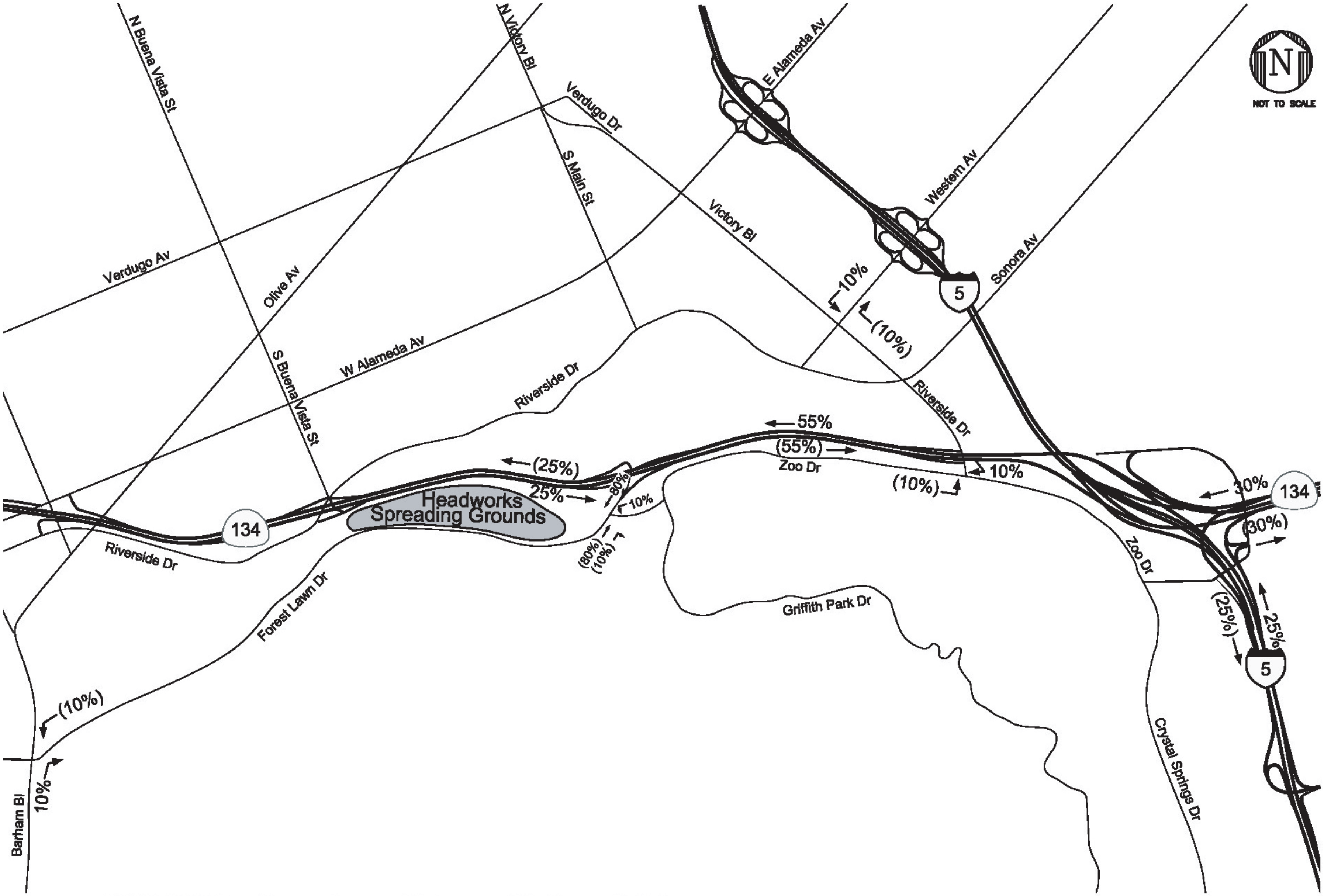
The Proposed Project-generated traffic volumes from Figures 9-15 and 9-16 were added to the cumulative base traffic volumes illustrated in Figures 9-9 and 9-10 to develop cumulative plus Proposed Project peak-hour traffic volumes as illustrated in Figures 9-17 and 9-18.

9.2.2 Traffic Impact Analysis

The traffic impact analysis compares the projected levels of service at each study intersection under the cumulative base and cumulative plus Proposed Project conditions to estimate the incremental increase in the V/C ratio caused by the Proposed Project. This provides the information needed to assess the potential impact of the Proposed Project using significance criteria established by LADOT. In addition, potential impacts of the trips on the roadway are also evaluated in this section.

9.2.2.1 Significant Traffic Impact Criteria

The LADOT has established threshold criteria used to determine if a project has a significant traffic impact at an intersection. In accordance with the *LADOT Traffic Study Policies and Procedures* set by City of Los Angeles, the significant impact criteria identified is a standard guideline within the City of Los Angeles in evaluating the potential traffic impact of a project.



XX%(XX%) = Percentage of Inbound (Outbound) Trips

Figure 9-11
SLRC SRP Draft EIR
Trip Distribution - Construction Workers (HWSG Site)

Source: Kaku Associates (2004)

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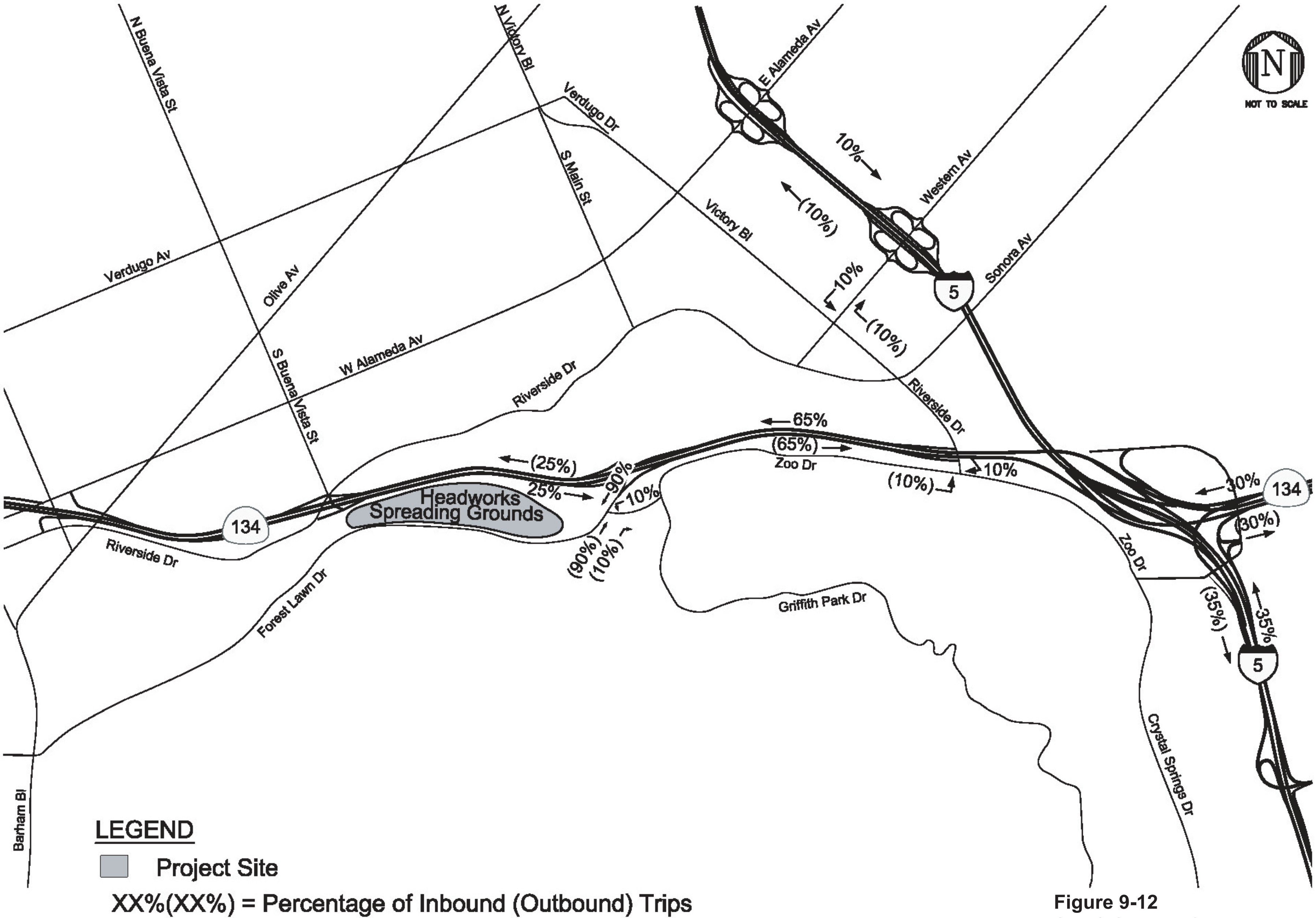

Figure 9-12
SLRC SRP Draft EIR
Trip Distribution - Trucks
(HWSG Site)

Source: Kaku Associates (2004)

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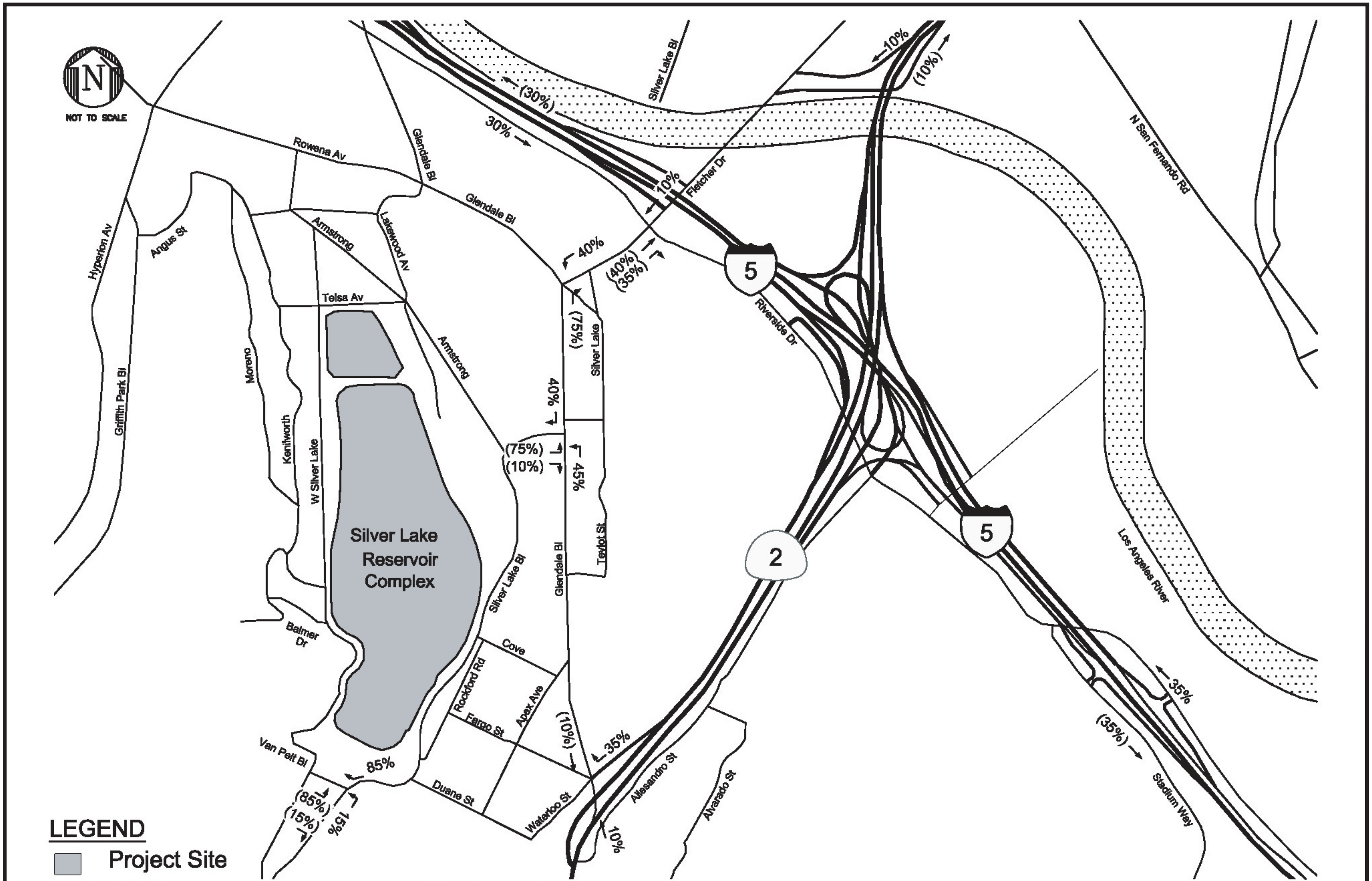

LEGEND

▨ Project Site

XX%(XX%) = Percentage of Inbound(Outbound) Trips

Source: Kaku Associates (2004)

Figure 9-13
SLRC SRP Draft EIR
Trip Distribution - Construction Workers (SLRC Site)

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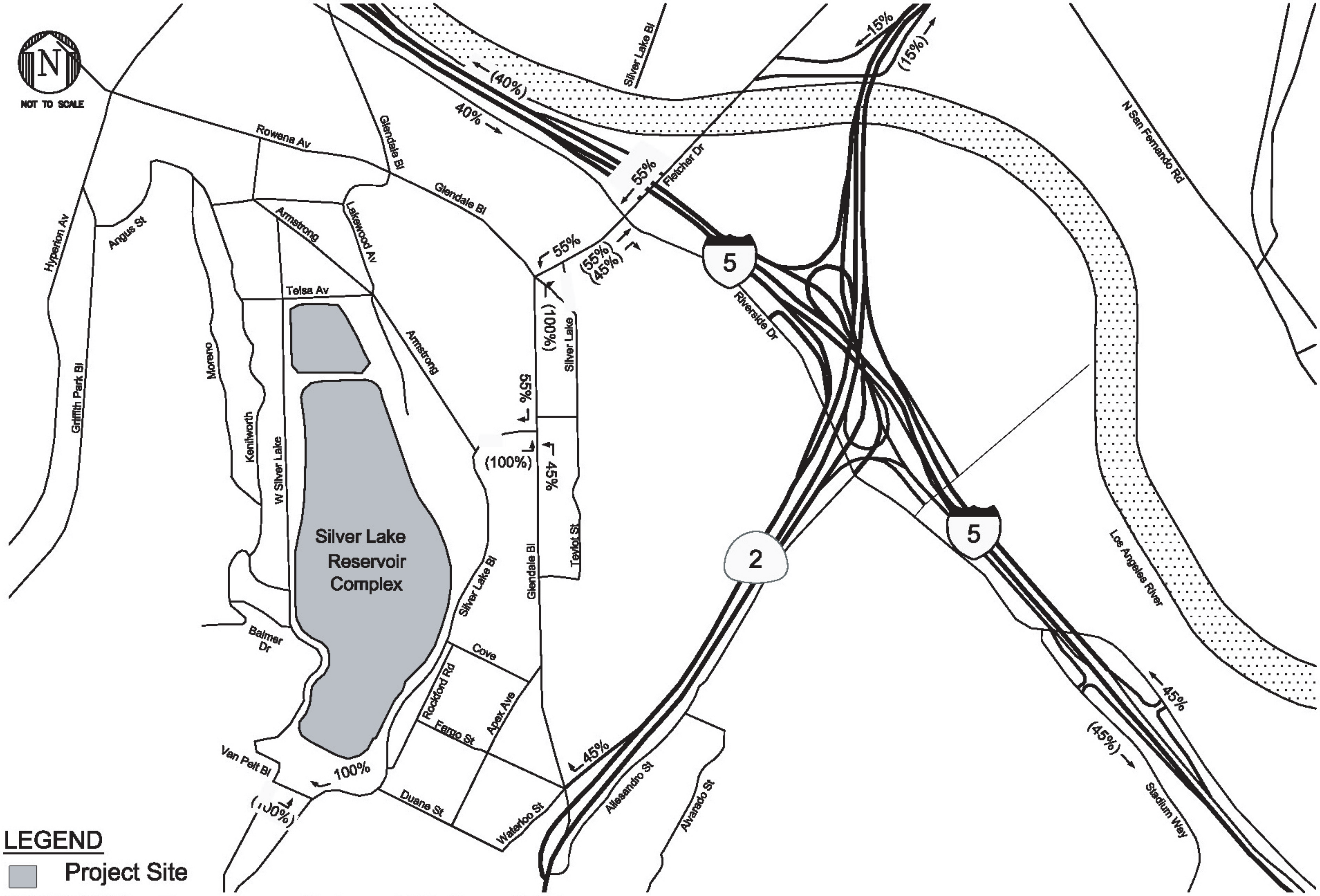

LEGEND

▨ Project Site

XX%(XX%) = Percentage of Inbound (Outbound) Trips

Figure 9-14
SLRC SRP Draft EIR
Trip Distribution - Trucks
(SLRC Site)

Source: Kaku Associates (2004)

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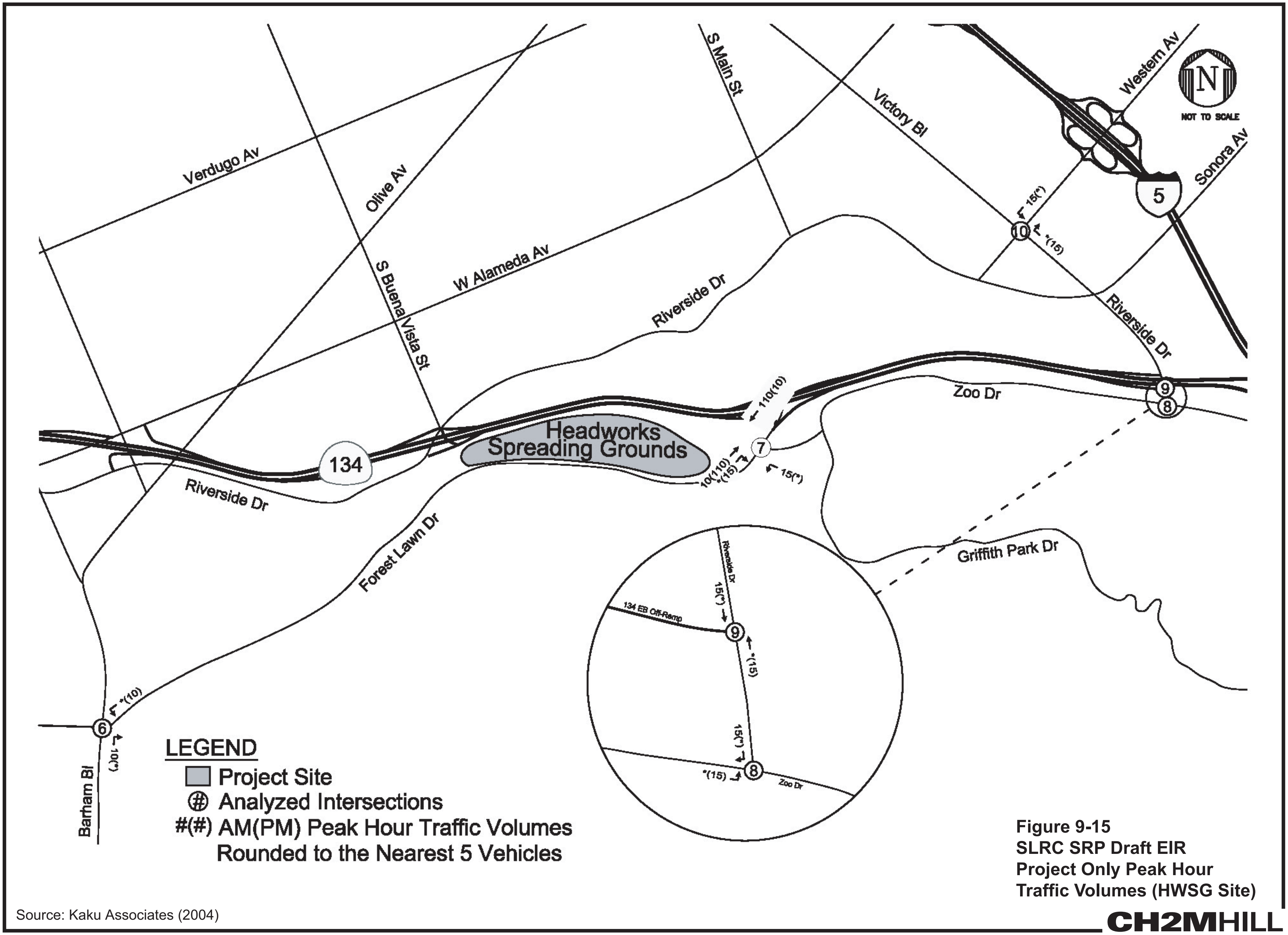

Figure 9-15
SLRC SRP Draft EIR
Project Only Peak Hour
Traffic Volumes (HWSG Site)

Source: Kaku Associates (2004)

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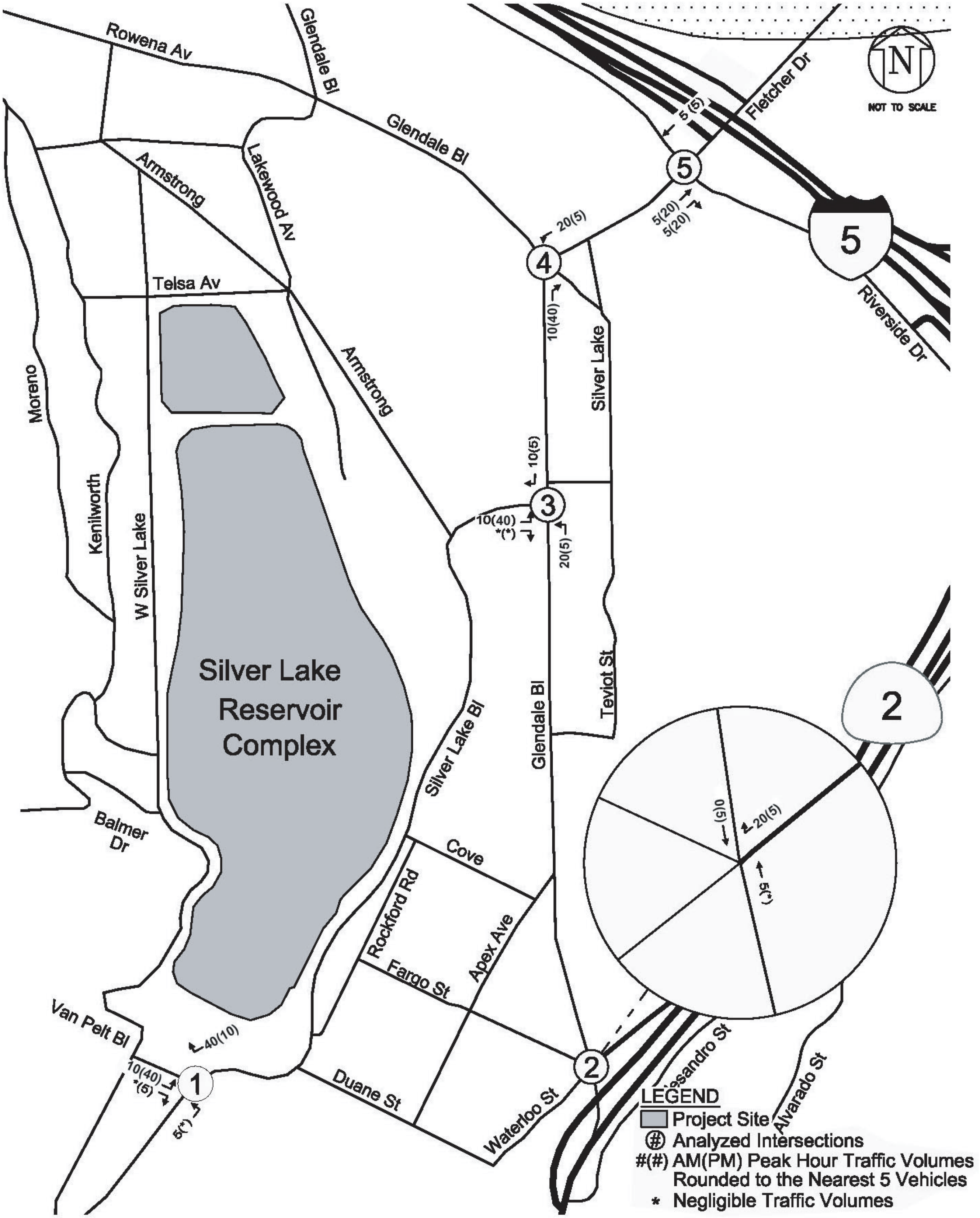

Figure 9-16
SLRC SRP Draft EIR
Project Only Peak Hour Traffic Volumes (SLRC Site)

Source: Kaku Associates (2004) and revised by CH2M HILL (April 2005)

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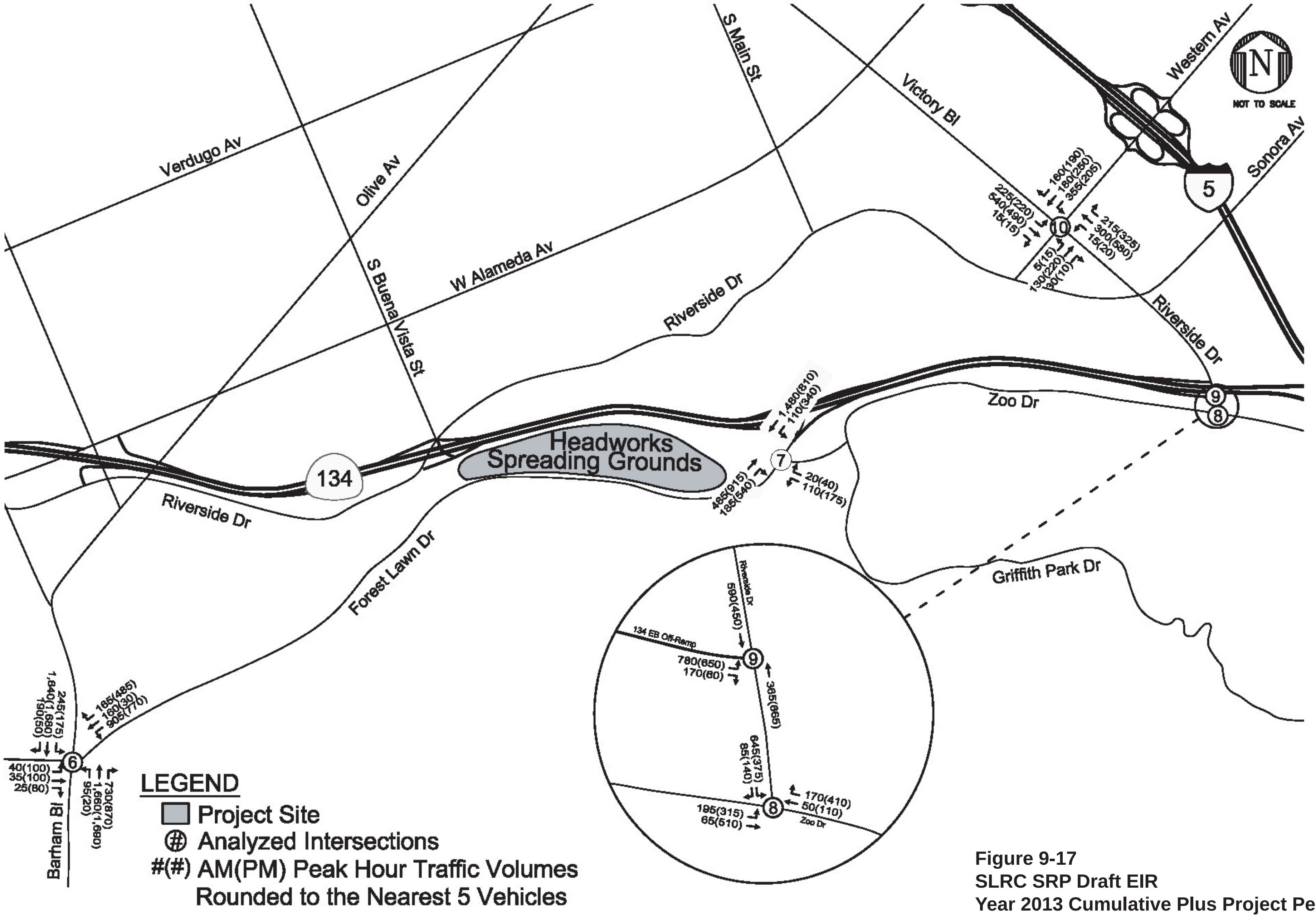

Source: Kaku Associates (2004)

Figure 9-17
SLRC SRP Draft EIR
Year 2013 Cumulative Plus Project Peak Hour Traffic Volumes (HWSG Site)

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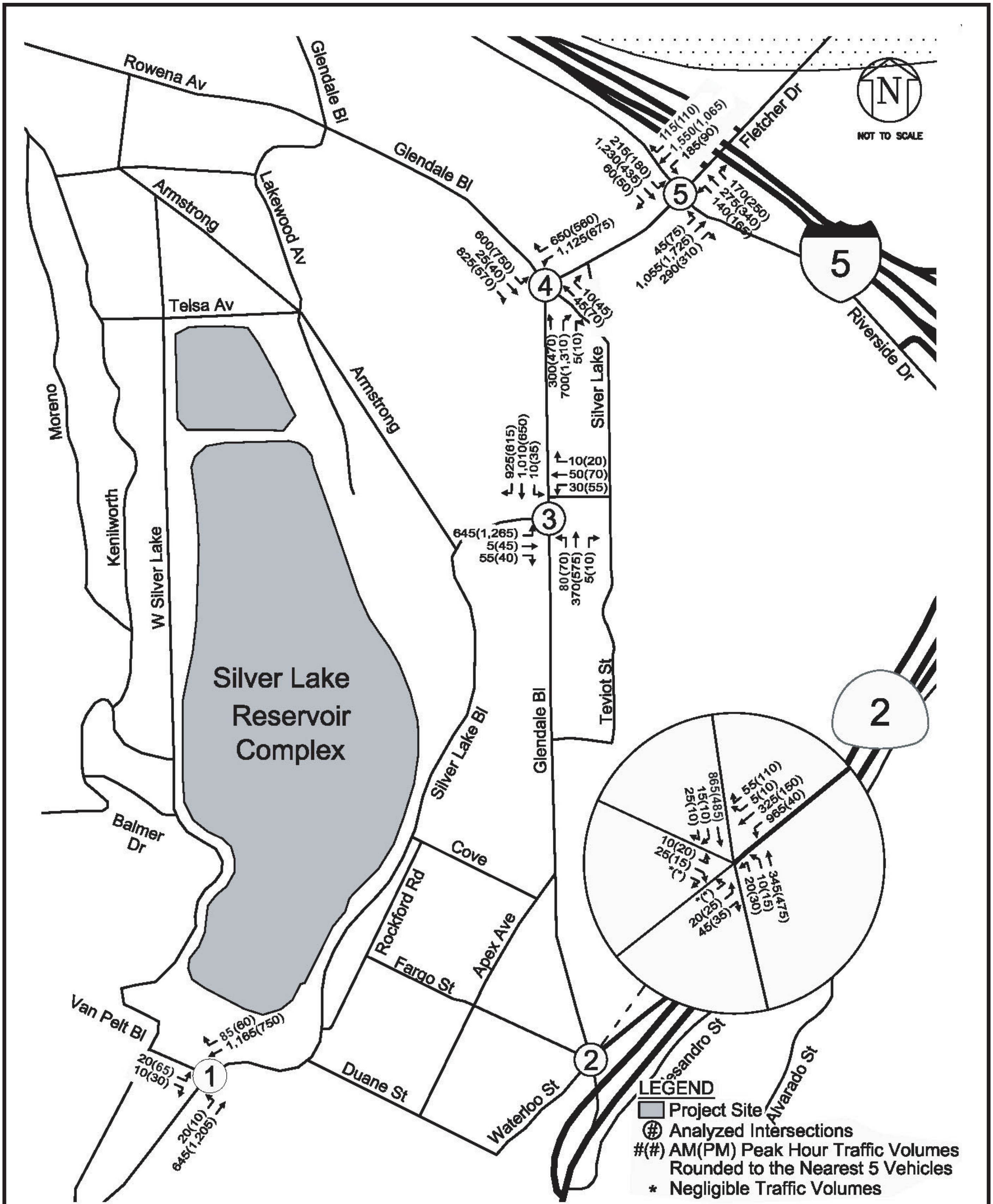

Figure 9-18
SLRC SRP Draft EIR
Year 2013 Cumulative Plus Project Peak Hour Traffic Volumes (SLRC Site)

Source: Kaku Associates (2004) and revised by CH2M HILL (Aprl 2005)

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Under the LADOT standard, a project impact would be considered significant if the following conditions are met:

Intersection Condition With Project Traffic		Project-related Increase in V/C Ratio
LOS	V/C Ratio	
C	0.701 – 0.800	Equal to or greater than 0.040
D	0.801 – 0.900	Equal to or greater than 0.020
E, F	> 0.900	Equal to or greater than 0.010

Using these criteria, for example, a project would not have a significant impact at an intersection if it is operating at LOS C after the addition of Proposed Project traffic and the incremental change in the V/C ratio is less than 0.040. If, however, the intersection is operating at a LOS F after the addition of Proposed Project traffic and the incremental change in the V/C ratio is 0.010 or greater, the Proposed Project would be considered to have a significant impact.

9.2.2.2 Cumulative Base Traffic Conditions

The Year 2013 cumulative base peak-hour traffic volumes were analyzed to determine the projected V/C ratios and LOS for the 10 analyzed intersections. Without the addition of Proposed Project traffic, Table 9-11 summarizes the future levels of service. As indicated in Table 9-11, only 4 of the 10 study intersections are projected to operate at an acceptable level of service (LOS D or better) during both peak hours. The following are the study locations projected to operate at an unacceptable level of service:

HWSG Site

- Barham Boulevard and Forest Lawn Drive/Lakeside Plaza Drive
- Forest Lawn Drive and Zoo Drive
- Riverside Drive and Zoo Drive
- Riverside Drive and State Highway 134 EB off-ramp

SLRC

- Silver Lake Boulevard and Van Pelt Place
- Riverside Drive and Fletcher Drive

9.2.2.3 Project Impacts

9.2.2.3.1 Intersection Impacts

Using the LADOT criteria for determining the significance of the Proposed Project traffic impacts, the Proposed Project was determined to have significant impacts at 3 of the 10 analyzed intersections. The three intersections are:

HWSG Site

- Forest Lawn Drive and Zoo Drive

SLRC

- Silver Lake Boulevard and Van Pelt Place
- Riverside Drive and Fletcher Drive

TABLE 9-11
Year 2013 Future Conditions Intersection Levels of Service

Intersection	Peak Hour	Year 2013 Cumulative Base		Year 2013 Cumulative Plus Project			
		V/C or Delay	LOS	V/C or Delay	LOS	Increase in V/C or Delay	Significant Impact?
SLRC Site:							
1. Silver Lake Blvd. and Van Pelt Pl. [1]	AM	0.801		0.814		0.013	NO
	PM	0.841		0.868		0.027	YES
	AM	49	E	72	F	23	NO
	PM	66	E	[2]	F	n/a	YES
2. Glendale Blvd. and SR 2 SB-off ramp/Waterloo St./Fargo St.	AM	0.908	D	0.914	E	0.006	NO
	PM	0.483	A	0.489	A	0.006	NO
3. Glendale Blvd. and Silver Lake Blvd.	AM	0.677	B	0.703	B	0.026	NO
	PM	0.750	C	0.766	C	0.016	NO
4. Fletcher Dr./Glendale Blvd. Silver Ridge Ave./Rowena Ave. (Glendale Blvd.)	AM	0.814	D	0.820	D	0.006	NO
	PM	0.877	D	0.877	D	0.000	NO
5. Riverside Dr. and Fletcher Dr.	AM	1.037	F	1.043	F	0.006	NO
	PM	0.972	E	0.982	E	0.010	YES
HWSG Site:							
6. Barham Blvd. and Forest Lawn Dr./Lakeside Plaza Dr.	AM	1.105	F	1.105	F	0.000	NO
	PM	1.046	F	1.051	F	0.005	NO
7. Forest Lawn Dr. and Zoo Dr.	AM	0.978	E	1.059	F	0.081	YES
	PM	0.878	D	0.951	E	0.073	YES
8. Riverside Dr. and Zoo Dr. [1]	AM	0.674		0.675		0.001	
	PM	0.723		0.732		0.009	
	AM	64	F	69	F	5	NO
	PM	39	E	40	E	1	NO
9. Riverside Dr. and State Highway 134 EB off-ramp [1]	AM	0.478		0.483		0.005	
	PM	0.455		0.460		0.005	NO
	AM	66	F	71	F	5	NO
	PM	96	F	[2]	F	n/a	
10. Victory Blvd. and Western Ave.	AM	0.657	B	0.665	B	0.008	NO
	PM	0.747	C	0.751	C	0.004	NO

Notes:

[1] Intersection is controlled by stop signs. The top row shows analysis using Highway Capacity Manual stop-controlled methodology, for the purpose of evaluating the operating condition of the intersection. Average vehicular delay in seconds is reported rather than V/C ratio. The bottom rows show analysis using the CMA methodology, for the purpose of application of City of Los Angeles significant criteria. V/C ratio is reported.

[2] Overflow condition indicating oversaturated conditions for long periods. Average vehicle delay cannot be calculated.

Forest Lawn Drive/Zoo Drive

For the HWSG site, the Forest Lawn Drive/Zoo Drive intersection would have significant impacts. Mitigation Measures TT-1 and TT-3 have been identified to help reduce the traffic impacts at this intersection, but the impacts would remain significant following implementation of the proposed Mitigation Measures.

Silver Lake Boulevard/Van Pelt Place

For the SLRC, the Silver Lake Boulevard/Van Pelt Place intersection would have significant impacts. Mitigation Measures TT-2 and TT-3 have been identified to help reduce the traffic impacts at this intersection, but the impacts would remain significant following implementation of the proposed Mitigation Measures.

Riverside Drive/Fletcher Drive

For the SLRC, the Riverside Drive/Fletcher Drive intersection would have a significant impact, although the projected v/c ratio is just over the threshold value. With the implementation of Mitigation Measure TT-3, the impacts would be reduced to a less-than-significant level.

9.2.2.3.2 On-Street Impacts

HWSG Site

Approximately 3,500 feet of 24-inch water distribution pipeline would be constructed at the HWSG site in Forest Lawn Drive roughly between the hydroelectric plant and Zoo Drive as part of reservoir construction. Construction would immediately follow reservoir construction and would not overlap with any other construction activity. Construction of the pipeline would require an approximately 4-foot-wide open trench, and the pipeline would likely be placed roughly south of the Forest Lawn Drive centerline, in the eastbound lanes. Construction would require one or both lanes of eastbound traffic to be closed for approximately 1 month. Forest Lawn Drive in this vicinity has two eastbound and two westbound lanes. Traffic would be detoured around the construction area into the westbound lanes (north of the centerline) such that there would be at least one westbound and one eastbound lane available. Mitigation Measures TT-3 would be implemented during water distribution pipeline construction to ensure that impacts to traffic on Forest Lawn Drive are less than significant.

