IV. ENVIRONMENTAL IMPACT ANALYSIS
D. HYDROLOGY/SURFACE WATER QUALITY

The following analysis of hydrology is based upon the Hydrology Study & Water Quality Report prepared by PSOMAS, dated March 2007. This study is provided as Appendix D of this EIR.

1. ENVIRONMENTAL SETTING

a. Existing Conditions

The project site comprises the grounds of the Autry National Center's Griffith Park Campus, which is situated on approximately 12.75 acres of land located within the northeast portion of Griffith Park. The topography of the site is relatively flat with an approximately 24-foot topographical slope from east to west. Impervious surfaces constitute approximately 52 percent of the site and pervious surfaces constitute approximately 48 percent of the site. Existing impervious surfaces include the Campus Building and surface parking areas which were constructed and opened to the public in 1988. Pervious surfaces include landscaped areas such as the South Lawn.

As discussed in the Initial Study, which is included as Appendix A of this EIR, the project site is located over the San Fernando Groundwater Basin, which annually provides the City with 87,000 acre-feet of water.[52] Groundwater levels in the City of Los Angeles are maintained through an active process via spreading grounds and recharge basins. The larger groundwater sources within the City of Los Angeles are actively recharged and supply the City with approximately 14 percent of its water supply.[53] The groundwater table beneath the site is approximately 17.5 feet to 36 feet below ground surface (bgs).

The project site can be divided into four distinct drainage areas. Drainage Area A, which is comprised of approximately 6.7 acres, serves the roof runoff from the Campus Building along with surface runoff from the northern side of the project site. Runoff from Area A discharges into a reinforced concrete channel that runs along the Interstate-5 (I-5) Freeway. This reinforced

[52] *City of Los Angeles Department of Water and Power, Urban Water Management Plan Fiscal Year 2002-2003, available at http://www.ladwp.com/ladwp/cms/ladwp005428.pdf, accessed December 12, 2005.*

[53] *Ibid, accessed December 12, 2005.*

concrete channel was constructed in 1956 and is in good condition. Drainage Areas B and C, which are comprised of 0.71 and 3.17 acres, respectively, include the majority of the surface parking areas. Area C also includes the South Lawn. These two areas drain via surface and gutter flow into an existing 54-inch reinforced concrete pipe (RCP) storm drain along the southern boundary of the project area. Drainage Area D, which is comprised of approximately 2.17 acres, consists primarily of parking areas and also drains via surface runoff into the 54-inch RCP on the southern boundary of the site.

Based on the Hydrology Study, during a 10-, 25-, and 50-year, storm event, Area A has a peak runoff flow of approximately 8.29, 11.02, and 13.51 cubic feet per second (cfs), respectively. During a 10-, 25-, and 50-year storm event, Area B experiences a peak runoff flow of approximately 0.63, 0.91, and 1.17 cfs, respectively. During a 10-, 25-, and 50-year storm event, Area C has a peak runoff flow of approximately 1.45, 2.89, and 3.82 cfs, respectively. During a 10-, 25-, and 50-yearstorm event, Area D has a peak flow of approximately 3.08, 4.08, and 4.92 cfs, respectively. Currently, the project site has a pre-project storm water runoff flow of 23.42 cfs during a 50-year storm event. The existing utility infrastructure adequately accommodates flows from the 50-year flood. Based on the City of Los Angles Flood Map, the project site is not located within the 100-year flood boundary of the Los Angeles River, which flows on the eastern side of I-5.

