4.7 HYDROLOGY/WATER QUALITY

This section evaluates the effects of the proposed project on local and regional hydrologic conditions including drainage facilities, flood hazards, water quality, and groundwater issues.

Data used to prepare this section were taken from site observations; information from the Federal Emergency Management Agency (FEMA); the City of Huntington Beach; the *Water Quality Control Plan, Santa Ana River Basin* (Basin Plan) (1995), the Santa Ana River Regional Water Quality Control Board (RWQCB) Region 8; *City of Huntington Beach Master Plan of Drainage* (MPD, 2005); *Draft Master Environmental Impact Report for the Huntington Central Park Master Plan of Recreational Uses* (1999); *City of Huntington Beach Urban Water Management Plan* (UWMP) (2010); *City of Huntington Beach Citywide Urban Runoff Management Plan* (CURMP) (2005); *Orange County Water District Groundwater Management Plan* (2004); Huntington Beach Senior Center Conceptual Grading and Utility Plan dated July 19, 2007 (Fuscoe Engineering, 2007); and the *Orange County Drainage Area Management Plan* (DAMP) (2003). Full bibliographic entries for all reference materials are provided in Section 4.7.5 (References) at the end of this section. In addition, Appendix 8 includes hydrology and water quality calculations, as well as a detailed regulatory framework associated with hydrology and water quality regulations pertinent to the proposed project. Hydrologic, hydraulic, and water quality conditions at the project site and in the vicinity have not changed substantially since preparation of the Draft EIR as little additional development has occurred that would result in changes to the amount of impervious surfaces or the character of stormwater pollutants.

As the proposed project has not changed since preparation of the Draft EIR in 2007 and existing conditions on the project site are consistent with those described in the Draft EIR, existing conditions and impacts identified in the Draft EIR remain substantially true. Accordingly, this section is substantially the same as Section 4.7 (Hydrology/Water Quality) included in the Draft EIR. However, the setting has been updated to reflect changes in applicable regulations.

All comments received in response to the Initial Study/Notice of Preparation (IS/NOP) circulated for the proposed project were taken in to consideration during preparation of this Environmental Impact Report, and if relevant, have been addressed in this section or others within this document.

4.7.1 Environmental Setting

The project site is located within Huntington Central Park, east of Huntington Lake. It is bordered on the south by the disc golf course, which is at a higher elevation than the project site, and on the north by an undeveloped area and the Shipley Nature Center located further north. Passive parkland (group picnic area and open turf area) is located directly to the west, and Goldenwest Street forms the eastern border. The project site is generally flat with vegetation comprised of primarily scattered weeds.

Climate records for the Newport Beach Harbor station[31] (south of the project site) and Long Beach WSCMO station[32] (north of the project site) indicate that mean monthly temperatures range from about

[31] Western Regional Climate Center, Historical Climate Data, Newport Beach Harbor, California, NCDC 1971-2000 Normals, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6175 (accessed May 12, 2007).

55.9 to 57.0 degrees Fahrenheit (°F) during January to about 68.1 to 75.1°F during August. The mean monthly maximum temperature occurs during August and is about 73.0 to 84.6°F; mean monthly minimum temperature occurs during December and is about 48.0 to 45.3°F. Annual precipitation at Newport Beach Harbor is about 11.65 inches per year, with about 92 percent occurring from November through April. Annual precipitation at Long Beach WSCMO is about 12.94 inches per year, with about 92 percent occurring from November through April.

Regional Hydrology and Drainage

The City of Huntington Beach (City) is located within the Santa Ana River Basin (SARB), a 2,800-square-mile area located roughly between Los Angeles and San Diego. The SARB is a group of connected inland basins and open coastal basins drained by surface streams flowing generally southwestward to the Pacific Ocean. The SARB can be divided into an upper basin and a lower basin. The project site is located within the lower basin drainage, which is dominated by the flood control dam at El Prado. The Santa Ana Canyon, which separates Chino Hills from the Santa Ana Mountains, is the major drainage of Orange County. The lower Santa Ana River has been channelized and modified so that in most years flow does not reach the Pacific Ocean and is used to recharge groundwater.

The project site is located within the SARB within the Westminster Watershed, which covers 74.1 square miles in the southwestern corner of Orange County. Three main tributaries drain this watershed: (1) the Los Alamitos Channel, (2) the Bolsa Chica Channel, and (3) the East Garden Grove-Wintersburg Channel, which drains past the Bolsa Chica Wetlands, into Huntington Harbour, and finally into Anaheim Bay. The project site is within the East Garden Grove-Wintersburg Channel drainage area.

The Orange County Flood Control District (OCFCD) is responsible for the design, construction, operation, and maintenance of regional flood control facilities. The County flood channels are maintained annually, which includes debris and vegetation removal. The existing storm drainage channels were originally designed to accommodate 25-year flood events or less, the standard at the time. However, when the channels were constructed, they were generally built to accommodate only 65 percent of the 25-year flood event. The channels were built with restrictive channel bottoms, which reduce the amount of water the channel could carry, but slow the flow rate of runoff water while still enabling the system to convey runoff. The County now uses 100-year flood event standards for new storm drain construction and drainage improvements, and portions of the channels have been improved to accommodate up to a 100-year storm event.

Local Hydrology and Drainage

Drainage from within the City is conveyed through streets and gutters to a City storm drain system consisting of underground pipes, pump stations, and open channels, as well as several Orange County channels. This drainage system is subject to the City of Huntington Beach CURMP and MPD. Hydrologic and hydraulic modeling has determined that several areas within the City's drainage system are undersized for the current storm flows and subject to potential flooding.

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[32] Western Regional Climate Center, Historical Climate Data, Long Beach WSCMO, California, NCDC 1971–2000 Normals, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5085 (accessed May 12, 2007).

The City is responsible for its own subregional and local drainage facilities. The City owns and operates fifteen storm drainage channel pumping stations that are generally located near principal Orange County drainage channels. Runoff water is collected at each pump station through the City's drainage facilities, and then transferred to the nearest OCFCD channel, which ultimately conveys water to the Pacific Ocean. The City's channels, originally designed to accommodate up to 25-year flood events, are generally constructed at ground level (or at grade). The at-grade channels exacerbate flooding potential because the amount of water that may be pumped into an at-grade channel is less than what can be pumped to a below-grade channel. As a result, those areas flooded in a storm event are most likely flooded because the pump stations are unable to pump a sufficient amount of water into the channels. If additional water is pumped, the channels may overflow.

The project site is located within the Slater Channel Planning Area within the western portion of Huntington Central Park and surface runoff drains towards Huntington Lake, which discharges to the Slater Channel during large storm events. The Slater Channel Planning Area has a drainage area of about 3.9 square miles. The predominant land uses within this planning area include a mixture of single and multi-family residential, parks, commercial, and industrial areas.

Local hydrology is typically assessed for three types of runoff categories:

- Dry weather urban runoff occurs throughout the year when there is no precipitation-generated runoff. It is primarily a water quality concern and flow quantities can represent a substantial year-round volume of water discharged with associated pollutants. Dry weather flow is estimated from monitoring data and cannot be predicted using normal hydrologic projections. Drainage system capacity and condition are typically not a concern for dry weather flows.
- Small storm runoff is typically the source of a high percentage of both overall wet weather runoff volume and pollutant loads on an average annual basis. Design storm events used as targets for water quality management are typically less than a one-year frequency storm event (10 percent of the peak flow rate of a 50-year peak storm event). Water quality design storms do not typically result in a significant flooding potential or cause drainage system capacity deficiencies. However, planning and design for water quality treatment should both target the removal of pollutants during the more frequent small storm events and safely convey the peak flows.
- Large storm peak runoff is of greatest concern for drainage system capacity analysis. It is not typically considered in water quality management except where natural or unlined channels have the potential for erosion under peak flows or increasing flows resulting from development; or where flood flows can cause the release of pollutants into the drainage system such as from surcharging sanitary sewer facilities.

A large portion of surface runoff within the Slater Channel Planning Area flows through Talbert and Huntington Lakes or to Sully-Miller Lake. Talbert Lake, located northeast of the site, has a surface area of about 16 acres and completely dries out when the groundwater table is low during the dry season. Sully-Miller Lake, south of the site, is a former quarry that has a permanent pool of water and no outlet. It receives runoff from a drainage area primarily to the south of approximately 600 acres. Runoff that reaches the quarry either infiltrates or evaporates, so the system provides water quality improvement to essentially all runoff that is discharged to the quarry. In addition, upstream of the quarry on the south side of Ellis Avenue in Baca Park there is a large detention basin that provides water quality enhancement prior to discharge to the quarry. Huntington Lake, located approximately 400 feet from the

site, is about 12 acres in surface area and generally maintains a water pool throughout the year; however water levels substantially decrease during the dry season. It is a terminal lake (no surface water exit) during small to moderate storm events and therefore serves as an important retention and water quality treatment component in the City's drainage system. During moderate to large storm events, stormwater discharges from Huntington Lake to the Slater Channel.

This Central Park lake system is an integral part of the City's drainage infrastructure acting as retention. The lakes are also significant from a water quality standpoint as Talbert and Huntington Lakes act as terminal lakes (no surface water exit) under small to moderate storm events and Sully-Miller Lake has no discharge except through groundwater recharge.

Off-site stormwater from south of the western portion of Huntington Central Park flows in a north and northeasterly direction towards Huntington Lake.[33] Off-site stormwater from the north flows through the Slater Channel that borders the north of this section of the park. Off-site drainage from the east and west are minimal. The Slater Channel has been improved to adequately convey the 100-year flood event.[34] The project site does not drain towards any drainage facilities identified as impaired for flow conveyance.[35]

On-Site Drainage Patterns

The project site is currently vacant and generally flat. No tributaries, streams, or other drainage features are located on the project site. The project site is located within a relatively low area that sheet flows to the west and southwest towards the Huntington Lake. The east side of the site is about 26 feet above mean sea level (msl) and slopes towards the west to about 14 feet above msl.[36] It is bordered on the east by a slope ascending up to Golden West Street and on the south by a slope ascending up to the disc golf course facility. The northern portion of the site is bounded by a composite/fill built-up area (also referred to as an earthen berm) in alignment with Talbert Avenue. Slopes from these areas and down to the project site are graded, eroded, and with slopes approximately 1:2 (vertical to horizontal) and about 20-feet in height. Soils within the project area typically are characterized by Hydrologic Group D (low permeability).[37]

Peak existing site runoff rate is expected to be about 10.9 cfs for a 10-year storm event, 13.6 cfs for a 25-year storm event, and 17.4 cfs for a 100-year storm event.[38] Mean annual runoff is expected to be about 4.53 inches per year or about 1.9 acre-feet (af) per year for the 5-acre site.[39]

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[33] City of Huntington Beach, *Draft Master Environmental Impact Report for Master Plan of Recreation Uses for Central Park* (February 26, 1999).
[34] City of Huntington Beach, *Citywide Urban Runoff Management Plan* (January 2005).
[35] City of Huntington Beach, *Huntington Beach Master Plan of Drainage* (January 2005); City of Huntington Beach, *Citywide Urban Runoff Management Plan* (January 2005).
[36] Ninyo & Moore, *Preliminary Geotechnical Evaluation, Huntington Beach Senior Center, Goldenwest Street, City of Huntington Beach, California* (July 31, 2007).
[37] City of Huntington Beach, *Citywide Urban Runoff Management Plan* (January 2005).
[38] See Appendix 8 for details.
[39] See Appendix 8 for details

Flooding

The 5-acre project site is located within a 54-acre parcel (legal lot) of Central Park. A portion of this 54-acre parcel has been delineated on Federal Emergency Management Agency (FEMA) flood maps as being within Zone "A." Thus, because a portion of the larger parcel is within a flood hazard area, this would require the structure to be built one foot higher than the Base Flood Elevation (BFE). The BFE for the project site is approximately 9.5 feet. Because the elevation of the project site ranges from 14 feet above msl to 26 feet above msl, the building would not have to be further elevated. However, a flood elevation certificate would have to be completed for the project. The project site itself is located within a FEMA defined Other Flood Area, Zone X where the site is within an area subject to the 0.2% chance of flooding (500-year flood event) and is protected from the 1% chance of flooding (100-year storm event) by levees, dikes, or other structures. Portions of the project site may be located outside of the area subject to the 0.2 percent chance of flooding (Zone X, no descriptor). These areas are not considered Special Flood Hazard Areas. The Slater Channel, an important flood control structure/feature is below grade and discharges to the Wintersburg Channel at the Slater Pump station. Therefore, in the event of a pump failure, portions of the project site could be inundated during a 1 percent chance of flooding event.[40]

Surface Water Quality

Storm water discharges from the urbanized areas in Orange County consist mainly of surface runoff from residential, commercial, and industrial developments. In addition, there are storm water discharges from agricultural land uses in the non-urbanized area of Orange County, including farming and animal operations.

Discharges from various areas within the City, drain directly or indirectly into urban streams, city lakes, bays, wetlands, estuaries, and the Pacific Ocean. The City owns, operates, and maintains a storm drainage system for the purpose of conveying storm runoff to reduce or eliminate flooding under peak storm flow conditions. The storm drainage system begins with the streets and roads, and includes inlets, storm drains, open channels, pump stations, detention basins, and other appurtenances. While the primary purpose of the storm drain system is to reduce or eliminate flood hazards, the system carries both dry- and wet-weather urban runoff and the pollutants associated with runoff from urban land use and activities.

