IV. ENVIRONMENTAL IMPACT ANALYSIS

G. HYDROLOGY AND WATER QUALITY

1. INTRODUCTION

The information contained in this section is derived primarily from the *Hydrology and Water Quality Civil Narrative* prepared by KPFF Consulting Engineers (Los Angeles, California) and dated January 2012 (see *Appendix F: Hydrology and Water Quality Civil Narrative* of this Draft EIR).[1]

2. ENVIRONMENTAL CONDITIONS

a. Physical Setting

(1) Urban Runoff and Surface Water Flows

The Project Site is located in an urbanized area in the community of Studio City in the City of Los Angeles, and bordered to the north by Valley Spring Lane; to the east by Whitsett Avenue; and to the south by the Los Angeles River Channel. The Project Site is occupied by an existing 9-hole pitch-and-putt golf course, a driving range, a clubhouse, a surface parking lot, 16 tennis courts, a small tennis house, and a small maintenance building. Approximately 25 percent of the Project Site's 16.11 acres is impervious surface area. Almost 100 percent of proposed Lot 1, which represents approximately 72 percent of the Project Site, is permeable surface area. Conversely, proposed Lot 2, which represents approximately 28 percent of the Project Site, and is developed with tennis courts and facilities, sidewalks, and parking, is almost 100 percent impervious.

The topography of the Project Site is considered shallow sloping with elevations ranging from approximately 629 feet above mean sea level at its northwest corner (at Bellaire Avenue) to 620 feet above mean sea level in its southeast corner (at the Fire Station and Valleyheart Drive). The elevation change in the topography of the Project Site results in a cross-slope decrease across the site of approximately 1.2 percent. Based on the existing Project Site topography, stormwater runoff sheet flows across the site from the high point in the northwest corner to the low point at the southeast corner and then discharges to the Los Angeles River. Under existing conditions, the Project Site experiences a flow rate of surface water across the site during a 25-year storm event of 33.43 cubic feet per second (cfs) with a total volume of 3.21 acre-feet. During a 50-year storm event under existing conditions, the Project Site experiences a flow rate of surface water of 41.15 cfs with a total volume of 3.74 acre-feet.

(2) Surface Water Runoff Quality

Water quality may be impacted by pollutants discharged directly into receiving waters. Industrial flows discharged from manufacturing activities and other activities, such as dewatering of groundwater encountered during construction, can usually be directed to an outfall or pipe and

[1] KPFF Consulting Engineers (Los Angeles, California), *Hydrology and Water Quality Report*, February 2012.

are therefore categorized as "point sources." Water quality may also be affected by pollutants found in surface water runoff originating from a wide range of dispersed or "nonpoint sources." In urban settings, this runoff is typically guided into a storm drain system and ultimately discharged to the receiving waters at a specific location(s). Hence, while the generic urban runoff is a nonpoint source, the outfall points of storm drain system discharges are treated as point sources.

Although stormwater runoff is part of the natural hydrologic cycle, natural drainage patterns and pollutant concentrations are frequently altered through processes such as urbanization. Stormwater runoff is recognized as a significant source of water pollution, which may result in declines in fisheries and other aquatic life, restrictions on recreational activities, and general impairment of the existing and potential beneficial uses of receiving waters. Reference to stormwater runoff also includes a subcomponent of "urban runoff," which is the discharge of pollutants to water bodies from non-storm (or "dry weather") related activities such as irrigation, hosing of paved areas, draining swimming pools, and washing cars. Dry weather flows also include illegal discharges to the storm drain system, often tied to unauthorized connections, leaks, or spills.[2]

The Project Site currently generates stormwater runoff from both storm events and urban runoff activity. Potential pollutants from the Project Site include fertilizers and pesticides from the golf course, fluid residues from vehicles using the surface parking area, and trash.

b. Regulatory and Policy Setting

(1) Water Quality Regulation

Clean Water Act

The Clean Water Act (CWA), first introduced in 1948 as the Water Pollution Control Act, authorizes federal, State, and local entities to cooperatively create comprehensive programs for eliminating or reducing the pollution of State waters and tributaries. The primary goals of the CWA are to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. As such, the CWA forms the basic national framework for the management of water quality and the control of pollutant discharges. The CWA also sets forth a number of objectives in order to achieve the above-mentioned goals. These objectives include regulating pollutant and toxic pollutant discharges; providing for water quality that protects and fosters the propagation of fish, shellfish, and wildlife; developing waste treatment management plans; and developing and implementing programs for the control of non-point sources of pollution.[3]

[2] City of Los Angeles 2006 LA CEQA Thresholds Guide, Section G2-Surface Water Quality, Introduction, pgs. 245 and 246.

[3] Non-point sources of pollution are carried through the environment via elements such as wind, rain, or stormwater and are generated by diffuse land use activities (such as runoff from streets and sidewalks or agricultural activities) rather than from an identifiable or discrete facility.