b. Regulatory Framework

Regulatory and permitting processes have been established to control the quality of water runoff from urban construction sites. In 1972, the Federal Water Pollution Control Act, also referred to as the Clean Water Act, was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful, unless a National Pollutant Discharge Elimination System (NPDES) permit authorizes the discharge. The Clean Water Act was amended in 1987 requiring the United States Environmental Protection Agency (USEPA) to create specific requirements for storm water discharges. In response to the 1987 amendments to the Clean Water Act, Phase I of the USEPA NPDES Program required NPDES permits for: (1) municipal separate storm sewer systems generally serving, or located in, incorporated cities with 100,000 or more people (referred to as Municipal permits); (2) eleven specific categories of industrial activity (including landfills); and (3) construction activity that disturbs more than five acres or greater of land. As of March 2003, Phase II of the NPDES Program extends the requirements for NPDES permits to numerous small municipal separate storm sewer systems, construction sites of one to five acres, and industrial facilities owned or operated by small municipal separate storm sewer systems, which were previously exempted from storm water permitting.

Section 402 (p) of the Clean Water Act mandates that the Municipal permits must: (1) effectively prohibit the discharges of non-storm water to the storm water system except under

certain provisions; and (2) require controls to reduce pollutants in discharges from the storm water system to the maximum extent practicable, including Best Management Practices (BMPs), control techniques, and system, design, and engineering methods.

A Municipal permit was issued to the County of Los Angeles and 84 incorporated cities (with the exception of the City of Long Beach) in December 2001.[54] To meet the Los Angeles County Municipal Permit requirements, municipalities are required to implement the Storm Water Quality Management Program that was prepared as part of the Report of Waste Discharge filed as part of the NPDES approval process. Pursuant to this program, municipalities, including the City of Los Angeles, are required to conduct a variety of activities including, but not limited to, the following:

- Control discharges at commercial/industrial facilities through tracking, inspecting, and ensuring compliance at facilities that are critical sources of pollutants;
- Implement a development planning program for specified development projects;
- Implement a program to control construction runoff from construction activity at all construction sites within its jurisdiction; and
- Implement a public agency activities program.

In accordance with the Los Angeles County Municipal Permit requirements, the City of Los Angeles has developed and completed several programs and activities, including the adoption of ordinances relating to storm water regulation and completion of a Development Best Management Practices Handbook regarding both construction (Part A) and planning (Part B) activities.

(1) Construction

The California General Construction Activity Storm Water Permit, adopted by the State Water Resources Control Board (SWRCB), regulates construction activity that includes clearing, grading, and excavation resulting in soil disturbance of at least 1 acre of total land area.[55] This General Permit authorizes the discharge of storm water to surface waters from construction activities. It prohibits the discharge of materials other than storm water and authorized non-storm water discharges and all discharges that contain a hazardous substance in excess of

[54] *County of Los Angeles Municipal Storm Water Permit (NPDES No. CAS004001, Order No 01-182).*

[55] *State Water Resources Control Board NPDES General Permit for Storm Water Discharges Associated with Construction Activity (NPDES No. CAS000002).*

reportable quantities established at 40 Code of Federal Regulations (CFR) 117.3 or 40 CFR 302.4 unless a separate NPDES Permit has been issued to regulate those discharges.

The NPDES General Construction Permit requires that all developers of land where construction activities will occur over more than one acre do the following:

- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the nation;
- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which specifies BMPs that will reduce pollution in stormwater discharges to the Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology standards; and
- Perform inspections and maintenance of all BMPs.

In order to obtain coverage under the NPDES General Construction Permit, a project applicant must submit a Notice of Intent (NOI) to the SWRCB and prepare a SWPPP. BMPs within the SWPPP typically regard minimization of erosion during construction, stabilization of construction areas, sediment control, control of pollutants from construction materials, as well as post-construction storm water management (e.g., the minimization of impermeable surfaces, treatment of storm water runoff, etc). The SWPPP also must include a discussion of the program to inspect and maintain all BMPs.

The City of Los Angeles Development Best Management Practices Handbook, Part A Construction Activities, Third Edition, adopted by the City of Los Angeles Board of Public Works on May 31, 2002, and associated ordinances, also have specific minimum BMP requirements for all construction activities and require that construction projects with one acre and greater of disturbed soil require the preparation of an SWPPP and filing of a NOI to comply with the State NPDES General Construction Permit with the SWRCB.