Several major channels owned and maintained by Orange County are also within the City. These channels receive runoff from areas within the City as well as substantial drainage areas in other upstream jurisdictions. It is estimated that runoff from the City makes up about 35 to 40 percent of the total dry and wet weather flows in the channels.

This discussion of water quality is within the context of urban runoff because the project site is located within an urbanized area. Urban runoff (both dry- and wet- weather) discharges into storm drains and, in some cases, flows directly to creeks, rivers, lakes, and the ocean. Polluted runoff can have harmful effects on drinking water, recreational water, and wildlife.

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[40] Federal Emergency Management Agency, Flood Insurance Rate Map for Orange County California and Unincorporated Areas, Panel 234 of 550, Panel 0234H, Map Number 06059C0234H (revised February 18, 2004).

Urban runoff pollutants include a wide array of environmental, chemical, and biological compounds from both point and nonpoint sources. In the urban environment, stormwater characteristics depend on site conditions (e.g., land use, perviousness, pollution prevention, types and amounts of Best Management Practices [BMPs]), rain events (duration, amount of rainfall, intensity, and time between events), soil type and particle sizes, multiple chemical conditions, the amount of vehicular traffic, and atmospheric deposition (EPA). The quality of urban runoff in the City is typical of most urban areas and includes a variety of common contaminants.[41] These pollutants consist primarily of suspended sediments, fertilizers and pesticides, animal waste, and contaminants that are commonly associated with automobiles (e.g., petroleum compounds such as oil, grease, and hydrocarbons). In addition, urban stormwater often contains high levels of soluble and particulate heavy metals generated from traffic, industrial facilities, and occasionally, residential sources.

Runoff Quality

For purposes of this report, urban runoff for discussing water quality issues has been divided into two categories summarized as follows:

- Dry weather urban runoff, which occurs when there is no precipitation-generated runoff. Typical sources include landscape irrigation runoff; driveway and sidewalk washing; non-commercial vehicle washing; groundwater seepage; fire flow; potable water line operations and maintenance discharges; and permitted or illegal nonstormwater discharges. Irrigation runoff and washing processes generally contribute to dry weather urban runoff only during the dry season (typically from April through September.). It can be a significant source of bacteria and other constituents that can be introduced through day-to-day urban activities as well as illicit discharges, dumping, or spills.
- Wet weather urban runoff refers collectively to non-point source discharges that result from precipitation events. Wet weather discharges includes all stormwater runoff. Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall and snow events that often contain pollutants in quantities that could adversely affect water quality. Most urban stormwater discharges are considered non-point sources and are regulated by an NPDES Municipal General Permit or Construction General Permit.

The Citywide Urban Runoff Management Plan, has projected the annual dry weather runoff for the City of Huntington Beach at 2,800 af. Furthermore, this plan estimates that the average annual wet weather runoff is about 8,000 af. Based on these estimates, dry weather runoff, which is often considered inconsequential nuisance flows, can contribute over one-fourth of the total annual runoff.

Wet- and dry-weather runoff typically contain similar pollutants of concern. However, except for the first-flush concentrations following a long dry period between rainfall events, the concentrations of pollutants found in wet-weather flows are typically lower than those found in dry-weather flows because the larger wet-weather flows dilute the amount of pollutants in runoff waters. Storm events may dislodge or carry pollutants over different surfaces than the lower dry weather flows. Table 4.7-1 (Major Types of Pollutants in Runoff) lists typical runoff pollutants.

[41] City of Huntington Beach, *Citywide Urban Runoff Management Plan* (January 2005).

Table 4.7-1 Major Types of Pollutants in Runoff

Pollutant	*Description*
Bacteria	Sources of fecal contamination to surface waters include wastewater treatment plants, on-site septic systems, domestic and wild animal manure, and urban runoff.
Pesticides and petroleum hydrocarbons	These compounds can potentially be found in dry and wet weather runoff as a result of normal use (e.g., vehicle fueling, landscaping) and/or illegal dumping and discharge. Elevated levels of oil and grease and petroleum hydrocarbons can be found in wet weather runoff, particularly from streets, roads, and other paved surfaces.
Metals	Metals such as copper, lead, zinc, arsenic, chromium, and cadmium can potentially be found in dry weather runoff but typically at levels much lower than in wet weather runoff. These metals may be toxic to or bioaccumulate in some aquatic species. Sources of metals in stormwater may include automobiles, paints, preservatives, motor oil, and various urban activities including atmospheric deposition from industrial plants and other operations.
Nutrients	Nitrogen and phosphorus are present in dry weather runoff that originate, primarily from irrigation nuisance flows, on-site septic system leakage, and deposits of animal waste or other organic debris. During wet-weather conditions, nutrients can be mobilized in runoff from landscaping, leaks from sanitary sewers and septic systems, and runoff of atmospheric deposits, animal waste, and organic debris deposited on impervious surfaces. Nutrient loads to surface waters can lead to heavy algae growth, eutrophication, and low dissolved oxygen levels.
Trash and debris	Significant loads of trash, debris, and coarse solids can be found in wet weather urban runoff. Plant material can be a substantial component of coarse solids.
Suspended solids	Erosion and sediment transport contribute to suspended solids in runoff waters. Sediment is associated with effects on surface water quality including increased turbidity, effects on aquatic and benthic habitat, and reduction in capacity of impoundments. In addition, a number of other pollutants are often attached to and are carried by sediment particles.

Wet- and dry-weather monitoring indicates that acute (1-hour maximum) California Toxics Rule Criteria (CTR) (refer to Section 4.7.2 [Regulatory Framework] below) is exceeded in the Wintersburg Channel and Huntington Harbor for a variety of pollutants.[42,43] Mass loading (total amount of pollutants transported in channel waters) within the Wintersburg Channel was approximately 0.45 ton of nitrate, 2.1 tons of phosphate, 35 tons of copper, 110 tons of zinc, and 21 tons of lead.[44]

Natural Treatment System

The Natural Treatment System—East Garden Grove Wintersburg Channel Urban Runoff Diversion Project for dry weather treatment using Talbert and Huntington Lakes—is a Santa Ana Regional Water Quality Control Board Approved Supplemental Environmental Project (SEP).[45] This proposed project would divert approximately one million gallons per day of urban runoff from a large regional channel, the East Garden Grove–Wintersburg Channel, into the Huntington Beach Central Park for natural treatment and restoration of aquatic resources. The project would provide multiple benefits, including:

[42] City of Huntington Beach, *Report of Waste Discharge*, Section 11.0 (Water Quality Monitoring Summary and Analysis), Table 11.3 (Summary of Exceedances of CTR Chronic Criteria in Harbors and Bays) (July 2006).
[43] City of Huntington Beach, *Report of Waste Discharge*, Section 11.0 (Water Quality Monitoring Summary and Analysis), Table 11.2 (Summary of Exceedances of Acute CTR Criteria Across the Region) (July 2006).
[44] City of Huntington Beach, *Report of Waste Discharge*, Section 11.0 (Water Quality Monitoring Summary and Analysis), Figure 11.5 (Baseline Levels [Adjusted for TSS] of Total Metals at Long-Term Mass Loading Stations) and Figure 11.6 (Baseline Levels [Adjusted for TSS] of Total Nutrients at Long-Term Mass Loading Stations) (July 2006).
[45] Santa Ana Regional Water Quality Control Board, Approved Supplemental Environmental Projects for the Santa Ana Regional Water Quality Control Board (revised March 12, 2007), http://www.waterboards.ca.gov/santaana/water_issues/programs/sep/docs/seplist.pdf.

the reduction in polluted runoff entering Bolsa Chica Wetlands, Huntington Harbour and Anaheim Bay; the restoration of aquatic resources in Central Park, including Talbert Lake, Huntington Lake, and Shipley Nature Center; enhancements to groundwater protection by reinforcing the sea-water intrusion barrier; and educational opportunities.

Water Quality Standards and Total Maximum Daily Loads

As previously mentioned, the project site currently discharges into Huntington Lake, which discharges to the Slater Channel during large storm events. The Slater Channel drains into the Wintersburg Channel. The Wintersburg Channel, in turn, discharges into Huntington Harbour. Huntington Harbour outlets to Anaheim Bay and ultimately, the Pacific Ocean. Designated beneficial uses for Huntington Harbor include: navigation; water and non-water contact recreation; commercial and sport fishing; wildlife habitat; rare, threatened, or endangered species; spawning, reproduction, and/or early development; and marine habitat. It is also listed as excepted from the municipal and domestic supply beneficial use. Anaheim Bay designated beneficial uses include: navigation (Outer Bay); water and non-water contact recreation; preservation of biological habitats of special significance; wildlife habitat; rare, threatened, or endangered species; spawning, reproduction, and/or early development; and marine habitat. It is also listed as excepted from the municipal and domestic supply beneficial use. There are no site-specific water quality objectives for Total Dissolved Solids, Hardness, Chloride, Total Inorganic Nitrogen, Sulfate, or Chemical Oxygen Demand.

Some receiving waters in the vicinity of the project area have been listed pursuant to Section 303(d) as not attaining water quality standards established by EPA. Anaheim Bay is listed as impaired (not meeting its designated beneficial uses) by dieldrin, nickel, PCBs, and sediment toxicity from unknown sources.[46] Huntington Harbour is listed as impaired by chlordane, copper, lead, nickel, PCBs, pathogens, and sediment toxicity from unknown sources, and by pathogens from urban runoff/storm sewers.[47] No TMDLs have yet been developed for these impaired water bodies.

Groundwater

Orange County Groundwater Basin

The Orange County Groundwater Basin (basin) underlies the northern half of Orange County, beneath broad lowlands known as the Tustin and Downey plains. It covers an area of approximately 350 square miles, bordered by the Coyote and Chino hills to the north, the Santa Ana Mountains to the northeast, the Pacific Ocean to the southwest, and terminates at the Orange County line to the northwest, where the entire aquifer system is contiguous with the Central Basin of Los Angeles County. Groundwater flow is unrestricted across the county line. The Newport-Inglewood fault zone forms the southwestern boundary of all but the shallow aquifers in the basin. The major surface water drainages overlying this

[46] California State Water Resources Control Board, *2010 Integrated Report: Clean Water Act Section 303(d) List/305(b)* (April 10, 2010), http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml (accessed September 8, 2011).
[47] California State Water Resources Control Board, *2010 Integrated Report: Clean Water Act Section 303(d) List/305(b)* (April 10, 2010), http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml (accessed September 8, 2011).

groundwater basin are the San Gabriel and Santa Ana Rivers, as well as San Diego and Santiago Creeks, all of which have headwaters outside the groundwater basin.

The aquifers comprising the basin extend over 2,000 feet deep, and form a complex series of interconnected sand and gravel deposits.[48] The proportion of fine materials increases from the mountain areas towards the coast, resulting in areas of recharge (forebay area) where materials are coarser and more interconnected, and pressure areas where materials are finer and the aquifer becomes confined. In coastal and central portions of the Basin, these deposits are separated by extensive lower-permeability clay and silt deposits, known as aquitards. In the inland area, generally northeast of Interstate 5, the clay and silt deposits become thinner and more discontinuous, allowing for larger quantities of groundwater to flow more easily between shallow and deeper aquifers.

Historical groundwater flow was generally toward the ocean in the southwest, but pumping has greatly altered the hydraulic gradient and caused water levels to drop below sea level inland of the Newport-Inglewood fault zone. The present hydraulic gradient is primarily from recharge areas toward withdrawal areas. Salt-water intrusion has migrated inland along the coastal regions and some water supplies have been contaminated in this area. A salt-water intrusion barrier in the Alamitos and Talbert Gaps has been successful in blocking this intrusion. Overall, groundwater storage capacity in the Basin is estimated at 38,000,000 AF.

The basin is recharged primarily from local rainfall (greater in wet years), base flow from the Santa Ana River (much of which is actually recycled wastewater from treatment plants in Riverside and San Bernardino Counties), imported water percolated into the basin, and reclaimed wastewater directly recharged into the basin.[49]

The basin is not adjudicated and based on the Department of Water Resources' official departmental bulletins, California's Groundwater Bulletin 118 (updated 2003) and Bulletin 160, and the California Water Plan Update (2005); the Orange County groundwater basin is not specifically identified as a basin in an overdraft condition. However, the Orange County Water District (OCWD) considers the Orange County groundwater basin to be in an overdrafted condition. OCWD's Groundwater Management Plan summarizes the accumulated overdraft and water level elevations within the basin. OCWD estimates that the accumulated overdraft in June 2004 was approximately 400,000 AF.

OCWD manages the City's groundwater basin and conducts a comprehensive water quality monitoring program. OCWD collects over 13,500 groundwater samples each year from over 800 wells. The water quality data collected from these wells is used to assess ambient conditions of the basin, monitor the effects of extraction, monitor the effectiveness of the seawater intrusion barriers, evaluate impacts from historic and current land use, address poor water quality areas, and also provide early warning of emerging contaminants of concern.

[48] California, State of. 1967. Department of Water Resources.
[49] City of Huntington Beach, *Urban Water Management Plan Update* (November 21, 2005).