SLRC

West Silver Lake Drive

The potential impact of the proposed bypass pipeline tunneling construction at the SLRC was evaluated along West Silver Lake Drive. For tunneling operations, jacking (entrance) and receiving (exit) pits would be needed at the ends of the pipe for equipment and to export materials. A jacking pit of 14 feet by 40 feet would be constructed on West Silver Lake Drive south of Armstrong Avenue and a receiving pit of 14 feet by 20 feet would be constructed on West Silver Lake Drive east of Redesdale Avenue (note that Redesdale Avenue does not intersect with West Silver Lake Drive). Approximately 10 parking spaces would need to be temporarily removed at the proposed jacking pit location, while West Silver Lake Drive east of Redesdale Avenue would need to be temporarily narrowed to accommodate the proposed receiving pit. West Silver Lake Drive is approximately 44 feet wide with parking on both sides within the vicinity of the proposed jacking pit, while no parking is allowed on the eastern portion of the roadway east of Redesdale Avenue. The proposed pits are expected to have minimal impact on the traffic flow along West Silver Lake Drive during the construction period because the existing number of travel lanes would be maintained. As for the proposed temporary removal of the parking at the jacking pit, on-street parking availability in the area was observed to be adequate. Thus, the temporary parking loss would have negligible impact on parking in the area. If it is determined at the time of construction that construction activities may adversely affect the street system surrounding the SLRC, Mitigation Measure TT-3 would be implemented to ensure that traffic impacts are less than significant.

Relief Station Construction

Two relief stations would be constructed within streets in the project area. The first relief station would be located on Silver Lake Boulevard, to the northeast of the Y-intersection with West Silver Lake Drive, just north of Effie Street. For most of the construction period, one lane of traffic in each direction would be maintained on Silver Lake Boulevard. During vault construction, however, Silver Lake Boulevard would be closed; and traffic would be detoured (via West Silver Lake Drive or North Occidental Boulevard).

The second relief station would be constructed on London Street, immediately east of Silver Lake Boulevard, just north of the US 101 interchange. During construction, London Street would be reduced to a single lane of traffic. Flaggers would be used to allow for both directions of traffic.

In both cases, there is a potential for traffic impacts due to closures and detours, which would result in a potentially significant impact. Specific plans for the lane and road closures required for the relief stations construction would be developed during detailed design for the relief stations. With implementation of Mitigation Measure TT-3, the traffic impacts from relief station construction would be less than significant.

9.2.2.3.3 Neighborhood Traffic Impacts

As part of the traffic analysis, the potential impact of the Proposed Project traffic on the adjacent residential neighborhood was also evaluated. Adjacent residential street segments on both the HWSG site and SLRC were evaluated to determine the potential neighborhood intrusion impacts of the Proposed Project. Using the methodology described in *LADOT Traffic Study Policies and Procedures*, it is based on percentage increase in daily traffic on the residential street. LADOT uses a sliding scale that becomes more stringent as the daily volume increases. The thresholds set by LADOT are as follows:

Projected Daily Traffic With Project (Final Average Daily Traffic [ADT])	Project-Related Increase in Daily Traffic
Less than 1,000	16% or more of final ADT
1,000 or more	12% or more of final ADT
2,000 or more	10% or more of final ADT
3,000 or more	8% or more of final ADT

HWSG Site

The HWSG site is located in an area where residential neighborhoods are distant enough that Proposed Project traffic is highly unlikely to use or cut through any residential streets to access the site. The access routes to and from the site would have no alternative other than traveling along major roadways because no residential streets within the study area would lead into and out of the HWSG site. Thus, Proposed Project-related increases daily traffic in any residential streets nearby would be negligible and insignificant.

SLRC

The SLRC is adjacent to residential neighborhoods, where Proposed Project traffic may travel along some of the residential streets surrounding the site. As shown in the trip-generation estimates derivation in Table 9-10, a maximum of 24 trucks and 35 construction workers per day are expected onsite. A maximum of 48 truck trips and 70 automobile trips could potentially use some of the residential streets. Trucks entering and leaving the site, however, would be directed to avoid unnecessary use of the residential streets. Truck routes would be designated as part of the traffic control plan that should be submitted to LADOT for its approval. The additional 70 daily trips made by the 35 construction workers are likely to access the site through major roadways such as Silver Lake Boulevard and Glendale Boulevard, as shown in the trip distribution in Figure 9-13. Assuming a portion of the 70 daily trips would use one of the residential streets, the additional traffic is insignificant considering the number of trips is small. Based on the maximum trip-generation estimates at the SLRC site, the Proposed Project-related increase in daily traffic in any of the residential streets is not expected to exceed any of the neighborhood intrusion impact criteria identified above. Therefore, the potential impact at the surrounding neighborhood streets would also be insignificant at the SLRC site.

9.2.2.5 Regional Congestion Management Plan Analysis

This section presents the Congestion Management Program (CMP) transportation impact analysis. This analysis was conducted in accordance with the procedures outlined in the *Congestion Management Program for Los Angeles County* (Los Angeles County Metropolitan Transportation Authority, June 2002). The CMP requires that when an EIR is prepared for a project, traffic impact analyses be conducted for select regional facilities based on the quantity of project traffic expected to use these facilities.

The CMP guidelines for determining the study area of the analysis for CMP arterial monitoring intersections and for freeway monitoring locations are as follows:

- All CMP arterial monitoring intersections where the Proposed Project will add 50 or more trips during either the a.m. or p.m. weekday peak hours of adjacent street traffic
- All CMP mainline freeway monitoring locations where the Proposed Project will add 150 or more trips, in either direction, during either the a.m. or p.m. weekday peak hours

The nearest CMP arterial monitoring intersection to the SLRC is the intersection of Alvarado Boulevard and Sunset Boulevard. The nearest mainline freeway monitoring location to the SLRC is the I-5 at Stadium Way (close to the SLRC site). Based on the incremental Proposed Project trip-generation estimates presented previously (39 morning peak-hour trips and 39 project afternoon peak-hour trips), the Proposed Project is not expected to add 50 or more new trips per hour to this location. Similarly, based on the incremental Proposed Project trip-generation estimates presented previously, the Proposed Project will not add more than the threshold of 150 new trips per hour to the CMP monitoring station at Stadium Way or any other freeway segment. Therefore, no further analysis of this CMP monitoring intersection is required.

The nearest mainline freeway monitoring location to the HWSG site is the State Highway 134 east of Central Avenue. Based on the incremental Proposed Project trip-generation estimates presented previously, the project is expected to generate 152 morning peak-hour trips and 152 afternoon peak-hour trips for the HWSG site. Given the trip distribution illustrated in Figures 9-11 and 9-12, only 30 percent of the project trips (46 morning peak hour trips and 46 afternoon peak hour trips) would travel on State Highway 134 to access the HWSG site from/to the east. Therefore, the Proposed Project will not add more than the threshold of 150 new trips per hour to the CMP monitoring station for State Highway 134. Therefore, no further analysis is required at this CMP freeway monitoring station. Similarly, based on the incremental Proposed Project trip-generation estimates presented previously, the Proposed Project will not add more than the threshold of 150 new trips per hour to the CMP monitoring station at Stadium Way or any other freeway segment. Therefore, no further analysis is required at this CMP freeway monitoring station.

9.3 Mitigation Measures

Mitigation measure to reduce or eliminate significant impacts on traffic and transportation resulting from the Proposed Project are identified below.

9.3.1 Construction

9.3.1.1 HWSG Site

Mitigation Measure TT-1: Forest Lawn Drive and Zoo Drive

The schedule of the construction workers will be staggered to minimize the impact at this location.

9.3.1.2 SLRC

Mitigation Measure TT-2: Silver Lake Boulevard and Van Pelt Place

Truck deliveries for materials or equipment will be scheduled so that none of the truck trips would arrive or depart the SLRC during the afternoon peak period between 4:00 p.m. and 6:00 p.m. Any truck deliveries will occur before the afternoon peak period.

Mitigation Measure TT-2: Riverside Drive and Fletcher Drive

Truck deliveries for materials or equipment will be scheduled so that none of the truck trips would arrive or depart the SLRC during the afternoon peak period between 4:00 p.m. and 6:00 p.m. Any truck deliveries will occur before the afternoon peak period.

9.3.1.3 On-Street Impacts

TT-3: Transportation Management Plan (TMP)

A Transportation Management Plan (TMP) would be developed to mitigate the traffic and roadway impacts of the construction activities on the project and surrounding area.

The TMP would be prepared in coordination with LADOT and would address the following, as appropriate:

- Construction work traffic impacts and strategies, including detours and traffic handling.
- Strategies for reducing worker trips, including carpooling and transit.
- General access restrictions associated with the Proposed Project, including proper notification of affected residences, businesses, and other facilities prior to construction. Advance public notification will include posting of notices and appropriate signage of construction activity. The TMP must ensure adequate access to residences and facilities via existing roadway intersections and private driveways at all times or include alternate access, detours, or temporary mitigation to address access restrictions adequately.
- Emergency access restrictions associated with the Proposed Project, including proper notification of emergency providers and provision of alternate routes, if necessary. All construction activities will be coordinated with local law enforcement, fire protection, and other emergency service providers. These entities will be notified of the timing, location, and duration of construction activities.
- Where construction will result in temporary lane closures of sidewalks and other pedestrian facilities, the TMP would address temporary pedestrian access, through detours or safe areas alongside the construction zone. Any affected pedestrian facilities and alternative facilities or detours will be identified.

9.3.2 Operation

9.3.2.1 HWSG Site

No significant traffic and transportation impacts were identified in association with operation of the proposed facilities at the HWSG site. Therefore, no mitigation measures are required.

9.3.2.2 SLRC

No significant traffic and transportation impacts were identified in association with operation of the proposed facilities at the SLRC. Therefore, no mitigation measures are required.

9.4 Significance After Mitigation

HWSG Site - Forest Lawn Drive/Zoo Drive

Due to the amount of traffic projected and the lane capacities at this location, there was no temporary mitigation measure feasible that would reduce the impact of the Proposed Project at the intersection of Forest Lawn Drive and Zoo Drive to a level of insignificance. Implementation of Mitigation Measures TT-1 and TT-3 would help to reduce Proposed Project impacts at this intersection, but would not reduce it to a less-than-significant level. Although this location would remain impacted during the construction period, the effect would be mostly due to the projected traffic in this area.

SLRC - Silver Lake Boulevard/Van Pelt Place

The construction traffic volumes associated with the overlapping activities (between October 2007 and May 2008) result in significant traffic impacts even after implementation of the proposed Mitigation Measures. However, because the construction duration is short-term and would only affect the traffic from Van Pelt Boulevard (i.e., through traffic is not affected), most of the impacts would affect construction-related traffic only.

10.0 Noise

A noise study, included in Appendix G, was prepared to describe existing noise-sensitive land uses potentially affected by the Proposed Project, evaluate potential noise generated during construction and operation of the Proposed Project at noise-sensitive land uses, and determine whether Proposed Project-related noise exposure would be significant. This chapter references a number of tables and figures that can be found in Appendix G.

10.1 Setting

10.1.1 Existing Noise-Sensitive Land Uses

10.1.1.1 HWSG Site

The HWSG site is fairly isolated, bordered by State Highway 134 on one side and Forest Lawn Drive on the other. The primary noise-sensitive land uses are two cemeteries, Forest Lawn Memorial and Mount Sinai Memorial, on the opposite side of Forest Lawn Drive. The only other receivers are a few residences located approximately 2,000 feet southwest of the proposed hydroelectric plant site, on Bob Hope Drive. These were the only residences noted in the vicinity of the HWSG site.

10.1.1.2 SLRC

The SLRC is entirely surrounded by single-family residences, with a few multifamily units at the south end. Many of these homes lie within 100 feet of the reservoir fence line, separated only by a local street. Residences subject to construction noise include those along West Silver Lake Drive, Van Pelt, Silver Lake Boulevard, and possibly Armstrong Avenue. Residences subject to operational noise are those near the proposed regulating station, surrounding the intersection of West Silver Lake Drive, Castle Street, and Redesdale Avenue.

10.1.2 Existing Ambient Noise Levels

To establish existing ambient noise levels, long-term (25-hour) and short-term measurements were conducted at multiple locations in and around the Proposed Project as described below. Long-term measurements were conducted April 6 and 7, 2004, using Quest model Q-300 Type-2 logging dosimeters. Dosimeters were calibration-checked, fitted with windscreens, and mounted approximately 5 feet above ground. All short-term measurements were conducted using two Larson Davis 824 Type-1 integrating sound level meters and spectrum analyzers, calibration-checked, fitted with windscreens, and mounted approximately 5 feet above ground.

10.1.2.1 HWSG Site

Ambient noise levels at the HWSG site are dominated by traffic. Most traffic noise emanates from State Highway 134, although Forest Lawn Drive is also a substantial contributor. Lawn maintenance at both cemeteries is a secondary contributor to ambient noise levels. The

HWSG site produces no noise emissions because there are currently no operations at this site. There is no significant air traffic in this area.

To establish ambient noise levels, one long-term (25-hour) and three short-term measurements were conducted in and around the site (Figure 10-1). A long-term measurement was performed at the location of the proposed hydroelectric plant (L5). This location is exposed to both Forest Lawn Drive and State Highway 134 noise. One short-term measurement was made at each cemetery, one set approximately 670 feet back from Forest Lawn Drive (S09), and the other approximately 330 feet back (S10). A third short-term measurement was performed at a residential location (Bob Hope Drive) about 2,000 feet southwest of the proposed hydroelectric plant location (S11 - not shown).

Appendix G Figure 2 shows results of long-term (25-hour) monitoring at the site of the proposed hydroelectric plant (L5). This location experiences little dispersion in noise levels due to constant traffic flow on State Highway 134.

Table 10-1 summarizes measurement results at the HWSG site. Long-term monitoring is shown in community noise equivalent level (CNEL). Short-term measurements are shown with the actual equivalent sound level (L_{eq}) value (average over the measurement interval).

TABLE 10-1
HWSG Site Ambient Noise Measurements

#	Location	Duration (hr:min)	L_{eq}	CNEL
L5	Hydroelectric Plant Site	25:08	-	67.6
S09	Mount Sinai Cemetery	0:27	58.0	-
S10	Forest Lawn Cemetery	0:30	62.7	-
S11	525 Bob Hope Dr.	0:10	56.6	-

10.1.2.2 SLRC

Ambient noise levels in the vicinity of the SLRC are driven mainly by local traffic and residential activities. West Silver Lake Drive, Silver Lake Boulevard, and Armstrong Avenue all carry substantial amounts of vehicle traffic, including at least one bus route. Other noise sources include typical residential activities, particularly lawn maintenance. There is no significant air traffic.

Operation of the reservoir itself does not produce any significant noise. The complex is essentially a large water basin; any pumps or other machinery are either sufficiently muffled or located well inside the complex property such that they are not noticeable beyond the fence line. The only other noise-producing activities at the complex are occasional service vehicles and grounds maintenance, both of which are insignificant in the residential environment.

To establish ambient noise levels, measurements were taken at multiple locations around the reservoir and in the surrounding neighborhood, as shown in Figure 10-2.

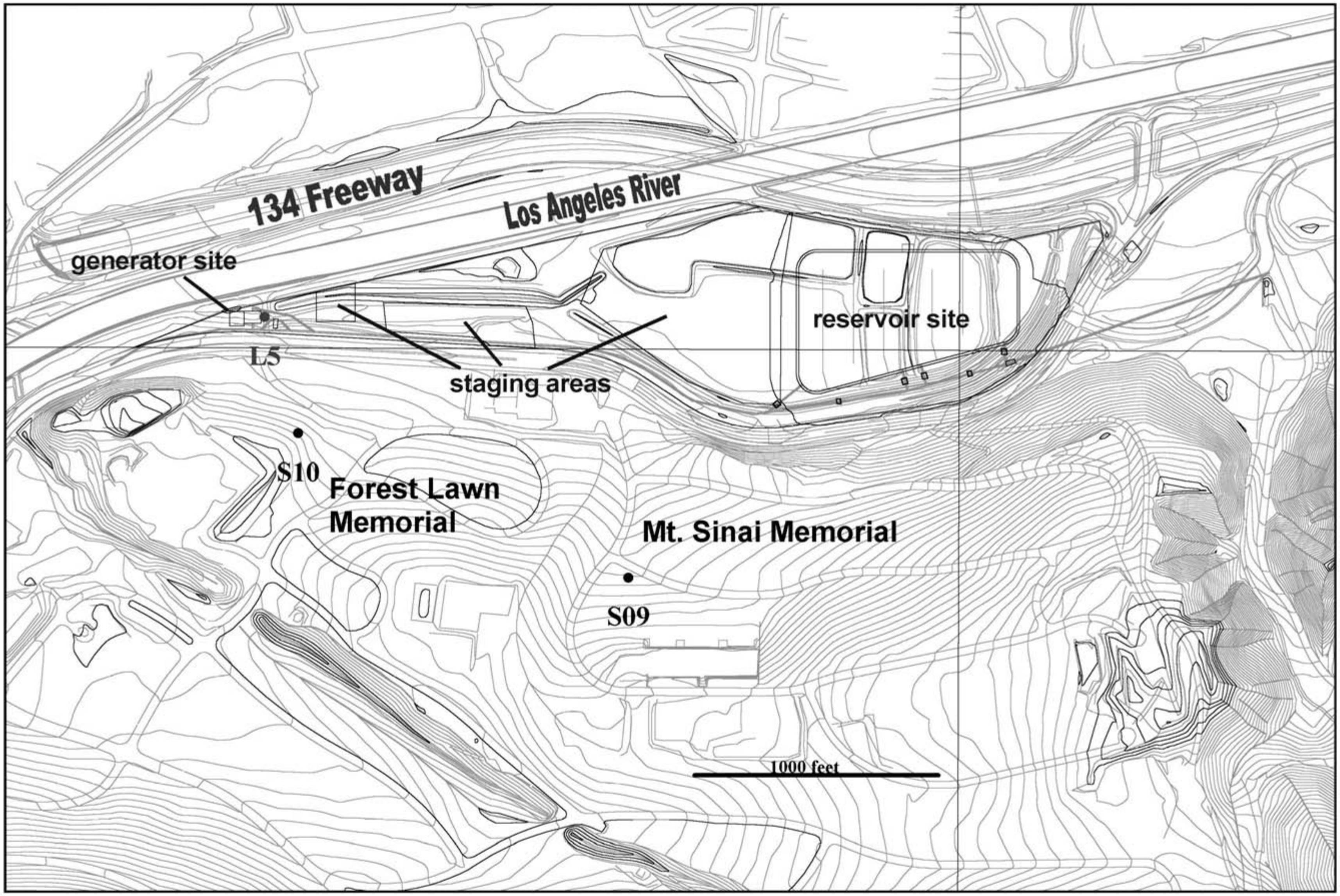

Figure 10-1
SLRC SRP Draft EIR
HWSG Site Noise
Measurement Locations

Source: Medlin & Associates

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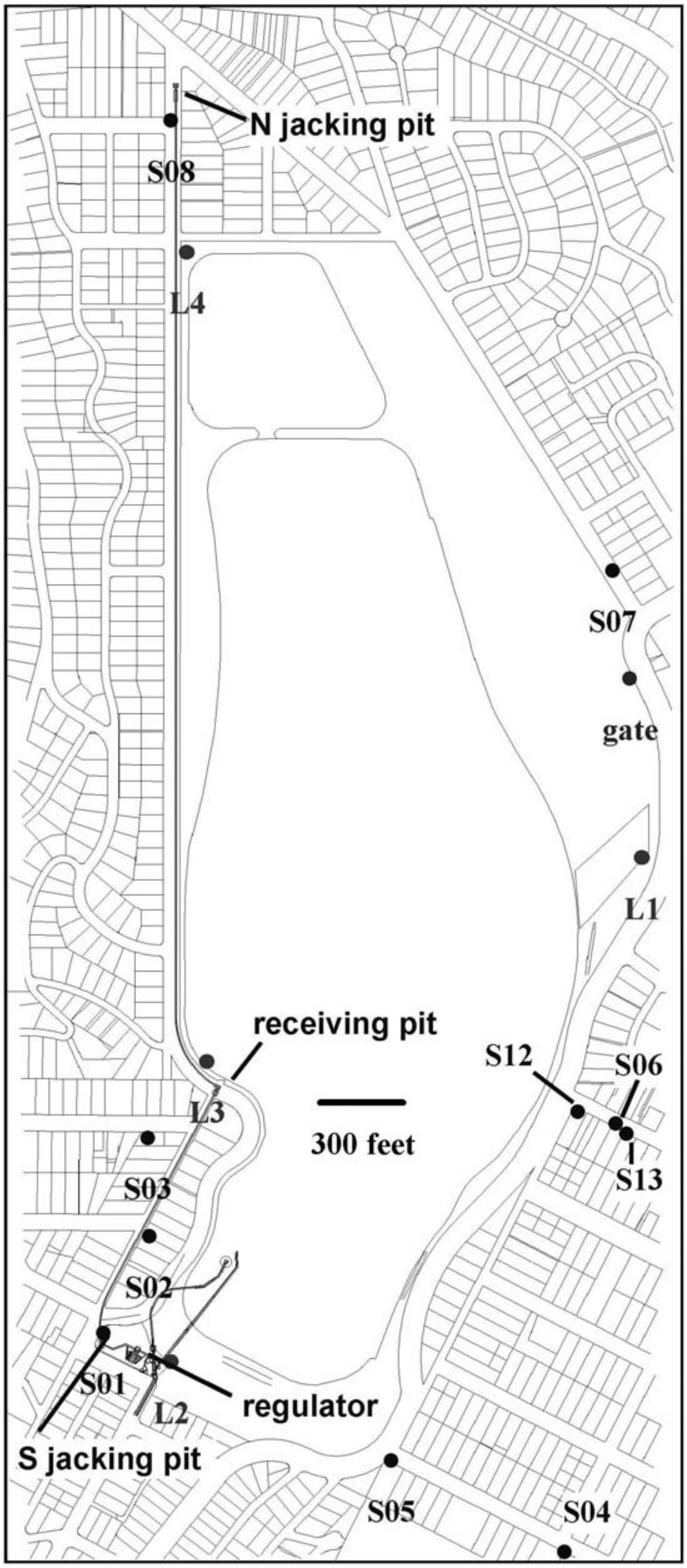

Figure 10-2
SLRC SRP Draft EIR
SLRC Noise Measurement Locations

Source: Medlin & Associates

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Long-term (25-hour) measurements were conducted at four locations around the reservoir property. These locations were selected to coincide with planned areas of concentrated construction activity. Where feasible, measuring instruments were set back from the nearest road by an amount approximately equal to the nearest residences, to approximate ambient noise levels experienced by these residences. Location L1 was selected to represent the material and equipment staging area. Machinery and trucks must pass this spot on the way to and from construction sites on the west and south sides of the reservoir. Though Armstrong Avenue is a shorter route to the north jacking pit, its use for hauling is unlikely because it is a narrow road with steeps hills. All construction traffic, therefore, is assumed to move down Silver Lake Boulevard, across Van Pelt, and onto West Silver Lake Drive. Location L2 represents the proposed regulating station and the south jacking pit. This area will be subject to both construction noise and operational noise from the regulating station. Location L3 represents the receiving pit, while location L4 represents the north end of the reservoir. Together, these two locations establish ambient noise conditions along West Silver Lake Drive, including the north jacking pit.

Appendix G Figures 5 through 9 present measurement histories at the four SLRC long-term monitoring locations.

Short-term measurements were conducted on April 6 and 21, 2004, at additional locations in the residential areas to further define the noise environment. Locations were selected in the vicinity of those for long-term measurements, but further back into the hills. Locations S12 and S13 (Cove Avenue) included a 1-hour traffic count.

Table 10-2 summarizes all measurement results at the SLRC. Long-term measurements are given in CNEL. Short-term measurements are given in their actual L_{eq} value (average over the measurement interval).

TABLE 10-2
SLRC Ambient Noise Measurements

#	Location	Duration (hr:min)	L_{eq}	CNEL
L1	Staging Area	26:06	-	63.9
L2	Regulating Station	25:55	-	59.0
L3	Receiving Pit	25:43	-	63.5
L4	Tesla and West Silver Lake Dr.	25:25	-	64.3
S01	Redesdale Ave. and W. Silver Lake Dr.	0:19	59.3	-
S02	Windsor Ave. and Redesdale Ave.	0:15	56.2	-
S03	Landa St. and Castle St.	0:15	50.0	-
S04	Duane St. and Apex Ave.	0:15	63.2	-
S05	Duane St. and Silver Lake Blvd.	0:15	70.4	-
S06	2362 Cove Ave.	0:05	59.7	-
S07	2440 Armstrong Ave.	0:12	59.7	-
S08	2519 West Silver Lake Dr.	0:15	70.0	-
S12	Cove Ave. and Rockford Rd.	1:00	67.0	-
S13	Top of Cove Ave.	1:00	56.3	-

10.2 Impacts

10.2.1 Thresholds of Significance

Noise impacts would be considered significant based on guidelines established by City of Los Angeles Municipal Code, City of Los Draft CEQA Thresholds Guide, and State of California CEQA Guidelines. Each are described below.

10.2.1.1 Municipal Code

Nonconstruction Noise

Chapter 11 of the Municipal Code addresses all noises other than those produced by construction activities. Applicable to this project are those sections that address noise produced by operation of (nonconstruction) equipment, specifically the SLRC regulating station and the hydroelectric plant at the HWSG site. Those sections are briefly described below.

Section 112.02: Prohibits noise emissions from machinery, including pumps that would cause the noise level on an occupied property to exceed the ambient level by more than 5 decibels (dB).

Section 112.04: Prohibits operation within a residential zone, or within 500 feet of a residence, of any machine that produces "a loud, raucous or impulsive sound" between the hours of 10:00 p.m. and 7:00 a.m. Further prohibits raising the noise level on an occupied property by more than 5 dBs, similar to above.

Section 112.05: Places permissible limits on noise levels generated by various types of powered equipment, as measured at a distance of 50 feet from the device:

- 75 dBs A-weighted (dBA) for construction, industrial, and agricultural machinery
- 75 dBA for equipment of 20 horsepower or less intended for infrequent use in residential areas
- 65 dBA for powered equipment intended for repetitive use in residential areas

While the above sections of the Municipal Code cite examples comprising common residential sources (air conditioners, lawn mowers, etc.), they do not specifically limit the nature of the source to these.

Sections 114.04 and 115.02 address audible signaling devices and amplified sound, respectively. Conditions on permissible use are manifold; however, it suffices to note that these sections may prohibit or limit the use of public address systems, machinery startup alarms, or other such devices at either site.

Section 116.01 provides a blanket statement that prohibits "any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area." It further provides a list of non-numerical criteria against which a noise may be judged to determine whether it violates this section. This section of the code, therefore, has implications regarding operation of the Silver Lake regulating station and the Headworks generator.

Construction Noise

Section 41.40 of the Municipal Code addresses construction noise in the City. Specifically, it limits the permissible hours of operation, including repair, servicing, and materials delivery, as follows:

- 9:00 p.m. – 7:00 a.m.: No activities involving power-driven equipment that may disturb sleep at any residence. No repair or servicing of equipment or jobsite delivery of materials likely to disturb sleep at any residence.
- Saturday before 8:00 a.m. or after 6:00 p.m.: No work on or within 500 feet of any residential land.
- National holiday before 8:00 a.m. or after 6:00 p.m.: No work on or within 500 feet of any residential land.
- Sunday (any time): No work on or within 500 feet of any residential land.

This section allows for exemption from the above limitations if written permission is obtained from the Board of Police Commissioners.

10.2.1.2 Los Angeles CEQA Thresholds Guide

The City of Los Angeles *Draft CEQA Thresholds Guide* (14 May 1998) sets forth criteria to be considered in the assessment of environmental impacts. Included in these are criteria that address construction noise and operational noise. The criteria are broken into three categories: checklist questions, screening criteria, and significance thresholds. Methods to determine significance are set forth, along with example mitigation measures. The thresholds applicable to noise are as follows.

Construction Noise

The Proposed Project would have a significant impact on noise levels resulting from construction if:

- Construction activities lasting more than 1 day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use (i.e., residences, transient lodging, schools, libraries, etc.)
- Construction activities lasting more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a sensitive use
- Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at anytime on Sunday

Operational Noise

The Proposed Project would have a significant impact on noise levels from Proposed Project operation if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” category, or any 5-dBA or greater noise increase (see Table 10-3).

TABLE10-3
Noise/Land-Use Compatibility Matrix (CNEL)

Land Use	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	Above 70
Multifamily Homes	50 - 65	60 - 70	70 - 75	Above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	Above 80
Transient Lodging – Motels, Hotels	50 - 65	60 - 70	70 - 80	Above 80
Auditoriums, Concert Halls, Amphitheaters	-	50 - 70	-	Above 65
Sports Arenas, Outdoor Spectator Sports	-	50 - 75	-	Above 70
Playgrounds, Neighborhood Parks	50 - 70	-	67 - 75	Above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	-	70 - 80	Above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	-
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	-

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh-air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise-reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: Office of Noise Control, California Department of Health Services (DHS).

10.2.1.3 California CEQA Guidelines

State CEQA requirements are addressed by the City's *CEQA Thresholds Guide*.

10.2.2 HWSG Site

Potential noise impacts at the HWSG site would result from construction activities and from operation of the hydroelectric plant.

10.2.2.1 Construction

Construction at the HWSG site would comprise five primary tasks:

- Reservoir grading and site preparation
- Inlet/outlet and vault construction
- Hydroelectric plant construction

- Reservoir storage structure construction
- Burying the storage reservoir

These tasks will take place at various times; however, there will be overlap. Reservoir grading and site preparation and inlet/outlet and vault construction would overlap; reservoir construction and hydroelectric plant construction would also overlap. Only burying the storage reservoir would occur completely independent of the other tasks. The analysis below, therefore, considers the effects of overlapping construction activities to provide a worst-case noise impact assessment.

Noise-producing construction activities would include trucking to and from the sites and onsite equipment operation. Construction would take place between the hours of 7:00 a.m. and 8:00 p.m. Monday through Friday, therefore falling within those times permitted by the municipal code.

Truck Traffic Noise

Noise level increases due to truck traffic are dependent upon the number of truck trips per hour and the existing traffic volumes and noise levels. Existing noise is due to traffic on both Forest Lawn Drive and State Highway 134. Both of these roads carry substantial volumes of traffic currently, particularly State Highway 134. Using the method described in Federal Highway Administration (FHWA) report FHWA-RD-77-108, noise levels due to heavy-truck traffic alone were estimated by solution of the equation:[1]

$$Leq = Lo + 10\log\left(\frac{N\pi Do}{ST}\right) + 10\log\left(\frac{Do}{D}\right)$$

This equation estimates the noise level produced by **N** trucks in 1 hour (**T**), passing by a fixed point **D** feet from an infinitely long road, at a speed **S**. **Lo** is the average noise level produced by a heavy truck moving at speed **S** when measured at a reference distance of **Do** (15 meters or ~50 feet). In the form stated above, this equation ignores attenuation due to barriers, ground absorption, and finite-length roads. It, therefore, produces a conservative estimate of trucking noise.

Appendix G Tables 4 through 8 show the projected volume of truck traffic for each construction task at the HWSG site. Projected hourly truck volumes were derived by dividing the projected daily volumes by 10 work hours per day.

Applying these traffic volumes to the equation above, noise levels due to trucking alone were computed. Because trucks will be moving slowly while approaching and leaving the HWSG facility, a speed of 30 mph was applied to the above equation. Additionally, the maximum Calveno Remel noise level of 85 dBA for heavy trucks was applied to account for the fact that trucks would be racing engines in low gear near the facility. Both of these assumptions will produce conservative results.

The resulting levels were then combined with levels measured at the cemeteries, as shown in Appendix G Table 9. These levels represent the peaks of trucking activity, when construction tasks overlap. Appendix G Table 10 shows the projected marginal increase

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[1] *FHWA Highway Traffic Noise Prediction Model*, Federal Highway Administration, 1978

in existing noise levels as a result of trucking. These marginal increases are all less than 5 dBs and, therefore, fall below the CEQA thresholds of significance.

Onsite Machinery

Construction activity would center around the hydroelectric plant site at the western end of the HWSG site and the reservoir site at the east end. Types of construction machinery required will vary depending upon the task. Appendix G Tables 11 through 15 show equipment to be used in the various tasks, and provide estimated noise emissions at a distance of 50 feet.[2] Noise emissions from all machines are combined in each table, with respect to the number of machines of each type, to provide one single noise-emission level for each location. Such combination assumes continuous and concurrent operations of all machines, thus providing worst-case results.

The highest projected noise levels result from reservoir grading and inlet/outlet and vault construction together and hydroelectric plant construction and reservoir construction together. Both scenarios have approximately equal potential noise emissions; and each, therefore, represents the worst-case scenario. Noise contours reflecting these worst-case scenarios are shown in Figure 10-3. Because activities around the reservoir would likely be spread over a large area, noise emissions resulting from these activities were equally distributed over six locations along the southern portion of the reservoir site.

Construction at the HWSG site would last more than 6 years, with the multiple concurrent operations illustrated by Figure 10-3 occurring for several months. Comparison of these contours with Table 10-1 indicates that the projected noise levels would likely exceed existing ambient noise levels by 5 dBs, thus creating a significant impact in accordance with the Los Angeles *CEQA Thresholds Guide.* Mitigation Measure N-1 has been identified to respond to mitigate significant construction noise impacts at the HWSG site.

10.2.2.2 Operation and Maintenance

The hydroelectric plant is expected to be the only significant source of operational noise at the HWSG site. Specific noise sources within the facility include the water-powered generator, a substation, and an emergency backup generator.

The generator would be housed in a reinforced concrete building, and would, therefore, be substantially noise-isolated from the exterior environment. Representative noise measurements were taken at the Franklin Canyon Power House near Beverly Hills. This is an older facility (built 1929) with many windows in its design. These windows, together with numerous vents on the west side, allow substantial amounts of machinery noise to escape to the exterior. As such, noise emissions from this plant may be used to provide conservative projections of noise levels generated by the hydroelectric plant.

The measured noise level 100 feet from the south face of the Franklin Canyon building was 65.7 dBA. This figure also includes some low-level hum from the adjacent substation. Based on this value, the contours of Figure 10-4 show predicted noise levels, in CNEL,

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[2] Machinery noise emissions based on data in: *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, U.S. Environmental Protection Agency, 1971; *Transit Noise and Vibration Impact Assessment*, Harris Miller, Miller & Hanson Inc., 1995; and Medlin & Associates compiled noise measurements, 2004.

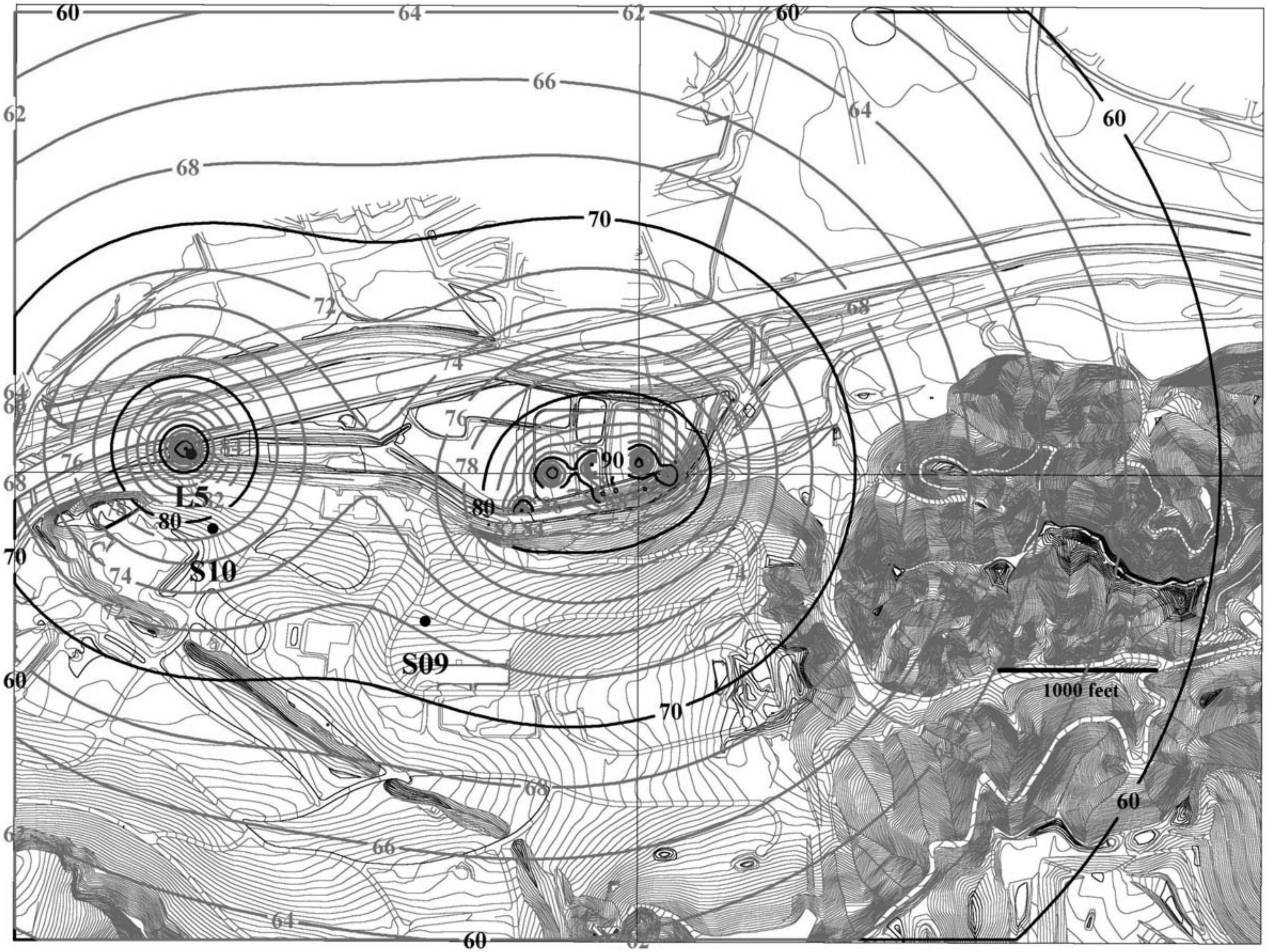

Figure 10-3
SLRC SRP Draft EIR
HWSG Site Worst-Case
Construction Noise Contours

Source: Medlin & Associates

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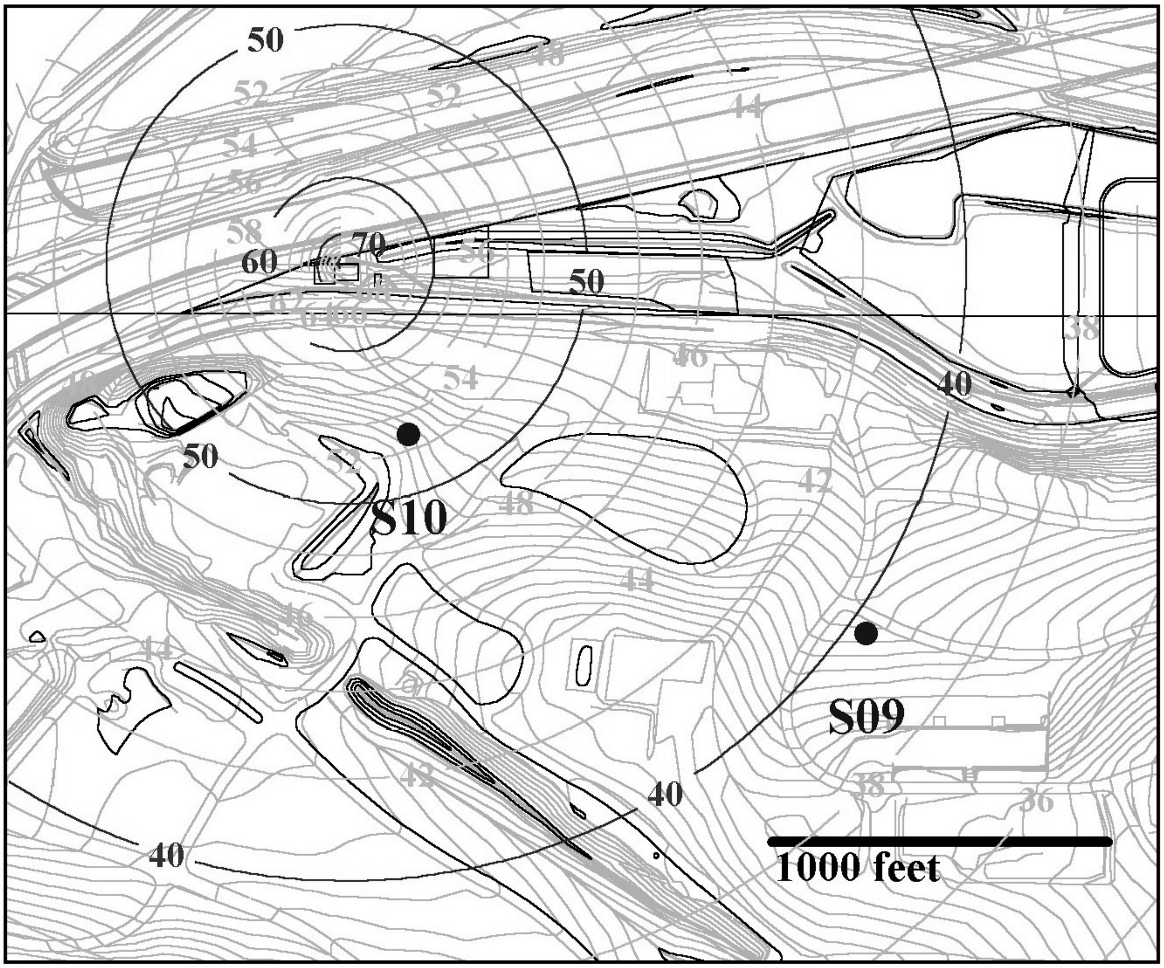

Figure 10-4
SLRC SRP Draft EIR
Hydroelectric Power Generating Facility
Operation Noise Contours

Source: Medlin & Associates

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from operation of the proposed hydroelectric plant. Comparison with levels shown in Table 10-1 indicates that noise levels created by the generator would fall substantially below existing ambient noise levels (due to traffic) at both cemeteries. Likewise, residences on Bob Hope Drive would experience noise levels well below existing ambient noise levels. Consequently, no significant noise impact would result at any sensitive receiver from routine operation of the hydroelectric plant.