Since its introduction, major amendments to the CWA have been enacted (e.g., 1961, 1966, 1970, 1972, 1977, and 1987). Amendments enacted in 1970 created the U.S. Environmental Protection Agency (USEPA), while amendments enacted in 1972 deemed the discharge of pollutants into waters of the United States from any point source unlawful unless authorized by a USEPA National Pollutant Discharge Elimination System (NPDES) permit. Amendments enacted in 1977 mandated development of a "Best Management Practices" program at the State level and provided the Water Pollution Control Act with the common name of "Clean Water Act," which is universally used today. Amendments enacted in 1987 required the USEPA to create specific requirements for discharges.

In response to the 1987 amendments to the CWA and as part of Phase I of its NPDES permit program, the USEPA began requiring NPDES permits for: (1) municipal separate storm sewer systems (MS4) generally serving, or located in, incorporated cities with 100,000 or more people (referred to as municipal permits); (2) 11 specific categories of industrial activity (including landfills); and (3) construction activity that disturbs five acres or more of land. Phase II of the USEPA's NPDES permit program, which went into effect in early 2003, extended the requirements for NPDES permits to: (1) numerous small MS4s[4] (2) construction sites of one to five acres, and (3) industrial facilities owned or operated by small MS4s. The NPDES permit program is typically administered by individual authorized states.

In 2008, the USEPA published draft Effluent Limitation Guidelines (ELGs) for the construction and development industry. On December 1, 2009, the EPA finalized its 2008 Effluent Guidelines Program Plan.[5]

In California, the NPDES stormwater permitting program is administered by the State Water Resources Control Board (SWRCB). The SWRCB was created by the Legislature in 1967. The joint authority of water distribution and water quality protection allows the SWRCB to provide protection for the State's waters through its nine Regional Water Quality Control Boards (RWQCBs). The RWQCBs develop and enforce water quality objectives and implement plans that will best protect California's waters, acknowledging areas of different climate, topography, geology, and hydrology. The RWQCBs develop "basin plans" for their hydrologic areas, issue waste discharge requirements, enforce action against stormwater discharge violators, and monitor water quality.[6]

National Pollution Discharge Elimination Systems (NPDES) Permit Program

The NPDES permit program was first established under authority of the CWA to control the discharge of pollutants from any point source into the waters of the United States. As indicated

[4] A small municipal separate storm sewer system (MS4) is any MS4 not already covered by the Phase I program as a medium or large MS4. The Phase II Rule automatically covers on a nationwide basis all small MS4s located in "urbanized areas" as defined by the Bureau of the Census (unless waived by the NPDES permitting authority), and on a case-by-case basis those small MS4s located outside of urbanized areas that the NPDES permitting authority designates.
[5] USEPA, http://water.epa.gov/scitech/wastetech/guide/construction/index.cfm
[6] USEPA. U.S. Environmental Protection Agency - Clean Water Act. July 2011 http://www.epa.gov/lawsregs/laws/cwa.html.

above, in California, the NPDES stormwater permitting program is administered by the SWRCB through its nine RWQCBs.

General Permit. SWRCB Order No. 2009-0009-DWQ known as "The General Permit" was adopted on September 2, 2009. This NPDES permit establishes a risk-based approach to stormwater control requirements for construction projects by identifying three project risk levels. The main objectives of the General Permit are to:

- Reduce erosion
- Minimize or eliminate sediment in stormwater discharges
- Prevent materials used at a construction site from contacting stormwater
- Implement a sampling and analysis program
- Eliminate unauthorized non-stormwater discharges from construction sites
- Implement appropriate measures to reduce potential impacts on waterways both during and after construction of projects
- Establish maintenance commitments on post-construction pollution control measures

California mandates requirements for all construction activities disturbing more than one acre of land be required to develop and implement Stormwater Pollution Prevention Plans (SWPPP). The SWPPP documents the selection and implementation of Best Management Practices (BMPs) for a specific construction project, charging owners/developers with stormwater quality management responsibilities. A construction site subject to the General Permit must prepare and implement a SWPPP that meets the requirements of the General Permit.[7, 8]

Los Angeles County Municipal Stormwater System (MS4) Permit

USEPA regulations require that MS4 permittees implement a program to monitor and control pollutants being discharged to the municipal system from both industrial and commercial projects that contribute a substantial pollutant load to the MS4.

On December 13, 2001, the LARWQCB adopted Order No. 01-182 under the CWA and the Porter-Cologne Act. This Order is the NPDES Permit or MS4 permit for municipal stormwater and urban runoff discharges within Los Angeles County. The requirements of this Order (the "Permit") cover 84 cities and most of the unincorporated areas of Los Angeles County. Under the Permit, the Los Angeles County Flood Control District (LACFCD) is designated as the Principal Permittee. The Permittees are the 84 Los Angeles County cities (including the City of Los Angeles) and Los Angeles County. Collectively, these are the "Co-Permittees". The Principal Permittee facilitates activities necessary to comply with the requirements outlined in the Permit but is not responsible for ensuring compliance of any of the Permittees or Co-Permittees.