Santa Ana River Groundwater Basin

The City currently receives approximately 64 percent of its water supply from groundwater wells accessing the Santa Ana River groundwater basin and 36 percent comes from imported water wholesaled by the Metropolitan Water District of Orange County (MWDOC) through Metropolitan. Imported water is delivered from northern California via the State Water Project and from the Colorado River.[50] These percentages are established through OCWD's allowable Basin Pumping Percentage (BPP). The BPP is typically set by OCWD on an annual basis. The City of Huntington Beach pumps groundwater from ten operating wells that vary in depth from 200 to 1,000 feet. The production ranges from 350 to 3,500 gallons per minute (gpm).[51]

Groundwater Levels

Groundwater at the project site was encountered during geotechnical testing at about 18 to 27 feet below ground surface (bgs).[52] Historic high groundwater levels are estimated to be at about 10 to 30 feet bgs at the west and east sides of the site, respectively. Fluctuations in groundwater levels may occur because of variations in ground surface topography, subsurface stratification, rainfall, irrigation, and other factors. The Talbert Injection Barrier Wells are located over 1.8 miles west of the Project Site.[53] These wells serve to mitigate saltwater intrusion as a result of groundwater supply pumping.

4.7.2 Regulatory Framework

Due to the extensive nature of this subsection, a more detailed discussion of applicable hydrology regulations is included in its entirety in Appendix 8.

■ Federal

Clean Water Act (CWA)

The Clean Water Act (CWA) was designed to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The US EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the SWRCB and RWQCB. While the NPDES system is administered by federal and State programs, the local authority provides the specific details with which projects must comply.

Total Maximum Daily Loads (TMDLs)

The CWA Section 303(d) established the Total Maximum Daily Load (TMDL) Program. The purpose of the TMDL program is for states to identify streams, lakes, and coastal waters that do not meet certain

[50] City of Huntington Beach, *Urban Water Management Plan Update* (November 21, 2005).
[51] City of Huntington Beach, written communication with Public Works Department (2007).
[52] Ninyo & Moore, *Preliminary Geotechnical Evaluation, Huntington Beach Senior Center, Goldenwest Street, City of Huntington Beach, California* (July 31, 2007).
[53] County of Orange, Orange County General Plan, Chapter VI: Resources Element (2005), Figure VI-8 (Orange County Groundwater Basin), http://www.ocplanning.net/Documents/pdf/GeneralPlan2005/Chapter_VI_Resources.pdf.

water quality standards and are not expected to meet standards solely through technology-based controls of point source discharges. For such watersheds, a TMDL for the constituent(s) for which the water body is impaired must be determined.

The TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still achieve the target water quality objective. All sources of the constituent(s) must be identified and loads quantified. Load reductions are determined and then allocated among the sources. Finally, an implementation plan is prepared to achieve the load reductions.

As noted above in the Surface Water Quality section, Anaheim Bay and Huntington Harbour, and Bolsa Chica State Beach are project site receiving waters listed on the 2010 California 303(d) list (see Environmental Setting Section) as impaired and therefore requiring a TDML.

Flood Plain Management

FEMA is responsible for determining flood elevations and floodplain boundaries based on Army Corps of Engineers (Corps) studies. FEMA is also responsible for producing and distributing the Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including the 100-year floodplain.

Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the *Code of Federal Regulations* (CFR), which enables FEMA to require municipalities that participate in the National Flood Insurance Program (NFIP) to adopt certain flood hazard reduction standards for construction and development in 100-year flood plains. Section 60.3(c)(2) of the NFIP regulations requires that the lowest occupied floor of a residential structure be elevated to, or above, the 100-year flood elevation (the base flood elevation). Section 60.3(c)(3) adds that nonresidential or commercial structures can either be elevated or dry flood–proofed to, or above, the 100-year flood elevation.

Federal Emergency Management Agency (FEMA)

FEMA is responsible for determining flood elevations and floodplain boundaries based on USACE studies and approved agency studies. FEMA is also responsible for distributing the FIRMS, which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas (SFHAs), including the 100-year flood zone.

FEMA allows nonresidential development in SFHAs; however, construction activities are restricted depending upon the potential for flooding within each area. Federal regulations governing development in a SFHA are set forth in Title 44, Part 60 of the Code of Federal Regulations (CFR). They enable FEMA to require municipalities that participate in the NFIP to adopt certain flood hazard reduction standards for construction and development in 100-year flood plains. In addition, the Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 mandate the purchase of flood insurance as a condition of federal or federally related financial assistance for acquisition and/or construction of buildings in SFHAs of any community.

Safe Drinking Water Act (SDWA)

The Safe Drinking Water Act (SDWA) and subsequent amendments authorize the USEPA to set health-based standards, or MCLs, for drinking water to protect public health against both naturally occurring and man-made contaminants. The USEPA administers the SDWA at the federal level and establishes MCLs for bacteriological, inorganic, organic, and radiological contaminants (United States Code [USC] Title 42, and CFR Title 40). The California Environmental Protection Agency (Cal/EPA) administers and enforces the drinking water program and has adopted its own SDWA, which incorporates the federal SDWA requirements including some requirements specific only to California (California Health and Safety Code, Section 116350 and related sections).

The California Office of Environmental Health Hazard Assessment (OEHHA) is initiating evaluation for several chemicals for which new MCLs have been promulgated by the Cal/EPA, which triggers a requirement that OEHHA prepare a Public Health Goal (PHG) designed to define the level of pollutant at which no adverse health effect is expected to occur. PHG levels are concentrations of chemicals in drinking water that are not anticipated to produce adverse health effects following long-term exposures. These goals are advisory but must be used as the health basis to update the state's primary drinking water standards (MCLs) by the California Department of Public Health (DPH) (Health and Safety Code Section 116365(b)(1). In addition, re-review, as required by Health and Safety Code Section 116365(e)(1), is being initiated for chemicals for which initial PHGs were published in 1997 and 1999. Risk assessments are being initiated for the chemicals, a few of which are listed below that are newly regulated:

- Bromate
- Chlorite
- Haloacetic acid
- Nitrosodimethylamine (NDMA)

State

Responsibility for the protection of water quality in California resides with the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs). The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The Santa Ana Regional Water Quality Control Board (SARWQCB) implements a number of federal and State laws, the most important of which are the State Porter-Cologne Water Quality Control Act and the Federal Clean Water Act.

All projects resulting in discharges, whether to land or water, are required to obtain approval of Waste Discharge Requirements (WDRs) by the RWQCBs. Land and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater and process and wash-down wastewater. WDRs for discharges to surface waters also serve as NPDES permits, which are further described below.

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California, including the California Toxics Rule (CTR), State Implementation Plan (SIP), Inland Surface Water Quality Standards, California Urban Water Management Act, and NPDES permits. The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revises policies for all waters of the state (including both surface and groundwater) and directs the RWQCBs to develop regional Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative.

Wastewater Recycling Standards—California Water Code (CWC)

Within the state of California, reclaimed water is regulated by the Cal/EPA, SWRCB, RWQCBs, and DPH. The California Legislature has declared the primary interest of the people of California in the development of facilities to recycle wastewater to supplement existing water supplies and to meet future water demands (CWC Sections 13510–13512). State policy (State Board Resolution No. 77-1) affirms this commitment to encourage recycled water use. However, because reclamation projects tend to add to the salt balance problem in the region, they must be carefully planned and implemented.

The mineral quality of the receiving water (surface or groundwater) can be adversely affected by high salt content of the reclaimed water. Each cycle of water use increases the salinity of the water. The amount of the increase depends on the type of use; normal domestic use generally adds 200 to 300 mg/L of TDS to the initial concentration. Agricultural use generally doubles the salinity, while industrial uses most often degrade water quality to a level where it may be unsuitable for discharge. Therefore, it is important that the type of reclaimed wastewater use and the likely effects on water quality be evaluated carefully prior to initiating such reuse.

Waste Discharge Requirements (WDRs)

All dischargers of waste to Waters of the State are subject to regulation under the Porter-Cologne Act and the requirement for WDRs is incorporated into the CWC. This includes both point and nonpoint source (NPS) dischargers. All current and proposed NPS discharges to land must be regulated under WDRs, waivers of WDRs, a basin plan prohibition, or some combination of these administrative tools. Discharges of waste directly to state waters would be subject to an individual or general NPDES permit, which also serves as WDRs. The RWQCBs have primary responsibility for issuing WDRs. The RWQCBs may issue individual WDRs to cover individual discharges or general WDRs to cover a category of discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders (CAOs) or Cease and Desist Orders (CDOs), assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

Master Recycled Water Permit

Any person who proposes to produce or use recycled water must file a Report of Waste Discharge (CWC Section 13522.5) and obtain water reclamation requirements (CWC Section 13523) or a Master Recycled Water Permit (CWC Section 13523.1). The CWC (Sections 13500–13529.4) requires that the DPH establish criteria for each type of use of recycled water and the DPH regulations for this purpose are contained in CCR Title 22.

National Pollutant Discharge Elimination System (NPDES) Permits

The NPDES permit system was established in the CWA to regulate both point source discharges (municipal or industrial discharge at a specific location or pipe) and nonpoint source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. The USEPA developed the federal NPDES stormwater permitting program. For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. For diffuse source discharges, the NPDES program establishes a comprehensive stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable (MEP). The NPDES program consists of (1) characterizing receiving water quality, (2) identifying harmful constituents, (3) targeting potential sources of pollutants, and (4) implementing a Comprehensive Stormwater Management Program.

The reduction of pollutants in urban stormwater discharge to the MEP level through the use of structural and nonstructural Best Management Practices (BMPs) is one of the primary objectives of water quality regulations. BMPs typically used to manage runoff water quality include controlling roadway and parking lot contaminants by installing oil and grease separators at storm drain inlets, cleaning parking lots on a regular basis, incorporating peak-flow reduction and infiltration features, such as grass swales, infiltration trenches, and grass filter strips into landscaping, and implementing educational programs.

General Construction Activity Stormwater Permit

The SWRCB permits all regulated construction activities under Order No. 2009-0009-DWQ (NPDES No. CAR000002). The SWRCB permit minimize the potential effects of construction runoff on receiving water quality, California requires that any construction activity affecting 1 acre or more must obtain coverage under the General Construction Storm Water Permit.

The General Construction Permit requires the preparation and implementation of a storm water pollution prevention plan (SWPPP), which must be prepared before construction begins. Components of SWPPPs typically include specifications for Low Impact Developments (LID)/BMPs to be implemented during project construction for the purpose of minimizing the discharge of pollutants in storm water from the construction area. In addition, a SWPPP includes measures to minimize the amount of pollutants in runoff after construction is completed, and identifies a plan to inspect and maintain project BMPs and facilities.

Regional

Santa Ana River Basin Water Quality Control Plan (Basin Plan)

The Santa Ana Water Quality Control Plan (Basin Plan) specifically: (1) designates beneficial uses for surface and ground waters; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy; and (3) describes implementation programs to protect all waters in the region.

The SARWQCB monitors and enforces the NPDES storm water permitting. In general, the regulations require all communities with populations over 100,000 to develop programs for reducing pollutants carried by stormwater runoff into waters of the United States. The permit serves as the mechanism for enforcement of the program.

Orange County Municipal NPDES Permit (Municipal NPDES Permit)

Stormwater discharges from the City are regulated under the California Regional Water Quality Control Board Santa Ana Region Waste Discharge Requirements for the County of Orange, Orange County Flood Control District, and The Incorporated Cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff Orange County (Order No. R8-2009-0030, NPDES No. CAS618030) (Municipal NPDES Permit).

The co-permittees of this Municipal NPDES Permit are responsible for the management of storm drain systems within their jurisdictions and required to: implement management programs, monitoring programs, implementation plans and all BMPs outlined in the Drainage Area Master Plan (DAMP) within each respective jurisdiction, and take any other actions as may be necessary to meet the MEP (Maximum Extent Practicable) standard. They are also required to coordinate with other pertinent agencies, to establish and maintain adequate legal authority, and to conduct inspection and maintenance of the storm drain system. If necessary, the co-permittees are required to take appropriate enforcement actions for illicit discharges to the MS4 system owned or controlled by the co-permittee.

Receiving water limitations are identified in the *Municipal NPDES Permit* and include requirements that:

- Discharges from the MS4s shall not cause or contribute to exceedances of receiving water quality standards (designated beneficial uses and water quality objectives) for surface waters or groundwaters, and
- The DAMP and its components shall be designed to achieve compliance with receiving water limitations.

Provisions for compliance inspection are incorporated in the *Municipal NPDES Permit* and include requirements for construction site inspections, including review of erosion control and BMP implementation plans and effectiveness. Each co-permittee is also required to enforce its ordinances and permits at all construction sites.

Requirements for new development and significant re-development include the establishment of a mechanism to ensure (prior to issuance of any local permits or other approvals) that all construction sites that are required to obtain coverage under the State's *General Storm Water Permit* for construction sites

have filed with the State Board a Notice of Intent to be covered by the relevant general permit and that short and long-term impacts on receiving water quality from new developments and re-developments are minimized.

The Municipal NPDES Permit also requires a water quality management plan (WQMP) for urban runoff for new development and significant redevelopment. The permittees are required to prepare and implement WQMPs for urban runoff from new developments/ significant re-developments, based on a project of 10,000 square feet (sf) or priority projects. Priority project must retain storm runoff volume using LID and/or participate in alternative compliance mechanisms.

Any structural infiltration BMPs must also meet the minimum requirement to not cause or contribute to an exceedance of groundwater water quality objectives or cause nuisance pollution and shall be implemented to protect groundwater quality.