A small (125-kilowatt [kW]) emergency backup generator would be co-located on the generating facility site, an example of which is the Caterpillar XQ125. According to the manufacturer's specification sheet, this model produces a noise level of 68.4 dBA at 7 meters (23 feet) when running under prime load. This is equivalent to 55.6 dBA at 100 feet, substantially less than used to generate the contours of Figure 10-4. Therefore, the emergency backup generator would produce no significant noise impacts at any sensitive receiver.

Maintenance activities at the HWSG site would primarily comprise infrequent use of service vehicles, and are, therefore, considered insignificant in the noise environment of the HWSG site.

10.2.3 SLRC

Potential noise impacts at the SLRC would result from construction activities and from operation of the regulating station.

10.2.3.1 Construction

Construction at the SLRC would comprise installation of a bypass pipeline under West Silver Lake Drive and Redesdale Avenue, installation of a regulating station in the grassy area at to the southwest corner of the SLRC (along West Silver Lake Drive), installation of two relief stations along Silver Lake Boulevard south of the SLRC, and activities at the SLRC related to taking Silver Lake and Ivanhoe Reservoirs out of service. Construction activities related to taking Silver Lake Reservoir out of service would overlap with bypass pipeline construction. Noise-producing construction activities would include onsite equipment operation and trucking to and from the construction sites. A materials and equipment staging area would be established on the east side of the reservoir property, necessitating passage of trucks and machinery along Silver Lake Boulevard. Construction would take place between the hours of 7:00 a.m. and 8:00 p.m. Monday through Friday and 8:00 a.m. and 5:00 p.m. Saturday, consistent with times permitted by the municipal code.

Trucking

Noise-level increases due to truck traffic are dependent upon the number of truck trips per hour and the existing traffic volumes. To accurately estimate noise impacts from trucking on local streets surrounding the reservoir, a 1-hour, traffic-counted noise measurement was conducted from 6:49 a.m. to 7:48 a.m. on April 21, 2004. The measurement location was the corner of Cove Avenue and Rockford Road, 57 feet from the edge of Silver Lake Boulevard, and approximately 900 feet south of the staging area. During this hour, 1,317 cars, 21 medium trucks (including school buses), and 3 heavy trucks passed the measurement point, producing a 1-hour L_{eq} of 67.0 dBA.

Using the method described in FHWA report FHWA-RD-77-108 in conjunction with the California Vehicle Noise Reference Energy Mean Emission Levels (Calveno Remels), increased noise levels due to additional heavy trucks were predicted by solution of the equation:

$$Leq = Lo + 10\log\left(\frac{N\pi Do}{ST}\right)$$

Marginal differences in noise levels were computed by adjusting the volume of heavy trucks while keeping constant the volume of automobiles and medium trucks. Speed-dependent, noise-emission levels were obtained from the Calveno Remels. Adjustments due to distance, finite roadway, and shielding remained constant and, therefore, cancelled in computing differences. Figure 10-5 shows the predicted increase in noise levels, over the existing level, for various hourly volumes of heavy-truck traffic, assuming a traffic speed of 40 mph on Silver Lake Drive. According to this graph, a heavy-truck volume of 68 trucks per hour would be required to increase the ambient noise level by 3 dBs. Similar results may be expected for trucking on West Silver Lake Drive.

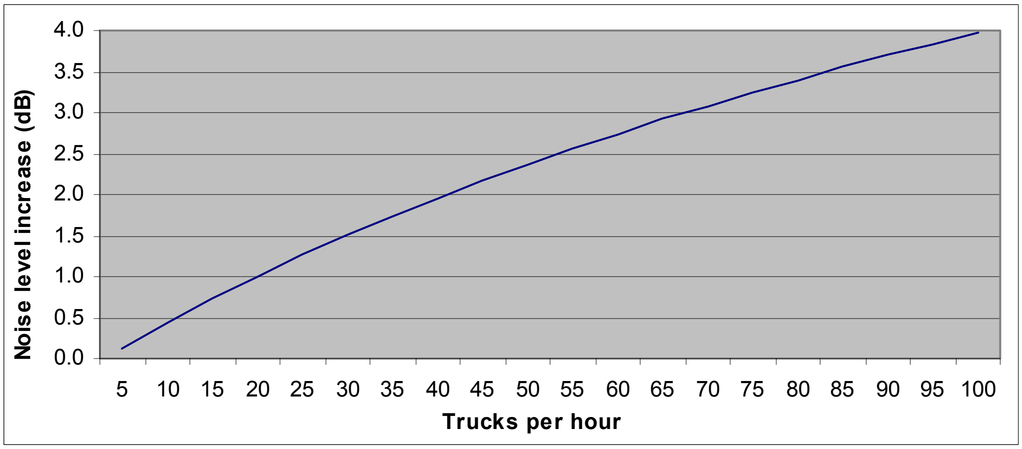

Figure 10-5: Noise Level Increase on Silver Lake Boulevard Due to Trucking

Appendix G Tables 16 and 17 show the projected daily volume of truck traffic required to support construction activities at the SLRC. Average hourly truck volumes were obtained by combining truck volumes for all operations and dividing by 10 work hours per day. Average hourly truck volumes would not exceed two truck trips per hour, resulting in a negligible noise increase according to Figure 10-5.

Onsite Machinery

The bypass pipeline would be installed primarily by tunneling (boring) under the streets. Trenching would be used only for a short length of pipeline south of Silver Lake Reservoir Dam. Access to the tunnel would be via the two jacking pits and one receiving pit, and it is around these pits that all bypass pipeline construction activity is assumed to be concentrated. Activities related to construction of the regulating station would be confined to the grassy area south of Silver Lake Reservoir Dam. Activities related to construction of the relief stations would be distributed across two sites south of the SLRC, while construction activities related to removal of Silver Lake and Ivanhoe Reservoirs from service would be located primarily to the east of Ivanhoe Reservoir and northeast of Silver Lake Reservoir.

Appendix G Table 18 shows equipment to be used in construction of the bypass pipeline, and its estimated noise emissions at a distance of 50 feet.[3] Tunnel-boring equipment is not listed because its use would be underground. Table 2 of Appendix G Addendum #2 provides the same information for construction of the regulating station and relief stations. The same information for activities related to removal of Silver Lake and Ivanhoe Reservoirs from service is shown in Table 3 of Appendix G Addendum #2.

Noise emissions from all equipment were combined, with respect to the number of machines of each type, into one single noise-emission level for each location. Because pipeline operations would take place at the three pits, the combined noise level from Appendix G Table18 was equally distributed among these three locations.

Figure 10-6 shows the resulting projected noise contours around each construction site for bypass pipeline construction and construction activities related to removal of Silver Lake and Ivanhoe Reservoirs from service. These contours assume continuous and concurrent operation of all equipment in the tables above, thus providing worst-case results. A more realistic scenario may be drawn by phasing the use of different machines. However, because aggregate noise levels are driven by the loudest machine(s) present, little reduction in the contours can be expected.[4] Figure 10-7 shows similar contours for the regulating station construction. In both figures, additional contours are shown at the staging area, representing simultaneous testing of three machines, each producing noise emissions of 85 dBA at 50 feet (or equivalently, a single machine producing 90 dBA).

Comparison of the contours in Figures 10-6 and 10-7 with Table 10-2 and Appendix G Figures 5 through 8 indicates that the projected noise levels for construction activities at the SLRC would exceed existing ambient noise levels by 5 dBs, thus creating a significant impact in accordance with the Los Angeles *CEQA Thresholds Guide.* Mitigation Measure N-2 has been identified to respond to predicted significant construction noise impacts at the SLRC.

10.2.3.2 Operation and Maintenance

The only operational noise produced at the SLRC is due to the regulating station, which would run 24 hours per day. Preliminary data indicate that the regulating station would produce a noise level of 60 dBA, 100 feet away. The nearest residence (1855 West Silver Lake Drive) lies around 120 feet away and would, therefore, experience a noise level of approximately 58 dBA. This is comparable to the highest level measured during the long-term (25-hour) monitoring and would, therefore, result in a 3-dB increase in daytime ambient noise. Moreover, because the regulating station would operate continuously, it would produce by itself a 24-hour average noise level of CNEL-65 at the nearest residence, 6 dBs higher than the existing ambient. This increase would exceed the significance thresholds of the CEQA guidelines, move this residence from the "normally acceptable"

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[3] Machinery noise emissions based on data in: *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances,* U.S. Environmental Protection Agency, 1971; *Transit Noise and Vibration Impact Assessment,* Harris Miller, Miller & Hanson Inc., 1995; and Medlin & Associates compiled noise measurements.

[4] A detailed schedule of equipment use was not available for this study.

category to "conditionally acceptable," and potentially violate Sections 112 and 116 of the Municipal Code.

Figure 10-8 illustrates noise levels in CNEL that can be expected from the regulating station. Primarily affected would be first-tier residences; buildings further back would be partially or completely shielded and, therefore, experience lower levels than shown. Little attenuation can be expected from the terrain near the regulating station. No physical barriers exist that would limit noise between the station and nearby residences, and the distances involved are too small to expect any significant attenuation from ground absorption.

In addition to nearby residences, users of the recreation center and the adjacent grassy area south of Silver Lake Dam would also be affected by noise emissions from the regulating station, experiencing levels greater than 70 dBA near the station. This is an uncomfortably high level, particularly in regard to existing levels, and would severely detract from park users' enjoyment.

Consequently, noise mitigation of the regulating station is required. As shown in Appendix G Figure 6, nighttime low noise levels approach a minimum of 43 dBA. To maintain levels on this order, the regulating station should produce no more than 40 dBA at the nearest residence (resulting in a total noise level of 45 dBA). This would require a reduction in noise emissions of nearly 20 dBs from the current estimate. Mitigation Measure N-3 has been identified to ensure that the regulating station would produce noise levels no more than 40 dBA at the nearest residence.

Maintenance of the regulating station would consist primarily of quarterly visits for about 2 hours each and is, therefore, considered insignificant from a noise perspective.

10.3 Mitigation

10.3.1 Construction

Mitigation Measure N-1: Construction Noise at the HWSG Site

Measures to minimize noise from construction activities at the HWSG site will include some or all of the following:

1. A noise monitoring and mitigation program at the HWSG site will be instituted to continuously assess construction noise impacts and implement mitigation when and where required. The program will account for perceived impacts as well as actual measured noise levels.

2. Use of extreme noise producers will be minimized as much as possible because aggregate noise levels are generally driven by a few loud machines. Activities such as rock crushing, which produces noises that are both loud and dissimilar to ambient noise, will be minimized. Every effort will be made to complete such activities as soon as possible, rather than extended over the duration of construction. When feasible, extreme noise producers will be shielded by a sound barrier and located as far as possible from noise-sensitive receivers. Where feasible, such activities will be conducted offsite at a nonsensitive location.

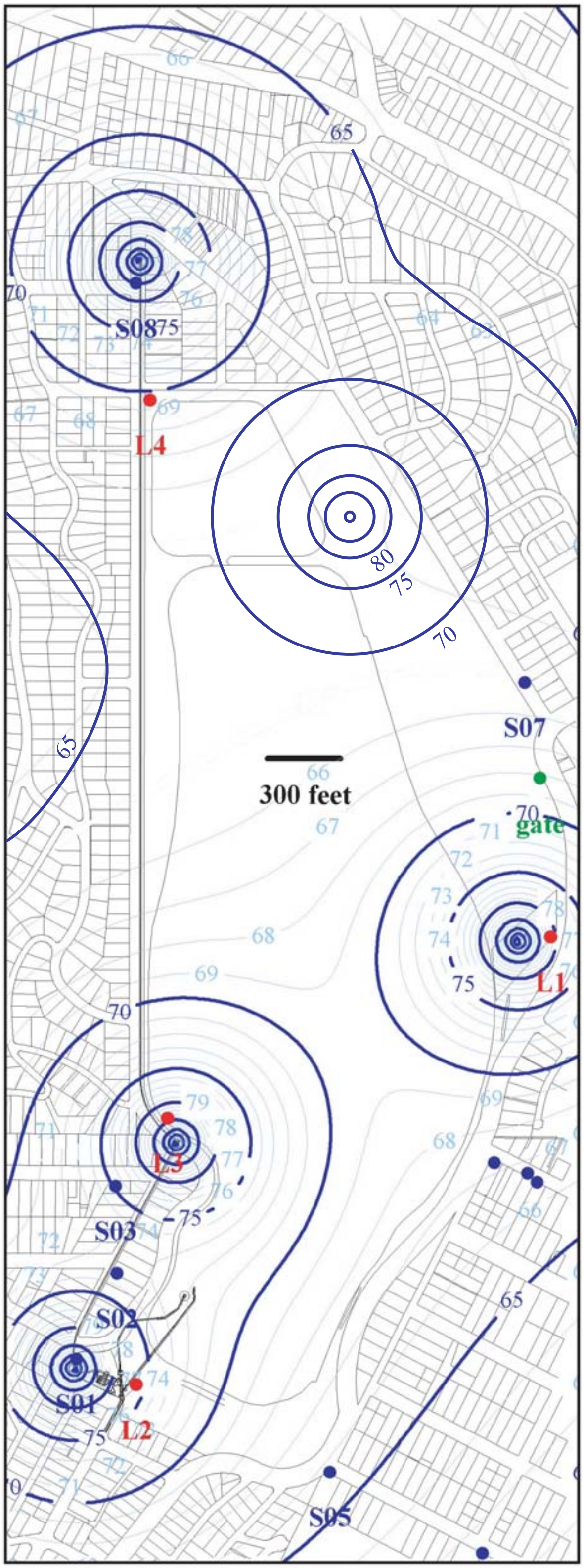

Figure 10-6
SLRC SRP Draft EIR
Overlapping Construction
Noise Contours

Source: Medlin & Associates, Revised by CH2M HILL, April 2005

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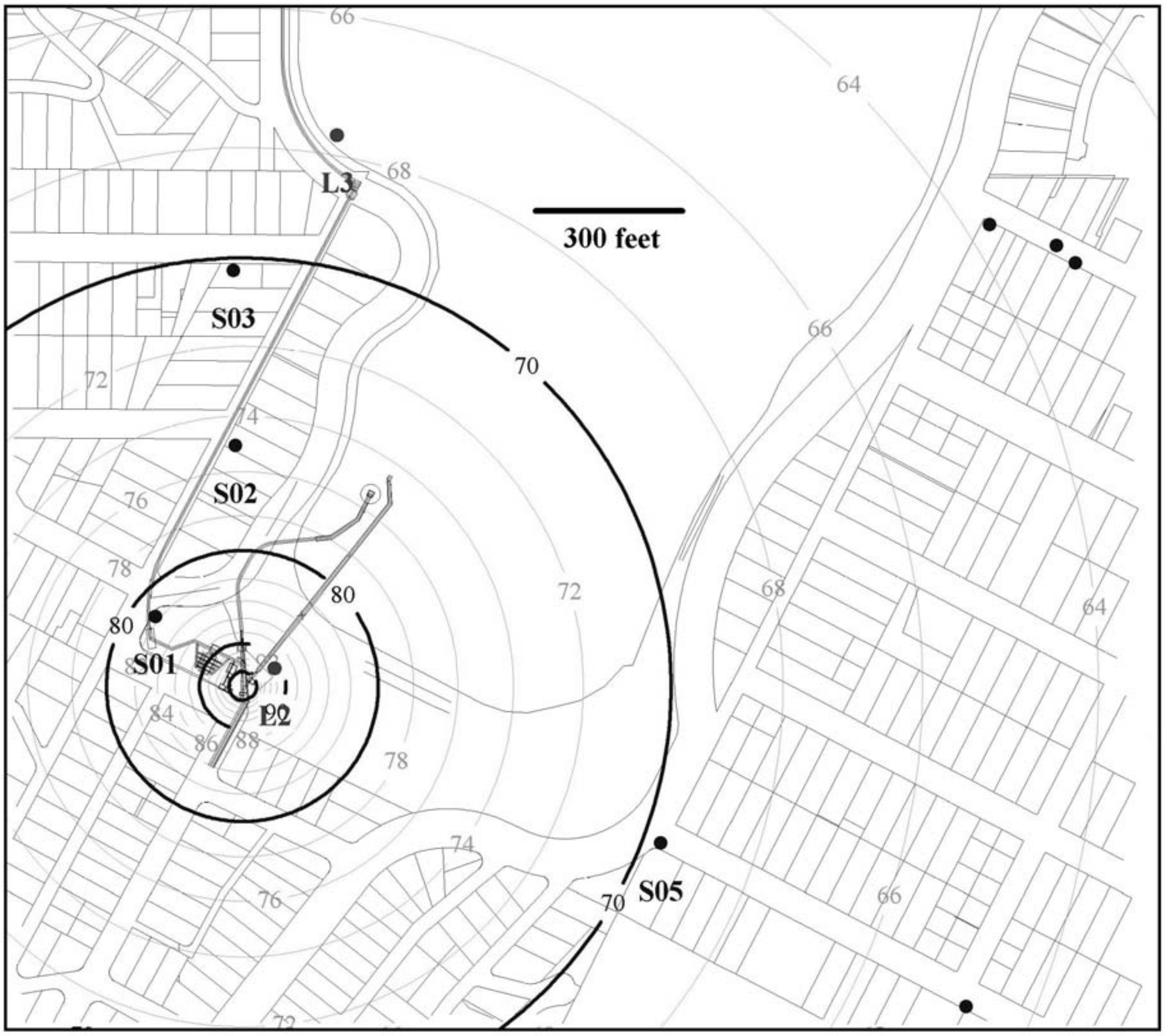

Figure 10-7
SLRC SRP Draft EIR
Regulating Station Construction Noise Contours

Source: Medlin & Associates

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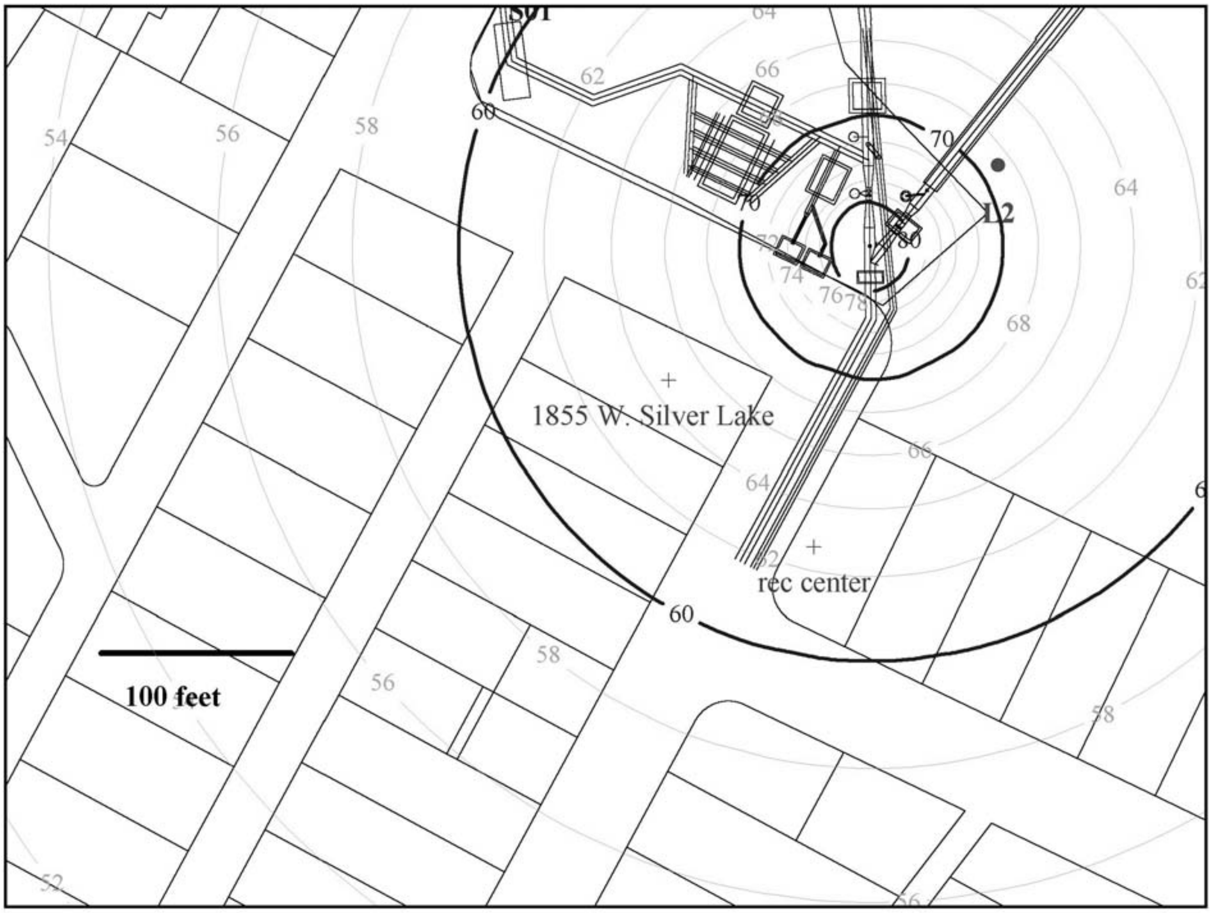

Source: Medlin & Associates

Figure 10-8
SLRC SRP Draft EIR
Regulating Station Operation
Noise Contours

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3. Fixed-location machinery, such as generators and compressors, will be shielded from sensitive receivers. Shielding may comprise any arrangement that produces substantial noise reductions including manufactured enclosures; plywood barriers; terrain (berms, dirt piles); and other large, fixed-location machinery.
4. Activities that may be performed at a fixed location (e.g., sawing lumber) will be shielded similar to Number 3, above.
5. Machinery will be equipped with high-performance mufflers and other noise-reducing equipment. Machinery will be maintained in good running condition, including frequent lubrication to minimize squealing and additional engine load, to reduce annoying noise emissions.
6. Construction hours will be strictly enforced. Staging areas will be secured with a locked fence to prevent early startup or late-night maintenance.

Mitigation Measures N-2: Construction Noise at the SLRC

Measures to minimize noise from construction activities at the SLRC will include some or all of the following:

1. A noise monitoring and mitigation program at the SLRC will be instituted to continuously assess construction noise impacts and implement mitigation when and where required. The program will focus primarily on ensuring no hazardous noise levels exist at nearby residences. Long-term (all day) monitoring should be conducted to verify that noise levels at sensitive receptors do not exceed permissible limits as determined by the appropriate authority.
2. Construction areas will be shielded with noise control barriers, particularly the area surrounding the regulating station. Barriers may be of any configuration sufficient to control the immediate noise levels; specifically, they should be heavy, continuous (no gaps), and have a sound-absorptive surface on the construction side. Typical construction sound barriers include 3/4-inch plywood with a glass or mineral wool facing, commercially available post-and-panel noise-control fencing, and commercially available noise-control curtains. Barrier height will be as tall as can be practically and safely erected, but should be a minimum of 8 feet high. Entrances to the noise-controlled areas will be located away from sensitive receivers. If feasible, the entrance to the regulating station area will be to the east or southeast (facing the dog park).
3. Use of extreme noise producers will be minimized as much as possible because aggregate noise levels are generally driven by a few loud machines. Every effort will be made to complete such activities in a timely manner, rather than extending them over the duration of construction. Where feasible, they will be shielded by a sound barrier and located as far as possible from noise-sensitive receivers. Where feasible, such activities will be conducted offsite at a nonsensitive location.
4. Fixed-location machinery, such as generators and compressors, will be shielded from sensitive receivers. Shielding may comprise any arrangement that produces substantial noise reductions including manufactured enclosures; plywood barriers; terrain (berms, dirt piles); and other large, fixed-location machinery.

5. Activities that may be performed at a fixed location (e.g., sawing lumber) will be shielded similar to Number 4 above.
6. Equipment maintenance and testing facilities at the staging area will be shielded similar to Number 2 above.
7. Machinery will be equipped with high-performance mufflers and other noise-reducing equipment. Machinery will be maintained in good running condition, including frequent lubrication to minimize squealing and additional engine load, to reduce annoying noise emissions.
8. Loudest operations in the late afternoons and evenings, particularly after 7:00 p.m., will be avoided.
9. Noise-producing equipment maintenance and testing at the staging area in the evenings, particularly after 7:00 p.m., will be avoided. Testing of loud machinery will be scheduled to coincide with peak morning and afternoon traffic hours, if possible.
10. Unnecessary equipment will be shut down overnight (e.g., blowers or generators will not be left running unnecessarily).
11. Construction hours will be strictly enforced. The staging area will be secured with a locked fence to prevent early startup or late-night maintenance.

10.3.2 Operation

Mitigation Measure N-3: Noise from Regulating Station at the SLRC

Sufficient technology currently exists to reduce noise levels from the regulating station to a less-than-significant level. However, given that project operation is not anticipated to begin until late 2013, identification of specific sound-reducing measures is not practical because sound-reduction technology is constantly evolving and advancing (i.e., more sophisticated sound-reduction technology is anticipated to be available in the future than is available today). LADWP will include technologically advanced sound-reduction measures in its detailed design of the regulating station equipment and/or enclosure materials to ensure that noise levels during operation of the regulating station are 40 dBA or less at the nearest residence.

10.4 Significance After Mitigation

10.4.1 Construction

Construction noise levels at both the HWSG site and the SLRC have been estimated conservatively high. It is anticipated that Mitigation Measures N-1 and N-2 will be successful at reducing potential noise impacts to less than significant levels. However, depending on overlapping construction tasks and duration, it is possible that noise impacts resulting from construction will remain significant even after mitigation.

10.4.2 Operation

Implementation of Mitigation Measure N-3 would ensure that potential noise impacts resulting from operation of the regulating station at the SLRC would be less than significant.

11.0 Air Quality

11.1 Regional Setting

National Ambient Air Quality Standards (NAAQS) have been established for seven "criteria" air pollutants. The primary national standards were established to protect public health with a built-in margin of safety. The secondary standards were established to protect and account for air pollutant effects on soil, water, visibility, vegetation, and other aspects of the general welfare of the human population. The State of California also has established California Ambient Air Quality Standards (CAAQS) for the criteria pollutants, as well as several additional pollutants. The NAAQS and CAAQS are presented in Table 11-1.

TABLE 11-1
Ambient Air Quality Standards

		California Standards	**Federal Standards**	
Pollutant	**Average Time**	**Concentration**	**Primary**	**Secondary**
Ozone	1 hour	0.09 ppm	0.12 ppm	Same as Primary Standards
	8 hours		0.08 ppm	
Carbon Monoxide	8 hours	9.0 ppm	9.0 ppm	None
	1 hour	20 ppm	35 ppm	
Nitrogen Dioxide	Annual Average	—	0.053 ppm	Same as Primary Standard
	1 hour	0.25 ppm	—	
Sulfur Dioxide	Annual Average	—	0.030 ppm	—
	24 hours	0.04 ppm	0.14 ppm	—
	3 hours	—	—	0.5 ppm
	1 hour	0.25 ppm	—-	—
Suspended Particulate Matter (PM_{10})	24 hours	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	50 µg/m^3	Same as Primary Standard
Suspended Particulate Matter ($PM_{2.5}$)	24 hours	65 µg/m^3	—	—
	Annual Arithmetic Mean	12 µg/m^3	15 µg/m^3	—
Sulfates	24 hours	25 µg/m^3	—	—

TABLE 11-1
Ambient Air Quality Standards

Pollutant	Average Time	California Standards	Federal Standards	
		Concentration	Primary	Secondary
Lead	30-day Average	1.5 µg/m³	—	—
	Calendar Quarter	—	1.5 µg/m³	Same as Primary Standard

Source: California Air Resources Board. June 9, 2003.

ppm = parts per million

µg/m³ = micrograms per cubic meter

Note: There are also CAAQS for visibility reducing particles, hydrogen sulfide, and vinyl chloride; however, they are not currently being monitored in the SCAB.

The SLRC SRP is located in Los Angeles County, which is part of the South Coast Air Basin (SCAB). This region is regulated by the South Coast Air Quality Management District (SCAQMD). As shown below in Table 11-2, EPA has designated the SCAB as being in severe nonattainment for ozone (O_3) and serious nonattainment for particulate matter less than 10 microns (PM_{10}). The region also is expected to be in nonattainment with the $PM_{2.5}$ standards because the 2003 Air Quality Management Plan (AQMP) indicates that EPA is expected to give the region until 2014 to comply with the 1997 standards. The region has demonstrated attainment with all other criteria pollutants (SCAQMD, 2003).

TABLE 11-2
Federal and State Designations of the South Coast Air District

Pollutant	Federal		State Standards
	Designation	Classification	
Ozone	Nonattainment	Severe*	Nonattainment
PM_{10}	Nonattainment	Serious	Nonattainment
CO	Attainment		Attainment
NO_2	Attainment		Attainment
SO_2	Attainment		Attainment

Source: South Coast Air Quality Management District air quality data from www.aqmd.gov and the 2003 Air Quality Management Plan Executive Summary Chapter.

*The likely attainment date from EPA for meeting the ozone standard is 2021 (2003 AQMP, page ES-8).

The SCAQMD has set up a network of air quality monitoring facilities throughout the SCAB. The criteria pollutants carbon monoxide (CO), O_3, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, and $PM_{2.5}$ are measured at the Burbank/Glendale monitoring station in Los Angeles County, which is the closest monitoring site to both the HWSG and SLRC Proposed Project sites. Table 11-3 shows the highest monitored levels of these air pollutants from 2000 through 2002, the last 3 years of available data. Both the California and federal

O_3 standards were exceeded at this location. Also, the California NO_2 standard was exceeded on 1 day in 2002, and both the PM_{10} and $PM_{2.5}$ standards were exceeded.

TABLE 11-3
Maximum Ambient Levels for Criteria Pollutants at Nearest Air Monitoring Station (Station #7)

		Burbank/Glendale		
Air Pollutant	**Standard Exceedance**	**2000**	**2001**	**2002**
Carbon Monoxide (CO)	Max. 1-hr Concentration (ppm)	8	6	6
	Max. 8-hr Concentration (ppm)	6.1	4.88	4.6
	# Days > Federal 1-hr Std. of > 9.5 ppm	0	0	0
	# Days > California 8-hr Std. of > 9.0 ppm	0	0	0
Ozone (O_3)	Max. 1-hr Concentration (ppm)	0.15	0.129	0.128
	Max. 8-hr Concentration (ppm)	0.119	0.104	0.097
	# Days > Federal 1-hr Std. > 0.12 ppm	3	2	1
	# Days > Federal 8-hr Std. of > 0.08 ppm	11	5	6
	# Days > California 1-hr Std. > 0.09 ppm	16	15	17
Nitrogen Dioxide (NO_2)	Max. 1-hr Concentration (ppm)	0.17	0.25	0.26
	# Days > California 1-hr Std. of > 0.25 ppm	0	0	1 (a)
Suspended Particulate Matter ($PM_{2.5}$)	Number of Samples	70	117	121
Sulfur Dioxide	Max. 24-hr concentration (µg/m^3)	84.4	94.7	57.8
	# Samples > Federal 24-hr Std. of > 65 µg/m^3	3	4	0
	Annual Arithmetic Mean (µg/m^3)	23.8	24.9	20.3
	Max. concentration in 1 hr (ppm)	0.01	0.01	0.01
	Max. concentration in 24 hours (ppm)	0.004	0.004	0.007
Suspended Particulate Matter (PM_{10})	Number of Samples	60	61	58
	Max. 24-hr Concentration (µg/m3)	74	86	71
	# Samples > Federal 24-hr Std. of > 150 µg/m^3	0	0	0
	# Samples > California 24-hr Std. of 50 µg/m^3	14	14	7
	Annual Arithmetic Mean (µg/m^3)	39.1	40.9	37.7

Source: Air Quality data downloaded at www.aqmd.gov.

Note: Lead and sulfate are not monitored at the Burbank Station.

(a) Note: Although the NO_x CAAQS was exceeded at this location for one day, the overall South Coast Air Basin is in attainment with both the California and federal NO_2 standards based on their Basinwide modeling.

Criteria pollutants were established based on the effects of the pollutants on human health. Following is a description of the adverse effects of criteria pollutants, as well as the primary sources of pollutant emissions in urban areas.

Carbon Monoxide

In urban areas, the primary cause of CO pollution is incomplete combustion of gasoline in motor vehicles. CO levels can vary substantially over short distances. Typically, higher concentrations are found near intersections or along heavily traveled roadways with slow moving traffic. CO is a colorless and odorless gas, which makes high concentrations dangerous because they cannot be detected by human senses. High concentrations can cause headaches, aggravation of cardiovascular disease, and the impairment of the central nervous system.

Sulfur Oxide

Sulfur oxides (SO_x) consist mainly of sulfur dioxide and sulfur trioxide. SO_x can have adverse health effects on the respiratory system, causing damage to the respiratory tract and bronchi constriction.

Nitrogen Oxides

Nitrogen oxides (NO_x) are of concern because of the role they play in the formation of ozone. Because reactions to form ozone are slow and occur as pollutants diffuse downwind, ozone is addressed on a regional basis.

Fine Particulate Matter (PM_{10} and $PM_{2.5}$)

PM_{10} and $PM_{2.5}$ consist of extremely small suspended particles or droplets that are 10 and 2.5 micrometers (or microns) or smaller, respectively, in diameter than can lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from such sources as road dust, diesel soot, combustion products, abrasion of tires and brakes, construction operations, and windstorms They are also formed in the atmosphere from NO_2 and SO_2 reactions with ammonia. PM_{10} and $PM_{2.5}$ scatter light and significantly reduce visibility.

PM_{10} and $PM_{2.5}$ pose a serious health hazard, alone or in combination with other pollutants. Particulate emissions from diesel-fueled engines has been identified as a toxic air contaminant by the California Air Resources Board.

Lead

Lead (Pb) emissions from vehicles have decreased substantially since leaded gasoline was phased out in the United States. As a result, an analysis of lead impacts is only conducted on projects that emit significant quantities of lead.

Ozone

The most widespread air quality problem in the state, ozone is a colorless gas with a pungent, irritating odor. Ozone is not emitted directly into the atmosphere, but is formed primarily when reactive organic gases (ROG) and NO_x react in the presence of sunlight. Ozone is present in relatively high concentrations in the SCAB, and the damaging effects of photochemical smog are generally related to the concentrations of ozone. Ozone may pose its worst health threat to those who already suffer from respiratory diseases. Ozone also hurts healthy people. The health effects of ozone can include reduced lung function; aggravated existing respiratory illness; and irritated eye, nose, and throat tissues. Chronic exposure can cause permanent damage to the alveoli of the lungs. The SCAB has peak ozone levels 2.5 times higher than the federal health standard, and 3 times higher than the more stringent state standard.

11.2 Impacts

11.2.1 Significance Thresholds

Air quality standards of significance for the Proposed Project were determined from adopted standards from the following sources:

- SCAQMD CEQA Guidelines
- City of Los Angeles CEQA Guidelines
- State CEQA Guidelines, Appendix G

Based on guidance from the above sources, impacts to air quality would be considered significant if construction or operation of the Proposed Project would result in any of the following:

- Conflict with, or obstruct implementation of, the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Result in a cumulatively considerable net increase of any criteria pollutant for which the Proposed Project region is in nonattainment under an applicable federal or state AAQS (including releasing emissions that exceed quantitative thresholds for ozone precursors)
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people

The SCAQMD CEQA Handbook lists the following levels as significant for construction projects:

Pollutant	Quarterly Significance Threshold (tons/quarter)	Daily Significance Threshold (lb/day)
Reactive Organic Gases	2.5	75
Nitrogen Oxides	2.5	100
Carbon Monoxide	24.75	550
Particulate Matter	6.75	150
Sulfur oxides	6.75	150

Impacts to air quality from the Proposed Project would be significant if the above daily and/or quarterly pollutant levels were exceeded during construction.

11.2.2 Construction

Construction of the Proposed Project would occur over approximately 6.5 years and include nine construction phases at the two project sites as described below. Emissions associated with each phase have been quantified based on number of employees, number and type of equipment, potential for generation of fugitive dust, etc. Where a range of employees or equipment is assumed, the highest number was used to develop a conservative analysis. Phases 1 through 5 below are expected to occur at the HWSG site. Phases 6 through 9 are expected to occur at the SLRC.