[7] State Water Resources Control Board. State Water Resources Control Board. July 2011 http://www.swrcb.ca.gov/water_issues/programs/npdes/
[8] USEPA. U.S. Environmental Protection Agency - NPDES. July 2011 http://cfpub.epa.gov/npdes/

Standard Urban Stormwater Mitigation Plan (SUSMP)

Under the Los Angeles County Municipal NPDES Permit, permittees are required to implement a development planning program to address stormwater pollution. These programs require project applicants for certain types of projects to implement SUSMPs throughout the operational life of their projects. The purpose of SUSMP is to reduce the discharge of pollutants in stormwater by outlining BMPs which must be incorporated into the design plans of new development and redevelopment projects. A project is subject to SUSMP if it falls under one of the categories listed below:

- Single-family hillside homes
- Ten or more unit homes (including single family homes, multifamily homes, condominiums, and apartments).
- Automotive service facilities
- Restaurants
- 100,000 square-feet or more of impervious surface area in industrial/commercial development.
- Retail gasoline outlet
- Parking lots with 5,000 square feet or more of surface area or with 25 or more parking spaces
- Redevelopment projects in subject categories that meet redevelopment thresholds
- Location within or directly adjacent to or discharging directly to an environmentally sensitive area if the discharge is likely to impact a sensitive biological species or habitat and the development creates 2,500 square feet or more of impervious surface.

Permittees are required to adopt the requirements set herein in their own SUSMP. Additional BMPs may be required by ordinance or code adopted by the Permittee and applied in a general way to all projects or on a case-by-case basis.

Low Impact Development (LID)

In October 2011, the City of Los Angeles passed an ordinance (Ordinance No. 181899) amending City of Los Angeles Municipal Code Chapter VI, Article 4.4, Sections 64.70.01 and 64.72 to expand the applicability of the existing SUSMP requirements by imposing rainwater Low Impact Development (LID) strategies on projects that require building permits.

LID is a stormwater management strategy with goals to mitigate the impacts of increased runoff and stormwater pollution as close to its source as possible. LID promotes the use of natural infiltration systems, evapotranspiration, and the reuse of stormwater. The goal of these LID practices is to remove nutrients, bacteria, and metals from stormwater while also reducing the quantity and intensity of stormwater flows. Through the use of various infiltration strategies, LID is aimed at minimizing impervious surface area. Where infiltration is not feasible, the use of bioretention, rain gardens, green roofs, and rain barrels that will store, evaporate, detain, and/or treat runoff may be used.

The intent of the City's LID standards is to:

- Require the use of LID practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff;
- Reduce stormwater/urban runoff while improving water quality;
- Promote rainwater harvesting;
- Reduce offsite runoff and provide increased groundwater recharge;
- Reduce erosion and hydrologic impacts downstream; and
- Enhance the recreational and aesthetic values in our communities.

LID design has become a leading practice for stormwater pollution prevention. The RWQCB, SWRCB, USEPA, and City of Los Angeles have prioritized the use of LID as the preferred approach to stormwater management. On September 28, 2011, the City of Los Angeles adopted an LID Ordinance that was based on standards issued by the LARWQCB and the City of Los Angeles Department of Public Works.[9] The LID Ordinance, which became effective May 12, 2012, conforms to the regulations outlined in the NPDES Permit and SUSMP.

County of Los Angeles Hydrology Manual

Per the City's Special Order No. 007-1299, December 3, 1999, the City has adopted the Los Angeles County Department of Public Works (LACDPW) Hydrology Manual (County Hydrology Manual) as its basis of design for storm drainage facilities. The County Hydrology Manual requires that a storm drain conveyance system be designed for a 25-year storm event and that the combined capacity of a storm drain and street flow system accommodate flow from a 50-year storm event. Areas with sump conditions are required to have a storm drain conveyance system capable of conveying flow from a 50-year storm event.[10] The County also limits the allowable discharge into existing storm drain facilities based on the MS4 Permit, and these limitations are enforced on all new developments that discharge directly into the County's storm drain system. Any proposed drainage improvements of County owned storm drain facilities, such as catch basins and storm drain lines, require the approval/review from the Los Angeles County Flood Control District (LACFCD).

(2) Los Angeles General Plan

The 1994 LARWQCB's Basin Plan is the document that outlines the regulatory process for the protection of the beneficial uses of all regional waters. The Basin Plan sets forth the regulations under which the Los Angeles General Plan establishes specific goals, objectives, and policies to reduce impacts from stormwater. According to the Basin Plan, the City of Los Angeles is located within three of the four major watersheds that make up the Los Angeles-San Gabriel Hydrologic Unit: the Ballona Creek, Dominguez Channel, and the Los Angeles River. The revised Basin Plan also recognized the Santa Monica Bay Watershed Management Area, which is comprised of the Ballona Creek and Malibu Creek watersheds (consistent with the Santa Monica Bay Restoration Project boundary). Storm drains within the City are constructed by both the City and

[9] City of Los Angeles Ordinance No. 181899, adopted September 2011 and effective May 2012.
[10] Los Angeles County Department of Public Works Hydrology Manual, January 2006, http://ladpw.org/wrd/publication/index.cfm, accessed October 19, 2011.

the LACFCD, managed by the Los Angeles County Department of Public Works. The LACFCD constructs the major storm drains and open flood control channels, and the City constructs local interconnecting tributary drains. The City designs the storm drain system so that flows from a 10-year event will not exceed the curb height, and flows from a 50-year event will be within the street right-of-way, while the County designs for a 50-year storm event and the Federal government (Army Corps of Engineers) designs for a 100-year event. The City's storm drain system must abide by the provisions set forth in the City of Los Angeles General Plan. The following goals, objectives, and policies have been established in the City of Los Angeles General Plan to reduce impacts associated with stormwater runoff:

Goal 9B: A stormwater management program that minimizes flood hazards and protects water quality by employing watershed-based approaches that balance environmental, economic and engineering considerations.