Section XV describes the regulations for municipal construction projects/activities. The proposed project is a municipal construction project and is required to comply with the DAMP. This regulation requires development and implementation of a SWPPP (Storm Water Pollution Prevention Plan) and monitoring program prior to the beginning of construction activities. The SWPPP and monitoring program must be consistent all terms and conditions of the latest version of the Construction General Permit.

This Municipal NPDES Permit also includes a Monitoring and Reporting Program for the County of Orange, Orange County Flood Control District, and Incorporated Cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff (Order No. R8-2009-0030 NPDES No. CAS618030).

Orange County Drainage Area Management Plan (DAMP)

The purpose of the DAMP was to satisfy NPDES permit conditions for creating and implementing an Urban Runoff Management Program (URMP) to reduce pollutant discharges to the maximum extent practicable (MEP) for protection of receiving waterbody water quality and support of designated beneficial uses. The DAMP contains guidances on both structural and nonstructural BMPs for meeting these goals.

Local

City of Huntington Beach Local Implementation Plan (LIP)

The current specific water pollution control program elements are documented in the DAMP and corresponding City of Huntington Beach Urban Stormwater Runoff NPDES Permit Local Implementation Plan of 2011 (City of Huntington Beach LIP). The City has developed the City of Huntington Beach LIP using the DAMP as its basis. The City of Huntington Beach LIP provides a written account of activities that the City has undertaken, or is undertaking, to meet the requirements of the Fourth Term NPDES Permit and a means of displaying a meaningful improvement in water quality. As with the DAMP, the City of Huntington Beach LIP proposes a wide range of continuing and

enhanced BMPs and control techniques that will be implemented and reported on as part of the Fourth Term Permit reports.

The City of Huntington Beach LIP has also incorporated the model construction program described in the DAMP. The construction program includes requirements, guidelines and methods that construction site owners, developers, contractors and other responsible parties must use for pollution prevention to protect water quality from construction discharges. New projects, as they are initiated, are added to the City's inventory of construction projects. Once compiled, construction projects are prioritized into risk levels I, II, or III based on threat to water quality.

Regardless of size or priority, all construction projects are required to implement BMPs to prevent runoff and discharges into the storm drain system or water bodies. At a minimum, all construction projects must include erosion and sediment controls, as well as waste and materials management controls. The City of Huntington Beach LIP designates the construction-specific BMPs that the City has determined acceptable for use within the City's jurisdiction.

2010 Urban Water Management Plan (UWMP)

City's 2010 Urban Water Management Plan (UWMP) provides information on water supply reliability and water use efficiency measures. The City's 2010 Urban Water Management Plan (UWMP) is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in the Orange County water supply trends, and conservation and water use efficiency policies. The UWMP, along with the City's Water Master Plan and other City planning documents, is used by City staff to guide the City's water use and management efforts through the years 2011 to 2035.

Citywide Urban Runoff Management Plan (CURMP)

The Citywide Urban Runoff Management Plan (CURMP) provides a broad framework for managing the quantity and quality of all urban runoff that reaches receiving waters from the land surfaces and through the storm drain system within the City. The Water Quality Element of the CURMP focuses primarily on managing runoff quality, while the Drainage Element addresses flood hazards and inconveniences. The CURMP identifies potential common solutions that can address both water quality and quantity concerns.

Section 3: Water Quality Element

The Water Quality Element provides a basis for implementing a comprehensive program for improving water quality through a combination of methods to reduce the level of urban runoff and pollutants emanating from private as well as public property and thus enhancing the quality of water discharged from the municipal storm drain system within the City.

Water Quality Management Plan

During the project review, approval, and permitting process, the City requires all new development and significant redevelopment to address the quantity and quality of storm water runoff from the completed development. A project-specific Water Quality Management Plan (WQMP) describing how the project will address runoff is required for all projects listed under the City's "Priority Project Category."

The WQMP describes how the project will meet the following requirements:

- Incorporate and implement all applicable Source Control BMPs
- Consider the implementation of Site Design BMPs (e.g., pervious pavement, bioretention), and document those BMPs included and those not included; and
- Either implement Treatment Control BMPs or participate in or contribute to an acceptable regional or watershed management program.

The City has general/standard conditions of approval to protect receiving water quality from short- and long-term impacts of new development and significant redevelopment. Prior to issuance of any grading or building permit for projects that disturb soil of 1 or more acres, the applicant shall prepare, submit, and implement a Stormwater Pollution Prevention Plan, including erosion control measures. This also includes the requirement that the applicant demonstrate that all structural and non-structural BMPs described in the WQMP have been installed and implemented in accordance with approved plans and specifications prior to close-out of a Grading or Building Permit and/or issuance of a Certificate of Use or Occupancy.

Section 4: Drainage Element

The Drainage Element of the CURMP incorporates a city-based MPD that is a comprehensive drainage study of the community, which identifies and creates an inventory of existing storm drain facilities, identifies those areas where system elements do not meet the latest goals established by the City, ranks the severity of the difference between existing capacity and the capacity needed to achieve those goals, prepares planning level cost opinions for system upgrades, and recommends system improvements to initiate the corrections.

City of Huntington Beach Municipal Code

In order to comply with NPDES permit requirements, the City of Huntington Beach has codified requirements in their municipal code. The following sections of the City's municipal code would be applicable to the proposed project:

- Chapter 14.25 (Storm Water and Urban Runoff Management)
- Chapter 14.48 (Drainage)
- Chapter 14.52 (Water Efficient Landscape Requirement)
- Chapter 17.05 (Grading and Excavation Code)

City of Huntington Zoning Code

The City of Huntington Beach Zoning Code Chapter 222 provides methods for reducing flood hazards (Section 222.08) and provides development standards and standards of construction (222.14) for development within Floodplain Overlay Districts. Portions of the project site are located within a Floodplain Overlay District (Section 222.04), and therefore, subject to these Zoning Codes.

City of Huntington Beach General Plan

The following goals, objectives, and policies within the Huntington Beach General Plan are applicable to hydrology and water quality.

Utilities Element

Goal U3 Provide a flood control system which is able to support the permitted land uses while preserving the public safety; upgrade existing deficient systems; and pursue funding sources to reduce the costs of flood control provisions in the City.

Objective U3.1 Ensure that adequate storm drain and flood control facilities are provided and properly maintained in order to protect life and property from flood hazards.

Policy U 3.1.6 During development review, determine if any structures meant for human habitation are constructed within the 100-year flood plain. If necessary, evaluate the structures' flood safety, and require remedial actions.

Objective U 3.2 Ensure the costs of infrastructure improvements to the storm drain and control system are borne by those who benefit.

Policy U 3.2.1 Require improvements to the existing storm drain and flood control facilities necessitated by new development be borne by the new development benefiting from the improvements; either through the payment of fees; or by the actual construction of the improvements in accordance with State Nexus Legislation.

Objective U 3.3 Ensure that storm drain facilities (channels and outputs) do not generate significant adverse impacts on the environment in which the facilities traverse or empty.

Policy U 3.3.1 Evaluate any existing environmental degradation or potential degradation from current or planned storm drain and flood control facilities in wetlands or other sensitive environments.

Policy U 3.3.2 Where feasible, utilize natural overland flows, open channels, and swale routings as preferred alignments for components of drainage systems.

Policy U 3.3.3 Require that new developments employ the most efficient drainage technology to control drainage and minimize damage to environmental sensitive areas.

Consistency Analysis

The proposed project would not result in the construction of new City stormwater drainage facilities or expansion of existing facilities. Any potential stormwater drainage facilities would be site-specific and constructed as part of the proposed project development or required improvements. The proposed

project would likely result in a less than substantial increase in pollutant loads to the Slater Channel and eventually Huntington Harbour and Anaheim Bay even though pollutant loads from site runoff might increase. Stormwater flow would be overland to the west through the park and into Huntington Lake prior to discharge to the Slater Channel. Travel through the park would essentially act as a filter strip BMP and Huntington Lake is essentially a stormwater retention wet pond BMP. Additionally, the proposed project includes bioswales and vegetated buffer areas to treat runoff from the proposed project's impervious areas. Implementation of BMPs and the project's directing of stormwater flows through the park and Huntington Lake would ensure that project implementation would not adversely impact wetlands or other sensitive environments. Consequently, implementation of the proposed project would not conflict with these policies.

While a portion of the larger 54-acre parcel of Central Park has been delineated on Federal Emergency Management Agency (FEMA) flood maps as being within Zone "A," the project site is not located within the 100-year flood hazard area according to FEMA flood maps. However, because the larger parcel is within Zone A, the proposed structure would be built one foot higher than the BFE. The BFE for the project site is approximately 9.5 feet. Because the elevation of the project site ranges from 14 feet above msl to 26 feet above msl, the building would not have to be further elevated. However, a flood elevation certificate would have to be completed for the project. Nonetheless, implementation of the proposed project would not conflict with these policies.

4.7.3 Project Impacts and Mitigation

Analytic Method

The proposed project is evaluated for impacts on drainage ways, including drainage pattern modifications; changes in storm flow peak flow rate, elevation, and duration; drainage system capacity, including impacts on downstream conditions and regional implications; changes in pollutant and sediment load to surface water systems; and effect on groundwater supplies.

Storm Flow

Changes in peak storm flow rates were calculated using the Rational Method[54] for the 10-year, 25-year, and 100-year storm events.[55] Existing conditions runoff is described in Section 4.7.1 (Environmental Setting). The post-project amount of impervious surface (building, paths, parking, and driveways) was estimated to be approximately 75 percent (1.26 acres of pervious surface and 3.74 acres of impervious surface). An additional 0.88 acre of off-site pervious area would also be paved to create a driveway in support the proposed project.

The time of concentration (Tc) for runoff was determined to be approximately nine minutes.[56] Table 4.7-2 (Estimated Proposed Project Peak Runoff Rates) lists the estimated peak runoff rates for both existing and proposed project conditions. Table 4.7-3 (Estimated Off-Site Improvements Peak Runoff Rates) lists the estimated peak runoff rate for the off-site driveway improvements.

[54] See Appendix 8 for details
[55] See Appendix 8 for details
[56] Estimated using Figure D-1 from 1986 Orange County Hydrology Manual.

Table 4.7-2 Estimated Proposed Project Peak Runoff Rates

Storm Event Return Period	*Existing (cfs)*	*Proposed Project (cfs)*	*Difference (cfs)*
10-year	10.9	14.2	+3.3
25-year	13.6	17.5	+3.9
100-year	17.4	22.1	+4.7

SOURCE: Atkins (2007)

Table 4.7-3 Estimated Off-Site Improvements Peak Runoff Rates

Storm Event Return Period	*Existing (cfs)*	*Proposed Project (cfs)*	*Difference (cfs)*
10-year	1.92	2.54	+32.5
25-year	2.40	3.11	+30.0
100-year	3.07	3.93	+28.1

SOURCE: Atkins (2007).

Water Quality

Pollutant and sediment transport is evaluated using the Simple Method[57] and typical stormwater concentrations of Pollutants of Concern (POC) from similar land uses. It should be noted that the proposed project does include several design features and/or water quality BMPs such as bioswales and vegetated buffer areas. In addition, roof drainage will be directed through pipes to pop-up emitters in the lawn area.

Runoff coefficients were determined using Caltrans methodology.[58] Table 4.7-4 (Estimated Mean Annual Runoff From the Project Site) lists the existing and proposed project estimated annual runoff characteristics, while Table 4.7-5 (Estimated Mean Annual Runoff From the Off-site Improvements) lists the estimated runoff from off-site improvements.

Table 4.7-4 Estimated Mean Annual Runoff from the Project Site

			Annual Runoff	
Condition	*Pervious Fraction*	*Runoff Coefficient*	*inches*	*acre-ft*
Existing	1	0.41	4.53	1.89
Proposed Project	0.25	0.82	9.06	3.77
Difference				***1.88***

SOURCE: Atkins (2007).

[57] See Appendix 8 for details
[58] See Appendix 8 for details

Table 4.7-5 Estimated Mean Annual Runoff from the Off-site Improvements				
			Annual Runoff	
Condition	*Pervious Fraction*	*Runoff Coefficient*	*inches*	*acre-ft*
Existing	1	0.41	4.53	0.33
Off-site Improvement	0	0.95	10.49	0.77
Difference				***0.44***

SOURCE: Atkins (2007).

The effect of changing land use on pollutant loading was estimated by using available stormwater pollutant data from Los Angeles County where monitoring programs have measured event-mean-concentrations of pollutants in stormwater based on land use classifications. This was the closest available information for land use pollutant concentrations (Orange County does not have such information available) and should be reasonably applicable to the project site. Where necessary (no data available from the Los Angeles tables), the National Stormwater Quality Database (NSQD)[59] was used to estimate pollutant concentrations in stormwater by the change in land use. The NSQD is a national database with stormwater data from the National Urban Runoff Program at locations around the US. The land use summary is a summary of all sites across the US in each land use category.

Project site existing pollutant loads were estimated using the pollutant concentrations in stormwater runoff from the Los Angeles County 'vacant' land use category (or 'open space' land use category from the NSQD) and proposed project conditions were estimated using the Los Angeles County 'education' land use category (or 'commercial' land use category from the NSQD). Table 4.7-6 (Event Mean Pollutant Concentrations in Stormwater) lists the pollutant stormwater concentrations for each land use category used in the analysis.