(2) Operation

The Los Angeles County NPDES permit requires implementation of a program addressing stormwater pollution for construction and a permanent Standard Urban Stormwater Mitigation Plan (SUSMP). Under new regulations adopted by the RWQCB, project applicants for certain types of projects will be required to implement SUSMP requirements for the operational life of the project to ensure that stormwater pollution is addressed by incorporating BMPs in the design phase of development. The City of Los Angeles has incorporated these requirements into its Development Best Management Practices Handbook, Part B Planning Activities, Third Edition, adopted by the City of Los Angeles Board of Public Works in

June 2004. Compliance with the requirements of this Manual is required by City of Los Angeles Ordinance No. 173,494.

Based on the Development Best Management Practices Handbook, the proposed project falls into the following categories that are subject to the SUSMP requirements:

- Housing developments (including single-family homes, multi-family homes, condominiums, and apartments) of ten or more units;[56] and

- Parking lots with 5,000 square feet or more of surface area, including accessory driveways, or with 25 or more parking spaces and potentially exposed to stormwater runoff.

The SUSMP provisions that are applicable to these and other land use categories include: (1) reducing peak stormwater runoff discharge rates; (2) conserving natural areas; (3) minimizing stormwater pollutants of concern; (4) protecting slopes and channels; (5) providing storm drain stenciling and signage; (6) properly designing outdoor material storage areas; (7) providing proof of ongoing BMP maintenance; and (8) designing standards for structural or treatment control BMPs. In addition, project applicants for these projects will be required to select source control and, in most cases, treatment control BMPs from the list approved by the RWQCB and included in the SUSMP. In combination, these treatment control BMPs must be sufficiently designed and constructed to treat, infiltrate, or filter stormwater runoff from either:

- The 85th percentile 24-hour runoff event determined as the maximized capture stormwater volume for the area, from the formula recommended in *Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998)*, or

- The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in *California Stormwater Best Management Practices Handbook—Industrial/ Commercial, (1993)*, or

- The volume of runoff produced from a 0.75-inch storm event, prior to its discharge to a stormwater conveyance system, or

[56] *In accordance with the Handbook this category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.*

- The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for "treatment" (0.75-inch average for the Los Angeles County area) that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

In addition, the BMPs must control peak flow discharge to provide stream channel and over bank flood protection, based on flow design criteria selected by the local agency.

In addition, the Los Angeles County Department of Public Works (LACDPW) requires that a storm drain conveyance system be designed for a 25-year storm event and that the combined capacity of the storm drain and street flow be able to convey a 50-year storm event. In areas with a sump condition, the storm drain conveyance system shall be designed for a 50-year storm event. All drainage improvements in the project vicinity are subject to review and approval by LACDPW and the Public Works Department of the City of Los Angeles. [57]

2. ENVIRONMENTAL IMPACTS

a. Methodology

As indicated above, this analysis of hydrology impacts is based on the Hydrology Study prepared by PSOMAS dated March 2007. The Hydrology Study was prepared based on a review of documents from and calculation methodologies specified by the LACDPW. Potential impacts to the storm drain system were analyzed by comparing the calculated runoff resulting from existing site conditions with proposed conditions due to project implementation. A 25-year storm interval was selected for the analysis as directed in the LACDPW Hydrology and Sedimentation Manual (1990). In addition, a 50-year storm event is also analyzed according to the City of Los Angeles CEQA Thresholds Guide (2006). Further information pertaining to the analysis methodology, including assumptions made in order to perform hydraulic calculations, is provided in Appendix D.

b. Threshold of Significance

Based on the 2006 City of Los Angeles CEQA Thresholds Guide, the project would have a significant impact on surface water flow and quality if the project would result in the following:

[57] *Los Angeles County Department of Public Works Hydrology Manual, January 2006, http://ladpw.org/wrd/Publication/engineering/2006_Hydrology_Manual/2006%20Hydrology%20Manual-Divided.pdf, accessed April 9, 2007.*

(1) Hydrology

- 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;
- Substantially reduce or increase the amount of surface water in a water body; or
- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

(2) Surface Water Quality

- Result in discharges associated with the project that would create pollution, contamination or nuisance as defined in Section 13050 of the California Water Code (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body.

c. Project Features

The proposed project would involve a net increase in impermeable surfaces. The Campus Building expansion would be located within the previously developed areas of the site, including expansion of the Campus Building with the existing paved patio and parking lot. The majority of grading would occur in developed or paved areas. Following project implementation, developed surfaces would comprise approximately 57 percent of the project site, and permeable landscaped areas would comprise approximately 43 percent of the site. This would represent an approximate 5 percent increase in impervious areas over existing conditions.

As described below, in compliance with NPDES and City requirements, BMPs would be implemented to address water quality. In addition, to address the increase in peak flows, detention basins would be provided to reduce peak flows to existing flow rates. A possible location for the detention basin is shown in Figures 4 and 5 on pages 52 and 56, respectively.

d. Analysis of Project Impacts

(1) Construction

During construction, portions of existing buildings would be expanded and landscaping would be removed. As a result, underlying soils would be exposed, making the site temporarily more permeable. However, this increase in permeability would not have a substantial impact on

existing drainage patterns and flows, particularly since grading and erosion control plans would be implemented along with appropriate BMPs. Specifically, construction activities associated with the proposed project would result in approximately 83,930 cubic yards of grading for the building additions and the semi-subterranean parking garage (21,330 cubic yards in Phase 1 and 62,600 cubic yards in Phase 2), of which 70,880 cubic yards is anticipated to be exported (15,680 cubic yards in Phase 1, and 55,200 cubic yards in Phase 2). As such, exposed soils could be subject to erosion and conveyance into nearby storm drains during storm events. In addition, on-site water activities to reduce airborne dust could contribute to pollutant loading in storm water runoff. However, as the construction site would be greater than one acre, the project would be required to obtain a NPDES general construction permit. In accordance with the requirements of the permit, the project would implement a SWPPP, which would specify BMPs and erosion control measures to be used during construction to prevent storm water pollution. BMPs to be utilized on the project site would include, but would not be limited to, placement of detention basins, proper scheduling to avoid the rainy season, and establishing sediment traps. These and other BMPs would eliminate or reduce pollutant levels in storm water runoff during construction. Thus, with compliance of SWPPP guidelines including implementation of BMPs, the project would not violate water quality standards. Construction-related impacts to hydrology and surface water quality would be less than significant.

As discussed in the Initial Study, which is included as Appendix A of this EIR, the groundwater table beneath the site is approximately 17.5 feet to 36 feet below ground surface (bgs). Further, based on the Geotechnical Report, the stormwater table slopes downward to the southwest. Excavation during the construction phase of the project would extend approximately 15 feet bgs on the western side of the Campus Building for the gallery expansion and level with the eastern grade, for the proposed semi-subterranean parking facility. If water is found during excavation, dewatering would occur in accordance with RWQCB and City guidelines to ensure that construction activities would not substantially deplete groundwater supplies or interfere with groundwater recharge. Therefore, construction impacts on groundwater would be less than significant.

(2) Operation

As shown in the Hydrology Study, with the proposed improvements, drainage would follow patterns that would be similar to existing drainage patterns, with the exception of relocated impervious areas resulting from the expanded Campus Building and relocated surface parking areas. To calculate peak flows with the proposed improvements, Drainage Area C was separated into two areas (Drainages D and E) representing the remaining lawn area and the new parking area.