To minimize construction emissions, the Proposed Project would implement standard construction practices. Fugitive dust produced during grading, excavation, and construction activities would be controlled pursuant to SCAQMD Rule 403. SCAQMD recommends minimizing fugitive dust (PM_{10} emissions) during all construction activities. The following measures would minimize fugitive dust emissions and their implementation has been accounted for in the construction emission calculations:

- The area disturbed by clearing, grading, earth moving, or excavation operations shall be as small as feasible to prevent excessive dust.
- Pregrading/excavation activities shall include watering the area to be graded or excavated before commencement of grading or excavation. Application of water (reclaimed, if available) shall penetrate sufficiently to minimize fugitive dust during grading activities.
- Trucks shall be required to have their loads covered as required by the SCAQMD.
- Graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved onsite roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. Watering shall be done at least twice daily.
- Inactive graded and/or excavated areas shall be monitored at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction and application of environmentally safe dust control materials, shall be periodically implemented over portions of the construction site that are inactive for over 4 days.
- Signs shall be posted limiting traffic to 15 mph or less.
- During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard to offsite properties.
- Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

Each of the aforementioned PM_{10} measures is assumed to be included in the SCAQMD Rule 403 – Dust Control Plan required for this Proposed Project. These combined measures are assumed to reduce fugitive PM_{10} by 50 percent, and are accounted for in the maximum daily and quarterly emissions calculated.

Section 11.2.2.1 describes the potential air quality impacts for construction activities at the HWSG site, while Section 11.2.2.2 describes potential air quality impacts for construction activities at the SLRC. Section 11.2.2.3 describes potential air quality impacts where construction phases at the two project sites overlap.

Maximum daily emissions for each individual phase are given in Tables 11-4 through 11-12. Because some of the significance thresholds would be exceeded, the tables include emissions both before and after mitigation. Mitigation measures are described in Section 11.3.

11.2.2.1 HWSG Site

Phase 1 – Reservoir Excavation and Subgrade Preparation

Reservoir excavation and subgrade preparation would take place approximately from January 2007 through September 2008. Approximately 470,000 cubic yards of soil material would be excavated for the construction of the reservoir. Of the 470,000 cubic yards, approximately 5 percent, or 23,000 cubic yards, would be disposed offsite due to its unsuitability as fill material. Based on using 20-cubic-yard capacity dump trucks to export the soil material needed, a total of 30 truckloads per day for approximately 40 days would be necessary to export 23,000 cubic yards of soil. A total of 1,200 truck trips would occur during the period from May 2008 through July 2008. Material and equipment would be staged onsite, and approximately 28 to 63 laborers would be required onsite during the reservoir excavation and subgrade preparation phase of construction.

Maximum daily emissions from this phase are shown in Table 11-4. Phase 1 emissions are anticipated to exceed maximum daily levels for NO_x and PM_{10} even after mitigation. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

TABLE 11-4
Construction Emissions – HWSG Site
Phase 1 – Reservoir Excavation and Subgrade Preparation

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	**lb/day CO**	**lb/day NO_x**	**lb/day SO_x**	**lb/day PM_{10}**
Construction Equipment*	56.2	235.9	693.7	0.7	31.8
Commute Vehicles	2.3	28.7	2.3	0.0	0.1
Fugitive Dust	0.0	0.0	0.0	0.0	784.4
Unmitigated Total	58.5	264.6	696.0	0.7	816.3
Mitigated Total**	**58.5**	**264.6**	**604.1**	**0.7**	**797.0**
Significance Thresholds***	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. Rule 403 measures are assumed to be included in the maximum project emissions.

***Emission thresholds established by the SCAQMD CEQA Handbook.

Phase 2 – Inlet/Outlet Vault Construction

Inlet/outlet and vault construction would take place approximately from January through August 2007. Excavation for the inlet/outlet and vault construction would be done as part of the grading and reservoir site preparation, as described above. Inlet/outlet and vault construction would require approximately 810 cubic yards of concrete. Approximately 41 trucks per day would deliver 410 cubic yards of concrete per day to the site for 2 days. Concrete would be obtained from the Southern California area, specifically Los Angeles and Orange Counties. Valves would be delivered on a flat-bed truck. Approximately one valve per day for 8 days would be delivered to the site. Construction of this phase will overlap with Phase 1 above. Approximately 10 to 14 laborers would be required onsite during inlet/outlet and vault construction.

Maximum daily emissions from this phase are shown in Table 11-5. Phase 2 emissions are anticipated to exceed maximum daily levels for NO_x and PM_{10} even after mitigation. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

TABLE 11-5
Construction Emissions – HWSG Site
Phase 2 – Inlet/Outlet Vault Construction

	Maximum Daily Emissions				
Construction Phases	**lb/day ROG**	**lb/day CO**	**lb/day NO_x**	**lb/day SO_x**	**lb/day PM_{10}**
Construction Equipment*	29.1	124.9	306.1	0.8	15.0
Commute Vehicles	0.5	6.4	0.5	0.0	0.0
Fugitive Dust	-	-	-	-	540.5
Unmitigated Total	29.6	131.3	306.1	0.8	555.5
Mitigated Total**	**29.6**	**131.3**	**277.4**	**0.8**	**548.2**
Significance Thresholds***	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. Rule 403 measures are assumed to be included in the maximum project emissions.

***Emission thresholds established by the SCAQMD CEQA Handbook.

Phase 3 – Reservoir Construction

Reservoir construction activities include construction of the reservoir itself, construction of the reservoir access structures, and relocation of the 24-inch water distribution line to Forest Lawn Drive. Reservoir construction would take place approximately from September 2008 through August 2011. Materials required for reservoir construction include concrete and gravel. A total of approximately 98,686 cubic yards of concrete would be required. Approximately 15 trucks per day would deliver 135 cubic yards of concrete per day to the site. A total of approximately 18,336 cubic yards of gravel would be required. Approximately two trucks per day would deliver 36 cubic yards of gravel per day to the site. Concrete and gravel would be obtained from the Southern California area, specifically

Los Angeles and Orange Counties. On average, 14 pieces of equipment would be onsite each day. A peak of approximately 50 pieces of equipment would be onsite from approximately April 2011 through July 2011. During the tank construction phase, the average number of laborers onsite would be approximately 80 per day. A peak of 180 laborers per day for concrete work would occur approximately from September through December 2009.

Construction of the water distribution line in Forest Lawn Drive would require an approximately 4-foot-wide open trench. A six- to seven-person crew is anticipated for the approximately 1-month construction period, using a backhoe, crane, compactor, dump trunk, two pick-up trucks, welding truck, and water truck.

Maximum daily emissions from this phase are shown in Table 11-6. Phase 3 emissions are anticipated to exceed maximum daily levels for ROG, NO_x and PM_{10} even after mitigation. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

TABLE 11-6
Construction Emissions – HWSG Site
Phase 3 – Reservoir Construction

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	lb/day CO	lb/day NO_x	lb/day SO_x	lb/day PM_{10}
Construction Equipment*	71.0	314.2	951.6	0.9	41.6
Commute Vehicles	7.0	85.3	6.8	0.1	0.2
Fugitive Dust	-	-	-	-	418.6
Unmitigated Total	78.0	399.5	958.4	1.0	460.4
Mitigated Total**	**78.0**	**399.5**	**830.7**	**1.0**	**435.1**
Significance Thresholds***	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**Yes**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. Rule 403 measures are assumed to be included in the maximum project emissions.

***Emission thresholds established by the SCAQMD CEQA Handbook.

Phase 4 – Burying the Reservoir

Activities related to burying the reservoir would occur from approximately August 2011 through April 2013. Approximately 420,000 cubic yards of fill material would be required to bury the storage structure. Of this amount, 156,000 would be obtained onsite from tank excavation, and 264,000 cubic yards would be imported. Approximately 80 truckloads per day for 166 days would be necessary to import all the soil material, resulting in a total of approximately 13,250 truck trips between August 2011 and March 2012. Approximately 320 cubic yards of concrete would be required to construct benches around the reservoir. An estimated eight truckloads of concrete per day for 4 days would be required. Approximately 19 to 42 laborers would be required onsite during the reservoir-burying phase of construction.

TABLE 11-7
Construction Emissions – HWSG Site
Phase 4 – Burying Reservoir Structure

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	**lb/day CO**	**lb/day NO_x**	**lb/day SO_x**	**lb/day PM_{10}**
Construction Equipment*	36.1	159.9	484.4	0.9	20.8
Commute Vehicles	1.6	19.2	1.5	0.0	0.0
Fugitive Dust	-	-	-	-	644.1
Unmitigated Total	37.7	179.1	485.9	0.9	644.9
Mitigated Total**	**37.7**	**179.1**	**425.9**	**0.9**	**652.8**
Significance Thresholds***	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. Rule 403 measures are assumed to be included in the maximum project emissions.

***Emission thresholds established by the SCAQMD CEQA Handbook.

Maximum daily emissions from this phase are shown in Table 11-7. Phase 4 emissions are anticipated to exceed maximum daily levels for NO_X and PM_{10} even after mitigation. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

Phase 5 – Hydroelectric Power Generating Facility

Construction of the hydroelectric plant would last approximately 18 months, from January 2010 to June 2011. The hydroelectric plant would be constructed at the west end of the HWSG site. Approximately 2 acres would be disturbed during construction.

Approximately 6,000 cubic yards of soil material would be excavated for the construction of the hydroelectric plant. Of this excavated soil, 2,600 cubic yards would be exported; and 3,400 cubic yards would be retained onsite for burial of the hydroelectric plant. Based on using dump trucks with a 16-cubic-yard capacity to export the soil material, a total of eight truckloads per day for a duration of 20 days would be necessary for a total of 160 truck trips between January and May 2010. During construction, 960 cubic yards of concrete would be needed, which would require approximately 80 trips by a 12-cubic-yard concrete mixer between June and December 2010. Other equipment required for the facility would be delivered by tractor-trailer and flat-bed truck. Approximately 312 tractor/trailer trips and 900 flat-bed trucks would be required over the duration of construction. An average of 40 laborers would be required onsite each day during construction.

Maximum daily emissions from this phase are shown in Table 11-8. Phase 5 emissions are anticipated to exceed maximum daily levels for NO_X and PM_{10} even after mitigation. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

TABLE 11-8
Construction Emissions – HWSG Site
Phase 5 – Hydroelectric Powerplant

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	lb/day CO	lb/day NO_x	lb/day SO_x	lb/day PM_{10}
Construction Equipment*	44.2	172.6	473.7	0.2	24.4
Commute Vehicles	1.5	15.6	1.7	0.4	0.4
Fugitive Dust	-	-	-	-	244.8
Unmitigated Total	45.7	188.2	475.4	0.6	269.6
Mitigated Total**	**45.7**	**188.2**	**411.4**	**0.6**	**254.5**
Significance Thresholds***	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. Rule 403 measures are assumed to be included in the maximum project emissions.

***Emission thresholds established by the SCAQMD CEQA Handbook.

11.2.2.2 SLRC

Phase 6 – Bypass Pipeline

Construction of the bypass pipeline would take place approximately from May 2007 through April 2009. Jacking and receiving pits for bypass pipeline tunneling would be located in West Silver Lake Drive. Roughly 5 to 15 feet around each pit would be blocked off, and the traffic around each pit would be reduced to one lane in each direction. An additional jacking pit would be located in the grassy area south of Silver Lake Reservoir dam. The portion of the bypass pipeline within the grassy area south of Silver Lake Reservoir dam would be constructed by open-trench methods.

Approximately 6,625 cubic yards of soil would be removed during bypass-pipeline construction. This soil would be exported to the HWSG site. Based on an estimate of 20 feet of tunneling per day and dump trucks with 10-cubic-yard capacity, two to three truckloads of soil would be exported from the site each day for 278 days from June 2007 through February 2008, and from October 2008 through February 2009. Steel pipe would be delivered to the site on flat-bed trucks. Approximately six trucks per day would deliver 240 feet of pipe per day for approximately 21 days, staggered throughout the construction period. Approximately nine trucks per day would deliver 90 cubic yards of concrete per day to the site for approximately 31 days, for a total of roughly 2,542 cubic yards of concrete.

Maximum daily emissions from this phase are shown in Table 11-9. Phase 6 emissions are anticipated to exceed maximum daily levels for NO_x and PM_{10} even after mitigation. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

TABLE 11-9
Construction Emissions – SLRC
Phase 6 – Bypass Pipeline

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	lb/day CO	lb/day NO_x	lb/day SO_x	lb/day PM_{10}
Construction Equipment*	32.5	131.1	374.9	0.4	18.0
Commute Vehicles	0.5	6.4	0.5	0.0	0.0
Fugitive Dust	-	-	-	-	318.2
Unmitigated Total	33.0	137.5	375.4	.04	336.4
Mitigated Total**	**33.0**	**137.5**	**328.2**	**0.4**	**325.6**
Significance Thresholds***	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. No additional mitigation credit was taken for watering site and other Rule 403 dust suppressant methods.

***Emission thresholds established by the SCAQMD CEQA Handbook.

Phase 7 – Regulating Station

Construction of the regulating station and relief stations would take place approximately from April through November 2009. Approximately 330 cubic yards of concrete would be required for construction of the regulating station. Approximately 5 to 15 trucks per day would deliver up to 130 cubic yards of concrete per day to the site for approximately 5 days. Concrete would be obtained from the Southern California area, specifically Los Angeles and Orange Counties.

Maximum daily emissions from this phase are shown in Table 11-10. Phase 7 emissions are anticipated to exceed maximum daily levels for NO_x and PM_{10} even after mitigation. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

TABLE 11-10
Construction Emissions – SLRC
Phase 7 – Regulating Station

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	lb/day CO	lb/day NO_x	lb/day SO_x	lb/day PM_{10}
Construction Equipment*	22.2	85.5	233.2	0.4	11.8
Commute Vehicles	0.5	6.4	0.5	0.0	0.0
Fugitive Dust	-	-	-	-	270.8
Unmitigated Total	22.7	91.9	233.7	0.4	282.6
Mitigated Total**	**22.7**	**91.9**	**206.1**	**0.4**	**275.7**

TABLE 11-10
Construction Emissions – SLRC
Phase 7 – Regulating Station

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	lb/day CO	lb/day NO_x	lb/day SO_x	lb/day PM_{10}
Significance Thresholds*	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. No additional mitigation credit was taken for watering site and other Rule 403 dust suppressant methods.

***Emission thresholds established by the SCAQMD CEQA Handbook.

Phase 8 – Removal of Silver Lake Reservoir from Service

Activities required to remove Silver Lake Reservoir from service would be conducted approximately between October 2007 and April 2008. Approximately 12 concrete trucks would be needed for vault lid and base construction, and was assumed to be the maximum number of concrete trucks onsite on any 1 day during the removal of the Silver Lake reservoir from service. The average number of laborers required would be approximately 10 to 14 per day.

Maximum daily emissions from this phase are given in Table 11-11. Phase 8 emissions are anticipated to exceed maximum daily levels for NO_X and PM_{10} even after mitigation.

TABLE 11-11
Construction Emissions – SLRC
Phase 8 – Removal of Silver Lake Reservoir from Service

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	lb/day CO	lb/day NO_x	lb/day SO_x	lb/day PM_{10}
Construction Equipment*	25.8	100.1	271.2	0.2	13.9
Commute Vehicles	0.5	6.4	0.5	0.0	0.0
Fugitive Dust	-	-	-	-	229.6
Unmitigated Total	26.3	106.5	271.7	0.2	243.5
Mitigated Total**	**26.3**	**106.5**	**237.9**	**0.2**	**235.2**
Significance Thresholds*	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. No additional mitigation credit was taken for watering site and other Rule 403 dust suppressant methods.

***Emission thresholds established by the SCAQMD CEQA Handbook.

Phase 9 – Removal of Ivanhoe Reservoir from Service

Construction activities related to removal of Ivanhoe Reservoir from service would include routing a new conveyance pipe to the reservoir from an existing 16-inch pipe on Armstrong Avenue. Also required would be installation of valves and a vault within the SLRC. The construction activities would take 2 to 3 months, estimated to be between May and July 2013.

Approximately 13 concrete trucks would be needed for 5 days during the period of removal of Ivanhoe Reservoir from service. The average number of laborers required would be approximately 10 to 14 per day.

Maximum daily emissions from this phase are given in Table 11-12. Phase 9 emissions are anticipated to exceed maximum daily levels for NO_X and PM_{10} even after mitigation.

TABLE 11-12
Construction Emissions – SLRC
Phase 9 – Removal of Ivanhoe Reservoir from Service

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	**lb/day CO**	**lb/day NO_x**	**lb/day SO_x**	**lb/day PM_{10}**
Construction Equipment*	25.9	100.4	272.7	0.2	13.9
Commute Vehicles	0.5	6.4	0.5	0.0	0.0
Fugitive Dust	-	-	-	-	239.1
Unmitigated Total	26.4	106.8	273.2	0.2	253.0
Mitigated Total**	**26.4**	**106.8**	**239.4**	**0.2**	**244.7**
Significance Thresholds***	**75**	**550**	**100**	**150**	**150**
Remaining Significant?	**No**	**No**	**Yes**	**No**	**Yes**

*Types of construction equipment needed for this phase are outlined in the Technical Appendix spreadsheets.

**Mitigation: Use of emulsified diesel fuel in all construction equipment. No additional mitigation credit was taken for watering site and other Rule 403 dust suppressant methods.

***Emission thresholds established by the SCAQMD CEQA Handbook.

11.2.2.3 Combined Construction Emissions at the HWSG Site and SRLC

Where construction phases overlap, the calculations have been combined regardless of the physical location of the construction activities. When two or more phases of the project overlap (even for days or weeks), the highest emitting days of each individual phases were combined to estimate the most conservative, worst-case emissions for that time period. Those estimates were then compared to the SCAQMD CEQA significance for construction on both a daily and quarterly basis. Tables 11-13 and 11-14 show maximum daily and quarterly construction emissions for the combined phases. Table 11-13 shows that, even after mitigation, maximum daily emissions exceed significance thresholds for ROG, CO, NO_X, and PM_{10}. Table 11-14 shows that, after mitigation, maximum quarterly emissions exceed significance thresholds for ROG, NO_X, and PM_{10}.

TABLE 11-13
Maximum Daily Construction Emissions for Phases 1 – 9

Construction Phases	Maximum Daily Emissions				
	lb/day ROG	lb/day CO	lb/day NO_x	lb/day SO_x	lb/day PM_{10}
Phase 1 – Reservoir Excavation and Subgrade Preparation	59	265	696	0.7	816
Phase 2 – Inlet/Outlet and Vault Construction	30	131	307	0.8	556
Phase 3 – Reservoir Construction	78	400	958	1.0	460
Phase 4 – Burying the Reservoir	38	179	486	1.0	665
Phase 5 – Hydroelectric Plant	46	188	486	0.9	270
Phase 6 – Bypass Pipeline	33	138	375	0.4	336
Phase 7 – Regulating Station	23	92	234	0.4	283
Phase 8 – Remove Silver Lake Reservoir from Service	26	107	272	0.2	244
Phase 9 – Remove Ivanhoe Reservoir from Service	26	107	273	0.2	253
Max. Daily Total* (without mitigation)	124	588	1,433	1.9	1,708
Max. Daily Total (with Mitigation)	124	588	1,242	1.9	1,671
Significance Thresholds**	75	550	100	150	150
Remaining Significant?	Yes	Yes	Yes	No	Yes

*Max. daily total is total for worst-case construction day (i.e., sum of daily emissions for phases that overlap).

Wherever two or more phases of the project overlap (even for days or weeks), the highest emitting days of each of individual phase were combined to estimate the most conservative, worst-case emissions. These overlapping emissions were then compared to the SCAQMD daily and quarterly significance levels.

For example, Phases 1, 2, and 6 overlap; Phases 1, 6, and 8 overlap. Phases 3 and 5, 3 and 6, and 3 and 7 also overlap. Phases 4 and 9 are the only phases that do not overlap in any way with any other phase.

Note: These totals are NOT the totals of phases 1 – 9 above because not all phases overlap all the time.

**Emission thresholds established by the SCAQMD CEQA Handbook.

Mitigation measures are outlined in Section 11.3.

Standard dust control measures per Rule 403 are included in the premitigation emissions.

TABLE 11-14
Maximum Quarterly Construction Emissions for Phases 1 – 9

Construction Phases	Maximum Quarterly Emissions				
	Tons/qtr ROG	Tons/qtr CO	Tons/qtr NO_x	Tons/qtr SO_x	Tons/qtr PM_{10}
Phase 1 – Reservoir Excavation and Subgrade Preparation	2.3	10.3	27.1	0.0	31.8
Phase 2 – Inlet/Outlet and Vault Construction	0.9	3.5	8.8	0.0	6.8
Phase 3 – Reservoir Construction	3.0	15.6	37.4	0.0	17.9
Phase 4 – Burying the Reservoir	1.4	6.8	18.2	0.0	20.3
Phase 5 – Hydroelectric Plant	1.8	7.3	18.4	0.0	9.6
Phase 6 – Bypass Pipeline	1.3	5.3	14.3	0.0	10.5
Phase 7 – Regulating Station	0.9	3.6	9.1	0.0	11.0
Phase 8 – Remove Silver Lake Reservoir from Service	1.0	4.1	10.5	0.0	5.1
Phase 9 – Remove Ivanhoe Reservoir from Service	1.0	4.1	10.6	0.0	5.4
Max. Quarterly* (without mitigation)	4.8	22.9	55.8	0.0	47.4
Max. Quarterly Total (with Mitigation)**	4.8	22.9	48.3	0.0	46.0
Significance Thresholds***	2.5	24.75	2.5	6.75	6.75
Remaining Significant?	Yes	No	Yes	No	Yes

*Max. quarterly emissions assume worst-case construction quarter (i.e., sum of maximum quarterly emissions for phases that overlap). Maximum quarterly emissions = worst case daily emissions x 67 workdays per quarter.

Wherever two or more phases of the project overlap (even for days or weeks), the highest emitting days of each of individual phase were combined to estimate the most conservative, worst-case emissions. These overlapping emissions were then compared to the SCAQMD daily and quarterly significance levels.

For example, Phases 1, 2, and 6 overlap; Phases 1, 6, and 8 overlap. Phases 3 and 5, 3 and 6, and 3 and 7 also overlap. Phases 4 and 9 are the only phases that do not overlap in any way with any other phase.

Note: These totals are NOT the totals of Phases 1 through 9 above as not all phases overlap all the time.

**Mitigation measures are outlined in Section 11.3.

Standard dust control measures per Rule 403 are included in the premitigation emissions.

***Emission thresholds established by the SCAQMD CEQA Handbook.

11.2.3 Operation

11.2.3.1 HWSG Site

Storage Reservoir Operation and Maintenance

Following construction, native vegetation would be planted on the side slopes and top of the reservoir. The remainder of the HWSG site that would be disturbed during construction would be returned to its original condition.

During operation of the reservoir at the HWSG site, LADWP staff would check the facility once a week, while security would check the facility daily. The reservoir inlet/outlet valves would be checked once a year. The tanks that make up the reservoir require cleaning once every 4 years. It is likely that LADWP would stagger tank cleaning such that one tank is cleaned every 2 years. Tank cleaning takes approximately 1 week and requires a utility truck and possibly a dump truck if there is a significant amount of sand at the bottom of the reservoir.

Significant air quality impacts are not anticipated as a result of operation and maintenance of the storage reservoir.

Hydroelectric Plant Operation and Maintenance

The 4-MW hydroelectric plant would generate electricity while reducing water pressure coming into the new storage reservoir. The hydroelectric plant would require a powerhouse, connection to the existing 35-kV LADWP distribution system, an outdoor substation, and a backup emergency generator. The hydroelectric-generated power would be connected to the existing 35-kV LADWP distribution system.

For backup station service power, an emergency generator with a capacity of approximately 125 kW would be housed in a separate enclosure from the powerhouse and switchyard. The enclosure would be either an outdoor metal shed type or a brick building 30 feet wide by 25 feet long by 10 feet tall.

All generators (including emergency generators) rated in excess of 50 bhp require an SCAQMD Permit to Construct/Operate. This generator is assumed to run on diesel fuel; and, as such, SCAQMD staff will confirm that all criteria and toxic air pollutants resulting from its use comply with the SCAQMD New Source Review and Rule 1401 permitting standards. Permit conditions issued for emergency generators generally restrict their allowable use to less than 50 hours per year according to the Air Borne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM, CARB, November 2004). Air quality impacts from testing this equipment are assumed to be negligible.

The hydroelectric plant would not require staff onsite; rather, the facility would be operated remotely, from the LADWP area control center. An LADWP operator would visit the facility once a week. Security would check the facility daily.

Quarterly preventative maintenance would be performed on the plant ancillary equipment (cooling water system, air compressor, electric motor actuators), requiring one service truck for 1 day. Once a year, the facility would be shut down for internal and external inspection. This maintenance activity would require three service trucks per day for 2 weeks. The facility would be shut down for overhaul once every 5 years. This maintenance activity would require three service trucks and one crane per day for 4 weeks.

Significant air emissions are not anticipated as a result of operation or maintenance of the hydroelectric plant for the following reasons:

- Regular operation of the hydroelectric power plant is not expected to result in any emissions because no fossil fuels are burned. In fact, the electricity produced by the plant could result in a net reduction in emissions by decreasing the load on regional power plants burning fossil fuels.
- The pumps are electric and, therefore, would not produce direct emissions associated with the burning of fossil fuels.
- No employees are required to work onsite at the plant.
- Quarterly maintenance activities and annual inspections are not expected to result in significant emissions.

11.2.3.2 SLRC

Bypass Pipeline Operation

Operation of the bypass pipeline would not be expected to result in air quality impacts.

Regulating Station and Relief Station Operation

Operation of the regulating station and relief stations would not be anticipated to result in air quality impacts for the following reasons:

- The pumps associated with the regulating station and relief stations would be electric and, therefore, would not produce direct emissions associated with the burning of fossil fuels.
- No employees are required to work onsite at the regulating station and regulating stations.
- Maintenance activities are not expected to result in significant emissions.

Silver Lake and Ivanhoe Reservoirs Operation

Following the removal of Silver Lake and Ivanhoe Reservoirs from the water distribution system, the reservoirs would be allowed to revert to a more natural state. The level of operation and maintenance of the two reservoirs after they are removed from service is not expected to increase compared to current operation levels. Air quality impacts are not anticipated as a result of maintenance of the reservoirs.

11.3 Mitigation Measures

11.3.1 Construction

Fugitive dust-control measures during construction were identified in Section 11.2.2 and would be included as part of the Proposed Project. Emissions of NO_x, ROG, PM_{10}, and CO are expected to be significant during the worst-case months of overlapping construction impacts. Mitigation Measure AQ-1 has been identified to help reduce construction-related air quality impacts.

Mitigation Measure AQ-1: Construction

The following measures would be implemented to reduce construction-related air quality impacts during all seven phases of project construction:

- Equipment idling time shall be minimized to the extent possible.
- Equipment engines shall be maintained in good condition and in proper tune in accordance with manufacturer specifications.
- Electricity from onsite power poles will be used, as feasible, in place of temporary diesel-powered generators.
- All construction equipment shall utilize emulsified diesel fuel. The use of such fuel has been demonstrated by the California Air Resources Board to reduce NO_x by 14 percent and reduce PM_{10} (from engine combustion) by 63 percent.

11.3.2 Operation

No significant adverse air quality impacts were identified as a result of project operation; therefore, no mitigation measures are required.

11.4 Significance After Mitigation

Construction-related emissions are expected to be significant even with the implementation of fugitive dust control measures and Mitigation Measure AQ-1. Construction-related emissions for this project were quantified using the worst-case, most conservative assumptions. For example, it is assumed that all equipment needed for a particular construction phase will be operating all day at its rated load capacity. Also, where any of the phases overlap (even for a few weeks) those overlapping emissions were used to determine significance. The SCAQMD threshold levels for significance during construction are very conservative, and generally even minor construction projects exceed the allowable emission levels.

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12.0 Public Services and Utilities

12.1 Setting

12.1.1 HWSG Site

Fire, Police, and Emergency Medical Services

The City of Los Angeles Fire Department provides fire and emergency medical services (paramedic/rescue) to the HWSG site primarily from Fire Station No. 76, located at 3111 North Cahuenga Boulevard. Fire Station No. 76 is a single-engine station staffed with four firefighters per shift (three shifts per day). A number of private ambulance companies also serve the Proposed Project area.

Police protection for the HWSG site is provided by the Northeast Community Police Station, located at 3353 San Fernando Road. Typically, 8 two-person patrol cars are on duty 24 hours per day, plus an additional three to four cars during mid-watch periods (mid-day and midnight).

Community Facilities

Community facilities in the vicinity of the HWSG site include Providence Saint Joseph Medical Center and Providence High School, both located north of State Highway 134, north of the far west end of the site.

Utilities

Utilities in the vicinity of the HWSG site include a Southern California Gas pipeline; Pacific Bell Telephone lines; City of Los Angeles storm drain; and a number of LADWP utilities, including various water pipelines and electrical power poles and lines. A 24-inch LADWP water distribution pipeline crosses the HWSG site.

12.1.2 SLRC

Fire, Police, and Emergency Medical Services

The City of Los Angeles Fire Department provides fire and emergency medical services (paramedic/rescue) to the SLRC primarily via Fire Station 56, located at 2759 Rowena Avenue. Fire Station 56 is a single-engine station with four firefighters per shift plus one paramedic/rescue vehicle staffed with two firefighters per shift and one heavy rescue vehicle staffed with two firefighters per shift. A number of private ambulance companies also serve the project area.

Police protection for the SLRC is provided by the Northeast Community Police Station, located at 3353 San Fernando Road. Typically, 8 two-person patrol cars are on duty 24 hours per day, plus an additional three to four cars during mid-watch periods (mid-day and midnight).

Community Facilities

Community facilities in the vicinity of the SLRC include the Silver Lake Recreation Center and a dog park, both located south of the Silver Lake dam, and a community nursery school that is located in the northeast corner of the SLRC.

Utilities

Utilities in the vicinity of the SLRC include a Southern California Gas pipeline, telephone lines, cable lines, City of Los Angeles sewer line and storm drain, and LADWP water pipelines and power lines.

12.2 Impacts

12.2.1 Thresholds of Significance

Fire, Police, and Emergency Medical Services

Impacts to fire, police, and emergency medical services would be considered significant if the Proposed Project would:

- Interfere with existing or planned emergency response plans or emergency evacuation plans
- Require additional staffing or equipment to maintain acceptable service ratios, response times, or other performance objectives
- Substantially degrade the level of service of existing fire, police, and emergency medical services below established or acceptable levels

Community Facilities

Impacts to community facilities would be considered significant if the Proposed Project would:

- Require new, altered, or expanded staffing, equipment, or facilities not currently provided
- Substantially degrade the level of service for existing community facilities below established or acceptable levels

Utilities

Impacts to utilities would be considered significant if the Proposed Project would:

- Require the expansion of existing utility (e.g., water, sewer, electrical, natural gas, telephone) infrastructure or additional staff to maintain acceptable levels of service
- Substantially degrade the level of service for utilities below established or acceptable levels

12.2.2 HWSG Site

12.2.2.1 Construction

Fire, Police, and Emergency Medical Services

Construction of the proposed facilities at the HWSG site for most of the roughly 6.5-year construction period would not require any on-street activities such that emergency response routes or times would be affected. A traffic management plan would be developed in conjunction with LADOT for the approximately 1-month period of in-street construction in Forest Lawn Drive for relocation of the water distribution line. Implementation of this traffic management plan would ensure that emergency response times would not be affected. Traffic levels around the site would increase temporarily with construction vehicles, but construction activities would not interfere with emergency response plans or emergency evacuation plans, nor would the facilities diminish the ability of police, fire, and emergency medical service personnel to respond to emergencies. The facilities would be constructed using local labor; therefore, there would be no population growth that would require additional staffing or equipment for emergency services.

Community Facilities

Construction of the proposed facilities at the HWSG site would not require additional facilities or staffing of existing community facilities nor would it diminish the level of service for existing community facilities. Neither Providence Saint Joseph Medical Center nor Providence High School would be impacted by construction activities at the HWSG site.

Utilities

Construction activities at the HWSG site would not result in service interruptions or otherwise adversely affect existing utilities.

12.2.2.2 Operation

Fire, Police, and Emergency Medical Services

Operation of the hydroelectric plant and storage reservoir at the HWSG site would not result in any adverse impacts to fire, police, and emergency medical services. The proposed water facilities would not interfere with existing or planned emergency response plans or emergency evacuation plans, nor would the facilities diminish the ability of police, fire, and emergency medical service personnel to respond to emergencies. The proposed facilities would be serviced and maintained by existing LADWP staff; therefore, there would be no population growth that would require additional staffing or equipment for emergency services.

Community Facilities

Operation of the proposed facilities at the HWSG site would not require additional facilities or staffing of existing community facilities nor would it diminish the level of service for existing community facilities.

Utilities

Operation of the hydroelectric plant would result in generation of approximately 4 MW of green power. The facility would be connected to an existing power transmission line at the site; no additional power poles would be required, and no adverse impacts are anticipated.

12.2.3 SLRC

12.2.3.1 Construction

Fire, Police, and Emergency Medical Services

Construction of the proposed bypass pipeline would require a jacking pit and a receiving pit to be located in West Silver Lake Drive. As described in Chapter 9, Traffic and Transportation, West Silver Lake Drive is wide enough so that the jacking and receiving pits can be operational while still allowing one lane of traffic in each direction. In-street construction for the relief stations would be managed via a construction management plan such that local traffic patterns would be maintained or local traffic rerouted. Traffic levels around the SLRC would increase temporarily with construction vehicles. Neither in-street construction for the bypass pipeline and relief stations nor additional traffic from construction activities would interfere with emergency response plans or emergency evacuation plans; nor would these activities diminish the ability of police, fire, and emergency medical service personnel to respond to emergencies. The facilities would be constructed using local labor; therefore, there would be no population growth that would require additional staffing or equipment for emergency services.

Community Facilities

Construction of the proposed facilities at the SLRC would not require additional facilities or staffing of existing community facilities nor would it diminish the level of service for existing community facilities. Neither the dog park nor the nursery school would be impacted by construction activities at the SLRC. Users of the Silver Lake Recreation Center may be temporarily inconvenienced by construction of the regulating station, but any related impacts are considered to be temporary and not adverse.

Utilities

Construction activities at the SLRC would not result in service interruptions or otherwise adversely affect existing utilities.

12.2.3.2 Operation

Fire, Police, and Emergency Medical Services

Operation of the bypass pipeline, regulating station, and relief stations at the SLRC and removal of Ivanhoe and Silver Lake Reservoirs from the distribution system would not result in any adverse impacts to fire, police, and emergency medical services. The facilities would not interfere with existing or planned emergency response plans or emergency evacuation plans, nor would the facilities diminish the ability of police, fire, and emergency medical service personnel to respond to emergencies. The facilities would be serviced and maintained by existing LADWP staff; therefore, there would be no population growth that would require additional staffing or equipment for emergency services.

Community Facilities

Operation of the bypass pipeline, regulating station, and relief stations at the SLRC would not require additional facilities or staffing of existing community facilities nor would it diminish the level of service for existing community facilities.

Utilities

Operation of the bypass pipeline, regulating station, and relief stations at the SLRC would not result in adverse impacts to utilities in the Proposed Project vicinity.

12.3 Mitigation Measures

No adverse impacts to public services and utilities are anticipated as a result of construction and operation of the Proposed Project. As such, no mitigation measures are required.

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13.0 Hazardous Materials

13.1 Setting

13.1.1 HWSG Site

The HWSG site consists of 43 acres of undeveloped land adjacent to the Los Angeles River and between the City of Burbank and Griffith Park. It is bounded on the north by the LA River and State Highway 134, and on the east and south by Forest Lawn Drive. The property is owned by the City of Los Angeles Department of Recreation and Parks, and LADWP retains an easement over the entire property. Facilities to be constructed and operated at the HWSG site include a 110-MG underground storage reservoir and a 4-MW hydroelectric plant.

CH2M HILL conducted a search of selected government databases using Environmental Data Resources® environmental database report system. The HWSG site was not identified on any of the searched databases indicating that there are no reported spills, leaks, or accidental releases that have occurred at the site. A copy of the database search in provided in Appendix I.

13.1.2 SLRC

The SLRC is located in the community of Silver Lake and consists of LADWP-owned Silver Lake and Ivanhoe Reservoirs and related facilities. Silver Lake is 5 miles northwest of downtown Los Angeles and just east of Griffith Park. Facilities to be constructed and operated at or near the SLRC include a bypass pipeline and a regulating station.

CH2M HILL conducted a search of selected government databases using Environmental Data Resources environmental database report system. The SLRC site and immediate vicinity were not identified on any of the searched databases. A copy of the database search in provided in Appendix I.

13.2 Impacts

13.2.1 Thresholds of Significance

Impacts related to hazardous materials would be considered significant if the Proposed Project would:

- Create a significant hazard through the routine transport, use, or disposal of hazardous materials
- Create a significant hazard through reasonably foreseeable upset and accident conditions involving the release of hazardous materials

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste with 0.25-mile of an existing or proposed school
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard

13.2.2 HWSG Site

13.2.2.1 Construction

Construction activities associated with the HWSG site primarily involves the use and operation of heavy equipment for site grading and excavation activities and construction of the reservoir tanks and hydroelectric plant.

Small amounts of hazardous materials would be stored at the HWSG during construction. These materials would be brought onsite, used, and then permanently removed from the site.

Whenever possible, transportation routes would be selected using the following guidelines:

- Routes that minimize rail crossings
- Routes that avoid congested intersections and residential areas
- Routes that are not located within 0.25-mile of a school

Hazardous materials that would be used during construction of the HWSG facility would include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. During construction, these materials would be stored in a locked utility building, handled according to the manufacturers' directions, and replenished as needed. Emergency fuel containers would be California Department of Transportation (Caltrans)-approved, 5-gallon safety containers secured to the construction equipment. Emergency fuel would be used when regular vehicle fueling is unavailable. No feasible alternatives exist for the motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers' requirements for coating.

Acutely hazardous materials, as defined in California's Health and Safety Code, Section 25531, et seq. would not be used at the HWSG site. Therefore, no discussion of acutely hazardous materials storage or handling is included in this section for Proposed Project construction activities.

The quantities of hazardous materials that would be onsite during construction are small. The most likely possible incidents would involve the dripping of fuels, oil, and grease from construction equipment. The small quantities of fuel, oil, and grease that may drip from construction equipment would have low relative toxicity and concentrations, and would be biodegradable.

Regular fueling and oiling of construction equipment would be performed daily to reduce the potential for accidental releases. Fuel, oil, and hydraulic fluids would be transferred directly from a service truck to construction equipment tanks and would not otherwise be stored onsite. Fueling would be performed by designated, trained service personnel either before or at the end of the workday.