Table 4.7-6 Event Mean Pollutant Concentrations in Stormwater			
		Land Use	
Pollutant	*Units*	*Existing Conditions (Vacant Land Use)*	*Proposed Project (Education Land Use)*
Suspended Solids	mg/L	165	103
Nitrate+Nitrite	mg/L	1.16	0.71
Total Nitrogen	mg/L	1.97	2.33
Total Phosphorous	mg/L	0.11	0.31
Dissolved Phosphorous	mg/L	0.06	0.27
Total Copper	µg/L	9.12	21.5
Total Lead	µg/L	10[a]	4.5
Total Zinc	µg/L	38.8	124
Fecal Coliforms	MPN/100 mL	7200[a]	4300[b]

SOURCE: Los Angeles County Department of Public Works, 1994–2000 Stormwater Quality Data Tables. Table 4-9 (Cumulative Event Mean Concentrations) (2001), http://www.ladpw.org/wmd/NPDES/9400_wq_tbl/Table_4-9.pdf.

a. NSQD 2005 Open Space
b. NSQD 2005 Commercial

[59] See Appendix 8 for details

Thresholds of Significance

The following thresholds of significance are based on Appendix G to the 2011 CEQA Guidelines. For purposes of this EIR, implementation of the proposed project may have a significant adverse impact if it would do any of the following:

- Violate any water quality standards or waste discharge requirements
- Substantially deplete groundwater supplies or interfere substantially 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)
- 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 that would result in substantial erosion or siltation on or off site
- 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 that would result in flooding on or off site
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Otherwise substantially degrade water quality
- 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
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows
- 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
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow

The Municipal NPDES Permit also requires that the following potential impacts shall be considered during CEQA review:

1. Potential impact of project construction on storm water runoff
2. Potential impact of project's post-construction activity on storm water runoff
3. Potential for discharge of storm water pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas
4. Potential for discharge of storm water to affect the beneficial uses of the receiving waters
5. Potential for significant changes in the flow velocity or volume of storm water runoff to cause environmental harm
6. Potential for significant increases in erosion of the project site or surrounding areas

Effects Not Found to Be Significant

Threshold	Would the project substantially deplete groundwater supplies or interfere substantially 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)?

According to the Central Park Master Plan EIR, the City of Huntington Beach provides drinking water to Central Park that is collected from a series of groundwater wells within the City. The wells tap into the Talbert Aquifer, a confined aquifer of sand and gravel extending approximately 130 feet below ground surface (bgs) to over 1,300 bgs. Groundwater recharge in Central Park is provided by the existing lakes (Huntington and Sully Miller) and their efficiency would not be modified by development of the new senior center. Impacts would be less than significant, and no further analysis is necessary in the EIR.

Threshold	Would the project result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The proposed project would not result in the construction of new City stormwater drainage facilities or expansion of existing facilities. Therefore, there would be no impact associated with construction of new or expanded City stormwater drainage facilities. Any potential stormwater drainage facilities would be site-specific and constructed as part of the proposed project development or required improvements. Proposed LID/BMPs include bioswales, vegetated buffer areas, pop-up emitters, and off-site dispersion piping. Potential proposed project construction impacts associated with site development and off-site improvements are discussed in the Impacts and Mitigation Measures section below.

Threshold	Would the project 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?

No residential uses are included as part of the proposed project. Consequently, no housing would be placed in a flood hazard area, and no impact would occur. No further analysis is required in this EIR

Threshold	Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?

The 5-acre project site is located within a 54-acre parcel (legal lot) of Central Park. A portion of this 54-acre parcel has been delineated on Federal Emergency Management Agency (FEMA) flood maps as being within Zone "A." Thus, because a portion of the larger parcel is within a flood hazard area, this would require the structure to be built 1 foot higher than the Base Flood Elevation (BFE). However, the project site is not located in a 100-year flood hazard area as mapped by FEMA. Therefore, implementation of the proposed project would not place structures in a 100-year flood hazard area such that flood flows would be impeded or redirected. Consequently, no impact would occur, and no further analysis is required in this EIR.

Threshold	Would the project 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 dams?

The project site is not located in any dam inundation area as identified in the City of Huntington Beach General Plan, Hazards Element, or the Prado Dam Inundation Area.[60] Consequently people would not be subject to dam inundation failure risks.

The nearest channelized watercourse within the project vicinity is the Slater Channel. This channel is below-grade (not confined in a levee system) and therefore levee failure is not an issue. The Wintersburg Channel is located down gradient of the project site and is also a below-grade structure. The nearest large watercourse is the Santa Ana River, located over 3 miles from the project site. Levees constructed along the Santa Ana River also minimize the flood risks to areas within the project site. In 1997 and through 2002, FEMA revised the flood maps for areas within the City of Huntington Beach, in recognition of the improvements to the Santa Ana River Channel. These revisions reduced the anticipated flood level in the City. Additionally, the channelization of the Santa Ana River from Weir Canyon Road to the Pacific Ocean has improved the capacity of the channel sufficiently that the channel can convey the water volume associated with a 190-year flood event. Therefore, no impact would occur as a result of dam or levee failure, and no further analysis is required in this EIR.

Threshold	Would the project expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow?

Tsunamis are large sea waves generated by submarine earthquakes, or similar large-scale, short-duration phenomena, such as volcanic eruptions, that can cause considerable damage to low-lying coastal areas. Seiches are waves, also caused by large-scale, short-duration phenomena, that result from the oscillation of confined bodies of water (such as reservoirs and lakes) that also may damage low-lying adjacent areas, although not as severely as a tsunami. The project site is not located within a moderate Tsunami Run-up Area.[61] Therefore, there would be no risk associated with tsunamis.

The closest enclosed bodies of water that could result in earthquake-induced seiches are Huntington Lake, Talbert Lake, and Sully Miller Lake. Talbert Lake and Sully Miller Lake are located over 1,000 feet from the project site and Huntington Lake is approximately 400 feet and down gradient from the project site. Therefore, potential seiche activity in these lakes would not be expected to reach the project site and there would be no risk from seiches.

Mudflow hazards typically occur where unstable hillslopes are located above gradient or where site soils are unstable and subject to liquefaction, and when substantial rainfall saturates soils causing failure. Although the proposed project is bounded by slopes to the east and south, as well as the earthen berm to the north, these slopes are not susceptible to mudslides. Refer to Impact 4.5-2 and 4.5-3 within

[60] County of Orange, *Orange County General Plan*, Chapter IX: Safety Element (March 2011), Figure 2-19 (Prado Dam and Santiago Reservoir Inundation Areas).
[61] City of Huntington Beach, *Huntington Beach General Plan*, Environmental Hazards Element (1996), Figure EH-8 (Moderate Tsunami Run-Up Area), http://www.huntingtonbeachca.gov/Government/Departments/Planning/gp/index.cfm.

Section 4.5 (Geology and Soils) for a detailed discussion regarding potential landslides. For those areas where proposed improvements would impact the adjacent slopes (in particular the northern slope or earthen berm), mitigation measure MM4.5-2 would require the near surface soils to be compacted along the slope face and the slope shall then be covered with an appropriate erosion protection device and drought tolerant plants. Surface water runoff would be diverted away from the top of the slope to reduce the likelihood of surficial sliding and erosion. Consequently, with the incorporation of the required mitigation measures, there would be no substantial mass earth movement during saturated soil conditions. Therefore, the proposed project would not result in a significant loss, injury, or death by mudflow.

In summary, there would be no impact that would expose people or structures at the project site to a significant risk of loss, injury, or death involving inundation by a seiche, tsunami or mudflow, and no further analysis of these is required in this EIR.

Impacts and Mitigation Measures

Threshold	Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality? (Including additional NPDES criteria 1 through 4)

Impact 4.7-1 **Construction and operation of the proposed project could increase stormwater pollutant loads or concentrations, which could result in a violation of water quality standards or a substantial degradation of water quality.**

Pollutants in urban runoff can impact the beneficial uses of the receiving waters and cause or threaten to cause a condition of pollution or nuisance. While the proposed project would not result in any point-source discharge subject to an individual permit per Waste Discharge Requirements (WDRs), it would be subject to the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-0009-DWQ), and the Municipal NPDES Permit (CAS000002).

Implementation of the proposed project would include a GPA to re-designate the use of the project site from low intensity to high intensity, to accommodate the development of the proposed senior center on the project site. Implementation of the proposed GPA would result in a departure from the anticipated low-intensity, passive recreational uses and instead would result in a high-intensity use on the site. Under both designations, the existing undeveloped conditions of the project site would not remain. While the GPA itself would not result in direct environmental impacts to hydrology, the development of the senior center would result in physical changes to the project site, the effects of which are analyzed below.

Construction Phase

The GPA itself would not result in any construction activities; however, the proposed project also includes a construction of a multi-purpose senior center on a 5-acre parcel of undeveloped land within Central Park. The senior center would include construction activities, such as excavation and trenching for foundations and utilities, soil compaction, minor cut and fill activities, and grading, all of which would temporarily disturb soils. Disturbed soils are susceptible to high rates of erosion from wind and

rain, resulting in sediment transport from the site. Erosion and sedimentation affects water quality through interference with photosynthesis, oxygen exchange, and the respiration, growth, and reproduction of aquatic species. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported downstream, which could contribute to degradation of water quality.

The delivery, handling, and storage of construction materials and wastes, as well as the use of construction equipment, could also introduce a risk for stormwater contamination that could impact water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination, and some hydrocarbon compound pollution associated with oil and grease can be toxic to aquatic organisms at low concentrations. Staging areas or building sites can also be the source of pollution due to the use of paints, solvents, cleaning agents, and metals during construction.

Impacts associated with metals in stormwater include toxicity to aquatic organisms, such as bioaccumulation, and the potential contamination of drinking supplies. Pesticide use (including herbicides, fungicides) associated with site preparation work (as opposed to pesticide use for landscaping) is another potential source of stormwater contamination. Pesticide impacts to water quality include toxicity to aquatic species and bioaccumulation in larger species. The City of Huntington Beach follows the guidelines of the Orange County's *Management Guidelines for the use of Fertilizers and Pesticides*. The guidelines include an integrated pest management plan which calls for various best practices as alternatives to the sole use of pesticides. Larger pollutants, such as trash, debris, and organic matter, are additional pollutants that could be associated with construction activities. Impacts include health hazards and aquatic ecosystem damage associated with bacteria, viruses, and vectors. Construction impacts on water quality are potentially significant and could lead to exceedance of standards or criteria.

All construction activities, including the adjacent off-site road improvements and installation and realignment of utilities, would be subject to existing regulatory requirements, such as those identified below.

In accordance with the Drainage Area Management Plan (DAMP), the MS4 Permit (adopted May 2009), the City's Municipal Code (Chapter 14.25), and City's Local Implementation Plan (LIP), the proposed project is required to develop and implement a project-specific WQMP that addresses appropriate stormwater quality best management practices (BMPs) and water quality management practices. The WQMP may include the following applicable measures: erosion and sediment control; vehicle and equipment cleaning/maintenance, potable water/irrigation controls; equipment staging areas to localize and establish BMPs for control of pollutants associated with equipment re-fueling, operation, and maintenance; and waste management and materials management. A project-specific WQMP would be reviewed and approved by the City prior to receiving a Precise Grading permit for the proposed project.

The proposed project, a senior center, is considered a Priority Project in the City of Huntington Beach Draft Strategic Plan (June 2006), and would be considered a Significant Development Project under City Municipal Code. The proposed project would be considered a Priority Project under the DAMP[62] because it would involve construction of a parking lot with more than 5,000 sf of impervious area and

[62] Table 7.11-1 (Priority Projects Categories), Exhibit 7.11 (Model Water Quality Management Plan)

create more than 10,000 sf of impervious surface area. The proposed project would be required to implement a SWPPP, which must be prepared before construction activities begins including specifications for LID/BMPs to be implemented during project construction for the purpose of minimizing the discharge of pollutants in stormwater from the construction area. The DAMP requires design review of public agency projects prior to initiating grading or construction activities to ensure that the construction plans for public works projects reflect the structural BMPs described in the project's approved WQMP. The CURMP also incorporates provisions for construction site inspection to assure that construction BMPs are implemented and operating effectively. Consequently, there would be no violation of the General Construction Permit WDR with implementation of the proposed project.

If construction dewatering is required for development of the proposed project, the developer would be subject to the NPDES permit. Compliance with this general discharge permit is considered by the RWQCB to be protective of water quality. The active monitoring of construction sites for compliance with regulations would also assure compliance with this general permit.

Consequently, the potential violation of either WDR would be less than significant. Furthermore, these existing regulations are considered protective of water quality and are designed to prevent violation of water quality standards. Implementation of existing project requirements would ensure that any violation of WDRs or water quality standards during construction would be ***less than significant***.

Operation

Operation of the proposed project would result in a significant change in land use and the potential for increased site runoff. The proposed GPA itself would not result in direct changes or impacts to water quality; however, the proposed project also includes the construction of a multi-purpose senior center on currently undeveloped land. The proposed site would change from an open space area to developed condition. During the operational phase of the proposed project, the major source of pollution in stormwater runoff would be contaminants that have accumulated on rooftops and other impervious surfaces, such as parking lots, pedestrian walkways, and the off-site road improvement prior to connecting to the storm drain system.