Objective 9.5: Ensure that all properties are protected from flood hazards in accordance with applicable standards and that existing drainage systems are adequately maintained.

Policy 9.5.1: Develop a stormwater management system that has adequate capacity to protect its citizens and property from flooding which results from a 10-year storm (or a 50-year storm in sump areas).

Policy 9.5.2: Assign the cost of stormwater system improvements proportionately to reflect the level of runoff generated and benefits.

Policy 9.5.3: Implement programs to correct any existing deficiencies in the stormwater collection system.

Policy 9.5.4: Ensure that the City's drainage system is adequately maintained.

Objective 9.6: Pursue effective and efficient approaches to reducing stormwater runoff and protecting water quality.

Policy 9.6.1: Pursue funding strategies which link the sources of revenues for stormwater system improvement to relevant factors including sources of runoff and project beneficiaries.

Policy 9.6.2: Establish standards and/or incentives for the use of structural and non-structural techniques which mitigate flood-hazards and manage stormwater pollution.

Policy 9.6.3: The City's watershed-based approach to stormwater management will consider a range of strategies designed to reduce flood hazards and manage stormwater pollution. The strategies considered will include, but not necessarily be limited to:

a. Support regional and City programs which intercept runoff for beneficial uses including groundwater recharge;

b. Protect and enhance the environmental quality of natural drainage features;

c. Create stormwater detention and/or retention facilities which incorporate multiple-uses such as recreation and/or habitat;

d. Onsite detention/retention and reuse of runoff;

e. Mitigate existing flood hazards through structural modifications (floodproofing) or property buyout (acquisition);

f. Incorporate site design features which enhance the quality of offsite runoff;

g. Use land use authority and redevelopment to free floodways and sumps of inappropriate structures which are threatened by flooding and establish appropriate land uses which benefit or experience minimal damages from flooding.

Policy 9.6.4: Proactively participate in inter-agency efforts to manage regional water resources, such as the Santa Monica Bay Restoration Project, the Los Angeles River Master Plan, the Los Angeles River Parkway Project and the Los Angeles County Drainage Area Water Conservation and Supply Feasibility Study.

Objective 9.7: Continue to develop and implement a management practices based stormwater program which maintains and improves water quality.

Policy 9.7.1: Continue the City's active involvement in the regional NPDES municipal stormwater permit.

Policy 9.7.2: Continue to aggressively develop and implement educational outreach programs designed to foster an environmentally-aware citizenry.

Policy 9.7.3: Investigate management practices which reduce stormwater pollution to identify technically feasible and cost effective-approaches, through:

a. Investigation of sources of pollution using monitoring, modeling and special studies;

b. Prioritization of pollutants and sources;

c. Conducting research and pilot projects to study specific management practices for the development of standards; and

d. Developing requirements that establish implementation standards for effective management practices.

(3) Los Angeles Municipal Code

Any proposed drainage improvements within the street right-of-way or any other property owned by, to be owned by, or under the control of the City requires the approval of a B-permit (Section 62.105, LAMC). Under the B-permit process, storm drain installation plans are subject to review and approval by the City of Los Angeles Department of Public Works, Bureau of Engineering. Additionally, any connections to the City's storm drain system from a property line to a catch basin or a storm drain pipe requires a storm drain permit from the City of Los Angeles Department of Public Works, Bureau of Engineering.

River Improvement Overlay (RIO) District

The Project Site is adjacent to the Los Angeles River. As such, it is subject to the design guidelines established in the River Improvement Overlay (RIO) District. The RIO is a proposed special use district comprised of the following:

- Property Improvement Guidelines - projects must receive clearance from the Department of City Planning prior to obtaining a building permit by meeting a required threshold of twenty (20) points assigned in three (3) design categories: Watershed, Urban Design, and Mobility.
- In the Watershed category, points can be accrued for stormwater management, stream enhancement, landscaping, water conservation, hardscape, landscape/hardscape maintenance, and open space design.
- In the Urban Design category, points can be accrued from vehicle parking, transparency, site lighting, and visual clutter design.
- Lastly, in the Mobility category, points can be accrued from connectivity, pedestrian, transit, bicycle and vehicular design.
- Complete Green Street Standards - these standards apply to the area between the property line and the edge of the curb for all new projects. They include the implementation of pedestrian street lights, bicycle racks, trees, and landscaping.
- Complete Green Street Guidelines - these guidelines serve as options to mitigate the environmental impact of a project, as well as guide the design of street improvements. They include pedestrian scale improvement; water conservation; street calming; bicycle lanes; and, transit amenity improvements.