Equipment refueling would be performed away from water bodies to prevent contamination of water in the event of a fuel spill. If a large spill from a service or refueling truck occurred, contaminated soil would be placed into barrels or trucks by service personnel for proper offsite disposal as a hazardous waste, as necessary, at a permitted hazardous waste transfer, storage, and disposal facility (TSDF). If a spill involved hazardous materials equal to or greater than the specific reportable quantity (25 gallons for petroleum products), all federal, state, and local reporting requirements would be followed; and cleanup materials would be disposed at approved sites. In the event of a fire or injury, the local fire department would be called.

Small spills would be contained and cleaned up immediately by onsite personnel. Larger spills would be reported via emergency phone numbers to obtain help from offsite containment and cleanup crews.

All hazardous materials would be handled and stored in accordance with applicable codes and regulations. Incompatible materials would be stored in separate storage and containment areas. Areas susceptible to potential leaks and/or spills would be paved and bermed. Piping and tanks would be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

Hazardous materials would be delivered periodically to the HWSG facility. Transportation would comply with all Caltrans, EPA, California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and California State Fire Marshal regulations for transporting hazardous materials. Under the California Vehicle Code, the CHP has the authority to adopt regulations for transporting hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery. The regulations concerning delivery of hazardous materials to the HWSG Site would be complied with fully. As previously mentioned, transportation routes would be selected using the following guidelines:

- Routes that minimize rail crossings
- Routes that avoid congested intersections and residential areas
- Routes that are not located within 0.25-mile of a school

Due to the small quantities of hazardous materials at the site during construction, the potential for environmental effects from the use of these materials during construction would be less than significant.

13.2.2.2 Operation

During operation of the storage reservoir and hydroelectric plant at the HWSG site, hazardous materials would not be required. The facility would be operated remotely from LADWP area control center. An LADWP operator would visit the facility once a week. Site security would check the status of the facility daily.

13.2.3 SLRC

13.2.3.1 Construction

Facilities to be constructed and operated at or near the SLRC include a bypass pipeline, regulating station, and relief stations; and pipelines, vaults, and valves related to removal of the reservoirs from service. Construction activities would primarily involve heavy equipment used for grading, excavation, and boring activities.

Small amounts of hazardous materials would be stored at the SLRC to support site construction activities. Hazardous materials to be used and guidelines for their use at the SLRC are the same as described above for the HWSG site (Section 13.2.2.1).

13.2.3.2 Operation

During operation of the bypass pipeline, regulating station, and relief stations at the SLRC, hazardous materials would not be used or stored onsite. Currently, chlorine is stored onsite and used for water treatment. When Ivanhoe and Silver Lake Reservoirs are removed from the distribution system, chlorine would no longer be stored at the SLRC.

13.3 Mitigation Measures

No significant impacts related to hazardous materials have been identified during construction and operation of the Proposed Project. As such, no mitigation measures are required.

14.0 Visual Resources

Visual or aesthetic resources are generally defined as the natural and built features of the landscape that can be seen and that contribute to the public's appreciative enjoyment of the environment. The goal of this section is to characterize the baseline aesthetic conditions in the Proposed Project area and assess how they would be altered by development of the Proposed Project. This visual study employs assessment methods based, in part, on the U.S. Department of Transportation FHWA (USDOT, 1988) and other accepted visual analysis techniques as summarized by Smarden et al. (1986). The analysis includes a systematic documentation of the visual setting, an evaluation of visual changes associated with the Proposed Project, identification of any aesthetic impacts that would be significant under CEQA significance criteria, and identification of any measures needed to mitigate the visual effects of the Proposed Project.

14.1 Setting

14.1.1 Introduction

This project would entail visible changes to the environment in two separate areas: at the Silver Lake Reservoir Complex (Figures 3-8, 3-9, and 14-2), and at a 43-acre site located approximately 4.5 miles to the northwest that lies between the LA River and the Hollywood Hills (Figures 3-2, 3-3 and 14-1).

To provide a foundation for assessment of the effects that the Proposed Project would have on the aesthetic qualities of each of these two areas, a systematic assessment of the existing visual conditions in each area is provided below. First, a general description is provided of each of the areas where facilities potentially could be constructed or where other changes are likely to take place as a result of the Proposed Project. Then, within the section for each area, an identification is made of the facilities that would be developed in the area, and of the potential for the changes associated with development of these facilities to be seen by members of the public. If facility development is likely to result in visible changes, photographs are provided of representative public views toward the areas where the changes would take place. Selection of the points from which these views were taken was made based on consideration of the numbers and sensitivity of viewers, and the representativeness of the view. All of the photos were taken using a 35-mm camera with a 50-mm lens to create images that provide a close approximation of what is seen by the human eye.

For each of the representative views, an assessment is provided of the existing aesthetic conditions. This assessment includes an overall rating of the level of scenic quality prevailing in the view. These ratings were developed based on field observations made in June 2004, review of photographs of the affected area, review of methods for assessment of visual quality, and review of research on public perceptions of the environment and scenic beauty ratings of landscape scenes. The final assessment of scenic quality was made based on professional judgment that took a broad spectrum of factors into consideration, including:

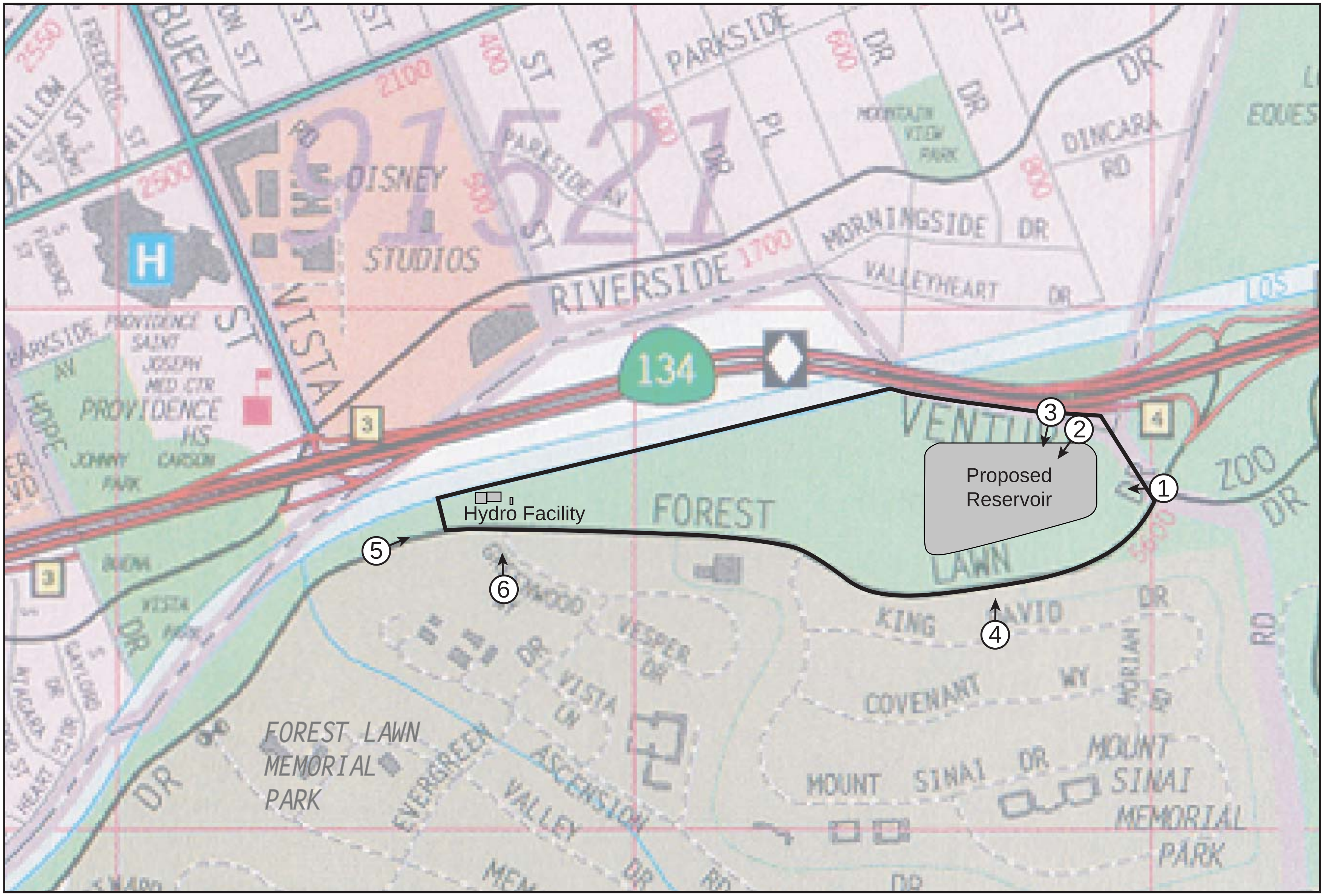
- Natural features, including topography, water courses, rock outcrops, and natural vegetation
- The positive and negative effects of man-made alterations and built structures on visual quality
- Visual composition, including an assessment of the vividness, intactness, and unity of patterns in the landscape

The final ratings assigned to each view fit within the rating scale summarized in Table 14-1. Development of this scale builds on a scale developed for use with an artificial intelligence system for evaluation of landscape visual quality (Buhyoff et al., 1994), and incorporates landscape assessment concepts applied by the U.S. Forest Service and the U.S. Department of Transportation (USDOT).

TABLE 14-1
Landscape Scenic Quality Scale

Rating	Explanation
Outstanding Visual Quality	A rating reserved for landscapes with exceptionally high visual quality. These landscapes are significant nationally or regionally. They usually contain exceptional natural or cultural features that contribute to this rating. They are what we think of as “picture post card” landscapes. People are attracted to these landscapes to view them.
High Visual Quality	Landscapes that have high quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These landscapes have high levels of vividness, unity, and intactness.
Moderately High Visual Quality	Landscapes that have above-average scenic value but are not of high scenic value. The scenic value of these landscapes may be due to man-made or natural features contained within the landscape, to the arrangement of spaces in the landscape or to the two-dimensional attributes of the landscape. Levels of vividness, unity, and intactness are moderate to high.
Moderate Visual Quality	Landscapes that are common or typical landscapes that have average scenic value. They usually lack significant man-made or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape. Levels of vividness, unity, and intactness are average.
Moderately Low Visual Quality	Landscapes that have below-average scenic value but not low scenic value. They may contain visually discordant man-made alterations, but the landscape is not dominated by these features. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low Visual Quality	Landscapes that have below average scenic value. They may contain visually discordant man-made alterations, and often provide little interest in terms of two-dimensional visual attributes of the landscape. Levels of vividness, unity, and intactness are below average.

Note: Rating scale based on Buhyoff et al., 1994; USDOT Federal Highway Administration, 1988; and United States Department of Agriculture Forest Service, 1995.



HWSG Site

⑤ Location of Photo Viewpoint

Figure 14-1
SLRC SRP Draft EIR
Proposed Facilities and Photo Viewpoints at the HWSG Site

Source: Thomas Brothers Los Angeles and Orange Counties, 2003.

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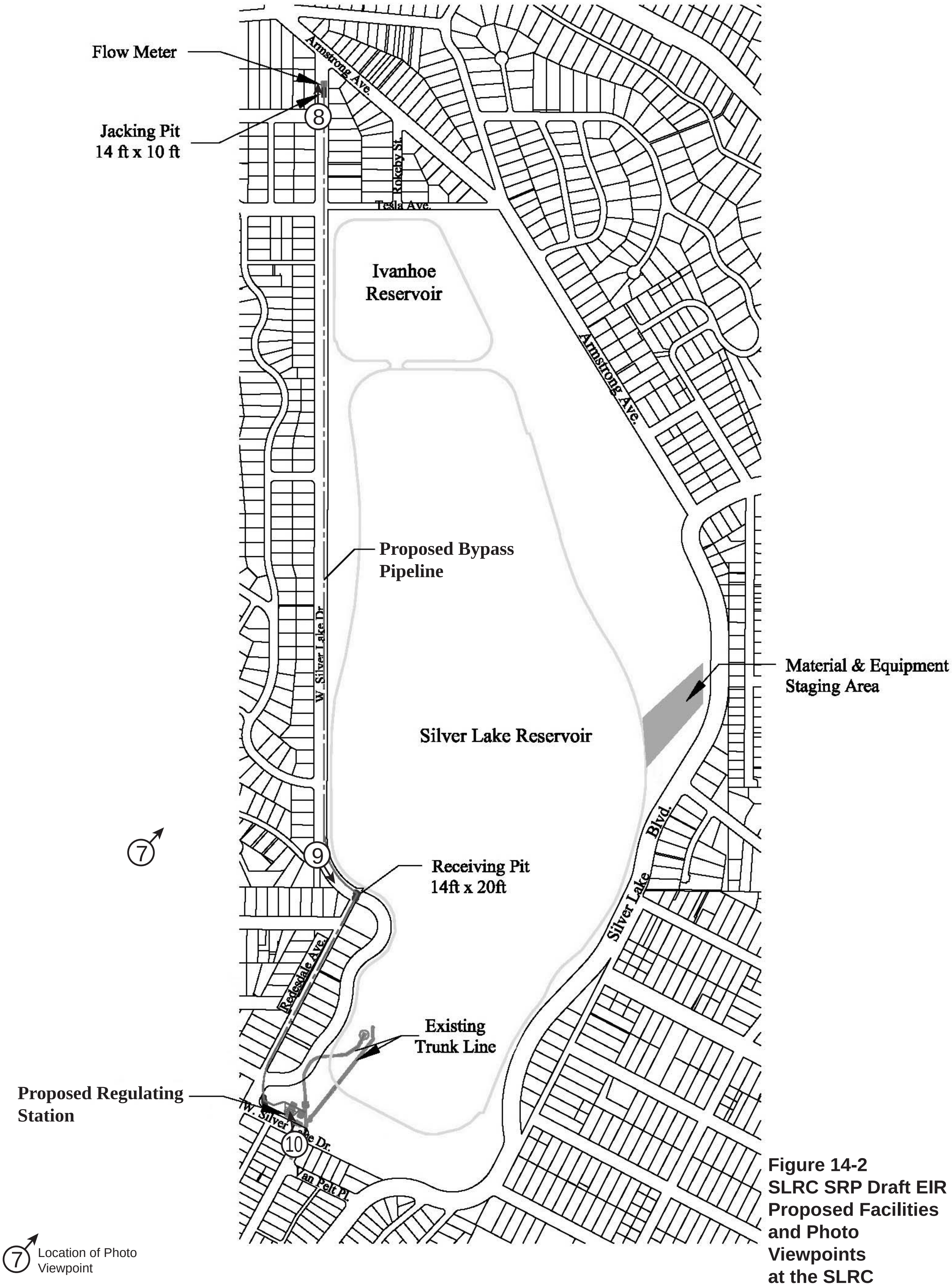

Figure 14-2
SLRC SRP Draft EIR
Proposed Facilities
and Photo
Viewpoints
at the SLRC

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In addition to describing the views and rating view character and quality and the assessment of each viewing area, information is provided on the numbers and kinds of viewers who experience the view.

14.1.2 HWSG Site

14.1.2.1 Site Context

The HWSG site is a 43-acre area located at the northern edge of Griffith Park and adjacent to the LA River (Figures 2-1, 3-2, 3-3, and 14-1). Although this site lies within the boundary of the park, LADWP retains an easement over the site. For a period of over 60 years, LADWP used this land for groundwater recharge; water drawn from the LA River was spread onto the surface of the ground to percolate into the groundwater aquifer. Although this area has not been used for this purpose since 1983, the now-dry spreading basins are still visible on the site. At present, the site is an open area with no structures and no current use. The bottoms of the former spreading basins are covered with a thin layer of weedy vegetation and large areas of exposed soil. Along the sides of some of the basins and along the edges of the property, there are scattered clusters of shrubs and small trees. The site is surrounded by a chain-link fence and is not accessible to the public. The current visual quality of the site is low, and the site does not encompass any features that would be considered scenic resources.

On its northern edge, the site is bordered by the LA River and State Highway 134. In this area, the river is contained within a concrete channel and is bordered by high-voltage, double-circuit electric transmission lines carried on tall lattice steel towers. To the north of the river and freeway, the flat valley lands lie within the City of Burbank, and are intensively developed with a mix of uses that include residential areas, Providence St. Joseph Medical Center, and the Disney Studios. The NBC and Warner Brothers Studios lie slightly to the west. To the northeast of the site, there is an area on the north side of the river that is a part of Los Angeles and Griffith Park that has been developed as the Griffith Park Equestrian Center. The Equestrian Center includes horse boarding stalls; training rings; indoor and outdoor show arenas; grass fields; a restaurant; and banquet, conference, and meeting facilities. This Equestrian Center is connected to the main portion of Griffith Park on the south side of the river by means of an equestrian bridge that crosses the river in the area just north of the HWSG site. The equestrian trail passes under the freeway by means of a tunnel, and travels along the northern edge of the HWSG site until it crosses Forest Lawn Drive and connects with the Griffith Park bridle path network.

On its southern edge, the site is bordered by Forest Lawn Drive, which separates the site from the two cemeteries that occupy the hillside to the south. In the Transportation Element of the Los Angeles City Plan, Forest Lawn Drive is designated as a Scenic Highway. Mount Sinai Memorial Park, a large, highly manicured cemetery, lies on the slopes that overlook the eastern portion of the site. Forest Lawn Memorial Park is an elaborately developed 340-acre cemetery complex that overlooks the western end of the site. To the east, the site is bordered by Griffith Park, a 4,107-acre open space reserve that is also the site of a number of important recreational and cultural facilities. Access to the portion of the park that borders the east side of the site is provided by Zoo Drive, which connects to

Forest Lawn Drive. The developed facilities in this portion of the park that are closest to the site are the Martinez Arena, an equestrian arena located just east of the intersection of Forest Lawn and Zoo Drives, and Travel Town Museum, a transportation museum located on Zoo Drive, approximately 0.4-mile east of the HWSG site.

14.1.2.2 Storage Reservoir Site

The 110-MG buried storage reservoir would be located on approximately 19 acres in the eastern half of the HWSG site, in the area directly north of Mount Sinai Memorial Park. The area where the reservoir would be developed is readily visible from the portions of Forest Lawn Drive that wrap around the southern and eastern edges of the HWSG site, from the segment of the equestrian trail that travels along the northern edge of the site, and from Mount Sinai Memorial Park. Because of the topographic conditions and the presence of screening vegetation, the area where the storage reservoir would be located is not readily visible from Forest Lawn Memorial Park. Although State Highway 134 passes close by the northern edge of the portion of the site where the buried storage reservoir would be located, because the current surface of the site is located at an elevation that is currently lower than that of the freeway, it is not readily visible to roadway travelers.

Photo 1 in Figure 14-3 is a view from Forest Lawn Drive at Zoo Drive, looking west into the portion of the HWSG site that would be used for the reservoir. At present, this portion of the site is entirely open and has a highly disturbed appearance. Applying the criteria summarized in Table 14-1, the visual quality of this view would be rated as low. The sensitivity of this view is high in that it is seen by large numbers of people in vehicles traveling on Forest Lawn Drive on their way to or from Griffith Park, the two cemeteries, or points to the west.

Photo 2 in Figure 14-4a is a view from the equestrian trail in the vicinity of the southern end of the tunnel that allows the trail to pass under State Highway 134. This is a view looking south, and the area where the reservoir would be located is the disturbed area in the foreground. Although the immediate foreground of this view is disturbed and unattractive, taken as a whole, the visual quality of this view is moderately high. It reflects the high degree of vividness created by the mountain backdrop and the high level of visual unity created in the middleground by the attractive landscape of the cemetery and in the background by the largely natural-appearing mountains.

Photo 3 in Figure 14-5a is a view from the eastbound lanes of State Highway 134, at the point where it lies to the south of the LA River and makes a slight curve as it passes close to the reservoir site. The view looks toward the southeast, over the portion of the HWSG where the reservoir would be located. Although the immediate foreground of this view is disturbed and unattractive, taken as a whole, the visual quality of this view is moderately high. It reflects the high degree of vividness created by the mountain backdrop and the high level of visual unity created in the middleground by the attractive landscape of the cemetery and in the background by the largely natural-appearing mountains.

Photo 1. Existing view looking west across the proposed underground reservoir site at the HWSG site as seen from Forest Lawn Drive at Zoo Drive.

Figure 14-3
SLRC SRP Draft EIR
Existing Condition at the HWSG Site

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Photo 2. Existing view looking south across the reservoir site from the equestrian trail.

Figure 14-4a
SLRC SRP Draft EIR
Existing Condition at the HWSG Site

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Photo 3. Existing view looking south across the reservoir site from State Highway 134 (Ventura Freeway).

Figure 14-5a
SLRC SRP Draft EIR
Existing Condition at the HWSG Site

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Photo 4 in Figure 14-6 is a panoramic view taken from King David Drive in Mount Sinai Memorial Park. This view is oriented toward the north, and takes in the portion of the HWSG site where the buried reservoir would be located. The reservoir site is the disturbed area containing the former spreading basins that lies between Forest Lawn Drive, which can be seen in the foreground, and State Highway 134, which is visible as a linear element in the middleground. Applying the criteria summarized in Table 14-1, the visual quality of this view would be rated as moderately low. The primary aesthetic asset of the view is the vista toward the mountains in the background, which create a moderately high level of vividness. Because of the high level of visual disturbance in the foreground that dominates the view, and the urbanized nature of the landscape in the middleground, the levels of visual intactness and unity are not high.

14.1.2.3 Hydroelectric Plant Site

The hydroelectric plant would be a relatively small facility (approximately 50 feet wide by 70 feet long and partially buried) located adjacent to Forest Lawn Drive at the far western end of the HWSG site. The area in which the hydroelectric plant would be located is most readily visible from the segment of Forest Lawn Drive adjacent to it. It is also visible from some of the north-facing slopes in the northeast section of Forest Lawn Memorial Park. Views of this area from State Highway 134 are somewhat limited because the site is located at an elevation that is slightly lower than that of the freeway, and because of the screening created by the heavy vegetation located in the area between the freeway and the north bank of the LA River.

Photo 5 in Figure 14-7 is a view into the proposed site for the hydroelectric plant as seen from Forest Lawn Drive at the west end of the HWSG property. The area is open, but has a somewhat unkempt appearance. Applying the criteria summarized in Table 14-1, the visual quality of this view would be rated as low. The vista toward the mountains in the distance creates a moderate level of vividness; but the unkempt appearance of the area in the foreground, the transmission corridor, the concrete-lined river channel, and highway combine to create a serious degradation of the level of unity and intactness of the scene. The sensitivity of this view is moderately high in that it is seen by moderate numbers of people in vehicles traveling on Forest Lawn Drive on their way to or from Forest Lawn Cemetery, or points to the west.

Photo 6 in Figure 14-7 is a view toward the site proposed for the hydroelectric plant as seen from the area near Greenwood Way in Forest Lawn Memorial Park. The cemetery grounds are visible in the immediate foreground, the hydroelectric plant site is visible in the area between Forest Lawn Drive and the LA River, and a portion of the Disney Studios is visible in the area just beyond the Ventura Freeway. The visual quality of this is moderately low. The vista toward the mountains in the backdrop creates a moderate level of vividness. The levels of unity and intactness of this view are low because of the areas of visually contrasting roadways and concrete river channel in the foreground and the highly contrasting scale, forms, and colors of the structures at the Disney Studio in the middleground. Because this view is seen by the moderate numbers of people who visit this portion of the cemetery, the sensitivity of this view is moderate.

14.1.3 SLRC

14.1.3.1 Site Context

The SLRC occupies 127 acres in the center of the Silver Lake neighborhood, which is located approximately 3 miles north of Downtown Los Angeles (Figures 3-8 and 14-2). Figure 3-10 identifies the major features of the SLRC and their locations on the site. The most visually important element of the complex is the large, open, concrete-lined Silver Lake Reservoir, which provides storage for treated drinking water. Ivanhoe Reservoir, a smaller, open, concrete-line reservoir located at the north end of Silver Lake Reservoir, functions as a settling basin for water that flows into the facility from the Los Angeles Aqueduct and other sources. Along the southern edges of the Silver Lake Reservoir, City streets follow very closely along the perimeter of the reservoir, with just a narrow buffer area in between. Further north, along the west side of the reservoir, the buffer area widens, and is occupied by a grove of large eucalyptus trees. On the east side of the SLRC, the buffer zone that lies between the two reservoirs and the City street network widens considerably. This creates a large, natural-appearing area that also accommodates a collection of small structures and service yards that support the LADWP operations at the reservoir complex. A small area of less than an acre fronting on Tesla Street at the north end of the site is used by a neighborhood nursery school. The dam that retains the Silver Lake Reservoir stretches across the southern end of the site. A 2-acre strip of land in front of the dam that fronts on West Silver Lake Drive, Van Pelt Street, and Silver Lake Boulevard is leased to the Los Angeles Department of Recreation and Parks and accommodates a recreation center, basketball courts, dog park, and landscaped areas used for passive recreation. Except for the area leased to the Department of Recreation and Parks the entire SLRC is surrounded by an 8-foot-high, chain-link fence topped with barbed wire, and public access is not permitted.

The reservoirs at the SLRC were first completed in 1907. Starting in the 1920s when residential development first began occurring around the complex, the emphasis has been on taking advantage of the amenity value of the views of the reservoirs and the park-like LADWP lands surrounding them. Today, the reservoirs and the open spaces associated with them are the visual focal point of the residential community that surrounds and overlooks the SLRC, provides the neighborhood with a strong sense of identity, and is highly valued by the residents of and visitors to the area. The Transportation Element of the Los Angeles General Plan designates Silver Lake Boulevard from Duane Street to Armstrong Avenue as a City Scenic Route.

14.1.3.2 Ivanhoe and Silver Lake Reservoirs

Under the Proposed Project, use of the Ivanhoe and Silver Lake Reservoirs for storage of treated water would be discontinued. The reservoirs would be removed from the LADWP water distribution system and maintained as nonoperating water system facilities.

Photo 4. Existing view looking north across the reservoir site from King David Drive in Mount Sinai Memorial Park.

Figure 14-6
SLRC SRP Draft EIR
Existing Condition at the HWSG Site

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Photo 5. Existing view looking east across proposed hydroelectric plant site from Forest Lawn Drive.

Photo 6. Existing view looking south across proposed hydroelectric plant site from the area near Greenwood Way in Forest Lawn Memorial Park.

Figure 14-7
SLRC SRP Draft EIR
Existing Condition at the HWSG Site

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Photo 7 in Figure 14-8 is a view toward Silver Lake Reservoir from Redcliff Street on the hillside that overlooks Silver Lake Reservoir on its western side. This view is fairly typical of views toward the SLRC from the surrounding neighborhood. In this view, some of the park-like area in the wide buffer strip that lies between the two reservoirs and the perimeter streets on eastern side can be seen. The overall visual quality of this view is moderately high. The visually engaging lake surface and the sense of enclosure created by the hills that frame the lake create a moderately high level of vividness. The degree of visual unity is relatively high because, although the level of development is dense, the buildings are generally consistently small in scale and relate well to the topography. In this view, the level of intactness is relatively high. In many areas around the SLRC, levels of intactness are lower because of the presence of overhead utility poles and wires in the foreground of views; and, in areas close to the lake, the chain-link fence that surrounds the lake is visually prominent. Because the reservoirs are seen from a very large number of residences, many of which were specifically sited and designed to take advantage of the views of the water, the views toward the two reservoirs have a high level of visual sensitivity. In addition, the reservoirs are also visually sensitive because they are seen at close range by those who walk and jog around the reservoirs and by travelers on the perimeter streets, including the segment of Silver Lake Boulevard which is a City-designated Scenic Route.

14.1.3.3 Bypass Line, Regulating Station, and Relief Stations

The bypass pipeline, which would be located entirely underground, would begin at the intersection of West Silver Lake Drive and Armstrong Avenue in the area slightly north of the SLRC. It would continue south under West Silver Lake Drive, until reaching Redesdale Avenue, which it would follow until terminating at the intersection of Redesdale Avenue and West Silver Lake Drive in the area near the Silver Lake recreation Center (Figure 2-5). At the terminus of the line, an underground regulating station would be required.

Photo 8 in Figure 14-9 is a view of the intersection of West Silver Lake Drive and Armstrong Avenue where the northern jacking pit required for the directional drilling for the underground pipeline would be located. Photo 9 in Figure 14-8 is a view looking south on West Silver Lake Drive at the point where the underground water line would turn to follow the alignment along Redesdale Avenue. Because Redesdale Avenue exists only as an undeveloped right-of-way in the area between West Silver Lake Drive and Landa Street, the next street to the south, no street intersection is visible in this view. The Redesdale Avenue right-of-way is located in the area to the left of the white retaining wall. In both views, the setting has a developed, urban character; and the level of visual quality is moderate. In the view depicted in photo 9, the near views of the lake add an element of special visual interest, although the chain-link fence visible in the immediate foreground detracts from the intactness of the view. These views are moderately sensitive in that they are seen by the residents of the homes that border these streets and by pedestrians and motorists on West Silver Lake Drive.

Photo 10 in Figure 14-9 is a view from the portion of West Silver Lake Drive in the area just south of the dam, looking west. The green landscaped area on the right side of the street is part of the area leased to the Los Angeles Department of Recreation and Parks for recreational use. The jacking pit at the terminus of the bypass line would be located in area under the trees at the far left of the photo where West Silver Lake Drive makes a 90-degree turn. The underground regulating station would be located in the open grassy area in the center of the photo. The level of visual quality of the landscape in this open space area is moderately high. The sensitivity of this view is high because it is seen by recreational users who use this space and the facilities at the adjacent recreation center, pedestrians and occupants of vehicles using this portion of West Silver Lake Drive, and residents of the small number of homes that face toward this space.

The first relief station would be located at the northeast corner of West Silver Lake Drive and Silver Lake Boulevard, as shown in Figure 2-7, in an area of existing aboveground utilities. Facilities would include two buried vaults with top access to house the relief valve and the back-flow preventer. However, there is a possibility that the back-flow preventer could be an aboveground facility, approximately 8 feet long and 3 to 4 feet high. The second relief station would likely be located at London Avenue and Dillon Street (Figure 2-7). Facilities would include a buried vault with top access to house the relief valve. In both locations, the setting has a developed, urban character; and the level of visual quality is moderate. These views are moderately sensitive in that they are seen by the residents of the homes that border these streets and by pedestrians and motorists on Silver Lake Boulevard.

14.2 Impacts

14.2.1 Analysis Procedure and Thresholds of Significance

14.2.1.1 Analysis Procedure

This analysis of the visual effects of changes that might be brought about by the Proposed Project is based on review of the data on existing conditions; Proposed Project descriptions, maps, plans, elevations, and cross-sections; and computer-generated visual simulations of changes to views where the underground storage reservoir has the potential to result in substantial alterations of existing visual conditions.

For the two views for which visual simulations were created, page-size photographs are presented to represent the “before” conditions from each simulation viewpoint. Visual simulations were produced to illustrate the “after” visual conditions from each of these points, which provide the viewer with a clear image of the location, scale, and visual appearance of the proposed facilities. The simulation images represent the appearance of the buried reservoir in the period immediately after completion of construction and installation of the landscaping. The computer-generated simulations are the result of an objective analytical and computer modeling process described briefly below. The images are accurate within the constraints of the available site and project data.

Computer modeling and rendering techniques were used to produce the simulated images of the views of the site as they would appear after development of the underground storage tank. Existing topographic and site data provided the basis for developing an initial digital model. The project engineers provided site plans and digital data for the proposed reservoir, which were used to create three-dimensional (3-D) digital models. These models were combined with the digital site model to produce a complete computer model of the underground reservoir on its site.

Photo 7. Existing view looking east across Silver Lake Reservoir from Redcliff Street.

Photo 8. Existing view of the intersection of Armstrong Avenue and West Silver Lake Drive, in the vicinity of the bypass pipeline northern jacking pit.

Figure 14-8
SLRC SRP Draft EIR
Existing Condition at the SLRC

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Photo 9. Existing view looking south on West Silver Lake Drive toward the location of the bypass pipeline receiving pit.

Photo 10. Existing view looking northwest toward the grassy area where the underground regulating station would be located. The southern jacking pit for the bypass pipeline would be located in the area under the trees at the far left of the photo.

Figure 14-9
SLRC SRP Draft EIR
Existing Condition at the SLRC

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For each viewpoint, viewer location was digitized from topographic maps and scaled aerial photos, using 5 feet as the assumed eye level. Computer "wire frame" perspective plots were then overlaid on the photographs of the views from the simulation viewpoint to verify scale and viewpoint location. Digital visual simulation images were produced as a next step based on computer renderings of the 3-D model combined with high-resolution digital versions of base photographs. The final "hardcopy" visual simulation images that appear in this analysis were produced from the digital image files using a color printer.

14.2.1.2 Impact Evaluation Criteria

Analysis of the impacts of the Proposed Project was based on evaluation of the changes to the existing visual resources that would result from construction and operation of the Proposed Project. An important aspect of this analysis was evaluation of the Proposed Project layout drawings; elevations; cross-sections; and, for two views, "after" views provided by the computer-generated visual simulations and their comparison to the existing visual environment. In making a determination of the extent and implications of the visual changes, consideration was given to:

- The specific changes in the composition, character, and any specially valued qualities in the affected visual environment
- The context of the affected visual environment
- The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration
- The numbers of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the likely changes

Significance criteria for impacts to aesthetic resources were developed from CEQA guidelines and the CEQA Checklist to evaluate the potential environmental impacts from the Proposed Project. The following criteria were applied:

- Would the Proposed Project have a substantial adverse effect on a scenic vista?
- Would the Proposed Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- Would the Proposed Project substantially degrade the existing visual character or quality of the site and its surroundings?
- Would the Proposed Project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

14.2.2 HWSG Site

14.2.2.1 Storage Reservoir

14.2.2.1.1 Description

The 110-MG underground storage reservoir that would occupy 19 acres in the eastern half of the HWSG site is described in Section 2.2.2.1 in the Project Description. The location of the reservoir on the site is depicted in Figures 2-1 and 14-1. The reservoir itself would be

10 acres in area and 40 feet high. As the cross-sections in Figure 2-2 indicate, the site would be partially excavated so the base of the reservoir would be set below the existing grade. The top of the reservoir would be approximately 10 feet higher than State Highway 134. When completed, the reservoir would be covered with a layer of soil; and the sides of the reservoir would be graded to create even slopes. The side slopes and top of the reservoir would be seeded with native grasses to create a natural-appearing meadow. To provide access into the reservoir for cleaning and maintenance, there would be two access structures on the top of the reservoir. These structures would be located next to each other in the center area of the cover of the reservoir. Each of the structures would be 25 feet wide, 125 feet long, and 14 feet high. The front faces of the access structures would have an opening with double doors with louvers to accommodate equipment entry. The access door would be painted a color that blends with its surrounding. The structures would be covered with soil and seeded with native grasses to blend in with the native grasses that would be created on the roof of the reservoir. A roadway that travels across the top of the reservoir to the entry doors would be required to enable the equipment to reach the access doors and would likely extend from the intersection of Forest Lawn Drive and Zoo Drive to the access structure openings. There would be four inlets and outlets to connect the reservoir to the River Supply Conduit, and these would be located in vaults buried in the fill on the southern edge of the reservoir. Although the vaults would be buried and thus out of sight, each vault would have a 3-foot by 3-foot steel access hatch that would be visible on the surface. An access road would skirt along the southern edge of the buried reservoir. Exterior lighting would be located at the entrance doors to the reservoir access structures, but these lights would be manually controlled and used only at times when nighttime access to the reservoir is required.

14.2.2.1.2 Construction Impacts

Construction of the reservoir would entail substantial excavation and grading of the site, construction of the inlet and outlet vaults, construction of the reservoir structure, and burial of the reservoir structure and the inlet and outlet vaults (see Section 2.2.2.1.2 in the Project Description for more details). During the construction process, much of the remaining portion of the HWSG site to the west of the reservoir site would be used as a staging area for storage of equipment and materials and parking of workers' vehicles. Overall, the construction process is expected to take 6 years. During much of that time, the reservoir site would have a highly disturbed appearance with areas of exposed earth; the presence of heavy equipment; and, during a 3-year period, the presence of the exposed, partially built reservoir structure. In the area to the west of the reservoir site that would be used as a staging area, the ground surface would be leveled and the vegetation removed, creating a large area of exposed soil. During the construction period, heavy equipment, piles of construction materials, and parked cars would be visible in this area. In evening hours during some portions of the year, use of floodlights may be required to illuminate areas where construction is taking place. Because no construction would take place after 8:00 p.m., the total number of hours when lighting would be required would be limited. To the extent that lighting is used during the construction period, it would be restricted to the levels required for safety; and light fixtures would be hooded and directed toward the work areas to minimize offsite impacts.

In the view toward the reservoir site from Forest Lawn Drive at Zoo Drive (Photo 1 in Figure 14-3), the area in the foreground of the view would have a highly disrupted appearance during much of the construction period. Although the character of this view would be changed by the presence of the construction activities, the level of visual quality, which is low at present, would not be altered.

In the view from the equestrian trail toward the reservoir site (Photo 2 in Figure 14-4a), the construction activities would be visible in the immediate foreground of the view. During the construction period, the foreground zone of the view would have a highly disrupted appearance. The increased level of disturbance in the foreground of the view is likely to result in some level of degradation of overall view quality during much of the 6-year construction period.

In the view from the eastbound lanes of State Highway 134 (Photo 3 in Figure 14-5a), the construction activities would be visible in the immediate foreground zone of the view, and would create a highly disrupted appearance in this portion of the view. The increased level of disturbance in the foreground of the view is likely to result in some level of degradation of overall view quality during much of the 6-year construction period.

In the view from Mount Sinai Memorial Park (Photo 4 in Figure 14-6), the alterations on the reservoir site and in the staging area would be readily visible in a large area in the foreground of the view. Although this area has a disturbed appearance at present, the level of disturbance would be increased during much of the construction period, resulting in some decrease in the overall quality of the view. The presence of the construction activities in the foreground would have a limited effect on the view toward the mountains in the distance, which is one of the most important visual assets of this view.

14.2.2.1.3 Impacts During Operational Period

Once construction of the reservoir is complete and the reservoir is buried, the top and slopes of the reservoir would be planted with native grasses to create a natural-appearing meadow. In addition, all traces of the construction activities would be removed from the staging area; and its surface would be returned to existing or better condition. Because nighttime lighting at the reservoir would be limited to lighting of the entrances to the access structures at such times that nighttime access to the reservoirs might be required, light impacts would be minimal.

The presence of the completed reservoir would improve the view toward the reservoir site from Forest Lawn Drive at Zoo Drive (Photo 1 in Figure 14-3). The disturbed area in the foreground of the view would be replaced by a view of the native grasses on the side slopes of the reservoir, and a view across an unbroken meadow on the top of the reservoir. The overall visual quality of this view would be increased from low at present to moderately low.