Pollutants associated with the operational phase of the proposed project include nutrients, oil and grease, metals, organics, pesticides, and gross pollutants (including bacteria). Nutrients that may be present in post-construction stormwater include nitrogen and phosphorous resulting from fertilizers applied to landscaping and atmospheric deposition. Excess nutrients can impact water quality by promoting excessive and/or a rapid growth of aquatic vegetation, which reduces water clarity and results in oxygen depletion. Pesticides can also enter stormwater after application on landscaping areas of the proposed project, which are toxic to aquatic organisms and can bioaccumulate in larger species, such as birds and fish. Oil and grease can enter stormwater from vehicle leaks, traffic, and maintenance activities. Metals may enter stormwater as surfaces corrode, decay, or leach. Potential gross pollutants associated with operational activities include clippings associated with landscape maintenance, street litter, and pathogens (bacteria). Pathogens (from sanitary sewer overflows, spills, and leaks from portable toilets, pets, and wildlife and human activities) can impact water contact recreation, non-contact water recreation, and shellfish harvesting. Microbial contamination of the beaches from urban runoff and other sources has resulted in a number of health advisories issued by the Orange County Health Officer.

Operation of the proposed project would not include vehicle or equipment maintenance; however it will include on-site storage of a small fleet of senior transportation vehicles. The proposed project would result in an increase in runoff (as shown in Tables 4.7-2 and 4.7-3) and change in land use and associated pollutants in stormwater runoff. Figure 3-7 (Conceptual Grading and Utilities Plan) in Chapter 3 (Project Description) indicates the stormwater quality BMPs that are planned for treating stormwater runoff. These BMPs include bioswales (throughout the parking lot areas of the project site), vegetated buffer areas, and pop-up emitters.

The proposed bioswales would generally extend in a north-south direction along the length of the parking lot and would separate adjoining rows of parking spaces. At the nearest point, bioswales would be located approximately 72 feet from the proposed structure. Flow would be directed across asphalt to the bioswales where it would be treated (filtered) by flowing through the grasses. Inlets would be located at the end of the bioswales, which would pick up the flow and carry it to conveyance channels along the north and south sides of the project. The conveyance channels would carry the flow towards the west where the water would be piped off site through dispersion pipes. The bioswales would look similar to any other landscape/planter area on site.

Vegetated buffer areas are also proposed, which provide another type of filtration device where rainwater is directed from parking lot areas to the perimeter, where it flows through grassed/vegetated areas to a perimeter channel where the water is picked up in inlets and conveyed to the diffusion pipe that delivers the water off site. Additionally, roof drainage would be directed through pipes to pop-emitters in the lawn area. Similar to the other BMPs, water would flow across grass to drainage inlets and into the diffuser pipe that empties into the park.

No BMPs are identified for the off-site contributing area. Table 4.7-7 (Estimated Proposed Project Effect on Mean Annual Pollutant Load) lists the change in estimated mean annual pollutant load following implementation of the Proposed Project. The access driveway from Goldenwest Street would be addressed in the WQMP with LID/BMPs.

The proposed project would likely result in a less than substantial increase in pollutant loads to Huntington Lake, the Slater Channel, and eventually Huntington Harbour and Anaheim Bay even though pollutant loads from site runoff might increase. Stormwater flow would be overland to the west through the park and into Huntington Lake prior to discharge to the Slater Channel. Travel through the park would essentially act as a filter strip BMP and Huntington Lake is essentially a stormwater retention wet pond BMP. Long filter strip BMPs (flow length of 150 feet) can remove approximately 68 percent of total suspended solids, 33 percent of total phosphorous, 9 percent of nitrate, 20 percent of lead, and 20 percent of zinc in stormwater runoff.[63] Removal efficiencies for wet detention ponds are about 50 to 90 percent of total suspended solids, 30 to 90 percent of total phosphorous, 40 to 80 percent of soluble nutrients, 70 to 80 percent of lead, and 40 to 50 percent of zinc in stormwater runoff.[64]

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[63] U.S. DOT Federal Highway Administration, Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring. Fact Sheet—Filter Strips, http://www.fhwa.dot.gov/environment/ultraurb/3fs11.htm (accessed July 30, 2007).

[64] U.S. Environmental Protection Agency, *Storm Water Technology Fact Sheet: Wet Detention Ponds*. EPA 832-F99-048 (September 1999), http://www.epa.gov/owmitnet/mtb/wetdtnpn.pdf.

Table 4.7-7 Estimated Proposed Project Effect on Mean Annual Pollutant Load

Pollutant	Mean Annual Pollutant Load: Existing (lbs)	Mean Annual Pollutant Load: Proposed Project (no BMP credits)(lbs)	Percent Increase (%)	Impact Significance[a]
Suspended Solids	843	1055	20	PS
Nitrate+Nitrite	5.94	7.27	18	PS
Total Nitrogen	10.1	23.9	58	PS
Total Phosphorous	0.563	3.17	82	PS
Dissolved Phosphorous	0.307	2.76	89	PS
Total Copper	0.047	0.220	79	PS
Total Lead	0.051	0.046	-10	NI
Total Zinc	0.199	1.27	84	PS
Pollutant	*billions of colonies*		*Percent Increase (%)*	*Impact Significance[a]*
Fecal Coliforms	168	201	16	PS

SOURCE: Atkins (2007).
PS = potentially significant; NI = no impact
a. Threshold: PS = more than 10 percent increase

Additionally, the proposed project includes bioswales and vegetated buffer areas to treat runoff from the proposed project's impervious areas, as detailed above. Potential pollutant loads from the project site for a bioswale of at least 200 feet in length with a maximum runoff velocity of 1.5 feet/second, water depth between 1 and 4 inches, a grass height of at least 6 inches, and a minimum contact (residence) time of 2.5 minutes, is estimated to be the following:[65]

- Total Suspended Solids—83 to 92 percent
- Turbidity (with 9 minutes of residence)—65 percent
- Lead—67 percent
- Copper—46 percent
- Total Phosphorus—29 to 80 percent
- Aluminum—63 percent
- Total Zinc—63 percent
- Dissolved Zinc—30 percent
- Oil/Grease—75 percent
- Nitrate-N—39 to 89 percent

Furthermore, a phytofiltration system (e.g., biofiltration system) can remove 97 percent of total zinc in stormwater. Therefore, with implementation of the bioswales and vegetated buffer areas, proposed project contributions to increased pollutant loads to Huntington Lake, Slater Channel and other downstream water bodies would not be substantial.

[65] D. Jurries, *Biofilters (Bioswales, Vegetative Buffers, and Constructed Wetlands) for Storm Water Discharge Pollution Removal*, State of Oregon Department of Environmental Quality, DEQ Northwest Region Document (January 2003).

Consequently, it is not expected that proposed project pollutant loads would be substantial or cause or contribute to degradation of water quality. Even if all the pollutants in proposed project runoff waters reach the Slater Channel, based on the monitoring data included in the City's 2006 Report of Waste Discharge (ROWD), the increase in total pollutant load from implementation of the proposed project would be considered minimal; the total nitrate load would only increase by less than 0.067 percent, the total phosphate load would increase by less than 0.13 percent, total copper load would increase by about 0.009 percent, total zinc load would increase by about 0.054 percent, and there would be no increase in total lead load.[66]

Additionally, the Planning Department and/or Public Works Department is required to review the project plans and impose terms, conditions, and requirements on the project in accordance with Section 14.25.040. Furthermore, for all private and public projects that are listed under the City's "Priority Project Category," a project-specific Water Quality Management Plan (WQMP) describing how the project will address runoff is required. All new development and significant redevelopment projects are required to develop and implement a Project WQMP that includes BMPs. Depending upon the project size and characteristics, these may include:

- Site Design BMPs (as appropriate)
- Applicable Source Control BMPs
- Project-based Treatment Control LID/BMPs; and/or participation in an approved regional or watershed management program as defined in Section 7-II.3.3.3 of the DAMP in the affected watershed.

The proposed project, which is a DAMP identified priority project and City of Huntington Beach identified significant development project, would be required to prepare and implement a project-specific WQMP that would be reviewed and approved by the City. Acceptable structural and non-structural BMPs are listed in the DAMP and California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment (2003) in compliance with the Municipal NPDES Permit. Treatment flow rate or volume design requirements for structural BMPs are specified in the Municipal NPDES Permit. Compliance with this regulation would assure implementation of the Central Park Master Plan EIR MM Water-2 and MM Water-3.

The following mitigation measure related to impacts associated with water quality degradation was initially identified in the Central Park Master Plan EIR. The language in this measure has been modified and additional requirements (BMPs) have been incorporated for this project to reflect project-specific components of the proposed senior center where necessary, although the intent remains the same. The original measures from the Central Park Master Plan EIR appear in Table 4-1 of this EIR.

For the purposes of this document, the City shall implement mitigation measure MM4.7-1, which would ensure that measures set forth in the Central Park Master Plan EIR are carried over:

MM4.7-1 *(This MM incorporates Measures Water-2 and 3 from the Central Park Master Plan EIR)*

The project proponent shall prepare and implement a site-specific Water Quality Management Plan(WQMP).

[66] See Appendix 8 for details.

This (WQMP) shall identify specific stormwater LID/BMPs for reducing potential pollutants in stormwater runoff. BMPs shall be designed in accordance with DAMP requirements and the recommendations of the Geotechnical Report prepared for the proposed project. The WQMP must be approved by the Public Works Department prior to the issuance of a grading permit.

The WQMP shall include the following BMPs along with selected BMPs to target pollutant removal rates:

- *Waste and materials storage and management BMPs (design and construction of outdoor materials storage areas and trash and waste storage areas, if any, to reduce pollutant introduction)*
- *Spill prevention and control BMPs*
- *Slope protection and stabilization BMPs*
- *Water efficient irrigation practices (Municipal Code 14.52 Water Efficient Landscape; water efficient guidelines and Conceptual Landscape Plan)*
- *Permanent erosion and sediment controls (e.g., hydroseeding, mulching, surface covers)*

The Project Proponent is encouraged to consider the following BMPs:

- *Minimize directly connected impervious area, including: pervious concrete (if applicable) or other pervious pavement for parking areas (e.g., turf block), pervious pavement for paths and sidewalks, and direction of rooftop runoff to pervious areas*
- *Incorporation of rain gardens or cisterns to reuse runoff for landscape irrigation*
- *Alternative building materials*
- *Site design and landscape planning*
- *Wet vaults for subsequent landscape irrigation*
- *Sand filters for parking lots and rooftop runoff*
- *Frequent street and parking lot sweeping*
- *Media filter devices for roof top drain spouts (including proprietary devices)*
- *Biofiltration devices (swales, filter strips, and others)*
- *Proprietary control measures (if supporting documentation is provided)*
- *Drain inlet filters*
- *Pet waste station*
- *The upstream drainage area must be completely stabilized*

In accordance with the DAMP, the MS4 Permit (adopted May 2009), the City's Municipal Code (Chapter 14.25), and the City's Local Implementation Plan (LIP), as well as mitigation measure MM4.7-1, the proposed project is required to develop and implement a project-specific WQMP that addresses appropriate stormwater quality best management practices (BMPs) and water quality management practices. Implementation of the existing regulations along with mitigation measure MM4.7-1 would reduce potential pollutant loads, assure that appropriate BMPs are used (e.g., constraints on infiltration-type BMPs), that regulatory requirements are met, and any post-construction violation of WDRs or water quality standards would be ***less than significant***. Furthermore, the potential for discharge of storm water pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment

maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas would be ***less than significant***.

Threshold	Would the project 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 that would result in substantial erosion or siltation on or off site? (Including additional NPDES criteria 1, 2, 5, and 6)

Impact 4.7-2 Implementation of the proposed project would alter the project site runoff characteristics that could result in more on-site and off-site erosion.

Construction Phase

As previously discussed, while the GPA itself would not result in any construction activities the proposed senior center building would include construction activities, such as excavation and trenching for foundations and utilities, soil compaction, cut and fill activities, and grading, all of which would temporarily disturb soils. Disturbed soils are susceptible to high rates of erosion from wind and rain, resulting in sediment transport from the site. Because the Project Developer is the City of Huntington Beach and the project site is owned by the Developer, the proposed project would not require a Grading Permit for construction activities (Municipal Code 17.05.050(d)). However, because the proposed project would disturb more than one-acre of surface area, it would still be subject to the Construction General NPDES Permit requirements, including preparation of a SWPPP (See Impact 4.7-1). The City of Huntington Beach LIP also requires that all construction projects, including the off-site road improvements, are required to implement stormwater BMPs that shall include, at a minimum, erosion and sediment controls. This LIP has incorporated the model construction program described in the DAMP and includes requirements, guidelines, and methods that must be used for pollution prevention to protect water quality from construction discharges. Therefore, construction of the proposed project would not result in substantial on-site or off-site erosion and impacts would be ***less than significant***.

Operation

As previously discussed, the GPA itself would not result in changes to land uses to impact runoff; however, the proposed project also includes construction of a multi-purpose senior center on currently undeveloped land. Operation of the proposed project would result in a significant change in land use and the potential for increased site runoff; both peak runoff rates and total storm flow volumes. Higher peak storm flow rates have a greater energy for scour and detachment of soil particles. This could contribute to more off-site erosion in the open space lands down gradient of the project site. However, the proposed project would include flow dissipation piping to reduce runoff rates and erosive forces as stormwater leaves the project site. This piping system would allow runoff from the proposed project to continue to sheet flow through the park lawn to Huntington Lake in a similar manner as existing conditions.