The RIO District is established to implement the urban design goals and principles outlined in the Los Angeles River Revitalization Master Plan (LARRMP). It is intended to promote sustainability of the Los Angeles River and the Greenway; establish a positive transition and interface between properties adjacent to the Greenway and the River Greenway; and, create active pedestrian streets that lead to the River.

3. ENVIRONMENTAL IMPACTS

a. Methodology

The Hydrology and Water Quality Civil Narrative (see *Appendix F* of this Draft EIR) includes a detailed description of the methodology to determine hydrological and water quality impacts associated with development of the Project. The methodology is summarized below.

Surface Water Hydrology Methodology

The Project Site is located within the City of Los Angeles. Drainage collection, treatment, and conveyance are regulated by the City. Per the City's Special Order No. 007-1299, December 3, 1999, the City adopted the County Hydrology Manual as its basis of design for storm drainage facilities. The County Hydrology Manual requires projects to have drainage facilities that meet the Urban Flood level of protection. The Urban Flood is runoff from a 25-year frequency design storm falling on a saturated watershed. A 25-year frequency design storm has a probability of 1:25 of being equaled or exceeded in any year. The City's CEQA Thresholds Guide, however, establishes the 50-year frequency design storm event as the threshold to analyze potential impacts on surface water hydrology as a result of development. To provide a more conservative analysis, the Hydrology and Water Quality Civil Narrative prepared for the Project analyzed the larger storm event threshold, the 50-year frequency design storm event.

The Modified Rational Method was used to calculate stormwater runoff. The "peak" (maximum value) runoff for a drainage area is calculated using the formula, Q = CIA
Where,

Q = Volumetric flow rate (cubic feet per second (cfs))
C = Runoff coefficient (dimensionless)
I = Rainfall Intensity at a given point in time (inches/hour (in/hr))
A = Basin area (acres)

The Modified Rational Method assumes that a steady, uniform rainfall rate will produce maximum runoff when all parts of the basin area are contributing to outflow. This occurs when the storm event lasts longer than the time of concentration. The time of concentration (Tc) is the time it takes for rain in the most hydrologically remote part of the basin area to reach the outlet. The method assumes that the runoff coefficient (C) remains constant during a storm. The runoff coefficient is a function of both the soil characteristics and the percentage of impervious surfaces in the drainage area.

The L.A. County Department of Public Works developed a time of concentration calculator (i.e., Tc Calculator) to automate time of concentration calculations as well as the peak runoff rates and volumes using the Modified Rational Method design criteria as outlined in the Hydrology Manual. The data input requirements include: sub-area size, soil type, land use, flow path length, flow path slope, and rainfall isohyets. The Tc Calculator was used to calculate the stormwater peak runoff flow rate for the Project conditions by evaluating an individual sub-area independent of all adjacent subareas.

Surface Water Quality Methodology

The SUSMP Method is used to analyze the peak mitigated flow rate as well as the mitigated volume. The SUSMP Method requires that projects must select source control and, in most cases, treatment control BMPs from the list approved by the LARWQCB. 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. Further, the source and treatment control BMPs must be sufficiently designed and constructed to collectively treat, infiltrate, or filter stormwater runoff to meet or exceed the requirements of the City of Los Angeles, Watershed Protection Division. Equations used to determine the peak mitigated flow rate and volume mitigated flow rate are provided in the Hydrology and Water Quality Civil Narrative (see *Appendix F*).

b. Thresholds of Significance

In accordance with Appendix G to the State CEQA Guidelines, the Project would have significant impact on hydrology and water quality if it would cause any of the following conditions to occur:[11]

a.) Violate any water quality standards or waste discharge requirements

b.) Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)

c.) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site

d.) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site

e.) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

f.) Otherwise substantially degrade water quality

g.) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map

11 State of California, California Environmental Quality Act: Guidelines, http://ceres.ca.gov/topic/env_law/ceqa/guidelines (May 2011).

h.) Place within a 100-year flood hazard area structures which would impede or redirect flood flows

i.) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam

j.) Inundation by seiche, tsunami, or mudflow

Furthermore, as set forth in the City of Los Angeles CEQA Thresholds Guide, the determination of significance shall be made on a case-by-case basis, considering the following:

(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 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 Impacts

(1) Hydrology

The following hydrology analysis discussion is based on information provided in the Hydrology and Water Quality Civil Narrative dated January 2012 (see *Appendix F* of this Draft EIR). The following analysis provides a good basis for the potential hydrology impacts of the Project, from which the City can determine the appropriate measures to require in approving the final engineering design of the Project.

As discussed above, the Project Site slopes from the northwest corner to the southeast corner at 1.2 percent decrease in elevation. For the Project, proposed Lot 1, consisting of the 9-hole golf course, clubhouse, and driving range, would remain intact with minimal changes to accommodate the Project. Proposed Lot 2, where the tennis courts and tennis house are currently located, would involve demolition of the tennis courts, tennis house, sidewalks, and a portion of the surface parking lot followed by development of the proposed Studio City Senior Living

Center. Because post-Project conditions for Lot 1 would be essentially unchanged, no net increase in the rate and quantity of stormwater runoff is expected from Lot 1.