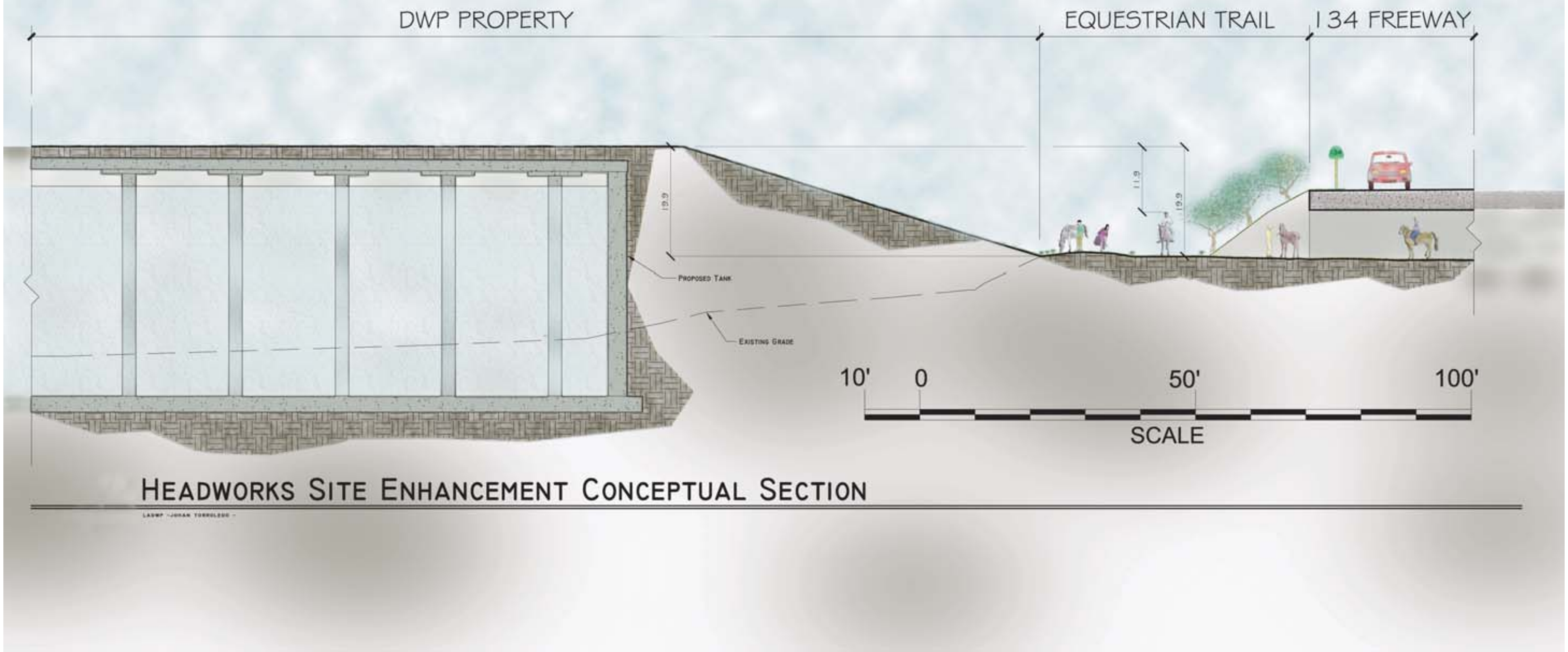
Figure 14-10 is a cross-section that depicts the relationship among State Highway 134, the equestrian trail, and the buried reservoir. As this cross-section indicates, the reservoir would be located approximately 75 feet south of the trail; and the top of the soil cover of the reservoir would be approximately 20 feet higher than the trail surface. What this cross-section does not show is the 125-foot-long access structures, which would extend up to 14 feet above the top of the reservoir.

Figure 14-4b is a photosimulation of the view from the equestrian trail as it would appear after completion of the reservoir. The composition of this view would be changed in that what is now a view over an open area toward the cemetery in the middleground and the mountains in the backdrop would be altered by the presence in the immediate foreground of the slope that covers the north side of the reservoir. This new topographic feature would create a higher degree of spatial definition for the corridor along the trail, and would substantially block the views toward the cemetery landscape in the middleground. The view toward the mountains in the background would be partially obstructed by the reservoir and the reservoir access structures. The presence of native grasses on the slope of the reservoir would be an improvement over the disturbed conditions now seen in the foreground of the view. In addition, the slopes would create an element of visual interest in the foreground that would partially compensate for the loss of the view toward the middleground. The presence of the front of the entrance structures in the immediate foreground of this view would detract from the overall level of unity and intactness of this view. Although the overall visual quality of this view would be reduced to some degree by the presence of the Proposed Project, the level of visual quality would remain moderately high.

As can be seen in Figure 14-4b, at the point at which they are closest, the reservoir would lie within approximately 120 feet of State Route 134; and the top of the soil cover of the reservoir would be approximately 8 feet higher than the roadway of State Highway 134. Figure 14-5b is a photo simulation of the view from the eastbound lanes of State Highway 134 in this area as it would appear after the buried reservoir and its landscaping are in place. In the view from the highway, the buried reservoir itself would create only partial blockage of the view toward the cemetery in the middleground, and no blockage of the view toward the hills in the background. However, the reservoir access structures on top of the reservoir would block views toward the treed slopes of the cemetery, and would detract from the overall level of unity and intactness of the view. Although the replacement of the disturbed-appearing former percolation basins with evenly graded and attractively vegetated buried reservoir would improve the appearance of the foreground zone of the view, the presence of the view-blocking and aesthetically contrasting access structures on top of the reservoir in the immediate foreground of the view would decrease the overall level of view improvement.

Figure 14-11 is a cross-section that depicts the relationship of the buried reservoir to Forest Lawn Drive and the cemetery on the hillside to the south. As review of this cross-section suggests, the presence of the buried, landscaped reservoir would bring about an improvement in the view from Mount Sinai Memorial Park (Photo 4 in Figure 14-6). The expanse of disturbed landscape in the foreground of the view would be replaced by a view of the reservoir, with its evenly graded and naturalistically landscaped sides and its level top, which would be covered with a meadow of native grasses. From this viewpoint, the back sides of the access structures located on top of the reservoir would be visible. Because these structures would be located at the far end of the top of the reservoir, because they would be covered with grass, and because they would not block any important view elements, they would not detract from this view. For this view, the result of the Proposed Project would be to improve the levels of intactness and unity, and to raise the overall level of visual quality of the view to moderate, or perhaps even moderately high.

Equestrian Tunnel Profile



Cross-sectional view of the proposed buried reservoir depicting its relationship to the equestrian trail and State Highway 134.

Figure 14-10
SLRC SRP Draft EIR
Future Condition at the HWSG Site

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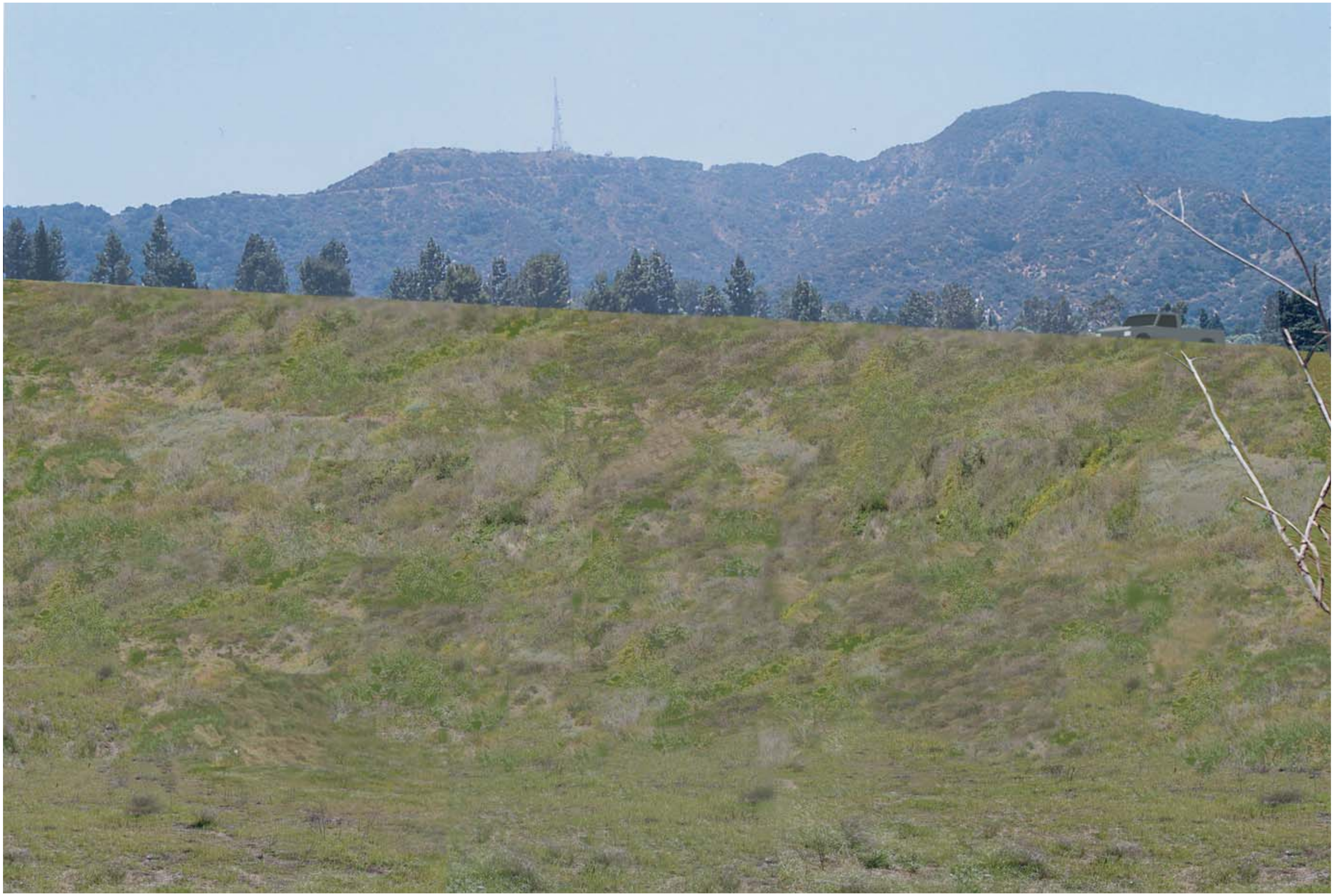

Simulated view looking south across the proposed reservoir from the equestrian trail.

Figure 14-4b
SLRC SRP Draft EIR
Future Condition at the HWSG Site

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Simulated view looking south across the proposed reservoir site from State Highway 134 (Ventura Freeway).

Figure 14-5b
SLRC SRP Draft EIR
Future Condition at the HWSG Site

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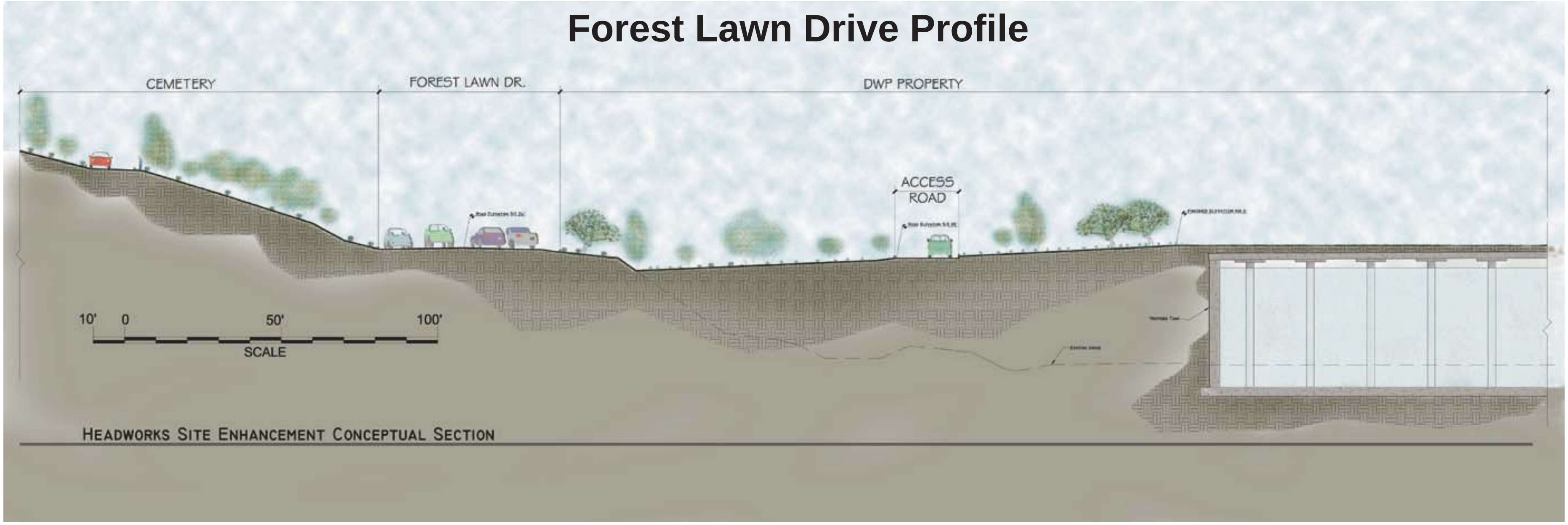

Cross-sectional view of the proposed buried reservoir depicting its relationship to Forest Lawn Drive and the cemeteries on the hillsides to the south.

Figure 14-11
SLRC SRP Draft EIR
Future Condition at the HWSG Site

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14.2.2.2 Hydroelectric Plant

14.2.2.2.1 Description

The small hydroelectric plant that is proposed for development at the western end of the HWSG site is described in Section 2.2.2.2 of the Project Description chapter. Figures 2-1 and 14-1 show the location of the plant on the site. Figure 2-3 is a plan showing the layout of the equipment inside the building that would house the plant. Figure 2-4 is a cross-section through the plant that shows the outline of the enclosing structure of the plant, and the design of the conduit system that would transport the pressurized water to and from the generating turbine.

Figure 14-12 is a cross-section that depicts the relationship of the power plant to its site and site context. The building that would house the plant would be constructed of reinforced concrete and would be approximately 50 feet wide and 70 feet long. Although the powerhouse would be 30 feet tall, much of it would be below grade, so that, at its highest point, it would extend only 18 feet above the ground surface. Adjacent to the power-generating plant, an outdoor substation would be developed that would include a transformer, related substation equipment, and a switchyard. The substation would be surrounded by a chain-link fence enclosing an area that is 60 feet by 60 feet. As an alternative, consideration is being given to eliminating the outdoor substation and enclosing it in the generating structure, requiring the structure to be expanded in length by an additional 16 feet. The plant would also include an emergency generator that would be housed in either an outdoor metal shed or a brick building that is 30 feet by 25 feet and 10 feet tall. Development of the power-generating plant would not require the addition of a new power line or any new power poles. The output of the plant would be fed into the existing 35-kV power line that runs along the north side of Forest Lawn Drive. Nighttime security lighting would be required for the powerhouse front entry and parking lot, and for the substation facility. This lighting would be restricted to the levels required for safety and security, and all lighting would be hooded and direct to the areas where it is needed to minimize offsite impacts.

14.2.2.2.2 Construction Impacts

Construction of the hydroelectric plant would take place over a period of 18 months. Approximately 2 acres would be disturbed during construction. In addition, a staging area would be established to the east of the hydroelectric plant site. Construction of the plant would entail considerable excavation, and about 3,400 yards of the excavated material would be stored onsite during the construction process to be used at the end of construction for partial burial of the powerhouse structure. During the construction period, the hydroelectric plant site would have a disturbed appearance with areas of exposed earth; the presence of heavy equipment; and, during a portion of the 18-month period, the presence of the exposed, partially-built powerhouse structure. In evening hours during some portions of the year, use of floodlights may be required to illuminate areas where construction is taking place. Because no construction would take place after 8:00 p.m., the total number of hours when lighting would be required would be limited. To the extent that lighting is used during the construction period, it would be restricted to the levels required for safety; and light fixtures would be hooded and directed toward the work areas to minimize offsite impacts.

In the view toward the reservoir site from Forest Lawn Drive at the west end of the HWSG site (Photo 5 in Figure 14-7), the area in the foreground of the view would have a highly disrupted appearance during much of the construction period. Although the character of this view would be changed by the presence of the construction activities, the level of visual quality, which is low at present, would not be altered.

In the view from Forest Lawn Memorial Park (Photo 6 in Figure 14-7), the alterations on the hydroelectric plant site and in the staging area would be somewhat visible in the middleground of the view. The visibility of the construction activities would be limited, to some degree, by the fact that they would be occurring in an area that is lower in elevation in Forest Lawn Drive and that they would be partially screened by the trees along the northern edge of Forest Lawn Drive. Because the construction activities would appear in a relatively small portion of this view, and because they would be partially screened, the overall impact on the quality and character of this view would be relatively low.

14.2.2.2.3 Impacts During Operational Period

Once construction of the hydroelectric plant is complete, the powerhouse would be partially buried; the site would be cleaned up and regraded; and landscaping would be installed. In addition, the staging area would be cleaned up and restored to its original or better condition. Night lighting required for safety and security at the powerhouse, parking lot, and substation would be visible. In the context of the vehicle lights associated with traffic on Forest Lawn Drive and State Highway 134, and the high levels of illumination at the nearby Disney Studio, night lighting would not have a significant effect on the character and quality of nighttime views in this area.

The presence of the hydroelectric plant would alter the view into the site from Forest Lawn Drive (Photo 5 in Figure 14-7). The area in the foreground of this view would be occupied by the low-profile powerhouse structure, which would be surrounded by landscaping. Because the top of the powerhouse would extend only slightly above the elevation of Forest Lawn Drive, the plant would have relatively little effect on views toward the mountains and other distant elements in the scene. Because the Proposed Project would replace the unkempt area in the foreground of the view with a visual composition that is more coherent and better maintained, the overall visual quality of this view, which is now low, would be improved.

As the cross-section in Figure 14-12 suggests, because the hydroelectric plant would not extend above the grade of Forest Lawn Drive, and would be substantially screened by trees, its effects on the view from Forest Lawn Memorial Park (Photo 6 in Figure 14-7) would be limited. Although some elements of the plant may be visible to some degree, the presence of the plant in this relatively small portion of the view would have relatively little effect on the character of the view and would not alter the now moderately low level of visual quality.

Hydroelectric Power Generating Facility Profile

Cross-sectional view of the proposed hydroelectric plant, depicting its relationship to Forest Lawn Drive and Forest Lawn Memorial Park.

Figure 14-12
SLRC SRP Draft EIR
Future Condition at the HWSG Site

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14.2.3 SLRC

14.2.3.1 Removal of Ivanhoe and Silver Lake Reservoirs from Service

14.2.3.1.1 Construction Period Impacts

Under the Proposed Project, Ivanhoe and Silver Lake Reservoirs would cease to function as reservoirs for storage of treated water. The reservoirs would remain in place, and their water levels would be maintained; but they would be disconnected from the LADWP water distribution system. Operation and maintenance of the reservoirs that would occur under the Proposed Project is detailed in Section 2.2.3.1.3 of the Project Description Chapter.

For an approximately 6-month period (October 2007 to April 2008) during the construction activities required to take the Silver Lake Reservoir out of service, the water levels in both Silver Lake and Ivanhoe Reservoirs would be lowered. The water in Silver Lake Reservoir would be lowered to an elevation of 435 feet, which would result in increased areas of the concrete lining of the reservoir being exposed to view. From some areas in the lower elevation areas surrounding the reservoir where the surface of the reservoir is now visible, views of the water surface of the reservoir may be reduced or even eliminated during the time of lower water elevation. The operating levels of the reservoir usually range between 440 and 451 feet; and, as recently as December 2004, the operating level was at 437 feet. The impact to views is likely to be limited because the change in water surface levels would not represent a substantial change from existing conditions. The water level in Ivanhoe Reservoir would be lowered to an elevation of 433 feet, which is 18 feet lower than the normal full elevation level of 451 feet. This change in water level would result in more of the Ivanhoe Reservoir concrete liner being exposed, and would reduce or even eliminate the visibility of the water surface of the reservoir from the lower elevation areas around it. These alterations in the surface levels of the two reservoirs would be very limited in duration: the water level would be gradually lowered during a 2-month period, the water would be kept at the lowered level for 2 months while the construction activities take place, and the water would be gradually brought back to its original level over an additional 2-month period.

During the construction period, construction equipment would be visible at the pipeline entry site at the northeast corner of Silver Lake Reservoir and at the valve locations south of the Silver Lake Dam. The presence of this equipment would represent a visual intrusion, which would, to some degree, alter the visual character and quality of the views toward these areas. However, these visual changes would be very short in duration, lasting no more than 2 months.

Approximately 4 to 5 years after the completion of the construction activities required to take Silver Lake Reservoir out of service, construction activities to take Ivanhoe Reservoir out of service would be conducted. This action would require cutting and plugging a pipeline located under Armstrong Avenue at West Silver Lake Drive. This could be accomplished using two existing in-street access points. If these access points were to be used, no excavation or other surface disturbance would be required; and the pipeline plugging could be accomplished quickly, and with very little visual disturbance. Alternatively, a new access point may be required to plug the pipeline. This access point would be located on either Armstrong Avenue or Rokeby Street. This would entail in-street construction, which would create localized, short-term construction-related visual disturbance involving excavation and the presence of construction equipment in the midst of a single-family residential area. Taking Ivanhoe Reservoir out of service would also require cutting and plugging the existing Silver Lake bypass pipeline at a point just south of Silver Lake Dam. This would entail construction activities in the area just east of the area where the new regulating station would be constructed, and would create a short-term visual disturbance related to excavation activities and the presence of construction equipment. Construction of the new conveyance pipeline and underground vault required to add make-up water to Ivanhoe Reservoir would create construction-related disturbances in the area between the reservoir and Armstrong Avenue. Some of this construction activity would take place in the street, where it would be visible at close range to residential viewers. The presence of the construction activities related to the development of these facilities would add a visually contrasting and disruptive element to views in the immediately surrounding area and would lead to a decrease in the overall level of visual quality. These effects would be temporary, however, because all of these construction activities would be completed during a 2- to 3-month period.

Once the construction associated with taking the Silver Lake and Ivanhoe Reservoirs out of service is completed, the areas that would be disturbed by the construction activities would be restored to their original appearance.

14.2.3.1.2 Impacts During Operational Period

Under the Proposed Project, Ivanhoe and Silver Lake Reservoirs would cease to function as reservoirs for storage of treated water. The reservoirs would remain in place, and their water levels would be maintained; but they would be disconnected from the LADWP water distribution system. Operation and maintenance of the reservoirs that would occur under the Proposed Project is detailed in Section 2.2.3.1.3 of the Project Description Chapter.

The only long-term alteration in the visible appearance of these reservoirs that may occur as a result of these changes is a change in water color. Because the water in the reservoirs would no longer be treated, it is likely that the reservoir waters would support some level of algae growth, which could give the water in reservoirs a greenish hue. The change in water color would cause a change in the appearance of the views toward the lake like those represented in Photo 7 in Figure 14-8, but the overall visual quality of the view would not be substantially altered. During the 4- to 5-year period after the Silver Lake Reservoir has been taken out of service and before the Ivanhoe Reservoir has been removed from service, the water in the Silver Lake Reservoir would have a greenish hue, while the water in the Ivanhoe Reservoir would remain blue. The contrast in the color of the water in the two reservoirs could call attention to change in color of the water in Silver Lake Reservoir, sustaining an awareness of the color change that could contribute to an increase in the perceived level of visual impact during this interim period.

14.2.3.2 Bypass Pipeline, Regulating Station, and Relief Stations

14.2.3.2.1 Description

The route of the bypass pipeline is indicated in Figures 2-6 and 14-2. This pipeline would be entirely underground, and would not require any aboveground features. The location of the regulating station and associated facilities that would be built at the southern terminus of the bypass pipeline is also identified in Figures 2-6 and 14-2. As these figures indicate, the regulating station and ancillary facilities would be sited in the area at the base of the

Silver Lake Reservoir dam. As detailed in Section 2.2.3.2.1 of the Project Description Chapter, the elements of the regulating station would be enclosed in buried vaults. All vaults would be completely underground, and a grass lawn would be established on top of the area in which they would be buried.

Access to the regulating station vault would be provided by either two 3-foot by 3-foot steel hatches or two 48-inch-diameter lids, which would be visible on the lawn area. Other aboveground elements associated with these facilities would be two ventilation hoods that would be 4 feet in diameter and 3 feet high, six ventilation standpipes that would be 1 foot in diameter and 3 feet high, and a control cabinet that would be 4 feet square and 6 feet high.

One of the relief stations would be constructed two blocks south of the Silver Lake Reservoir Dam at the intersection of Silver Lake Boulevard and West Silver Lake Drive (see Figure 2-7). At the Y-shaped intersection of these two streets, there is an open area with existing aboveground utilities. In this area, two buried vaults with a top-entry would be constructed to house the relief valve and the back-flow preventer. As an alternative, it is possible that the back-flow preventer would be housed in an aboveground facility approximately 8 feet long and 3 to 4 feet high. At this location, it would also be necessary to install 100 feet of pipeline under Silver Lake Boulevard.

The second relief station would be installed at Silver Lake Boulevard and London Street, which is located close to the 101 Hollywood Freeway, approximately 1.4 miles south of the Silver Lake Dam. At this site (see Figure 2-7), a buried vault with top access would be constructed in London Street to house the relief valve. Construction at this location may require relocation of existing substructures and realignment of a 60-inch trunk line.

14.2.3.2.2 Construction Impacts

Construction of the bypass pipeline would be achieved using a process that involves underground tunneling. As a result, construction activity would be visible only at the jacking and receiving pits at West Silver Lake Drive and Armstrong Avenue (Photo 8 in Figure 14-8), West Silver Lake Drive at Redesdale Avenue (Photo 9 in Figure 14-9), and near the Silver Lake Recreation Center (Photo 10 in Figure 14-9). During the 2-year construction period, pits surrounded by safety barriers would exist at each of these locations; and construction equipment would be present. The presence of the construction activities would add a visually contrasting and disruptive element to these views and would lead to a decrease in the overall level of visual quality. However, these effects would be temporary because, after construction of the pipeline is complete, the areas at the jacking and receiving pits would be restored to their original condition. At the jacking pit near the Silver Lake Recreation Center, limited tree removal would be required to permit the construction activities to take place. When construction is complete, any trees that may have been removed would be replaced as appropriate given the presence of underground pipes and vaults.

Construction of the underground vaults required for the regulating station and associated facilities would require excavation that would occur in an approximately 30,000-square-foot area of open lawn in the area to the west of the Silver Lake Recreation Center (see Photo 10 in Figure 14-9). During the 7-month construction period, the site would be surrounded by a security barrier; and heavy equipment would be present. The presence of the construction activities would add a visually contrasting and disruptive element to these views and would lead to a decrease in the overall level of visual quality. However, these effects would be temporary because, after construction of these facilities is complete, the original grade of the ground surface would be restored; and the lawn cover would be re-established.

Construction of the two relief stations would require excavation. In the case of the Silver Lake Boulevard and West Silver Lake Drive location, this excavation would likely take place in Silver Lake Boulevard and in the open area at the Y-intersection. In the case of the Silver Lake Boulevard at London Street location, the excavation would likely take place within the London Street right-of-way. During short periods required for the construction of these facilities (6 to 7 weeks for the facility at Silver Lake Boulevard and West Silver Lake Drive, and 11 weeks for the facility at Silver Lake Boulevard and London Street), the sites would be surrounded by a security barrier; and heavy equipment would be present. The presence of the construction activities would add a visually contrasting and disruptive element to these views and would lead to a decrease in the overall level of visual quality. These effects would be very short-term in nature, however; after construction is complete, the sites would be restored.

In the early evening hours during some portions of the year, construction of these facilities may require use of floodlights to illuminate areas where construction is taking place. Because no construction would take place after 8:00 p.m., the total number of hours when lighting would be required would be limited. To the extent that lighting is used during the construction period, it would be restricted to the levels required for safety; and light fixtures would be hooded and directed toward the work areas to minimize offsite impacts.

During the construction period, a materials equipment and staging area to support the construction of the bypass pipeline and the regulating station and associated facilities would be established in a portion of the meadow area on the east side of the reservoir. At present, this is an open, grassy area visible from Silver Lake Boulevard. While being used as a staging area, the ground surface is likely to be covered with gravel; and the site would be devoted to storage of vehicles, equipment, and construction materials. Night lighting would be required to assure safety and security. This lighting would be restricted to the minimum required, and all light fixtures would be hooded and directed to the areas where light is needed. During the period in which it is present, the staging area would alter the character of the view toward the meadow and lake visible from Silver Lake Boulevard, and would lower the existing level of visual quality, which is now moderate to moderately high. However, these changes would be temporary because, after the construction of the Proposed Project is complete, this area would be restored to its existing condition.

14.2.3.2.3 Impacts During Operational Period

Because the bypass pipeline would be entirely buried, it would not be visible, and would thus have no aesthetic impacts during the operational period. During the operational period, the views seen in Photos 8 (Figure 14-8) and 9 (Figure 14-9) would appear essentially the same as they do now.

Because the regulating station and related facilities would be buried and covered with a restored lawn, the visual changes associated with their presence in the view seen in Photo 10 (Figure 14-9) would be relatively minor. These changes would consist of the presence of several relatively small access hatches on the surface of the lawn, two 3-foot-high ventilation hoods, four 3-foot-high ventilation pipes, and a 6-foot-high control cabinet. Because none of the aboveground features associated with the regulating features would have night lighting, the Proposed Project would not have any light impacts during the operational period.

Once construction is complete, the only visible evidence of the relief station that would be constructed at the intersection of Silver Lake Boulevard and West Silver Lake Drive would be access covers located in the street and in the open area at the intersection of the two streets and, possibly, an 8-foot-long, 3-foot-high structure housing a back-flow preventer located in the open area that is already at the site of other infrastructure equipment. The relief station at Silver Lake Boulevard and London Drive will be entirely underground, and the only visible feature will be the access cover located in London Drive. The visual effects of both of these relief stations will be minimal.

14.2.4 Impact Significance

The assessment of the significance of the aesthetic impacts of the Proposed Project has been structured by applying the criteria set forth in Appendix G of the State CEQA Guidelines. The CEQA Guidelines define a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including…objects of historic or aesthetic significance (14 CCR 15382).” The four questions related to aesthetics that are posed for lead agencies and the answers to them for the Proposed Project follow.

1. *Would the project have a substantial adverse effect on a scenic vista?*

   No – There are no areas developed or designated as scenic viewpoints in the vicinity of the portions of either the HWSG site of the SLRC that would be affected by the Proposed Project. However, Forest Lawn Drive is a City-designated scenic route; and some of the views toward the buried reservoir from Mount Sinai Memorial Park and toward the hydroelectric plant from Forest Lawn Memorial Park could be considered scenic vistas. In addition, views from the residential hillsides surrounding Silver Lake Reservoir could be considered to be scenic vistas as well. The portion of Silver Lake Boulevard that passes the planned staging area in the SLRC meadow area is also a City-designated scenic route. As documented in the analysis above, the effects of the Proposed Project on the visual quality of these views during the operational period would be relatively minor and would not create the “substantial adverse effect” that would constitute a significant impact. During the construction period, there would be a somewhat greater level of change in the views from Forest Lawn Drive and the two cemeteries, and of the view from Silver Lake Boulevard toward the staging area. But these changes would not substantially alter the existing overall level of visual quality of these views and would be temporary in duration.

2. *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

   No – This question does not apply to the Proposed Project because none of the Proposed Project facilities fall within the boundaries of a state scenic highway.

3. *Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

   No – The HWSG site of the underground storage reservoir and hydroelectric plant is now highly disturbed and has a low level of visual quality. As documented in the analysis above, the visible changes to the HWSG site during the construction period would not "substantially degrade" the visual character and quality of this site; and, in any case, these changes would be of limited duration. During the operational period, the Proposed Project-related changes would constitute an improvement in the appearance of this area. The visual changes associated with construction of the bypass pipeline, regulating station, relief stations, and related facilities at the SLRC would be temporary in nature and thus would not be significant. During the operational period, the bypass pipeline would not be visible; the relief stations would be barely visible; and, at the regulating station site, the small aboveground features would have relatively little effect on the overall quality of the views of this area. The changes in the color of the lake related to the change in the status and operation of Ivanhoe and Silver Lake Reservoirs would have a relatively small and less-than-significant impact on the quality of views that include these lakes.

4. *Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?*

   No – During the construction period, some use of floodlights may be required during early evening hours at some times of the year; but the total number of hours of nighttime construction activity would be limited by the fact that no construction would take place after 8:00 p.m. Offsite light impacts would be reduced through restriction of lighting to the minimum required for safety, and by using fixtures that are hooded and directed to the areas where the light is needed. The presence of this construction period lighting would not have an adverse effect on views in the Proposed Project area.

   During the operational period, there would be no night lighting of Proposed Project facilities in the area of the Silver Lake Reservoir. At the HWSG site, the night lighting at the hydroelectric plant and substation and the occasional use of lighting at the reservoir access structures would be limited and highly shielded; and this would not constitute substantial sources of light or glare that would adversely affect views in this urbanized context.

14.3 Mitigation Measures

14.3.1 Introduction

Because the Proposed Project would not result in any aesthetic impacts that are significant under CEQA criteria, no mitigation measures are required. However, the design of the Proposed Project includes a number of measures intended to integrate the proposed facilities into their settings and thus minimize their aesthetic impacts. The most important of these measures are indicated below.

14.3.2 HWSG Site

14.3.2.1 Storage Reservoir

14.3.2.1.1 Construction

Measures Included as a Part of the Proposed Project

- The equipment and staging area would be located as near to the center of HWSG site as practicable, where it is least visible from viewers, particularly those in the nearby cemeteries.
- Night lighting of the Proposed Project site and staging area would be limited to that required for safety and security, and lights would be directed to minimize offsite light-spill.

14.3.2.1.2 Operation

Measures Included as a Part of the Proposed Project

- The reservoir would be completely buried and surface graded to maximize the visual integration of the buried area into the site.
- The buried reservoir would be planted with native grasses to create a natural-appearing meadow on the slopes and top of the reservoir.

14.3.2.2 Hydroelectric Plant

14.3.2.2.1 Construction

Measures Included as a Part of the Proposed Project

- Night lighting of the Proposed Project site and staging area would be limited to that required for safety and security, and lights would be directed to minimize offsite light-spill.

14.3.2.2.2 Operation

Measures Included as a Part of the Proposed Project

- The powerhouse would be partially buried to minimize its profile and to aid its visual integration into the site.
- Night lighting of the plant would be limited to that required for safety and security, and lights would be directed to minimize offsite light-spill.
- Additional landscaping would be provided, including planting more trees along the northern edge of Forest Lawn Drive to screen views of the facilities from Forest Lawn Drive and Forest Lawn Memorial Park.
- A combination of a screening wall and/or landscaping would be used around the substation to screen views from Forest Lawn Drive.

14.3.3 SLRC

14.3.3.1 Change in Status of the Ivanhoe and Silver Lake Reservoirs

Measures Included as a Part of the Proposed Project

- An adaptive management plan would be applied that includes semiannual monitoring for nutrients (nitrogen and phosphorous); bimonthly water surveys (algal count, chlorophyll, transparency); turning on the mixer as needed; and in-reservoir alum treatment should algae reach unacceptable levels.

- A maintenance regime for the reservoir property would be established that includes weed abatement, brush trimming, maintaining the meadow area, and relandscaping on an as-needed basis.
- As described in Chapter 2, LADWP would develop a Property Maintenance and Management Plan for the SLRC in coordination with the Silver Lake community that would address water quality, water level, landscaping, facility maintenance, and vector control.

14.3.3.2 Bypass Pipeline, Regulating Station, and Relief Stations

Measures Included as a Part of the Proposed Project

- The areas where the jacking and receiving pits would be located would be restored to their original condition at the completion of construction.
- The surface of the area where the regulating station and associated facilities are located would be restored to its original grade, the lawn would be re-established, and any trees or shrubs that may have required removal would be replaced as practicable given the location of new underground facilities.
- Night lighting of the construction site and staging area would be limited to that required for safety and security, and lights would be directed to minimize offsite light-spill.
- As described in Chapter 2, LADWP would develop a Property Maintenance and Management Plan for the SLRC in coordination with the Silver Lake community that would address water quality, water level, landscaping, facility maintenance, and vector control.

15.0 Project Alternatives

15.1 CEQA Requirements for Alternatives

CEQA requires that a reasonable range of feasible alternatives be evaluated in an EIR. The CEQA Guidelines, Section 15126.6, Consideration and Discussion of Alternatives to the Proposed Project, specify that "an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternative." Additionally, "an EIR is not required to consider alternatives which are infeasible." CEQA Guidelines Section 15126.6 further states that the EIR "should briefly describe the rationale for selecting the alternatives to be discussed…and should identify any alternatives that were considered by the lead agency but were rejected as infeasible… Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts."

CEQA also requires consideration of a "No Project" alternative. CEQA Guidelines, Section 15126.6(e)(1), states that the "purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project."

Section 15.2, below, discusses the LADWP process for evaluating and selecting Proposed Project alternatives, including how preliminary alternatives were identified, screening criteria used to evaluate alternatives, and alternatives considered but eliminated from further consideration. Section 15.3 provides an evaluation of alternatives to the Proposed Project identified through the process described in Section 15.2, and Section 15.4 identifies the environmentally superior alternative. Section 15.5 discusses an alternate element of the Proposed Project, construction of the regulating station trunk line in West Silver Lake Drive.

15.2 Alternatives Development Process

The alternatives development process includes identification of preliminary alternatives, application of screening criteria, elimination of alternatives from further consideration, and identification of alternatives to the Proposed Project. Figure 15-1 illustrates the alternatives development process.

15.2.1 Identification of Preliminary Alternatives

Preliminary alternatives were identified through a combination of regulatory requirements, operational requirements, and stakeholder input, as described below.

15.2.1.1 Regulatory Requirements

To comply with increasingly more stringent state and federal regulations, including those that address THMs and HAAs, LADWP has been required to make major changes to its open reservoir system. These regulations include the S2DBR and the LT2ESWTR.

The S2DBR addresses maximum contaminant levels of THMs and HAAs. Compliance dates at the state level are anticipated as follows:

- June 1, 2008 - 120 ppm for THMs and 100 ppm for HAAs
- June 1, 2011 - 80 ppm for THMs and 60 ppm for HAAs

LT2ESWTR requires that all existing open, finished-water reservoirs be covered or meet 99.99 percent virus kill before the water enters the distribution system. Reservoirs in the LADWP system must comply with this regulation, which requires one of the following at the state level anticipated by June 2008:

- Cover the reservoir
- Provide 4-log virus inactivation (99.99 percent virus kill) at the outlet
- Implement measures to mitigate the risk of contamination to reservoir

Based on these and other regulatory requirements, LADWP determined that they had several options to achieve compliance, including covering Ivanhoe and/or Silver Lake Reservoirs, constructing water treatment facilities to treat water coming out of the reservoirs, or constructing offsite water storage facilities.