The proposed project would also be required to develop and implement a WQMP including post-construction structural and non-structural BMPs for erosion and sediment controls. Implementation of mitigation measure MM4.7-1 would also include slope stabilization to prevent increased on-site and off-site erosion following implementation of the proposed project. Furthermore, implementation of

mitigation measure MM4.7-2 would assure that the proposed grading and drainage system does not contribute to on-site or off-site erosion by making sure that the system design is adequate for mitigating potential erosive conditions.

MM4.7-2 *(This MM incorporates Measure Utilities-8 from the Central Park Master Plan EIR)*

The project proponent shall prepare a Project Hydrology and Hydraulic Report and Drainage Plan that incorporates stormwater conveyance facilities to provide adequate site drainage and minimize erosive forces.

This Hydrology and Hydraulic Report shall include analysis of stormwater runoff peak flow and total volume from the 2-year and 100-year storm events for both existing and developed conditions. Stormwater conveyance and detention features shall be designed and incorporated into the proposed project to reduce runoff forces to non-erosive rates for the 100-year storm events. To the maximum extent practicable, the Drainage Plan shall also reduce post-construction peak runoff rates and timing to existing conditions levels. Off-site road improvements shall be included in the Hydrology and Hydraulic Report and Drainage Plan.

The Hydrology and Hydraulic Report shall include a Drainage Plan identifying any additional stormwater quality LID/BMPs, their locations, and design characteristics, along with the flow dissipation piping, bioswales, and vegetated buffer areas already identified on the Conceptual Grading and Utility Plan (Figure 3-7 in Chapter 3 [Project Description]). Supporting documentation shall be included to show that incorporation of these features will result in post-construction runoff erosive forces that do not exceed existing conditions erosive forces.

The Public Works Department shall approve this Hydrology and Hydraulic Report and Site Drainage Plan prior to the issuance of a precise grading permit. It is recommended that the Site Drainage Plan be coordinated with the WQMP to maximize efficiency of stormwater runoff detention/retention and water quality treatment.

Implementation of mitigation measures MM4.7-1 and MM4.7-2 would reduce the potential storm flow rates to non-erosive conditions, reduce peak runoff rates to existing conditions levels to the maximum extent practicable, assure slope stabilization, and implementation of post-construction erosion and sediment control BMPs, thereby reducing potential impacts associated with on-site or off-site erosion to ***less than significant*** levels.

Threshold	Would the project 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 that would result in flooding on or off site? (Including additional NPDES criteria 1, 2, and 5)

Impact 4.7-3 **Implementation of the proposed project would alter the project site runoff characteristics that could result in more flooding off site.**

Construction Phase

The proposed GPA itself would not directly result in any construction activities; however the proposed senior center building would include construction activities, such as excavation and trenching for foundations and utilities, soil compaction, cut and fill activities, and grading, all of which would temporarily disturb soils and alter the local drainage patterns, and potentially result in an increase in the

amount or rate of surface runoff. Replacement of fill material and grading for development of the proposed project would not be expected to greatly impact runoff characteristics during construction. The project site is currently fairly flat (about 2 percent slope) and the existing soil/fill material already has a high runoff potential. As discussed above in Impact 4.7-2, during construction, grading and fill activities would not be expected to substantially alter existing site runoff characteristics in terms of rate or volume of on-site or off-site stormwater runoff with implementation of mitigation measure MM4.7-2. Therefore, potential impacts of construction activities on increased runoff and hence, flooding on-site or off-site would be ***less than significant***.

Operation

The proposed GPA itself would not result in changes to land uses that would impact drainage patterns; however, the proposed project also includes construction of a multi-purpose senior center on currently undeveloped land. Operation of the proposed project would result in a significant change in land use and the potential for increased site runoff for both peak runoff rates and total storm flow volumes. Higher peak storm flow rates and overall volume could result in off-site flooding in the areas down gradient from the project site.

There is some indication that the Shipley Nature Center pond, north of the project site, has increased in size and may encroach upon the adjacent paths at times. Runoff from the project site currently drains towards Huntington Lake; however, the local topography has not been recently surveyed and it is possible that runoff from the project site would drain to the same area to which the Shipley Nature Center may drain (likely the northwest corner of the undeveloped 14-acre area) during large storm events. Increased runoff from the project site could therefore create conditions that reduce stormwater conveyance from the Shipley Nature Center, further exacerbating any actual or perceived flooding issues in the Shipley Nature Center. Any reduction in stormwater conveyance from the Shipley Nature Center could contribute to greater flooding potential in this area and this would be a potentially significant impact. Additionally, re-grading and replacement of fill material could result in on-site flooding, if not properly designed and installed.

Implementation of mitigation measure MM4.7-2 would assure that on-site drainage is adequate to prevent on-site flooding and that peak stormwater runoff rates are reduced to the maximum extent practicable to prevent contributions to off-site flooding. The potential proposed project drainage towards the Shipley Nature Center is speculative; however, mitigation measure MM4.7-2 would reduce potential impacts of increased runoff and potential effects on the Shipley Nature Center would not be substantial. As required by mitigation measure MM4.7-2, the Drainage Plan will include measures to reduce post-construction peak runoff rates and timing to existing levels, as ensured by the City's Public Works Department. As a result, the proposed project would not contribute to future runoff rates on site or to off-site areas (including the Shipley Nature Center) above those that currently exist. Therefore, potential on-site or off-site flooding impacts would be ***less than significant*** with mitigation incorporated.

Threshold	Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? (Including additional NPDES criteria 1, 2, 4, and 6)

Impact 4.7-4 Implementation of the proposed project may contribute runoff that would exceed the capacity of existing stormwater drainage systems.

Drainage from the project site sheet flows to the west and southwest to the Huntington Lake; the project site drainage does not flow to a storm drain system and no new major facilities associated with the proposed project drainage are planned. The only planned off-site stormwater drainage system would be the flow dissipation piping in an area along the western boundary of the project site and off-site road improvement. Furthermore, the City has already upgraded the flood protection capacity of the Slater Channel (to which Huntington Lake discharges during large rainfall events) to meet the 100-year storm event.[67]

The proposed GPA itself would not create any runoff; however the proposed project also includes construction of a multi-purpose senior center that may increase project site peak runoff from the 100-year storm event by over 25 percent (4.7 cfs). However, this increased potential runoff is only 4.7 cfs within a 3.9-mile drainage area. Assuming conservative (highest proposed project impact potential) runoff properties for the entire Slater Channel drainage area, total maximum peak runoff for the 100-year storm event could be about 7,340 cfs.[68] This assumes that all stormwater peak flows from each contributing area in the entire Slater Channel drainage area enters the Slater Channel system at the same time. Because runoff takes time to enter the channel and peak flow from areas downstream would likely enter the channel before peak flows from upstream area pass through, the actual peak 100-year flow in Slater Channel would likely be much lower than this maximum estimate. Even if peak flow in the Slater Channel is one tenth of this estimated maximum peak flow (or 734 cfs) the increase in runoff from the proposed project site would only be about 0.6 percent of the total channel peak flow. Furthermore, implementation of mitigation measure MM4.7-2 would reduce runoff rates to existing conditions levels to the maximum extent practicable, thereby, reducing potential impacts on the storm drainage system capacity. Therefore, the existing system has adequate conveyance capacity for the 100-year storm event and this would be a ***less than significant*** impact.

Threshold	Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? (Including additional NPDES criteria 1, 2, 4, and 6)

Impact 4.7-5 Implementation of the proposed project may provide substantial additional sources of polluted runoff during both construction and post-construction phases.

Construction Phase

Please refer to the discussion for Impact 4.7-1. Existing regulatory requirements, including a preparation and implementation of a SWPPP would reduce the potential for additional sources of pollutants in

[67] City of Huntington Beach, *Citywide Urban Runoff Management Plan* (January 2005).
[68] See Appendix 8 for details.

stormwater runoff and potential impacts of the proposed project construction on stormwater runoff quality would be less than significant.

Operation

Please refer to the discussion for Impact 4.7-1. Existing site design characteristics include features that would minimize potential pollutants in stormwater runoff. Furthermore, existing regulations require preparation and implementation of a WQMP. Implementation of mitigation measure MM4.7-1 would assure that potential pollutant loads are not substantial compared to existing conditions and BMPs are appropriate and designed correctly according to local standards. Furthermore, implementation of mitigation measure MM4.7-2 would prevent substantial increases in project site runoff.

The amount, timing of application, and form of many landscape chemicals can affect subsequent transport in stormwater. Application of chemicals prior to a storm event or over-application of chemicals increases their susceptibility to mobilization in runoff water. Surface applications compared to soil incorporated applications will also increase potential for transport in runoff; and, dissolved forms of chemicals are more likely to be mobilized compared to solid forms that may be released over a longer time frame. These activities could also result in additional sources of pollutants in runoff water from the proposed project. Implementation of mitigation measure MM4.7-5, however, would maximize efficiency of landscape chemical applications and minimize the potential for chemicals in runoff water.

MM4.7-5 *The project proponent shall prepare and implement a Nutrient and Pesticide Management Program.*

A Nutrient and Pesticide Management Program (NPMP) shall be prepared and implemented to minimize the risk of pollutants associated with landscape establishment and maintenance practices in runoff waters. This NPMP shall include guidelines, application regulations, and applicator training, and shall encourage minimization of chemical use.

Existing regulatory requirements (e.g., preparation and implementation of a WQMP) and implementation mitigation measures MM4.7-1, MM4.7-2, and MM4.7-5 would reduce potential post-construction impacts to ***less than significant*** levels.

Threshold	Would the project otherwise substantially degrade water quality?

Impact 4.7-6 **Implementation of the proposed project may otherwise substantially degrade groundwater quality by allowing infiltration of polluted stormwater.**

Implementation of proposed project stormwater quality BMPs may result in a greater amount of polluted water infiltrating to the local groundwater table if the bioswale and vegetated buffer areas allow for substantial infiltration to treat stormwater runoff. The existing groundwater table is at some locations and times of year estimated to be within 10 feet of the surface. Extensive grading, fill replacement, and compaction would greatly alter existing fill material infiltration properties so the exact likelihood of

contamination risk is unknown. Thus, it is not recommended that infiltration BMPs be situated within engineered fill in order to prevent destabilization of fill material.[69]

For stormwater treatment and detention, a variety of options are available as noted in the CASQA, which is approved by the City. These include measures to minimize directly connected impervious area during site design and planning, use of biofiltration devices to treat runoff, collection of rooftop and parking lot drainage for landscape irrigation, structural detention and treatment devices that may include proprietary devices, and other BMPs. In areas where soil filtration or vegetative treatment processes BMPs can be used, these would provide for removal of pollutants in infiltrating stormwater prior to discharge to groundwater, provided they are correctly sited, designed, installed, and maintained. However, infiltration structures that are not correctly designed and sited could result in contaminated stormwater leaching into groundwater systems and destabilization of fill material. Mitigation measure MM4.7-2 would prevent implementation of stormwater quality BMPs that could contribute to degradation of groundwater resources. Therefore, implementation of these mitigation measures would reduce potential other water quality degradation impacts to ***less than significant*** levels.

4.7.4 Cumulative Impacts

The geographic context for surface water hydrology and water quality cumulative impact analysis is the Westminster Watershed and the limits of the Orange County Groundwater Basin with regard to groundwater impacts. The surface area above the Orange County Groundwater Basin is largely built-out.[70] However, there are still some open space and rural residential areas within the groundwater basin surface area. Major areas of vacant lands within Westminster Watershed include the Seal Beach Naval Area and coastal wetland areas. The Court of Appeals has determined that residential development is not permitted in these lowland wetlands and they are currently designated as Open Space Reserves.

The cumulative analysis includes those projects in the cumulative projects list (Table 3-4 in Chapter 3), as well as full buildout of the Westminster Watershed, which includes portions of the cities of Anaheim, Cypress, Fountain Valley, Garden Grove, Huntington Beach, Los Alamitos, Santa Ana, Seal Beach, Stanton, and Westminster. The Westminster Watershed covers 74.1 square miles in the southwestern corner of Orange County. Three main tributaries drain this watershed. The Los Alamitos Channel drains into the San Gabriel River while the Bolsa Chica Channel empties into Huntington Harbor and then to Anaheim Bay. The East Garden Grove-Wintersburg Channel drains past the Bolsa Chica Wetlands and then into Huntington Harbor. Land use within the Westminster Watershed is primarily single and multi-family residential, commercial, and industrial with some parkland (CURMP, 2005). This analysis also includes implementation of TMDLs for 2010 303(d) listed water quality limited segments (Huntington Harbor and Anaheim Bays) and effects of global climate change.

Continued development and redevelopment within the Westminster Watershed area would be subject to the Municipal NPDES Permit, Construction General Permit, and DAMP regulatory requirements, along

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[69] Ninyo & Moore, *Geotechnical Evaluation, Huntington Beach Senior Center, Goldenwest Street, City of Huntington Beach, California* (June 1, 2007).

[70] County of Orange, *Orange County General Plan Land Use Element Amendment* (September 13, 2005), http://www.ocplanning.net/Documents/pdf/GeneralPlan2005/Chapter_III_Land_Use_Element_Amendment_2005_Official.pdf.

with any specific municipal codes. The DAMP requires local agency/municipality construction site inspection, Local Implementation Plans, and Water Quality Monitoring Programs. Furthermore, all construction activities that disturb more than 1 acre of land surface would be required to prepare and implement a construction SWPPP, which would minimize potential pollutant transport during construction and potential violation of water quality standards. Incorporation of WDR requirements in the *City of Huntington Beach Municipal Code*, Construction site inspection required by the DAMP, SWPPP water quality monitoring, De Minimus Threat General Permit monitoring requirements, and Reports of Waste Discharge to the RWQCB would assure that the Construction General Permit (2009-0009) and the Municipal NPDES Permit (CA000002) conditions are not violated.