A net increase from pre-development to post-development conditions on Lot 2 is anticipated. During a 50-year storm event, Lot 2 would result in a net increase of runoff of 9.97 cfs. And a net increase of 9.16 cfs would result during a 25-year storm event. However, with implementation of Compliance Measures, including requirements to implement a SUSMP and related design BMPs, LID Standards, a SWPPP, and obtaining a NPDES Permit, any net-increase of waterflow expected to occur during a 50- or 25-year storm event would be minimized to a less-than-significant level.

(2) Surface Water Quality

Construction Phase

During the construction of the Project at the Development Site, the existing tennis courts, tennis house, paved sidewalks, and a portion of the surface parking area would be demolished and approximately 82,000 cubic yards of grading and soil export would occur. As development occurs, if rainy days are encountered, the potential exists for stockpiled soil to be exposed and cause contaminated surface water to enter the stormwater conveyance system that serves the Project Site. Additionally, dust-watering activities during construction could contribute to contaminated surface water entering the stormwater conveyance systems. However, as a Compliance Measure, prior to the start of any construction, the Project would be required to obtain an NPDES General Construction Permit, which in turn would require that a SWPPP be developed to address methods to minimize water quality impacts during construction activity. The SWPPP would require the use of BMPs and other erosion control measures to reduce the surface water from being contaminated and flowing into the stormwater conveyance system. Also, the SWPPP would be required to be compliant with the SWRCB and the City of Los Angeles' Development Best Management Practices Handbook. Finally, construction activity on the Development Site would be required to comply with additional Compliance Measures through the City of Los Angeles grading permit regulations as described in the Los Angeles City Municipal Code. With implementation of the Compliance Measures, contamination or pollution of surface water during construction activities would be reduced and impacts during construction would be less-than-significant.

Occupancy and Operational Phase

Occupancy and operational activities on Lot 2 would be similar to other surrounding urbanized properties. It is possible that activity associated with the Studio City Senior Living Center would contribute to polluted surface water entering the stormwater conveyance system. Urban-related pollutants may include grease, oil, suspended solids, metals, solvents, phosphates, pesticides, and fertilizers.

However, there are measures in place, which are required by City, State, and federal regulations, and will have to be complied with for the Project to obtain the appropriate permits for operation. As a Compliance Measure, and in accordance with the City of Los Angeles, Watershed Protection Division Infiltration Requirements and Guidelines, BMPs

will be required for implementation into the Project. The first priority for BMP selection related to stormwater treatment is an infiltration system, when feasible. Infiltration systems are preferred as they provide for percolation and infiltration of the stormwater into the ground, which not only reduces the volume of the stormwater runoff entering into the Municipal Separate Storm Sewer Systems (MS4), but, in some cases, can contribute to groundwater recharge. Infiltration may not be feasible due to the Development Site having low permeability or impervious soils, or groundwater within 10 feet of existing grade.[12] The second priority for BMP selection is biotreatment and filtration. BMPs such as bio-swales and bioretention cells are acceptable forms of treatment to meet this second tier treatment level. The determination for infiltration feasibility for the Project will depend on the final grading plans for the Development Site. Utilization of mechanical water treatment systems remains a viable option.

As a second Compliance Measure, and in accordance with the City of Los Angeles Low Impact Development (LID) Standards, which aim to remove nutrients, bacteria, and metals from stormwater, while also reducing the quantity of stormwater flows, the use of various infiltration strategies will minimize impervious surface area. Where infiltration is not feasible, the use of capture and reuse BMPs or biofiltration BMPs that will store, evaporate, detain, and/or treat runoff can be used.[13]

As a final Compliance Measure, and in accordance with NPDES permit requirements, the Project Applicant would develop a SUSMP that would be in place for the life of the Project, thus reducing surface water contaminants entering the stormwater conveyance system. BMPs of the SUSMP that would be in place as Compliance Measures are described below. Additionally, the Project would be designed to be compliant with the Clean Water Act and Order No. 90-079 of the RWQCB, which both regulate surface water quality.

With implementation of the Compliance Measures established through the Los Angeles Watershed Protection Division Infiltration Requirements and Guidelines, the Los Angeles Low Impact Development Standards, and SUSMP, it is anticipated that the Project would not result in discharges that would create pollution, contamination or nuisance of surface water and therefore, surface water quality impacts during operation of the Project would be less-than-significant.

(3) Consistency with Adopted Plans and Policies

Development of the proposed Project would not be inconsistent with plans and policies addressing water quality and hydrology on the Project Site. The Project demonstrates compliance and consistency with the applicable parts of the Clean Water Act, NPDES, Los Angeles County Municipal Stormwater System, SUSMP, LID, County of Los Angeles Hydrology Manual, Los Angeles General Plan, Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass Community Plan, RIO District Guidelines, and the Los Angeles Municipal Code. Compliance and consistency with these various requirements will also be required for the Project to obtain building and grading permits. The permitting plan check process and implementation of the

[12] City of Los Angeles Watershed Protection Division. "City of Los Angeles Standard Urban Stormwater Mitigation Plan Infiltration Requirements & Guidelines." n.d.
[13] City of Los Angeles. "Low Impact Development Best Management Practices Handbook." June, 2011

Compliance Measures below will ensure that the Project is consistent with all adopted plans and policies applicable to the Project Site.