15.2.1.2 Operational Requirements

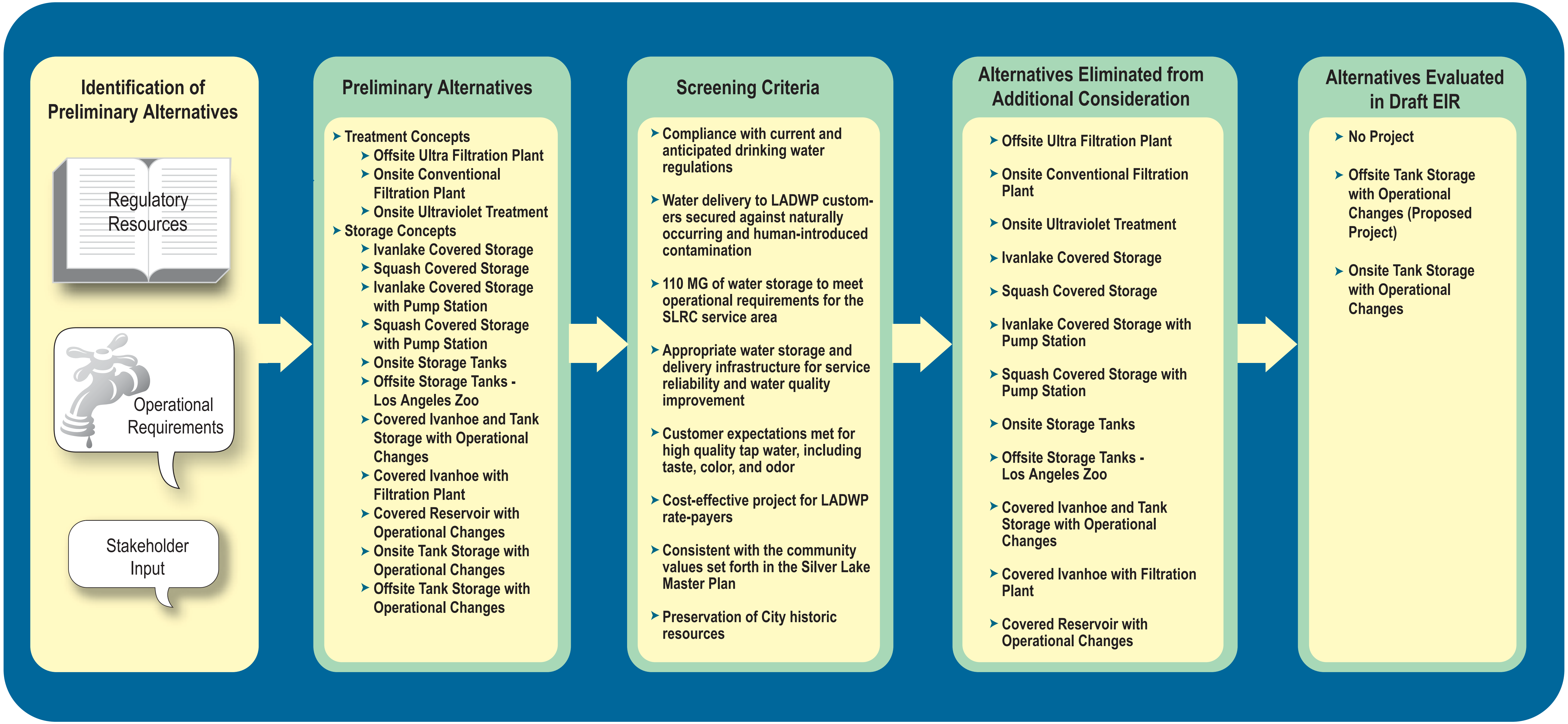
LADWP has several operational requirements that must be met for a successful water quality improvement project. The LADWP water distribution system is arranged by elevation, so the operational water storage for the area served by the SLRC needs to be located at an elevation similar to the SLRC for proper system pressure. The LADWP minimum water storage quantity is either 300 MG or 110 MG plus system improvements to provide the functional equivalent of 200 MG of emergency storage.

15.2.1.3 Stakeholder Input

Two decades ago, LADWP recognized the need to begin making changes to its open reservoir system. In 1988, LADWP published an Open Reservoir Water Quality Improvement Plan titled “Safeguarding a Vital Asset” that included a proposal to cover all smaller reservoirs and construct a water treatment facility for larger reservoirs.

In 1989, a mediation process was initiated between LADWP and the Coalition to Preserve Open Reservoirs (CPOR), which consists of representatives of 10 open-reservoir communities throughout Los Angeles. The mediation process continues today.

LADWP has worked with CPOR representatives on several water quality improvement projects for open reservoirs in Los Angeles in the last decade, including Rowena Reservoir, Stone Canyon and Encino Reservoirs, and Hollywood Reservoir. In all cases, LADWP focused on meeting water quality regulations and operational requirements for the City’s open reservoirs while also being responsive to the needs of the communities surrounding the reservoirs.



Identification of Preliminary Alternatives

Regulatory Resources

Operational Requirements

Stakeholder Input

Preliminary Alternatives

- Treatment Concepts
  - Offsite Ultra Filtration Plant
  - Onsite Conventional Filtration Plant
  - Onsite Ultraviolet Treatment
- Storage Concepts
  - Ivanlake Covered Storage
  - Squash Covered Storage
  - Ivanlake Covered Storage with Pump Station
  - Squash Covered Storage with Pump Station
  - Onsite Storage Tanks
  - Offsite Storage Tanks - Los Angeles Zoo
  - Covered Ivanhoe and Tank Storage with Operational Changes
  - Covered Ivanhoe with Filtration Plant
  - Covered Reservoir with Operational Changes
  - Onsite Tank Storage with Operational Changes
  - Offsite Tank Storage with Operational Changes

Screening Criteria

- Compliance with current and anticipated drinking water regulations
- Water delivery to LADWP customers secured against naturally occurring and human-introduced contamination
- 110 MG of water storage to meet operational requirements for the SLRC service area
- Appropriate water storage and delivery infrastructure for service reliability and water quality improvement
- Customer expectations met for high quality tap water, including taste, color, and odor
- Cost-effective project for LADWP rate-payers
- Consistent with the community values set forth in the Silver Lake Master Plan
- Preservation of City historic resources

Alternatives Eliminated from Additional Consideration

- Offsite Ultra Filtration Plant
- Onsite Conventional Filtration Plant
- Onsite Ultraviolet Treatment
- Ivanlake Covered Storage
- Squash Covered Storage
- Ivanlake Covered Storage with Pump Station
- Squash Covered Storage with Pump Station
- Onsite Storage Tanks
- Offsite Storage Tanks - Los Angeles Zoo
- Covered Ivanhoe and Tank Storage with Operational Changes
- Covered Ivanhoe with Filtration Plant
- Covered Reservoir with Operational Changes

Alternatives Evaluated in Draft EIR

- No Project
- Offsite Tank Storage with Operational Changes (Proposed Project)
- Onsite Tank Storage with Operational Changes

Figure 15-1
SLRC SRP Draft EIR
Alternatives Development Process

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As part of the ongoing mediation process, LADWP has met regularly with CPOR representatives to present concepts developed to meet new water quality regulations at the SLRC. On November 16, 2002, LADWP held a Public Workshop at Marshall High School to present several water quality improvement project options at the SLRC to the community and allow for feedback from community members. Subsequent to that workshop, LADWP continued to refine project options based on hydrologic and storage needs and meet with the community to discuss those options. More than 14 different project options were evaluated prior to identifying the Proposed Project.

15.2.2 Preliminary Alternatives

Preliminary alternatives identified by LADWP to meet water quality objectives at the SLRC can generally be classified by treatment concepts and storage concepts. A brief description of these concepts is provided below.

15.2.2.1 Treatment Concepts

Offsite Ultra Filtration Plant

The Offsite Ultra Filtration Plant Concept involves construction of a 139-million-gallon-per-day (mgd) ultrafiltration plant along with a 13-MG clearwell at an undetermined location. This concept would result in the retreatment of drinking water that enters the SLRC. Free chlorine would be added to the treated water to control algae, which would increase the formation of THMs and HAAs. Approximately 10 tons of powdered activated carbon would be required per day, and a substantial waste stream requiring disposal would be produced. This concept may also result in severe algae problems at the SLRC and would require other system improvements, including construction of approximately 5 miles of new water distribution pipeline. Power outages would leave the SLRC service area vulnerable if the filtration plant is offline. The present worth cost for this option was estimated at $263 million plus $40 million associated with pipeline and pumping costs; construction time was estimated at 2 to 5 years.

Onsite Conventional Filtration Plant

The Onsite Conventional Filtration Plant Concept involves construction of a 139-mgd conventional water treatment facility at the SLRC. The facility would consist of aboveground structures that would disturb the existing knoll and trees at the site. This concept would not require any covered water storage, and chlorination would be eliminated. This concept would result in high operations and maintenance costs resulting from brine disposal and pumping, and would require additional onsite chemicals. Power outages would leave the SLRC service area vulnerable if the filtration plant is offline. The present worth cost for this option was estimated at $198 to $430 million; construction time was estimated at 2 years.

Onsite Ultraviolet Treatment

The Onsite Ultraviolet (UV) Treatment Concept involves construction of a UV water treatment system at the SLRC. This concept would consist of a buried vault for the UV system and would not require any covered water storage. The LADWP has insufficient experience with UV treatment of water systems, and UV treatment is not the Best Available Control Technology (BACT) for meeting water quality requirements at the SLRC. Free chlorine would be added to treated water to control algae, which would increase the formation of THMs and HAAs. Power outages would leave the SLRC service area vulnerable to meeting disinfection requirements if the UV reactors are offline. The present worth cost for this option is unknown; construction time was estimated at approximately 1 year.

15.2.2.2 Storage Concepts

Ivanlake Covered Storage

The Ivanlake Covered Storage Concept involves 300 MG of covered storage at Ivanhoe Reservoir and the northern one-third of Silver Lake Reservoir. The new storage would have a concrete, aluminum, or floating cover. This concept would require construction of a dam that would separate covered storage from the remainder of the reservoir. Silver Lake Reservoir would be drained during construction. The present worth cost for this option was estimated at $124 to $277 million; construction time was estimated at 3 to 6 years.

Squash Covered Storage

The Squash Covered Storage Concept involves 300 MG of covered water storage along the east side of Silver Lake Reservoir with approximately one-third of the reservoir having a concrete or floating cover. This concept would require construction of a long dam that would separate covered water storage from the remainder of the reservoir. Silver Lake Reservoir would be drained during construction. The present worth cost for this option was estimated at $327 million; construction time was estimated at 8.5 years.

Squash Covered Storage with Pump Station

The Squash Covered Storage with Pump Station concept is the same as the Squash Covered Storage Concept except that the covered portion of Silver Lake Reservoir would be 15 percent smaller, and a pump station would be constructed at the SLRC. The pump station would be approximately 40 feet tall and would result in the addition of a potentially significant noise source to the SLRC and increased pumping costs. The present worth cost for this option was estimated at $367 million; construction time was estimated at 5.5 to 7.5 years.

Ivanlake Covered Storage with Pump Station

The Ivanlake Covered Storage with Pump Station Concept is the same as the Squash Covered Storage with Pump Station Concept except that Ivanlake and the northern one-third of Silver Lake Reservoir would be covered. The present worth cost for this option was estimated at $287 million; construction time was estimated at 5.5 to 7.5 years.

Onsite Storage Tanks

The Onsite Storage Tanks Concept involves 300 MG of covered storage in buried tanks within 50 percent of the footprint of Silver Lake Reservoir. This concept would require construction of a dam to separate the buried tanks from the remainder of the reservoir. Silver Lake Reservoir would be drained during construction. Large quantities of soil would be needed to bury the tanks, and some trees and the knoll at the SLRC would likely be destroyed. The present worth cost for this option was estimated at $343 million; construction time was estimated at 16 years.

Offsite Storage Tanks – LA Zoo

The Offsite Storage Tanks – LA Zoo Concept involves construction of five 30-MG water storage tanks in the parking lot of the LA Zoo. This concept would supply roughly one-half the water storage needed and would have a pumping component to match system pressures. The entire LA Zoo parking lot would be unavailable for zoo use during construction. The use of the zoo parking lot is inconsistent with the City Charter. The present worth cost for this option was estimated at greater than $300 million; construction time was estimated at more than 6 years.

Covered Ivanhoe and Tank Storage with Operational Changes

The Covered Ivanhoe and Tank Storage with Operational Changes Concept involves covering Ivanhoe Reservoir with a floating cover and constructing two underground storage tanks in the meadow and knoll areas to provide 100 MG of regulatory storage. In addition, offsite system improvements would be necessary to provide the functional equivalent of 200 MG of emergency storage. The improvements include new trunk-line installation, pump-station upgrades, and providing other supply sources. Silver Lake Reservoir would be drained during construction. The present worth cost for this option was estimated at $75 million; construction time was estimated at 2.5 years.

Covered Ivanhoe with Ultra Filtration Plant

The Covered Ivanhoe with Filtration Plant Concept involves covering Ivanhoe Reservoir with a floating cover and constructing a 97-mgd ultra filtration plant with a 13-MG underground storage tank in the knoll and meadow areas. These changes would provide the 300 MG of regulatory and emergency water storage needed to serve the Silver Lake service area. Silver Lake Reservoir would be drained during construction. Power outages would leave the SLRC service area vulnerable if the filtration plant is offline. The present worth cost for this option was estimated at $230 million; construction time was estimated at 3 years.

Covered Reservoir with Operational Changes

The Covered Reservoir with Operational Changes Concept involves construction of a new covered reservoir to provide 100 MG of regulatory water storage. Construction would include two new dams with covers (flexible floating, aluminum, or concrete) and trunk lines to connect new facilities. In addition, offsite improvements would be necessary to provide the functional equivalent of 200 MG of emergency water storage. The system improvements include new trunk-line installation, pump-station upgrades, and providing other supply sources. Silver Lake Reservoir would be drained during construction. The present worth cost for this option was estimated at $81 to 215 million; construction time was estimated at 3 to 6 years.

Onsite Tank Storage with Operational Changes

The Onsite Tank Storage with Operational Changes (OTSOC) Concept involves construction of four underground storage tanks in the meadow area and part of Silver Lake Reservoir to provide 100 MG of regulatory water storage. In addition, offsite improvements would be necessary to provide the functional equivalent of 200 MG of emergency storage. The improvements include new trunk-line installations, pump-station upgrades, and providing other supply sources. Silver Lake Reservoir would be drained during construction. The present worth cost for this option was estimated at $183 million; construction time was estimated at 5.5 years.

Offsite Tank Storage with Operational Changes

The Offsite Tank Storage with Operational Changes Concept is the Proposed Project, described in detail in Chapter 2 of this Draft EIR.

15.2.3 Screening Criteria

LADWP identified screening criteria for the water quality improvement project. The screening criteria are the same as the objectives for the Proposed Project plus one additional criteria.

Project Objectives

1 Compliance with current and anticipated drinking water regulations

2 Water delivery to LADWP customers secured against naturally occurring and human-introduced contamination

3 110 MG of water storage to meet operational requirements for the SLRC service area

4 Appropriate water storage and delivery infrastructure for service reliability and water quality improvement

5 Customer expectations met for high quality tap water, including taste, color, and odor

6 Cost-effective project for LADWP rate-payers

7 Consistency with the community values set forth in the Silver Lake Master Plan

Additional Screening Criteria

Because Ivanhoe and Silver Lake Reservoirs are designated as historic resources (City Historic Cultural Monument No. 422), the following additional screening criterion was evaluated along with the project objectives identified above:

8 Preservation of City historic resources

15.2.4 Screening Criteria Applied to Preliminary Alternatives

LADWP applied the screening criteria identified above to the preliminary alternatives identified in Section 15.2.2. Table 15-1 shows the preliminary alternatives and identifies whether the above screening criteria were met.

TABLE 15-1
SLRC SRP Draft EIR
Screening Criteria Applied to Preliminary Alternatives

Preliminary Alternative	Screening Criteria Met	Screening Criteria Not Met
Offsite Ultra Filtration Plant	3, 4, 5, 7, 8	1, 2, 6
Onsite Conventional Filtration Plant	1, 3, 5	2, 4, 5, 6, 7, 8
Onsite Ultraviolet Treatment	3, 7, 8	1, 2, 4, 5, 6
Ivanlake Covered Storage	1, 2, 3, 4, 5	6, 7, 8
Squash Covered Storage	1, 2, 3, 4, 5	6, 7, 8

TABLE 15-1
SLRC SRP Draft EIR
Screening Criteria Applied to Preliminary Alternatives

Preliminary Alternative	Screening Criteria Met	Screening Criteria Not Met
Ivanlake Covered Storage with Pump Station	1, 2, 3, 5	4, 6, 7, 8
Squash Covered Storage with Pump Station	1, 2, 3, 5	4, 6, 7, 8
Onsite Storage Tanks	1, 2, 3, 4, 5	6, 7, 8
Offsite Storage Tanks – Los Angeles Zoo	1, 2, 3, 5, 7, 8	4, 6
Covered Ivanhoe and Tank Storage with Operational Changes	1, 2, 3, 4, 5, 6	7, 8
Covered Ivanhoe with Filtration Plant	1, 2, 3, 5	4, 6, 7, 8
Covered Reservoir with Operational Changes	1, 2, 3, 4, 5, 6	7, 8
Onsite Tank Storage with Operational Changes	1, 2, 3, 4, 5, 6	7, 8
Offsite Tank Storage with Operational Changes (Proposed Project)	1, 2, 3, 4, 5, 6, 7, 8	-

15.2.5 Alternatives Eliminated from Additional Consideration

When the screening criteria were applied to the preliminary alternatives, those alternatives that did not meet the majority of screening criteria were eliminated from additional consideration. The preliminary alternatives eliminated are listed below:

- Offsite Ultra Filtration Plant
- Onsite Conventional Filtration Plant
- Onsite Ultraviolet Treatment
- Ivanlake Covered Storage
- Squash Covered Storage
- Ivanlake Covered Storage with Pump Station
- Squash Covered Storage with Pump Station
- Onsite Storage Tanks
- Offsite Storage Tanks – Los Angeles Zoo
- Covered Ivanhoe and Tank Storage with Operational Changes
- Covered Ivanhoe with Filtration Plant
- Covered Reservoir with Operational Changes

15.3 Alternatives Evaluation

Preliminary alternatives that met the majority of the screening criteria were Onsite Tank Storage with Operational Changes and Offsite Tank Storage with Operational Changes. The Offsite Tank Storage with Operational Changes Alternative is the Proposed Project as described in Chapter 2 and evaluated in Chapters 3 to 14 in this Draft EIR. This section describes the potential environmental impacts of the No Project Alternative (as required by CEQA Section 15126.6(e)) and the Onsite Tank Storage with Operational Changes Alternative.

15.3.1 No Project Alternative

The No Project Alternative would result in the continued operation of Silver Lake and Ivanhoe Reservoirs without significant operational changes and no action being taken by LADWP toward meeting water quality standards. The storage reservoir and hydroelectric plant would not be constructed at the HWSG site, and the bypass pipeline and regulating station would not be constructed at the SLRC. Silver Lake and Ivanhoe Reservoirs would not be removed from the water distribution system.

The No Project Alternative would not achieve compliance with water quality regulations nor would the alternative achieve LADWP water quality objectives. Algae would continue to be a problem in the reservoirs, and chlorine would continue to be stored and used at the SLRC. Table 15-2 identifies the potential environmental impacts of the No Project Alternative.

15.3.2 Onsite Tank Storage with Operational Changes

The OTSOC Alternative involves construction of four underground storage tanks in the meadow area and part of Silver Lake Reservoir to provide 100 MG of regulatory water storage. In addition, offsite improvements would be necessary to provide the functional equivalent of 200 MG of emergency storage. The improvements include new trunk-line installations, pump-station upgrades, and providing other supply sources. Silver Lake Reservoir would be drained during construction, and construction time is estimated at 5.5 years. Figure 15-2 shows where at the SLRC the water storage tanks would be constructed and illustrates the size and shape of Silver Lake Reservoir following construction. Similar to the Proposed Project, Ivanhoe and Silver Lake Reservoirs would be removed from service to the water distribution system and maintained as view lakes.

The OTSOC Alternative would achieve compliance with water quality regulations, and the alternative would achieve LADWP water quality objectives. The OTSCO Alternative may not be consistent with the community values set forth in the Ivanhoe and Silver Lake Reservoirs Master Plan, and the alternative would not wholly preserve City historic resources. Table 15-2 identifies the potential environmental impacts of the OTSOC Alternative.

15.3.3 Comparison of the No Project and OTSOC Alternatives to the Proposed Project

Table 15-3 provides a comparison of the potential environmental impacts of the No Project and OTSOC Alternatives to the Proposed Project. The Proposed Project would result in potentially significant impacts related to traffic, noise, and air quality at the HWSG site and potentially significant impacts related to noise and air quality at the SLRC. The No Project Alternative would result in significant impacts to water resources at the SLRC because this alternative would not meet drinking water quality regulations, but would not result in any other Proposed Project-related impacts. The OTSOC Alternative would result in no potentially significant impacts at the HWSG site because no Proposed Project construction would take place there, but would result in potentially significant impacts related to land use, earth resources, water resources, biological resources, cultural resources, traffic, noise, air quality, and visual resources at the SLRC.

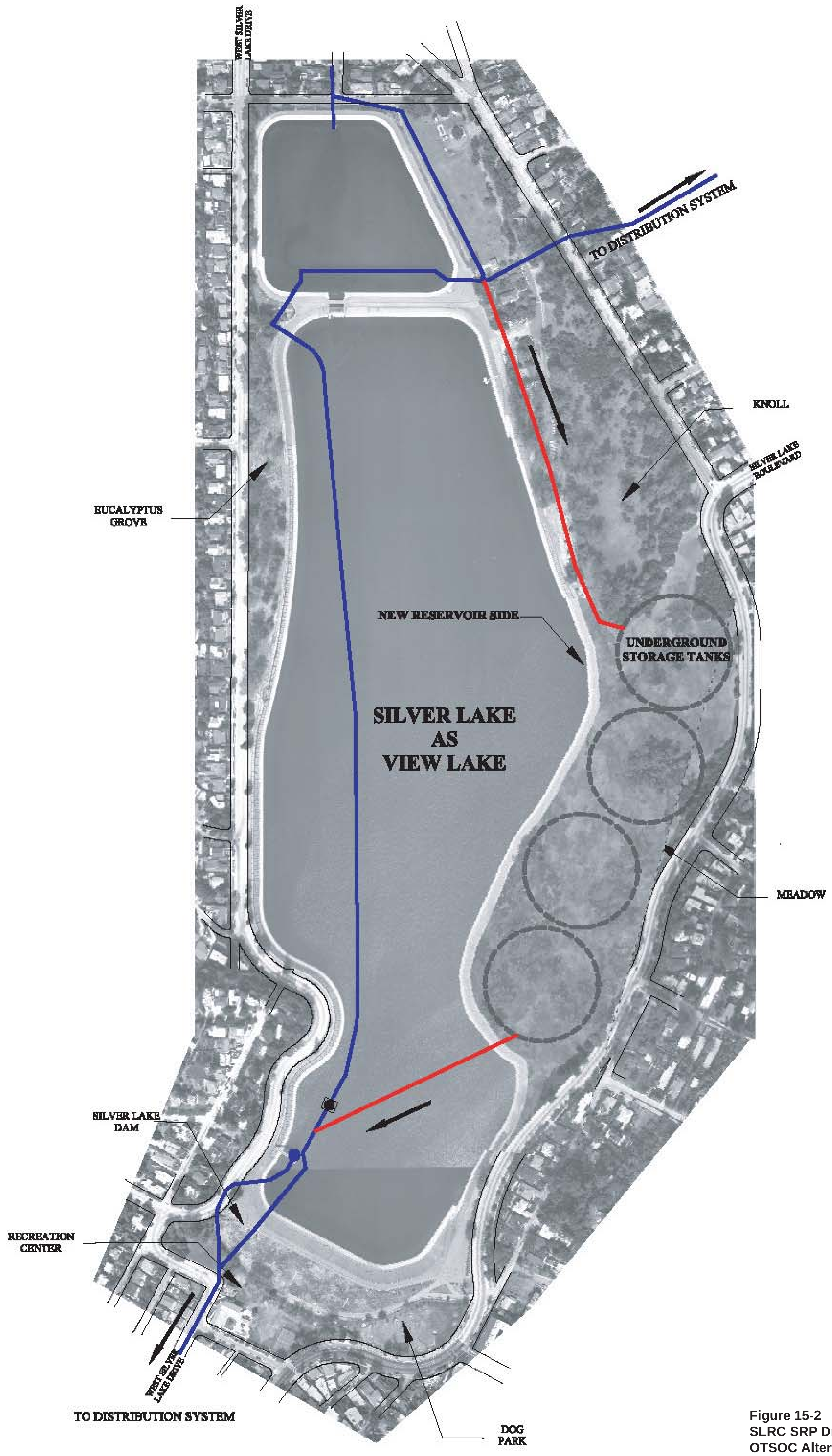

Figure 15-2
SLRC SRP Draft EIR
OTSOC Alternative

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TABLE 15-2
SLRC SRP Draft EIR
Potential Impacts from Project Alternatives

Resource Area	No Project Alternative	Onsite Tank Storage with Operational Changes (OTSOC) Alternative
Land Use	The No Project Alternative would result in no impacts related to land use at either the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no impacts related to land use at the HWSG site. Actual land use at the SLRC under the OTSOC Alternative would change, from open water to open space from burying the storage tanks. The OTSOC Alternative may not be consistent with the goals and objectives identified in the Silver Lake Master Plan due to the partial loss of viewable water.
Earth Resources	The No Project Alternative would result in no impacts related to earth resources at either the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no impacts related to earth resources at the HWSG site. Construction of four buried water storage tanks at the SLRC under the OTSOC Alternative would result in significant excavation at the SLRC not currently proposed by the Proposed Project. Construction of the tanks would take approximately 5.5 years.
Water Resources	Under the No Project Alternative, LADWP would not comply with water quality objectives of state and federal regulations.	Under the OTSOC Alternative, there would be no impacts related to water resources at the HWSG site. All 43 acres of the HWSG site would be available for future spreading of LA River Water, if future conditions are favorable. Construction of the OTSOC Alternative at the SLRC would require draining of Silver Lake Reservoir during construction. Unlike the Proposed Project, this would result in the water storage provided by Silver Lake Reservoir to be unavailable for the duration of construction.
Biological Resources	The No Project Alternative would result in no impacts to biological resources at the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no impacts related to biological resources at the HWSG site. Construction of the OTSOC Alternative at the SLRC would require draining of Silver Lake Reservoir during construction. Due to the duration of construction (approximately 5.5 years), this may result in a significant adverse impact to waterfowl that use Silver Lake Reservoir.

TABLE 15-2
SLRC SRP Draft EIR
Potential Impacts from Project Alternatives

Resource Area	No Project Alternative	Onsite Tank Storage with Operational Changes (OTSOC) Alternative
Cultural Resources	The No Project Alternative would result in no impacts to cultural resources at either the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no impacts related to cultural resources at the HWSG site. The OTSOC Alternative would require significant earth work at the SLRC and physical modification of Silver Lake Reservoir. Because Silver Lake Reservoir is a City Historical Monument, modification of the structure would likely be a significant adverse impact. The landscaping throughout the SLRC contributes to the historic character of the SLRC; removal of the landscaping for construction of the storage tanks would also likely represent a significant adverse impact.
Paleontological Resources	The No Project Alternative would result in no impacts to paleontologic resources at either the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no impacts related to paleontologic resources at the HWSG site. Construction of the OTSOC Alternative at the SLRC would result in greater ground disturbance than proposed under the Proposed Project. However, the likelihood of significant paleontologic resources being present at the SLRC is low; therefore, no impacts to paleontologic resources from the OTSOC Alternative at the SLRC would be expected.
Traffic and Transportation	The No Project Alternative would result in no traffic and transportation impacts at either the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no traffic impacts at the HWSG site. This would eliminate the potential significant unavoidable traffic impacts at the HWSG associated with the Proposed Project. The OTSOC Alternative involves significant earth work and concrete work necessary to construct four storage tanks at the SLRC. Construction time is estimated at 5.5 years, during which a high number of construction vehicles (workers and trucks) would access the SLRC from Silver Lake Drive and/or Armstrong Avenue. Because the SLRC is in the midst of a residential neighborhood, construction traffic would likely result in significantly adverse impacts.

TABLE 15-2
SLRC SRP Draft EIR
Potential Impacts from Project Alternatives

Resource Area	No Project Alternative	Onsite Tank Storage with Operational Changes (OTSOC) Alternative
Noise	The No Project Alternative would result in no noise impacts at either the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no noise impacts at the HWSG site. This would eliminate the potentially significant noise impacts from construction associated with the Proposed Project at the HWSG site. The OTSOC Alternative involves 5.5 years of earth work and concrete work at the SLRC, which would likely result in adverse noise impacts during construction to the residences around the SLRC that would be significantly greater than the potential noise impacts anticipated for the Proposed Project. However, because a regulating station would not be required for the OTSOC Alternative, the potentially significant noise impacts resulting from operation of the regulating station under the Proposed Project would be eliminated under the OTSOC Alternative.
Air Quality	The No Project Alternative would result in no air quality impacts at either the HWSG site or the SLRC.	Under the OTSOC Alternative, there would be no air quality impacts resulting from construction at the HWSG site. The OTSOC Alternative involves 5.5 years of earth work and concrete work at the SLRC. Total construction time for the four water storage tanks at the SLRC is similar to the approximately 6 years of construction time for the water storage tank at the HWSG site under the Proposed Project. On a regional basis, emissions for construction of the OTSOC Alternative would likely be similar to those anticipated under the Proposed Project. Local construction emissions at the SLRC would be greater under the OTSOC Alternative than under the Proposed Project due to the significant increase in excavation and construction equipment expected at the SLRC.
Public Services and Utilities	The No Project Alternative would result in no public services and utilities impacts at their the HWSG site or the SLRC.	The OTSOC Alternative would not result in adverse public services and utilities impacts at either the HWSG site or the SLRC, similar to the Proposed Project.
Hazardous Materials	Under the No Project Alternative, chlorine would continue to be used and stored at the SLRC; there would be no impacts at the HWSG site.	Under the OTSOC Alternative, there would be no hazardous materials impacts at the HWSG site, similar to the Proposed Project. The OTSOC Alternative would result in chlorine no longer being used or stored at the SLRC, similar to the Proposed Project.

TABLE 15-2
SLRC SRP Draft EIR
Potential Impacts from Project Alternatives

Resource Area	No Project Alternative	Onsite Tank Storage with Operational Changes (OTSOC) Alternative
Visual Resources	Under the No Project Alternative, there would be no adverse impacts to visual resources at either the HWSG site or the SLRC. The potential beneficial aesthetic impact provided by development of a portion of the HWSG site would not be realized under the No Project Alternative.	Under the OTSOC Alternative, there would be no visual resources impacts at the HWSG site. The potentially beneficial aesthetic impact provided by development of a portion of the HWSG site under the Proposed Project would not be realized under the OTSOC Alternative. The OTSOC Alternative would result in 5.5 years of construction at the SLRC, during which time Silver Lake Reservoir would be drained and significant earth work and concrete work would be visible. This impact would be significant but temporary. The OTSOC Alternative would also result in a loss of surface water resulting from reshaping Silver Lake Reservoir and a loss of a large amount of existing vegetation. The permanent loss of some surface water may be a significant unavoidable impact that would not be realized under the Proposed Project.

TABLE 15-3
SLRC SRP Draft EIR
Comparison of Potential Impacts from the Proposed Project and Project Alternatives

Resource Area	Proposed Project		No Project Alternative		OTSOC Alternative	
	HWSG Site	SLRC	HWSG Site	SLRC	HWSG Site	SLRC
Land Use	NS	NS	NS	NS	NS	S
Earth Resources	NS	NS	NS	NS	NS	NS
Water Resources	NS	NS	NS	S	NS	S
Biological Resources	NS	NS	NS	NS	NS	S
Cultural Resources	NS	NS	NS	NS	NS	S
Paleontological Resources	NS	NS	NS	NS	NS	NS
Traffic and Transportation	S	NS	NS	NS	NS	S
Noise	S	S	NS	NS	NS	S
Air Quality	S	S	NS	NS	NS	S
Public Services and Utilities	NS	NS	NS	NS	NS	NS
Hazardous Materials	NS	NS	NS	NS	NS	NS
Visual Resources	NS	NS	NS	NS	NS	S

Note:
NS = no significant impact after mitigation
S = potentially significant impact after mitigation

15.4 Environmentally Superior Alternative

LADWP has determined that the environmentally superior alternative is the Proposed Project. The No Project Alternative, while having fewer construction-related impacts, would not meet the basic Proposed Project objectives related to drinking water quality regulations. As such, the No Project Alternative cannot reasonably be considered to be environmentally superior.

The OTSOC Alternative eliminates potential environmental impacts at the HWSG site associated with the Proposed Project, but increases the number of potential environmental impacts at the SLRC. Because the SLRC is in a residential area and because Ivanhoe and Silver Lake Reservoirs are City historic resources, the potential impacts associated with the OTSOC Alternative are considered to be more significant than the impacts associated with the Proposed Project.

15.5 Alternative Regulating Station Trunk Line Location

LADWP currently plans to use open-trench construction methods to install the bypass pipeline that runs between the southern jacking pit and the regulating station (regulating station trunk line) in the grassy area south of Silver Lake Reservoir (Figure 2-6). Due to the potential presence of existing underground utilities, however, LADWP may need to relocate the regulating station trunk line to West Silver Lake Drive (Figure 15-3). If the trunk line were to be constructed in West Silver Lake Drive, the duration for this portion of regulating station construction would be roughly 2 weeks; and this portion of West Silver Lake Drive would be closed and local traffic rerouted. Potential impacts to each of the resource areas from this alternative are described below.

Land Use

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in adverse land use impacts.

Earth Resources

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in new or additional adverse impacts to earth resources. Potential impacts to soil resources or resulting from geologic hazards would be the same as identified in Chapter 4 for bypass pipeline and regulating station construction. Mitigation Measures ER-1 and ER-2 would be implemented to ensure that potential impacts are less than significant.

Water Resources

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in new or additional adverse impacts to water resources. Potential impacts to surface water quality would be the same as identified in Chapter 5 for construction at the SLRC. Mitigation Measure WR-1 would be implemented to ensure that potential impacts are less than significant.

Biological Resources

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in adverse impacts to biological resources. Because a portion of the grassy area south of Silver Lake Reservoir Dam would not be disturbed by trenching for the regulating station trunk line, potential impacts associated with disturbance of this area would be avoided.

Cultural Resources

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in additional adverse impacts to cultural resources. Because a portion of the grassy area south of Silver Lake Reservoir Dam would not be disturbed by trenching for the regulating station trunk line, the potential impacts associated with disturbance of historically significant landscaping would be avoided. Construction in this portion of West Silver Lake Drive would be unlikely to result in adverse impacts to archaeological resources that might be present because existing streets and underground utilities have likely already disturbed such resources. However, to ensure that impacts are less than significant, Mitigation Measure CR-1 would be implemented.

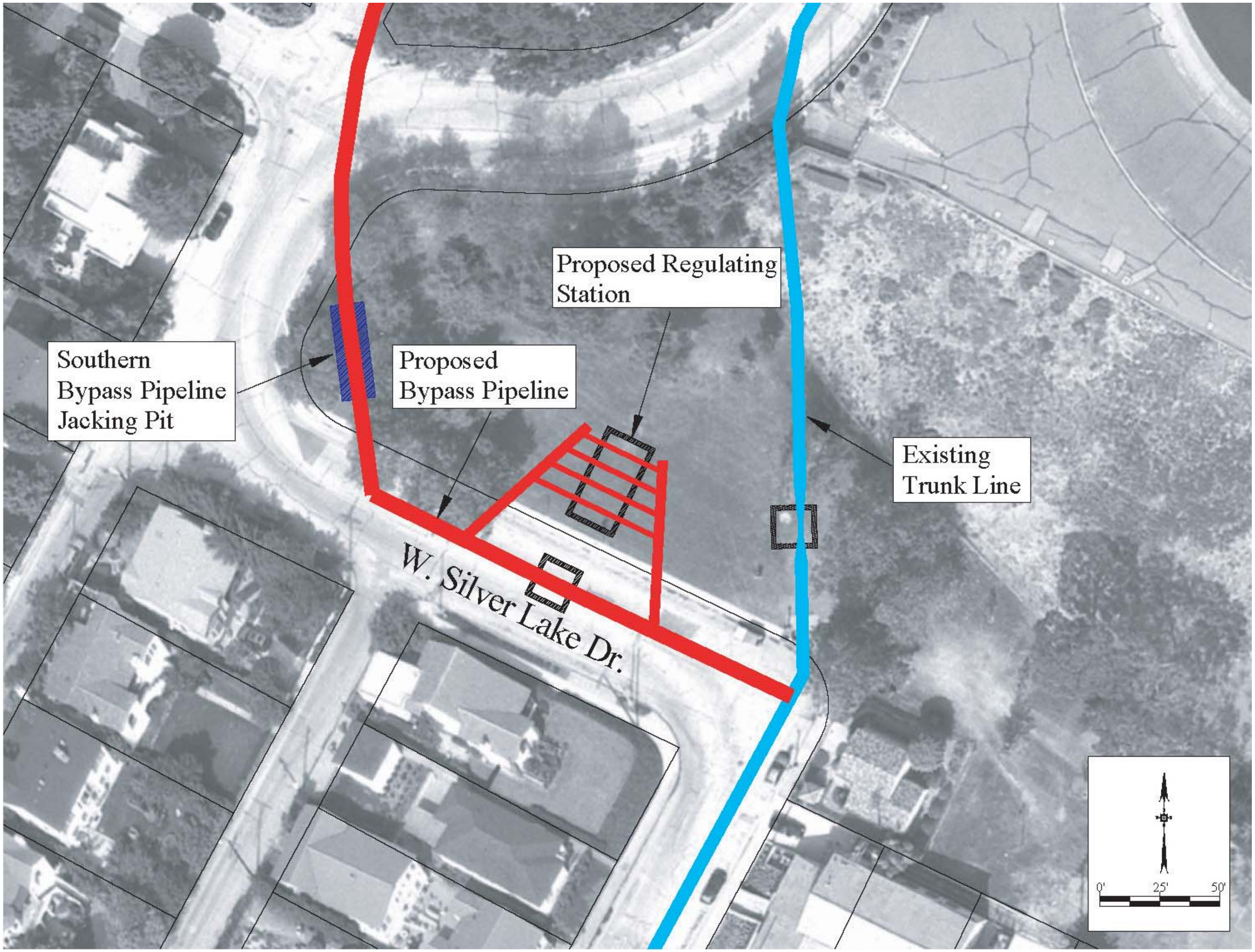

Figure 15-3
SLRC SRP Draft EIR
Potential Regulating Station Trunk Line Location
Draft Site Plan

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Paleontologic Resources

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in additional adverse impacts to paleontologic resources. Construction in this portion of West Silver Lake Drive would be unlikely to result in adverse impacts to paleontologic resources that might be present because existing streets and underground utilities have likely already disturbed such resources. There would be no impact on paleontologic resources as a result of in-street construction if this activity encountered only unfossiliferous artificial fill. At depths greater than 5 feet below grade, however, the impact of excavation for these structures and, if to a depth sufficient to encounter this rock unit below any artificial fill, for the southern jacking pit and the regulating station, would be of high significance. This is because of the high potential for encountering remains old enough to be considered fossilized.

Mitigation Measures PR-1 and PR-3 have been identified to ensure that potential significant adverse impacts to paleontologic resources at the SLRC are reduced to less-than-significant levels.