As shown in the Hydrology Study, during a 10-, 25-, and 50-year, storm event, peak flows with the project for Drainage Area A would be approximately 9.69, 12.93, and 15.65 cfs, respectively. Peak flows for Area B with the project would be approximately 0.5, 0.77, and

0.96 cfs during 10-, 25-, and 50-year, storm events, respectively. Drainage Area C would have peak flows of approximately 1.78, 3.05, and 4.06 cfs during 10-, 25-, and 50-year storm events, respectively. Area D would have peak flows of approximately 0.55, 1.11, and 1.68 cfs during 10-, 25-, and 50-year storm events, respectively, with the project. Finally, Area E would have peak flows of approximately 2.76, 3.92, and 4.96 cfs during 10-, 25-, and 50-year storm events, respectively.

Based on the Hydrology Study, the proposed project's increase in impervious area would result in a post-development storm water runoff flow of 27.31 cfs, which represents a 16 percent increase in flow when compared to existing conditions of 23.42 cfs. The proposed flow rates can be attenuated to existing flow rates by the usage of detention areas in Areas A and E. Specifically, as shown in the Hydrology Study, as a result of the detention storage areas, storm water discharge rates from the development would be maintained at or below existing conditions. Therefore, no increase in flows during a 50-year storm condition would occur and SUSMP requirements regarding peak flows would be met. Thus, impacts associated with drainage would be less than significant.

The project would not generate any new sources of polluted runoff. In addition, in accordance with the SUSMP requirements, the project would be required to implement BMPs during the operational phase of the project to reduce the discharge of polluted runoff from the site. Specifically, operational BMPs to be implemented may include, but are not limited to, swales and stilling basins in landscaped area, catch basin filtration inserts for collection of suspended pollutants and oils from paved areas, screened or enclosed trash container areas, stenciling of on-site storm drain inlets, and structural treatment control devices for increasing filtration and targeted pollution control. The final selection of BMPs would be completed through coordination with the City of Los Angeles. With compliance with NPDES requirements, impacts associated with water quality would be less than significant.

As discussed in the Initial Study, which is included as Appendix A of this EIR, operation of the project would not interfere with groundwater recharge. The majority of the site is developed with buildings and paved surfaces, with only limited ornamental landscaping around the site perimeter. The project would replace existing impervious areas with new impervious areas and would continue to incorporate landscaping on-site. Thus, the amount of impervious surface area on-site would not measurably change, and groundwater recharge in the area would not be affected. Furthermore, the project would be designed to comply with the recommendations of the Geotechnical Report to ensure that project operations would not interfere with groundwater supplies. As such, operation of the project would not substantially deplete groundwater supplies or result in a substantial net deficit in the aquifer volume or lowering of the local groundwater table. Impacts would be less than significant.

3. MITIGATION MEASURES

The proposed project would be subject to the NPDES requirements described above, including preparation of a SWPPP and compliance with SUSMP requirements. Compliance with these requirements would ensure that impacts to hydrology and surface water quality are reduced to less than significant levels. As the proposed project is not anticipated to result in any significant impacts to hydrology and surface water quality, no mitigation measures would be required.

4. CUMULATIVE IMPACTS

Other related projects could potentially increase the volume of stormwater runoff and contribute to pollutant loading in stormwater runoff, resulting in cumulative impacts to hydrology and surface water quality. However, as with the proposed project, all of the related projects would also be subject to State NPDES permit requirements for both construction and operation. Each project would be required to develop SWPPPs and would be evaluated individually to determine appropriate BMPs and treatment measures to avoid impacts to surface water quality. In addition, the City of Los Angeles Department of Public Works reviews all construction projects on a case-by-case basis to ensure that sufficient local and regional drainage capacity is available. Furthermore, the Los Angeles Zoo Parking Lot Sustainability project would improve drainage and water quality. Thus, cumulative impacts to hydrology and surface water quality would be less than significant.

5. LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts to hydrology and surface water quality would be less than significant; therefore, no mitigation measures would be required.