d. Cumulative Impacts

Hydrological and water quality impacts are typically discussed on a regional level in urbanized locations. Individual sites are required to abide by regulations and development standards to reduce contribution of hydrological sheetflow and surface water quality concerns in urbanized areas. The *Hydrology and Water Quality Civil Narrative* (*Appendix F* of this Draft EIR) was developed by KPFF Consulting Engineers to determine site-specific hydrological and surface water quality characteristics at the proposed Development Site. This report has required that the Compliance Measures listed below be implemented to mitigate against hydrological and surface water quality issues during construction and operation of the Project. It is expected that the Related Projects associated with the Project would each be required to have a hydrology and water quality report completed to determine site-specific hydrological and water quality issues and provide Mitigation Measures to reduce such issues and impacts. Furthermore, each Related Project in the City would be required to abide by development standards and Compliance Measures in the Los Angeles Municipal Code, the NPDES, and the RWQCB to reduce impacts associated with hydrological and water quality issues. Significant cumulative hydrological and water quality impacts associated with concurrent development of the proposed Project and Related Projects are not anticipated.

4. COMPLIANCE MEASURES, PDFS, AND MITIGATION PROGRAM

a. Compliance Measures

The following Compliance Measures are reasonably anticipated standard conditions that are based on local, State, and federal regulations and laws that serve to offset or prevent specific hydrological impacts. The Compliance Measures have been discussed in the *Hydrology and Water Quality Civil Narrative* prepared for the SCSLC Project and shall be incorporated into the design of the Project, as required, to reduce the impacts on hydrological and water quality issues on and in the vicinity of the Project Site.

- The Project Applicant shall be required to implement a SUSMP, which shall outline the stormwater treatment measures or post-construction Best Management Practices (BMPs) required to control pollutants associated with storm events up to the ¾-inch precipitation level.

- The Project shall comply with the Low Impact Development (LID) Standards that are intended to promote the use of natural infiltration systems, evapotranspiration, and the reuse of stormwater, including, but not limited to, high-flow biotreatment devices, vegetated swales, filter strips, bioretention facilities, planter boxes, bioinfiltration facilities, and dry wells.

- The Project's stormwater management features shall focus on meeting or exceeding the goals of the General Construction Permit, as well as SUSMP and LID.

- Since Lot 2 accounts for approximately 4.52 acres, the Project shall implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall be designed to address the following objectives:

    - All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity shall be controlled;

    - Where not otherwise required to be under a Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges shall be identified and either eliminated, controlled, or treated;

    - BMPs are effective and shall be used in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard;

    - Calculations and design details as well as BMP controls for the site run-off shall be complete and correct;

    - Stabilization BMPs installed to reduce or eliminate pollutants after construction shall be completed;

    - Shall identify post-construction BMPs, which are those measures to be installed during construction that are intended to reduce or eliminate pollutants after construction is completed (post-construction BMPs are required for all sites by Section XIII.B); and

    - Shall identify and provide methods to implement BMP inspection, visual monitoring, Rain Event Action Plans (REAPs) and Construction Site Monitoring Program (CSMP) requirements to comply with the General Permit.

- In order to implement a SWPPP, the sediment and receiving water risk factors shall be calculated to determine the overall combined risk level for this Project.

- Since the Project is adjacent to the Los Angeles River, the combined risk level for this Project can be hypothesized to be a minimum of Risk Level 2; it may also be determined to be a Risk Level 3 based on final calculations of the sediment risk factor. As such, the following Risk Level 2 or 3 requirements shall be met:

- Compliance with narrative effluent standards;
- Good site management "housekeeping"
- BMP implementation to control all non-stormwater discharges during construction;
- Erosion control BMP implementation;
- Sediment control BMP implementation;
- Effectively manage all run-on, runoff within the site and all runoff that discharges off the site;
- Ensure all inspection, maintenance, repair and sampling activities are performed or supervised by a Qualified SWPPP Practitioner (QSP) certified and trained by the California Stormwater Quality Association;
- Ensure the Qualified SWPPP Practitioner develops a Rain Event Action Plan (REAP) forty-eight (48) hours prior to any likely precipitation event;
- Develop and implement a Construction Site Monitoring Program (CSMP);
- Collect water quality samples or runoff that is discharged offsite;
- Prepare and electronically submit an Annual Report no later than September 1st of each year for the duration of construction.

• Construction BMPs shall be designed and maintained as part of the implementation of the SWPPP in compliance with the General Construction Permit. Implementation of the SWPPP shall begin when construction commences, before any site clearing and grubbing or demolition activity. During construction, the SWPPP shall be referred to regularly and amended as changes occur throughout the construction process. The Notice of Intent (NOI), Amendments to the SWPPP, Annual Reports, Rain Event Action Plans (REAPs), and Non-Compliance Reporting shall be posted to the State's SMARTS website in compliance with the requirements of the General Construction Permit. All of the following BMPs shall be included as part of the Project to manage construction stormwater run-off:

  - **Erosion Control BMPs** protect the soil surface and prevent soil particles from detaching. Selection of the appropriate erosion control BMP shall be based on minimizing areas of disturbance, stabilizing disturbed areas, and protecting slopes/channels.
  - **Sediment Control BMPs** are treatment controls that trap soil particles that have been detached by water or wind. Selection of

the appropriate sediment control BMP shall be based on keeping sediments on site and controlling the site boundaries.