Traffic and Transportation

Use of West Silver Lake Drive for construction of the regulating station trunk line would require the closure of West Silver Lake Drive in this area for approximately 2 weeks. The full closure of West Silver Lake Drive would be considered a significant impact. Mitigation Measure TT-3, described in Chapter 9, would be implemented. Mitigation Measure TT-3 requires development of a Transportation Management Plan to be prepared and implemented in conjunction with the LADOT. Implementation of Mitigation Measure TT-3 would ensure that impacts are less than significant.

Noise

Noise impacts associated with construction of the regulating station trunk line in West Silver Lake Drive are anticipated to be similar to those associated with the Proposed Project. Mitigation Measure N-2, described in Chapter 11, would be implemented to reduce or eliminate potential significant impacts.

Air Quality

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in new or additional adverse air quality impacts. Standard construction practices and Mitigation Measure AQ-1, described in Chapter 11, would be implemented to reduce air quality impacts.

Public Services and Utilities

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in new or additional adverse impacts to public services and utilities. In fact, potential impacts to existing underground utilities would be avoided by locating the trunk line in the street. In-street construction for the regulating station trunk line would be managed via a construction management plan such that local traffic patterns would be maintained or local traffic rerouted; and fire, police, and emergency medical services would not be adversely affected.

Hazardous Materials

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in adverse impacts related to hazardous materials.

Visual Resources

Use of West Silver Lake Drive for construction of the regulating station trunk line would not result in adverse impacts related to visual resources. Potential short-term impacts would be similar to those described in Chapter 14 for bypass pipeline and regulating station construction.

16.0 Other CEQA Topics

16.1 Cumulative Impacts

This section addresses potential cumulative impacts to the environment that could occur as a result of implementing the Proposed Project in conjunction with one or more other projects.

The CEQA Guidelines (Section 15130) state that "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." Other projects causing related impacts may consist of "past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency."

Additionally, the discussion of cumulative impacts "shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute."

16.1.1 Proposed Project Impacts

Each section of the resource chapters (Chapters 3 through 14) identified both potentially significant and unavoidable significant impacts associated with implementation of the Proposed Project. The Proposed Project has the potential for unavoidable significant impacts to air quality, noise, and traffic and transportation from construction activities. Resource areas with potential significant impacts resulting from construction activities include earth resources, water resources, biological resources, and cultural resources. These potential impacts are briefly summarized below for each Proposed Project site.

TABLE 16-1
Summary of Proposed Project Impacts at Each Project Site

Resource Area	HWSG Site	SLRC
Earth Resources	Construction activities would potentially result in soil erosion and sedimentation runoff.	
Water Resources	Changes in topography and the presence of excavated and/or unprotected soil during construction would potentially affect stormwater runoff.	
Biological Resources	Construction activities would potentially result in the loss of riparian habitat along the south portion of the HWSG site and may result in the fill and permanent loss of waters of the U.S. and CDFG jurisdictional streambed and bank. If found onsite during preconstruction surveys, construction activities would also result in potential impacts to special-status plants, nesting birds of special concern, and special-status mammals (bats).	If found onsite during preconstruction surveys, construction activities would result in potential impacts to nesting birds of special concern and special-status mammals (bats).

TABLE 16-1
Summary of Proposed Project Impacts at Each Project Site

Resource Area	HWSG Site	SLRC
Cultural Resources	No impacts to historical resources associated with construction activities at the HWSG site are anticipated, and the potential for discovery of prehistoric or historical archaeological sites at the HWSG site is considered to be low.	The potential for discovery of prehistoric or historical archaeological sites at the SLRC is considered to be low. Landscaping considered to contribute to the historic character of the SLRC would be disturbed during construction.
Traffic and Transportation	Construction traffic at the HWSG site would potentially result in a significant impact at the intersection of Forest Lawn Drive and Zoo Drive. Water distribution line construction would also result in potential in-street impacts along Forest Lawn Drive.	Construction traffic at the SLRC would potentially result in a significant impact at the intersection of Silver Lake Boulevard and Van Pelt Place. Construction may also result in potential in-street impacts in the vicinity of the SLRC.
Noise	During time periods when construction tasks at the HWSG site overlap, Proposed Project noise levels may exceed existing ambient noise levels by 5 dBs, creating a significant impact.	Construction activity at the SLRC would likely result in noise levels that exceed existing ambient noise levels by more than 5 dBs, resulting in a significant impact.
Air Quality	Construction emissions are anticipated to exceed maximum daily levels for ROG, NO_x and PM_{10} at the HWSG site and NO_x and PM_{10} at the SLRC. When construction emissions for both Proposed Project sites are combined, construction emissions are anticipated to exceed significance thresholds for ROG, NO_X, and PM_{10}.	

The only significant impact that was identified resulting from Proposed Project operation is noise from the regulating station at the SLRC. However, mitigation will be provided to ensure potential noise levels are less than significant.

16.1.2 Thresholds of Significance

The CEQA Guidelines (Section 15355) define cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.”

A cumulative impact is significant if, when considered collectively with the impacts of the other projects, it exceeds the threshold of significance for a particular individual environmental resource area, as described in the impacts section of each resource chapter, and summarized in Section 16.1.1, Proposed Project Impacts.

For the purposes of this analysis, potentially significant cumulative effects are addressed in terms of short-term cumulative impacts (i.e., those impacts that would be cumulatively considerable during construction). The only potentially significant long-term impact identified for the Proposed Project was operational noise from the regulating station at the SLRC. This operational noise impact would be mitigated to a less-than-significant level, and the noise would be highly localized. Because noise from the regulating station is the only potentially significant impact from the Proposed Project during operation, the noise would be highly localized; and the noise would be mitigated to a less-than-significant level. Cumulative long-term impacts were not evaluated.

16.1.3 Reasonably Foreseeable Future Projects

The following criteria have been selected to identify reasonably foreseeable future projects that could potentially result in a significant short-term cumulative impact when combined with the Proposed Project:

- Projects located in the vicinity of the Proposed Project (HWSG site and SLRC)
- Projects with construction time frames that overlap with construction of the Proposed Project (January 2007 through April 2013 at the HWSG site; May 2007 through November 2009 and May through July 2013 at the SLRC)

Because the Proposed Project may have potentially significant short-term construction impacts to earth resources, water resources, biological resources, cultural resources, paleontologic resources, traffic and transportation, noise, and air quality, the potential effect that additional projects have on these specific environmental resource areas are evaluated to determine the potential for a significant cumulative impact.

Potential projects that could produce related or cumulative effects fall into the following general categories:

- LADWP projects in the vicinity of the HWSG site
- LADWP projects in the vicinity of the SLRC
- Other public agency or private projects in the vicinity of the HWSG site
- Other public agency or private projects in the vicinity of the SLRC

16.1.3.1 LADWP Projects

16.1.3.1.1 Vicinity of HWSG Site

Headworks Restoration

LADWP and USACE are jointly evaluating ecosystem restoration alternatives at the HWSG site. USACE is currently preparing a Draft Environmental Assessment that evaluates a variety of ecosystem restoration opportunities at the HWSG site. These opportunities include, but are not limited to, the following: (1) environmental restoration including development of a wetland or restoration of riparian habitat and (2) development of passive recreation opportunities at the HWSG site to complement nearby parks and facilities. Because construction activities for the Proposed Project at the HWSG site would essentially disturb the entire 43-acre parcel, any restoration activity pursued jointly by LADWP and USACE would occur following the completion of construction of Proposed Project facilities.

Lower Reach River Supply Conduit Project

The LADWP-proposed Lower Reach RSC Project is intended to replace the existing Lower Reach RSC, which is a major water transmission pipeline in the LADWP water system. The project is intended to replace the existing Lower Reach, which has exceeded its design life and has a history of leaks. The Lower Reach RSC pipeline would involve construction of approximately 38,000 linear feet of welded-steel pipeline. Within the Lower Reach, five units have been identified. Unit 1a includes approximately 3,100 linear feet of 96-inch-diameter pipe and 3,500 linear feet of 84-inch-diameter pipe that would extend the length of the HWSG site and beyond. Construction of Unit 1a at the HWSG site would consist of open-trench excavation and tunneling and would require approximately 22 workers. Unit 1a is anticipated to be constructed approximately in 2007 and 2008. Approximately 21 pieces of equipment would be needed onsite during open-trench excavation and two truckloads of pipe would be delivered each day. The RSC pipeline at the HWSG site would be constructed during the same time frame as reservoir excavation and subgrade preparation and would also overlap with inlet/outlet and vault construction for roughly 3 months. As part of RSC pipeline construction at the HWSG site, a regulating station to control pressure in the pipeline would be built underground inside a vault near the location of the hydroelectric plant for the Proposed Project. The HWSG site would also be the location of a jacking pit for a portion of the RSC that would be tunneled underneath Zoo Drive. LADWP has scheduled RSC construction at the HWSG site to overlap with the Proposed Project so that earth-disturbing activities at the site can be performed concurrently to minimize potential adverse impacts.

An environmental document to address CEQA requirements for the Lower Reach RSC Project is currently being prepared.

Upper Reach River Supply Conduit Project

The LADWP-proposed Upper Reach RSC Project is intended to replace the existing Upper Reach RSC, which is a major water transmission pipeline in the LADWP water system. The project is intended to enhance current pipeline capacity and to comply with current California Department of Health Services system pressure standards. The Upper Reach RSC pipeline would involve construction of approximately 32,500 linear feet of welded-steel pipeline. Within the Upper Reach of the RSC, three potential units have been identified. Unit 7 would begin at the HWSG site and traverse east in Forest Lawn Drive and Riverside Drive. Unit 7 would include approximately 8,500 feet of 72-inch-diameter pipe that would be constructed using open-trench excavation and tunneling methods. Unit 7 would be constructed approximately in 2009 and 2010 similar to Unit 1a as described above. An anticipated construction time frame for Unit 7 would entirely overlap with reservoir storage structure construction for the Proposed Project, although it would not overlap with in-street construction for the Proposed Project water distribution line in Forest Lawn Drive.

An environmental document to address CEQA requirements for the Upper Reach RSC Project will be prepared when a determination has been made to move forward with this project.

16.1.3.1.2 Vicinity of SLRC

Silver Lake and Ivanhoe Reservoirs Master Plan Implementation

The Master Plan identified desired improvements at and around the SLRC for a variety of projects, including public open space and recreational improvements, traffic-calming improvements, signals and stop signs, curb and decomposed granite pedestrian/jogging path, tree planting and other streetscape improvements, and art and architecture improvements. The item of most importance identified in the Funding and Implementation section of the Master Plan is providing a safe and continuous walkway around the SLRC perimeter. Traffic-calming elements, including signals, stop signs, and crosswalks, were identified as elements to be implemented as soon as possible. Currently, activities related to installation of a pedestrian/jogging path around the SLRC are in progress. It is anticipated that this path would be completed before construction activities related to the Proposed Project commence. However, other projects related to implementation of the Master Plan may overlap with Proposed Project construction at the SLRC. The Master Plan states that all improvement projects at the SLRC would be reviewed by and negotiated with LADWP.

Lower Reach River Supply Conduit

Portions of the Lower Reach RSC pipeline would also be constructed in the vicinity of the SLRC. Unit 4 of the Lower Reach includes 6,000 linear feet of 66- to 84-inch pipeline. In the vicinity of the SLRC, Unit 4 would be located in Rowena Avenue for approximately 800 feet, in West Silver Lake Drive for approximately 1,000 feet and would end at the intersection of West Silver Lake Drive and Armstrong Avenue. This intersection is the location of the northern jacking pit for the bypass pipeline component of the Proposed Project. The construction method for Unit 4 would be a combination of open trench and jacking/boring, and approximately 24 workers would be required during construction. Unit 4 is anticipated to be constructed approximately in 2005 to 2007. According to this construction schedule, the Lower Reach RSC pipeline in the vicinity of the SLRC would overlap with the Proposed Project bypass pipeline construction for approximately 5 months (May to September 2007). An environmental document for the Lower Reach RSC Project is currently being prepared.

16.1.3.2 Other Projects

The City of Los Angeles Planning Department and other City departments were contacted for information on reasonably foreseeable future projects in the vicinity of the HWSG site and the SLRC. One potential cumulative project at each project site was identified, as described below.

16.1.3.2.1 Vicinity of HWSG Site

Glendale-Burbank Interceptor Sewer

The Glendale-Burbank Interceptor Sewer (GBIS) is a project currently being evaluated by the Los Angeles Bureau of Sanitation (BOS). The project is a gravity sewer consisting of approximately 4.7 miles of 48- to 90-inch pipe. As shown on preliminary project maps, GBIS would be constructed in the vicinity of the HWSG site. Although its exact location is unknown, GBIS would likely be constructed within a corridor either north of the HWSG site (either north or south of the LA River) or south of the HWSG site, possibly in the Forest Lawn Drive right-of-way. Construction of GBIS cannot commence before completion of other BOS improvements that are not anticipated to be complete until sometime in 2013. Therefore, it is highly unlikely that the GBIS project would overlap with Proposed Project construction at the HWSG site. An environmental document has not yet been prepared for the GBIS project.

16.1.3.2.2 Vicinity of SLRC

State Route 2 (SR-2) Freeway Terminus Improvement

The Metropolitan Transportation Authority (MTA) is the lead agency for the State Route 2 (SR-2) Freeway Terminus Improvement Project (FTIP). The purpose of the project is to upgrade the southern terminus of SR-2 and to address transportation issues and community concerns on Glendale Boulevard. Specific project objectives include: improving traffic flow and reducing congestion at the SR-2 Freeway Terminus, enhancing open space opportunities, providing community benefits, and implementing pedestrian enhancements at the SR-2 Freeway Terminus. An environmental document has not yet been prepared for the SR-2 FTIP, but preparation of one is anticipated to begin within the next 6 months. Accounting for the time required for environmental documentation preparation and project design, construction of the project would not likely begin until sometime in 2007, although that date may change. Construction activities for the Proposed Project at the SLRC are scheduled for May 2007 through October 2009, so it is possible that some construction activities for the Proposed Project and the SR-2 FTIP may overlap.

Hyperion Avenue Bridge Retrofit and Rehabilitation Project

The City of Los Angeles Bureau of Engineering is the lead agency for the Hyperion Avenue Bridge Retrofit and Rehabilitation Project (Hyperion Avenue Bridge RRP). The project involves the seismic retrofit of the Hyperion Avenue Bridge, which extends approximately from Ettrick Avenue (south of the Los Angeles River) to Glenfeliz Boulevard (north of the Los Angeles River). The project includes creating a continuous sidewalk on the west side of the bridge, replacing of the bridge railings to replicate the original railings, and repaving the bridge. The project also includes widening the northbound and southbound Glendale Viaducts over the Los Angeles River and replacing of the bridge railings, and realigning the northbound I-5 off-ramp connection to Glendale Boulevard, which would also create a pocket park with access to the bike path along the Los Angeles River. Construction for the project would take approximately 1 to 2 years, and would likely begin in mid-to-late 2006. Preliminary environmental documentation for the proposed project has been prepared. The construction timeframe for the Hyperion Avenue Bridge RRP would potentially overlap with the Proposed Project from May 2007 through October 2008. Although the Hyperion Avenue Bridge RRP is not located within the immediate vicinity of the Proposed Project, it is located within the community of Silver Lake; and construction timeframes for the Proposed Project and the Hyperion Avenue Bridge RRP would overlap for roughly 18 months.

Silver Lake Branch Library

A branch of the Los Angeles Public Library is proposed to be constructed at the southwest corner of Silver Lake Boulevard and Glendale Boulevard. Design for the library branch is anticipated to begin in June 2005 and take 14 months. Following design, construction bids would be solicited; and construction on the library may begin in mid-2007. Construction funds are not currently available, however; and the project would not go out to bid until funds are available. Because design is not complete, sources of funding have not been identified, and additional details on the library are not available, it is not possible to prepare an adequate evaluation of the potential environmental impacts of the Silver Lake Branch Library along with the potential environmental impacts associated with the Proposed Project.

16.1.4 Potential Cumulative Impacts

The following discussion summarizes the potential cumulative impacts that could occur with construction of the Proposed Project in conjunction with the previously identified potential cumulative projects. Mitigation measures, if required, are also identified.

16.1.4.1 HWSG Site

Potential cumulative projects in the vicinity of the HWSG site include the joint LADWP/ USACE Headworks Restoration Project, the LADWP Upper Reach and Lower Reach RSC Projects, and the Bureau of Sanitation Burbank-Glendale Interceptor Sewer Project. Of these, only the Upper Reach and Lower Reach RSC projects would have construction activities that overlap with Proposed Project construction. Potential cumulative impacts for the Upper Reach and Lower Reach RSC projects in conjunction with the Proposed Project at the HWSG site are discussed below.

Earth Resources

The Proposed Project would have potential impacts to earth resources related to erosion and sedimentation. The Upper Reach and Lower Reach RSC projects would have similar potential impacts. The RSC project would implement BMPs designed to reduce or eliminate soil erosion or sedimentation and would be subject to similar mitigation measures as those identified for the Proposed Project. It is not anticipated that Upper Reach and Lower Reach RSC projects impacts, together with Proposed Project impacts, would result in impacts that exceed the Thresholds of Significance identified in Section 4.2.1 of this Draft EIR. Therefore, cumulative impacts to earth resources that may occur as a result of construction of the Upper Reach and Lower Reach RSC projects in conjunction with the Proposed Project would be less than significant.

Water Resources

The Proposed Project would have potential impacts to water resources if changes in topography and the presence of excavated and/or unprotected soil during construction affected stormwater runoff. The Upper Reach and Lower Reach RSC projects would have similar potential impacts. The Upper Reach and Lower Reach RSC projects would include BMPs designed to reduce or eliminate sedimentation runoff that could potentially affect surface water and would be subject to similar mitigation measures as those identified for the Proposed Project. It is not anticipated that Upper Reach and Lower Reach RSC projects impacts, together with Proposed Project impacts, would result in impacts that exceed the Thresholds of Significance identified in Section 5.2.1 of this Draft EIR. Therefore, cumulative impacts to water resources that may occur as a result of construction of the Upper Reach and Lower Reach RSC projects in conjunction with the Proposed Project would be less than significant.

Biological Resources

Construction activities for the Proposed Project would potentially result in the loss of riparian habitat along the south side of the HWSG site. If found onsite during preconstruction surveys, construction of the Proposed Project would also result in potential impacts to special-status plants, nesting birds of special concern, and special-status bats. Construction of the Upper Reach and Lower Reach RSC would not create additional potential impacts in the same location because the entire HWSG site is anticipated to be disturbed as part of Proposed Project construction. Therefore, no cumulative impacts to biological resources are anticipated to occur from construction of the Upper Reach and Lower Reach RSC projects together with the Proposed Project.

Cultural Resources

The potential for discovery of prehistoric or historical archaeological sites at the HWSG site is considered to be low. The Proposed Project, however, identified mitigation measures to be implemented in the event such sites are encountered during construction. Construction of the Upper Reach and Lower Reach RSC would occur in the same general location to be disturbed for Proposed Project construction and would be subject to similar mitigation measures as those identified for the Proposed Project. Therefore, no cumulative impacts to cultural resources are anticipated to occur as a result of construction of the Upper Reach and Lower Reach RSC projects together with the Proposed Project.

Traffic and Transportation

The Proposed Project would potentially result in adverse traffic impacts at the intersection of Forest Lawn Drive and Zoo Drive. During the overlapping period of reservoir excavation and subgrade preparation and inlet/outlet vault construction, the Proposed Project would result in approximately 360 daily truck trips and 154 daily worker trips. Upper Reach and

Lower Reach RSC construction would result in an additional 4 daily truck trips and 44 daily worker trips. A review of Table 9-11 in the Traffic and Transportation chapter of this Draft EIR indicates that the increase in construction-related traffic at the HWSG site would not adversely affect four of the intersections studied in the vicinity of the HWSG site. However, an increase in construction-related traffic may incrementally increase the significant adverse impact anticipated at the intersection of Forest Lawn Drive and Zoo Drive. Mitigation identified for the Proposed Project to reduce potential adverse impacts at this intersection would also be applied to the Upper Reach and Lower Reach RSC projects. As is the case for the Proposed Project, however, it is likely that cumulative construction impacts to traffic and transportation at the intersection of Forest Lawn Drive and Zoo Drive would remain significant even after mitigation.

Noise

During time periods when construction tasks at the HWSG site overlap, Proposed Project noise levels may exceed existing ambient noise levels by 5 dBs, creating a significant impact. It is possible that the addition of Upper Reach and Lower Reach RSC construction at the HWSG site would contribute to exceeding ambient noise levels. The Proposed Project includes mitigation intended to reduce or eliminate significant noise impacts, including implementation of a noise mitigation and monitoring program, although it is possible that noise impacts would not be completely mitigated. This monitoring program would take into account the overlapping construction between the Upper Reach and Lower Reach RSC and the Proposed Project and would implement additional mitigation measures, if necessary. Cumulative noise impacts, however, may remain significant even after mitigation.

Air Quality

Air emissions during construction at the HWSG site are anticipated to exceed maximum daily levels for ROG, NO_x, and PM_{10}. When combined with construction at the SLRC, construction emissions are anticipated to also exceed significance thresholds for ROG, NO_x and PM_{10}. Because air emissions are typically considered on a regional basis, any project being constructed in the general vicinity of the HWSG site during the same construction time frame would contribute to cumulatively significant air quality impacts.

BMPs and mitigation measures have been identified for the Proposed Project to reduce construction-related air quality impacts, although impacts may continue to be significant after mitigation. These same practices and mitigation would also help to reduce cumulatively significant impacts. The Upper Reach and Lower Reach RSC projects would implement BMPs designed to reduce air emissions and would be subject to similar mitigation measures as those identified for the Proposed Project. These practices and mitigation would help to reduce cumulatively significant air quality impacts, although it is likely that short-term cumulative air quality impacts would remain significant after mitigation.

16.1.4.2 SLRC

Potential cumulative projects in the vicinity of the SLRC include improvements consistent with the Master Plan, the LADWP Lower Reach RSC, the MTA SR-2 FTIP, and the Hyperion Avenue Bridge RRP. All four of these projects may have construction time frames that overlap with construction activities for the Proposed Project at the SLRC. Potential cumulative impacts for these projects in conjunction with the Proposed Project at the SLRC are discussed below.

Earth Resources

The Proposed Project would have potential impacts to Earth Resources related to erosion and sedimentation. Earth resources would be disturbed for the Lower Reach RSC, the SR-2 FTIP, and the Hyperion Avenue Bridge RRP and may be disturbed for projects related to the Master Plan implementation. The Lower Reach RSC, SR-2 FTIP, and Hyperion Avenue Bridge RRP would likely have earth resources-related impacts that are localized in nature, and all would include BMPs designed to reduce or eliminate soil erosion or sedimentation. Therefore, it is assumed that cumulative impacts to Earth Resources that would occur as a result of projects constructed within the same time frame as the Proposed Project would be mitigated to a less-than-significant level.

Water Resources

The Proposed Project would have potential impacts to Water Resources if changes in topography and the presence of excavated and/or unprotected soil during construction affect stormwater runoff. Because the projects would likely have some amounts of excavated soil during construction, the Master Plan projects, the Lower Reach RSC, SR-2 FTIP, and Hyperion Avenue Bridge RRP could potentially result in sedimentation runoff that could affect surface water quality. Additionally, portions of the Hyperion Avenue Bridge RRP would be constructed within the Los Angeles River. Potential impacts, however, would be localized in nature; and the other projects would all include BMPs designed to reduce or eliminate sedimentation that could potentially affect surface water. Therefore, it is assumed that cumulative impacts to water resources that would occur as a result of projects constructed within the same time frame as the Proposed Project would be mitigated to a less-than-significant level.

Biological Resources

If found onsite during preconstruction surveys, construction of the Proposed Project would result in potential impacts to nesting birds of special concern and special-status bats at the SLRC. The Lower Reach RSC in the vicinity of the SLRC would be constructed in street rights-of-way and not immediately at the SLRC. Construction activities related to the SR-2 FTIP would likely be constructed adjacent to SR-2 and not immediately at the SLRC. Hyperion Avenue Bridge RRP construction would be constructed at the Hyperion Avenue/ I-5 intersection and not near the SLRC. Environmental documents for the Lower Reach RSC project, SR-2 FTIP, and Hyperion Avenue Bridge RRP have been or will be prepared that would identify and mitigate for potential impacts to biological resources. Impacts identified for these projects, however, are not anticipated to overlap with Proposed Project impacts to nesting birds of special concern and special-status bats because the potential impact area for the Proposed Project is limited to the immediate vicinity of the SLRC.

Projects related to the Master Plan implementation would occur at the SLRC and may affect nesting birds of special concern and special-status bats if construction were to occur in the vicinity of active nests or roosts. Projects at the SLRC that would potentially affect nesting birds of special concern and special-status bats would be anticipated to perform preconstruction biological surveys; if found, a proposed project would be expected to implement mitigation measures similar to those provided for the Proposed Project. Given the above, it is assumed that cumulative impacts to biological resources that would occur as a result of projects constructed within the same time frame as the Proposed Project would be less than significant.

Cultural Resources

Potentially adverse construction impacts related to cultural resources in the vicinity of the SLRC are limited to the disturbance of historically significant landscaping at the SLRC. Because the Lower Reach RSC and SR-2 FTIP are not located in the immediate vicinity of the SLRC, they would not impact historically significant landscaping at the SLRC. The Hyperion Avenue Bridge RRP may result in impacts to historical resources, but would not overlap with impacts to historically significant landscaping at the SLRC. Projects related to the Master Plan implementation would occur at the SLRC and may affect historically significant landscaping. Projects that would have a significant adverse impact on historically significant landscaping at the SLRC would be required to mitigate potential impacts by employing the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Cultural Landscapes*. With *Guideline* implementation, it is likely that the Master Plan project impacts would be less than significant. Based on the above approach, it is assumed that cumulative impacts to cultural resources that would occur as a result of projects constructed within the same time frame as the Proposed Project would be less than significant.

Traffic and Transportation

The Proposed Project would potentially result in adverse traffic impacts at the intersection of Silver Lake Boulevard and Van Pelt Place. Bypass pipeline construction would also result in potential in-street impacts along West Silver Lake Drive, although these impacts would likely be less than significant.

Lower Reach RSC construction would overlap Proposed Project construction by approximately 4 months. An environmental document for the Lower Reach RSC is currently being prepared. While the Proposed Project would have a potentially significant impact at the intersection of Silver Lake Boulevard and Van Pelt Place, it is not anticipated to have in-street impacts on West Silver Lake Drive. The Lower Reach RSC would not likely impact the intersection of Silver Lake Boulevard and Van Pelt Place because this intersection is at the far southern end of the SLRC. Because the Lower Reach RSC would not be extended onto West Silver Lake Drive, no in-street construction impacts would occur that would overlap with the Proposed Project. Additionally, it is also unlikely that Lower Reach RSC construction would increase traffic levels on West Silver Lake Drive because construction traffic would not be routed through a residential neighborhood. The environmental document for the Lower Reach RSC would include mitigation to reduce construction traffic impacts, and the Proposed Project would be included in the Lower Reach RSC environmental document as a cumulative project. In addition, both the Lower Reach RSC project and the Proposed Project would require construction management traffic plans to be approved by LADOT.

Construction activities potentially related to the SR-2 FTIP would not occur in the immediate vicinity of the SLRC, but would occur at the intersection of Glendale Boulevard and SR-2 southbound off-ramp/Waterloo Street/Fargo Street. This Draft EIR concluded that the Proposed Project would not result in significant impacts at this intersection. An environmental document has not yet been prepared for the SR-2 FTIP. It is likely that traffic impacts at Glendale Boulevard and the SR-2 southbound off-ramp would be significant; however, it is unlikely that traffic impacts, if construction time frames overlap, would be cumulatively significant for the SR-2 FTIP and the Proposed Project, given the distance between the projects. The environmental document for the SR-2 FTIP, however, would include a traffic analysis that would take into account traffic volumes anticipated for the Proposed Project and would provide mitigation measures to reduce or eliminate potential significant impacts as a result of construction of the SR-2 FTIP. In addition, both the SR-2 FTIP and the Proposed Project would require construction management traffic plans to be approved by LADOT.

Construction activities related to the Hyperion Avenue Bridge RRP would not occur in the immediate vicinity of the SLRC, but would occur at the Hyperion Avenue crossing of I-5 and the Los Angeles River. One lane of traffic in each direction on Hyperion Avenue is expected to be closed for the 1- to 2-year construction timeframe. Preliminary environmental documentation for the Hyperion Avenue Bridge RRP indicates that traffic impacts are anticipated to be less than significant. Additionally, construction traffic for the Proposed Project would not use Hyperion Avenue. Therefore, cumulative traffic impacts for the Hyperion Avenue Bridge RRP and the Proposed Project are not anticipated.

Projects related to the Master Plan implementation would have the potential to temporarily adversely impact traffic in the vicinity of the SLRC, given that desired improvements include traffic-calming measures, signals and stop signs, and pedestrian paths that would possibly result in in-street construction activities. It is assumed that any such projects would be required to have a construction management traffic plan approved by LADOT. With this plan, traffic impacts resulting from the Master Plan projects are anticipated to be less than significant.

Traffic and transportation impacts from the SR-2 FTIP and the Lower Reach RSC would likely be individually significant. Traffic impacts for the Hyperion Avenue Bridge RRP are anticipated to be less than significant, and it is not likely that impacts associated with projects related to the Master Plan implementation would be significant. Cumulative impacts associated with intersections and roadway segments identified for the Proposed Project are not anticipated. It is possible that the construction schedules for multiple cumulative projects may overlap with the Proposed Project, however; and motorists attempting to avoid potential impacts associated with other projects in the Proposed Project vicinity may choose to utilize streets and intersections potentially impacted by the Proposed Project. This would result in unforeseen cumulative impacts. Mitigation identified for the Proposed Project and anticipated to be required for the SR-2 FTIP, the Lower Reach RSC, and the Hyperion Avenue Bridge RRP would help ensure that cumulative impacts are minimized. Because construction of multiple cumulative projects may overlap with the Proposed Project, however, it is possible that significant cumulative impacts related to traffic and transportation may remain after mitigation.

Noise

Construction-related noise impacts at the SLRC from the Proposed Project would occur around each of the bypass pipeline jacking and receiving pits on the west side of the SLRC, around the site of the regulating station south of Silver Lake Reservoir Dam, around both of the relief station locations, and in the vicinity of the staging area on the eastern side of the SLRC.

Lower Reach RSC construction would overlap Proposed Project construction by approximately 4 months. Overlapping noise impacts for the Lower Reach RSC and the

Proposed Project would be limited to the vicinity of the northern jacking pit for the bypass pipeline component of the Proposed Project. The Proposed Project includes mitigation intended to reduce or eliminate significant noise impacts, including implementation of a noise mitigation and monitoring program, although it is possible that noise impacts cannot be completely mitigated. This monitoring program would take into account the 4 months of overlapping construction between the Lower Reach RSC and the Proposed Project and would implement additional mitigation measures, if necessary.

Construction activities potentially related to the SR-2 FTIP would not occur in the immediate vicinity of the SLRC, but would occur at the confluence of Glendale Boulevard and SR-2 southbound-off ramp/Waterloo Street/Fargo Street. Although construction-related noise impacts from the SR-2 FTIP may be significant, given the attenuating effect of distance on noise levels, it is unlikely that noise impacts of the SR-2 FTIP would overlap with those of the Proposed Project.

Construction activities related to the Hyperion Avenue Bridge RRP would not occur in the immediate vicinity of the SLRC, but would occur at the Hyperion Avenue crossing of I-5 and the Los Angeles River. Although construction-related noise impacts from the Hyperion Avenue Bridge RRP may be significant, given the attenuating effect of distance on noise levels, it is unlikely that noise impacts of the Hyperion Avenue Bridge RRP would overlap with those of the Proposed Project.

Noise from construction of projects related to the Master Plan implementation would occur in the immediate vicinity of the SLRC, potentially near areas where noise levels would be the greatest (regulating station and staging area). The noise mitigation and monitoring program for the Proposed Project would take into account any other projects occurring in the immediate vicinity, but it is possible that noise impacts cannot be completely mitigated.

Noise impacts from the Lower Reach RSC may be cumulatively significant in the vicinity of the intersection of West Silver Lake Drive and Armstrong Avenue (the location of the bypass pipeline northern jacking pit) when combined with the Proposed Project. Noise impacts from construction of projects related to the Master Plan implementation may be cumulatively significant in the vicinity of the regulating station and staging area when combined with the Proposed Project. Mitigation identified for the Proposed Project would reduce potential impacts, but it is possible that cumulative noise impacts may remain significant even after mitigation.

Air Quality

Air emissions during construction at the SLRC are anticipated to exceed maximum daily levels for NO_x and PM_{10}. When combined with construction at the HWSG site, construction emissions are anticipated to exceed significance thresholds for ROG, NO_x and PM_{10}. Because air emissions can be considered on a regional basis, any project being constructed in the general vicinity of the SLRC during the same construction time frame may contribute to cumulatively significant air quality impacts.

BMPs and mitigation measures have been identified for the Proposed Project to reduce construction-related air quality impacts, although impacts may continue to be significant after mitigation. These same practices and mitigation would also help to reduce cumulatively significant impacts. Significant construction projects in the vicinity of the Proposed Project, such as the Lower Reach RSC, the SR-2 FTIP, and the Hyperion Avenue Bridge RRP, or projects related to the Master Plan implementation, would be required to identify BMPs and mitigation measures to reduce air quality impacts. These practices and mitigation would help to reduce cumulatively significant air quality impacts, although it is likely that short term cumulative air quality impacts would remain significant after mitigation.

16.1.5 Cumulative Impacts Summary and Conclusions

Based on the analysis contained in this Draft EIR, the Proposed Project would not result in significant adverse environmental impacts during operation or maintenance, with the exception of potential operation noise from the regulating station at the SLRC. However, noise impacts would be mitigated to less than significant and would be highly localized. Therefore, cumulative impacts during operation have not been addressed in this cumulative impacts discussion.

Two projects were identified that could potentially result in cumulative impacts at the HWSG site: the LADWP Upper Reach and Lower Reach RSC. Four projects were identified that could potentially be constructed during the same time frame as construction at the SLRC for the Proposed Project: projects related to the Master Plan implementation, the LADWP Lower Reach RSC, the MTA SR-2 FTIP, and the Hyperion Avenue Bridge RRP.

The potential for significant cumulative impacts from the above projects plus the Proposed Project has been identified for traffic and transportation, noise, and air quality at the HWSG site and the SLRC. BMPs and mitigation measures, both for the Proposed Project and for the cumulative projects, have been identified to reduce potential impacts; but it is anticipated that the above-referenced construction-related cumulative impacts may remain significant after mitigation.

16.2 Growth Inducement

Section 15126.2(d) of the CEQA Guidelines requires that growth-inducing impacts of a project be discussed in an EIR. Growth inducement is related to the ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment.

The quantity and distribution of population in the City of Los Angeles affect housing, the economy, the environment, infrastructure use, and demand on public services. Thus, to respond to and plan for future population, the City’s General Plan (including the Framework and Housing Elements) and the Southern California Association of Governments Regional Comprehensive Plan and Guide include forecasts of population and housing trends. Because projections are used to plan the infrastructure and level of service required to support the future population, actual growth in excess of the projections can lead to deficiencies. The projections have been based without improvements to infrastructure or, specifically, water quality.

The Proposed Project has been proposed in response to water quality regulations. The Proposed Project neither adds to nor subtracts from the amount of water available or the ability to serve such water. It merely delivers water that meets state and federal drinking water quality standards to the existing water distribution system. However, the following sections address the requirements of CEQA that an EIR discuss whether the Proposed Project could directly or indirectly lead to economic, population, or housing growth.

16.2.1 Thresholds of Significance

A project would have a significant effect on regional growth based on:

- The degree to which the project would cause growth (i.e., new housing or employment generators) or accelerate development in an undeveloped area that exceeds project/planned levels for the year of project occupancy/buildout
- Whether the project would introduce unplanned infrastructure that was not previously evaluated in the adopted Community Plan or General Plan

16.2.2 Existing Environmental Setting

The HWSG site and SLRC are located in the midst of a highly urbanized area.

The HWSG site consists of 43 undeveloped acres bounded on the north by the LA River and State Highway 134, and on the east and south by Forest Lawn Drive. The property is owned by the City of Los Angeles Department of Recreation and Parks, and LADWP retains an easement over the entire property. Cemeteries line the southern side of the site, while movie and television studios border the northern side. There are no residential areas immediately surrounding the HWSG site. The HWSG site is zoned as Open Space; water facilities are permitted via a conditional use permit.

The SLRC consists of 126 acres, 101 of which are used exclusively for LADWP facilities. The reservoirs are enclosed by a perimeter fence and bordered on the west by West Silver Lake Drive, on the south-southeast by Silver Lake Drive, on the northeast by Armstrong Avenue, and on the north by Tesla Avenue. The SLRC is surrounded primarily by medium- to high-density, single-family residences. The SLRC is zoned open space; open reservoirs and associated facilities are permitted outright.

16.2.3 Impacts

The Proposed Project would require a significant number of construction workers during construction. The vast majority of workers is expected to live and work in the Los Angeles area, resulting in a less-than-significant impact on the permanent increase of population, housing, geographic distribution, and supply-demand relationships. The degree of Proposed Project-related changes regarding construction workers needed to construct the Proposed Project would not alter the City, regional, or other adopted population growth policies in the area.

In the long term, the Proposed Project neither adds to nor subtracts from the amount of water available or the ability to serve such water, but merely improves the quality of water delivered to the customer. None of the proposed facilities would be staffed; maintenance and operation would be provided by existing LADWP staff. Because the Proposed Project only provides water quality improvements to the existing water supply and requires no operating staff, it would not impact population, housing, geographic distribution, or supply-demand relationships. The degree of Proposed Project-related changes would not alter City, regional, or other adopted population growth policies in the area because existing water supply and operating staff would not change.

16.2.4 Mitigation

No mitigation measures are required because the Proposed Project would not have a significant short- or long-term impact on population, housing, geographic distribution, and supply-demand relationships; and the degree of Proposed Project-related changes would not alter the City, regional, or other adopted population growth policies.

16.3 Significant Irreversible Environmental Effects

The Proposed Project would develop approximately 19 acres of currently undeveloped open space at the HWSG site and convert it to usable open space.

The materials and energy necessary to implement the Proposed Project would be irreversibly committed. The construction of the facilities would require the commitment of construction materials including concrete, aggregate, steel, glass, asphalt, and others. The construction of these facilities would also require the commitment of gasoline, diesel fuel, refined oil, electrical energy, and water. Sufficient quantities of these resources exist in the region, and these impacts are not expected to be significant.

The long-term operation of Proposed Project facilities would require minimal continued commitment of natural resources for energy production and materials. The hydroelectric plant would capture energy from water flowing into the storage reservoir and produce up to 4 MW of electricity. Operation of the storage reservoir and bypass pipeline would not require the use of natural resources, except for occasional maintenance. Operation of the regulating station would require electricity and gas. Also, these materials and energy would be minimal; and they would be unavailable for other uses.

LADWP would continue to comply with current pollution and energy-reduction regulations enforced by local, state, and/or federal agencies. In addition, LADWP would be responsible to comply with all future regulations related to energy conservation and pollution-reduction measures required by local, state and/or federal agencies.

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