Each co-permittee must develop a WQMP that must be approved by Orange County as protective of water quality. Furthermore, all priority projects in the area would be required by the DAMP to develop a Project WQMP. Other, non-priority projects would also be required to implement BMPs. These conditions would assure that potential pollutants in stormwater are minimized and that violation of the Municipal NPDES Permit or water quality standards would not be considerable.

Therefore, potential violation of water quality standards or waste discharge requirements would not be cumulatively considerable with implementation of existing requirements and future TMDLs. Furthermore, the proposed project impacts on water quality standards and waste discharge requirements are less than significant; mitigation would be implemented to reduce potential stormwater pollutant loads to existing conditions levels, which would not exceed the acute CTR criteria.[71] Therefore, the proposed project would not contribute considerably to cumulative impacts and cumulative impacts would be less than significant.

Development of the proposed project in the Westminster Watershed could alter the watershed drainage patterns that could contribute to increases in erosion and siltation. However, most of the area is already built out and existing regulations would be applicable to any new or re-development, which would minimize potential impacts. Therefore, cumulative effects on erosion and siltation would not be considerable. Incorporation of proposed project mitigation measure MM4.7-1 would assure that the potential proposed project contributions to cumulative erosion and siltation are less than significant and cumulative impacts would therefore be less than significant.

Continued development of the Westminster Watershed could alter the watershed drainage patterns that could increase stormwater runoff. Many stormwater conveyance facilities within areas of Huntington Beach are currently inadequate for conveying stormflows. Planned storm drain system improvements would be subject to existing regulatory requirements, including the Construction General Permit, Municipal NPDES Permit, and DAMP, which would minimize impacts of new or planned stormwater drainage systems within the watershed. Furthermore, most of the area is already built out and existing regulations would be applicable to any new or re-development, which would minimize potential impacts. Therefore, cumulative effects on stormwater runoff would not be considerable. Incorporation of proposed project mitigation measure MM4.7-2 would assure that the potential proposed project

[71] Acute criteria are applicable for stormwater assessment because storm events are transient in nature. Chronic criteria would be applicable for assessment of dry-weather runoff/discharges.

contributions to cumulative stormwater flows are less than significant and cumulative impacts would therefore be less than significant.

Stormwater conveyance facilities within areas of Huntington Beach are currently inadequate for conveying stormflows. Several areas within the Westminster Watershed currently flood during storm events. The CURMP includes plans for mitigation of the existing conveyance system to adequately convey the 100-year flood event. However, even though the Westminster Watershed will be fully developed in the future, this will not significantly affect existing discharges because it was already 85 percent built out in 1990.[72] Local agencies and the Army Corps of Engineers have or are remediating existing flooding conditions through channel and stormwater infrastructure improvements.

Global climate change could, however, alter the existing drainage conditions to exacerbate the existing and potentially future flood conditions in the watershed. Global climate change could affect regional surface water hydrology and sea level rise, both of which could contribute to increased flooding. Warming in western mountains is projected to cause decreased snowpack, more winter flooding, and reduced summer flows.[73] Because of uncertainties in the climate sensitivity, it is not clear how rapidly sea levels will rise, even under the highest emission scenarios.[74] Therefore, cumulative impacts of flooding could be potentially significant and unavoidable. Incorporation of proposed project mitigation measure MM4.7-2 would assure that the potential proposed project contributions to cumulative stormwater flows are not considerable and cumulative impacts would therefore be less than significant.

Continued operation and development within the Westminster Watershed could continue to contribute landscaping chemicals to both wet- and dry-weather runoff; however, these have not been identified as contributing to water quality degradation in receiving waters. Furthermore, the monitoring requirements of the existing DAMP and LIPs would assure that potential landscaping chemicals in surface runoff do not cause or contribute to degradation of receiving water quality. Implementation of mitigation measures MM4.7-5 would assure that the proposed project does not cause or contribute considerably to cumulative effects and there would be no impact.

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[72] Orange County Watershed and Coastal Resources Division, *Westminster Reconnaissance Study Section 905(b) (WRDA 86) Analysis*, http://www.ocwatersheds.com/documents/WestminsterReconnaissanceStudy1123.pdf (accessed June 13, 2007).

[73] Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*, Contribution of Working Groups I, II, and III to the Fourth Assessment Report of the IPCC, R.K. Pachauri and A. Reisinger (eds.) (2007), http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_ assessment_report_synthesis_report.htm. Stephen H. Schneider, Melvin Lane, and Joan Lane, The Unique Risks to California from Human-Induced Climate Change, From a presentation by Professor for Interdisciplinary Environmental Studies; Professor, Department of Biological Sciences; Senior Fellow, Woods Institute for the Environment Stanford University (May 22, 2007), http://www.climatechange.ca.gov/publications/others/2007-05-22_schneider.pdf.

[74] California Climate Change Center, *Projecting Future Sea Level*, A Report from the California Climate Change Center, CEC-500-2005-202-SF. Prepared by D. Cayan, P. Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick, Table 3 (Projected global sea level rise (SLR) (cm) for the SRES A1fi, A2, and B1 greenhouse gas emission scenarios. SLR for A2 and B1 scenarios is estimated by combining output recent global climate change model simulations with MAGICC projections for the ice melt component. SLR estimates for A1fi estimated from MAGICC based on A2 temperature changes scaled according to those in A1fi) (March 2006), p. 19.

The Westminster watershed lies on a flat coastal plain, and is almost entirely urbanized with residential and commercial development. Further development within the watershed would not contribute to cumulative effects associated with mudflows. Therefore, there would be no impact.

4.7.5 References

California Climate Change Center. *Projecting Future Sea Level.* A Report from the California Climate Change Center. CEC-500-2005-202-SF. Prepared by D. Cayan, P. Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick. Table 3 (Projected global sea level rise (SLR) (cm) for the SRES A1fi, A2, and B1 greenhouse gas emission scenarios. SLR for A2 and B1 scenarios is estimated by combining output recent global climate change model simulations with MAGICC projections for the ice melt component. SLR estimates for A1fi estimated from MAGICC based on A2 temperature changes scaled according to those in A1fi), March 2006, p. 19.

California Regional Water Quality Control Board, Santa Ana Region. Resolution No. R8-2003-039: Resolution Amending the Water Quality Control Plan for the Santa Ana River Basin to Incorporate a Diazinon and Chlorpyrifos Total Maximum Daily Load for San Diego Creek and Upper Newport Bay. Attachment to Resolution No. R8-2003-039: Amendment to the Santa Ana Region basin Plan, April 4, 2003. http://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2003/03_039.pdf.

California State Water Resources Control Board. *2010 Integrated Report: Clean Water Act Section 303(d) List/305(b)*, April 10, 2010. http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml (accessed September 8, 2011).

Center for Watershed Protection. *The Simple Method to Calculate Urban Stormwater Loads*, 2004. http://www.stormwater.net (accessed August 4, 2006).

Federal Emergency Management Agency. Flood Insurance Rate Map for Orange County California and Unincorporated Areas, Panel 234 of 550, Panel 0234H, Map Number 06059C0234H, revised February 18, 2004.

Huntington Beach, City of. *Citywide Urban Runoff Management Plan*, January 2005.

———. *Draft Master Environmental Impact Report for Master Plan of Recreation Uses for Central Park*, February 26, 1999.

———. *Huntington Beach General Plan*. Environmental Hazards Element, 1996. http://www.huntingtonbeachca.gov/Government/Departments/Planning/gp/index.cfm.

———. *Huntington Beach Master Plan of Drainage*, January 2005.

———. *Huntington Beach Urban Water Management Plan*, June 2011.

———. *Report of Waste Discharge*. Section 11.0 (Water Quality Monitoring Summary and Analysis). Figure 11.5 (Baseline Levels [Adjusted for TSS] of Total Metals at Long-Term Mass Loading Stations) and Figure 11.6 (Baseline Levels [Adjusted for TSS] of Total Nutrients at Long-Term Mass Loading Stations), July 2006.

———. *Report of Waste Discharge*. Section 11.0 (Water Quality Monitoring Summary and Analysis). Table 11.2 (Summary of Exceedances of Acute CTR Criteria Across the Region), July 2006.

———. *Report of Waste Discharge*. Section 11.0 (Water Quality Monitoring Summary and Analysis). Table 11.3 (Summary of Exceedances of CTR Chronic Criteria in Harbors and Bays), July 2006.

———. Written communication with Public Works Department, 2007.

Intergovernmental Panel on Climate Change. *Climate Change 2007: Synthesis Report*. Contribution of Working Groups I, II, and III to the Fourth Assessment Report of the IPCC. R.K. Pachauri and A. Reisinger (eds.), 2007. http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm.

Jurries, D. *Biofilters (Bioswales, Vegetative Buffers, and Constructed Wetlands) for Storm Water Discharge Pollution Removal*. State of Oregon Department of Environmental Quality. DEQ Northwest Region Document, January 2003.

Los Angeles County Department of Public Works. 1994–2000 Stormwater Quality Data Tables. Table 4-9 (Cumulative Event Mean Concentrations), 2001. http://www.ladpw.org/wmd/NPDES/9400_wq_tbl/Table_4-9.pdf.

National Tsunami Hazard Mitigation Program. *Designing for Tsunamis–Seven Principles for planning and Designing for Tsunami Hazards*, 2001.

Ninyo & Moore. *Geotechnical Evaluation, Huntington Beach Senior Center, Goldenwest Street, City of Huntington Beach, California*, June 1, 2007.

———. *Preliminary Geotechnical Evaluation, Huntington Beach Senior Center, Goldenwest Street, City of Huntington Beach, California*, July 31, 2007.

Noble, Xu, Rosenfeld, Largier, Hamilton, Jones, and Robertson. *Huntington Beach Shoreline Contamination Investigation*. Phase III: U.S. Geological Survey Open-file Report 03-62, version 1.0, 2003. http://pubs.usgs.gov/of/2003/of03-62/findings.html.

Orange, County of. *Management Guidelines for the use of Fertilizers and Pesticides*, September 1993.

———. *Orange County General Plan*. Chapter III Land Use Element Map, 2005. http://www.ocplanning.net/Documents/pdf/Land_Use_Element_Map_2005.pdf (accessed June 11, 2007).

———. *Orange County General Plan*. Chapter IX: Safety Element, March 2011. http://www.ocplanning.net/Documents/pdf/GeneralPlan2005/Chapter_IX_--_Safety__March_15_2011.pdf.

———. *Orange County General Plan*. Chapter VI: Resources Element, 2005. http://www.ocplanning.net/Documents/pdf/GeneralPlan2005/Chapter_VI_Resources.pdf.

Orange, County of. *Orange County General Plan Land Use Element Amendment*, September 13, 2005. http://www.ocplanning.net/Documents/pdf/GeneralPlan2005/Chapter_III_Land_Use_Element_Amendment_2005_Official.pdf.

Orange County Stormwater Program. *Orange County Stormwater Program 2003 Drainage Area Management Plan*, September 2003. http://www.ocwatersheds.com/StormWater/documents_damp_toc.asp.

Orange County Water District. *Groundwater Management Plan*, March 2004.

Orange County Watershed and Coastal Resources Division. *Westminster Reconnaissance Study Section 905(b) (WRDA 86) Analysis*. http://www.ocwatersheds.com/documents/WestminsterReconnaissanceStudy1123.pdf (accessed June 13, 2007).

Santa Ana Regional Water Quality Control Board. *Amendments to the Santa Ana Region (#8) Water Quality Control Plan*, 2002.

———. Approved Supplemental Environmental Projects for the Santa Ana Regional Water Quality Control Board, revised March 12, 2007. http://www.waterboards.ca.gov/santaana/water_issues/programs/sep/docs/seplist.pdf.

———. *Water Quality Control Plan Santa Ana Region 8*, 1995.

Schneider, Stephen H., Melvin Lane, and Joan Lane. The Unique Risks to California from Human-Induced Climate Change. From a presentation by Professor for Interdisciplinary Environmental Studies; Professor, Department of Biological Sciences; Senior Fellow, Woods Institute for the Environment Stanford University, May 22, 2007. http://www.climatechange.ca.gov/publications/others/2007-05-22_schneider.pdf.

U.S. DOT Federal Highway Administration. Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring. Fact Sheet—Filter Strips. http://www.fhwa.dot.gov/environment/ultraurb/3fs11.htm (accessed July 30, 2007).

U.S. Environmental Protection Agency. *Establishment of Numeric Criteria for Priority Pollutants for the State of California*. California Toxics Rule. EPA-823-F-97-008, 1997.

———. *Storm Water Technology Fact Sheet: Wet Detention Ponds*. EPA 832-F99-048, September 1999. http://www.epa.gov/owmitnet/mtb/wetdtnpn.pdf.

———. *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California*. California Toxics Rule. EPA-823-00-008, April 2000.

Western Regional Climate Center. Historical Climate Data. Long Beach WSCMO, California, NCDC 1971–2000 Normals. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5085 (accessed May 12, 2007).

———. Historical Climate Data. Newport Beach Harbor, California, NCDC 1971-2000 Normals. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6175 (accessed May 12, 2007).