- **Wind Erosion Control BMPs** consists of applying water to prevent or minimize dust nuisance.

- **Tracking Control BMPs** consists of preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. These BMPs include street sweeping and vacuuming. All sites shall have a stabilized construction entrance to prevent off-site tracking of sediment and debris.

- **Non-Stormwater Management BMPs** are also referred to as "good housekeeping practices," which involve keeping a clean, orderly construction site.

- **Waste Management and Materials Pollution Control BMPs** consist of implementing procedural and structural BMPs for handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into stormwater runoff or discharges through the proper management of construction waste.

- The proper disposal, storage or use of hazardous materials such as cleaners, agents, solvents, or other construction or operations related activities shall occur in accordance with regulatory requirements. Any non-stormwater discharge shall be controlled and properly disposed of through either approved connections to the sanitary sewer system or transported to an approved processing facility to prevent the contamination of the Project Site's soils or groundwater. In addition, loading docks and storage areas shall be designed to provide spill containment and prevent contaminants from reaching the groundwater.

- The following BMPs shall be included as part of the SUSMP for the Project to manage post-construction stormwater run-off:

  - Promote evapotranspiration and infiltration by increasing the overall footprint of landscaped areas and promoting the use of native and/or drought tolerant plants.

  - Provide storm drain system stenciling and signage to discourage illegal dumping.

  - Design material storage areas and loading docks within structures or enclosures to prevent leaks or spills of pollutants from entering the storm drain system.

- Provide evidence of ongoing BMP maintenance as part of a legal agreement with the City of Los Angeles. Recorded covenant and agreements for BMP maintenance are part of standard building permit approval processing.

- Design post-construction structural or treatment control BMPs to either treat or infiltrate stormwater runoff. Stormwater treatment facilities and systems shall be designed to meet the requirements of the SUSMP manual.

- Volumetric Treatment Control BMPs shall be designed to capture the volume of runoff from a 0.75-inch storm event, prior to discharging to the public storm drain system.

- Flow based Treatment Control BMPs shall be designed to the same standards as the volume-based control BMPs. The flow of runoff produced from the storm event shall be equal to or at least 0.2 inches per hour.

- Treatment devices shall be sized and designed to meet the above requirements outlined in the SUSMP manual.

- The Project shall be designed to comply with all local and State regulations regarding the control of pollutants of concern that may affect the quality of groundwater underlying the Development Site. Compliance with both the Construction General Construction Permit and Los Angeles County SUSMP shall require the implementation of both construction related and post-construction Best Management Practices (BMPs) for the safe handling and disposal of contaminants and pollutants of concern.

b. Project Design Features (PDFs)

The following PDFs are specific design and/or operational characteristics included to further avoid or reduce potential hydrological impacts.

PDF HYD-1: Stormwater from the roofs shall be reclaimed by conveying runoff through roof downspouts via an underground storm drain pipe network to a pre-treatment system to remove debris and sediment from runoff and then conveyed to an infiltration trench and/or drywell for infiltration purposes. If infiltration is found not feasible, the use of capture and reuse BMPs or biofiltration BMPs that would store, evaporate, detain, and/or treat runoff may be used.

PDF HYD-2: Various landscape areas shall be developed along the building perimeters. Landscaped areas shall be graded, where possible, to flow directly to an infiltration trench and/or drywell, for infiltration purposes, or intercepted by a series of planter drains, area drains, etc., and conveyed to the selected infiltration

system through a subsurface PVC storm drain pipe. An overflow pipe shall be provided to discharge excess stormwater that cannot be infiltrated during a heavy storm event. Overflow from the infiltration trench shall be discharged to the Los Angeles River open channel. If infiltration is found not feasible, the use of capture and reuse BMPs or biofiltration BMPs that will store, evaporate, detain, and/or treat runoff may be used.

PDF HYD-3: Hardscaped pedestrian walkways shall be graded in coordination with existing topography to sheet flow storm runoff into landscaped areas, where possible, or to various catch basins and curb inlet catch basins with filter inserts to be treated prior to discharging into a bio-retention basin. A series of cleanouts shall be provided for the new subsurface pipe network at appropriate distances and/or bends.

c. Mitigation Measures

Implementation of the above required Compliance Measures incorporated as part of the design of the Project would result in less-than-significant impacts to hydrological and water quality conditions. No additional Mitigation Measures are required to reduce impacts.

5. LEVEL OF SIGNIFICANCE AFTER MITIGATION

As required by City, State, and federal regulations, the Project would incorporate into its design the above Compliance Measures. With implementation of the Compliance Measures, no additional Mitigation Measures would be required. Additionally, due to the proximity of the Project to the Los Angeles River and the adjacent use of the golf course on the Project Site, the Project Applicant has included certain PDFs that would further reduce environmental impacts related to hydrology. Therefore, impacts on hydrology and water quality would be less-than-significant with development of the proposed Project.