

## 4.7 HYDROLOGY/WATER QUALITY

This section evaluates the potential for significant impacts on hydrology and water quality due to the proposed project. Consistent with the discussion in Section 4.0 (Introduction to the Analysis), based on a preliminary environmental analysis of the proposed project prepared prior to commencement of this EIR and analysis completed for the BECSP Program EIR, substantial additional analysis of hydrology and water quality impacts is not required. Rather, this section includes a discussion of the current environmental setting, the proposed project and its relationship to the BECSP, where applicable; a discussion of consistency with the environmental analysis prepared for the BECSP, where applicable; any new information or analysis pertinent to the current analysis and identification of impacts; identification of mitigation measures required to address potential impacts of the proposed project; and significance conclusions regarding the proposed project after mitigation incorporation. Mitigation measures included applicable measures from the BECSP EIR as well as any new or additional mitigation measures required to reduce potential impacts. All impacts are considered to be less severe than less than significant with incorporation of mitigation.

Data used to prepare this section were obtained from the Preliminary Hydrology Study and Preliminary Water Quality Management Plan (WQMP) prepared by KHR Associates in August and September 2011 for the project site, the BECSP EIR and City of Huntington Beach General Plan. Full bibliographic entries for all reference materials are provided in Section 4.7.5 (References) at the end of this section.

### 4.7.1 Environmental Setting

#### **Watershed**

The project site is located within the approximately 80.35-square-mile Anaheim Bay—Huntington Harbor watershed, which includes portions of Anaheim, Cypress, Fountain Valley, Garden Grove, Huntington Beach, Los Alamitos, Santa Ana, Seal Beach, Stanton, and Westminster.<sup>35</sup>

#### **Soil and Groundwater Conditions**

According to the Preliminary Hydrology Study prepared for the project site, subsurface conditions at the site consist of a thin layer of artificial fill underlain by a thick deposit of alluvium with the soils consisting of sand, silty sand, and silty clay. The depth to groundwater at the site ranges from between 30 to 60 feet below the existing grade. Historic groundwater data indicates ground water depths in excess of 30 feet.<sup>36</sup>

#### **Drainage and Downstream Conditions**

According to the Preliminary Hydrology Study prepared for the project site, the project site is relatively flat and is currently 95 percent impervious,<sup>37</sup> with the remaining 5 percent consisting of landscaped areas. The entire project site is developed with a clear means of drainage. No substructure drainage facilities are present on the project site. The majority of the site drains via sheet flow over asphalt pavement towards

<sup>35</sup> KHR Associates, *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California* (August 22, 2011).

<sup>36</sup> KHR Associates, *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California* (August 22, 2011).

<sup>37</sup> KHR Associates, *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California* (August 22, 2011).

eight outlet points and into Beach Boulevard or Ellis Avenue. A portion of the site drains to a ribbon gutter that flows southerly, adjacent to the eastern property line and then westerly along the southern property line until discharging to a driveway into Beach Boulevard. Beach Boulevard and Ellis Avenue are developed streets with concrete curbs and gutter that help facilitate drainage towards catch basins located 70 feet south of and at the intersection of Beach Boulevard and Ellis Avenue. Stormwater is then routed through the Ellis Storm Drain which drains into Sully-Miller Lake, within Huntington Central Park. Sully-Miller Lake is about 0.75 mile away from the project site and typically retains water year round. The lake has no discharge except for groundwater recharge.

The proposed project site was identified in the BECSP EIR as being located in an area with existing storm drains that require upgrading, including the storm drain line located within the project site and several downstream storm drains lines (BECSP EIR Figure 4.7-1b [Existing Project Site Drainage Characteristics and Capacity Constraints (Central)]).

The Federal Emergency Management Agency (FEMA) flood control map identifies the project site as not being located with a Special Flood Hazard Area (SFHA), and it is not subject to 100-year flood hazards.<sup>38</sup> However, the project site is located within the inundation zone for failure of the Prado Dam.

### **Regional Hydrology and Drainage**

The City of Huntington Beach 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 and surface flows are dominated by the flood control dam at El Prado. The Santa Ana River 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, but is used to recharge groundwater instead.

Drainage from within the City is conveyed through streets and gutters to City storm drain systems consisting of underground pipes, pump stations, and open channels. The City owns and operates fifteen storm drainage channel pump stations that are generally located near principal Orange County drainage channels. Runoff is collected through the City's drainage facilities at each pump station, 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 65 percent of the 25-year flood events, were typically constructed at ground level (or at-grade); however, the at-grade channels accelerate flooding potential because the amount of water that may be pumped into an at-grade channel is less than what can be pumped into a below-grade channel.

The Drainage Element of the Citywide Urban Runoff Management Plan incorporates a city-based Master Plan of Drainage (MPD), which is a comprehensive drainage study that 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

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<sup>38</sup> Federal Emergency Management Agency, Digital Flood Insurance Rate Map (DFIRM) (2004).

recommends system improvements to initiate corrections as funding becomes available. The City then initiates individual drainage projects within its budgetary, political, and discretionary constraints. Hydrologic and hydraulic modeling has determined that several areas within the City's drainage system are undersized for the current storm flows and conveyance standards and are subject to potential flooding.

## 4.7.2 Regulatory Framework

Refer to Section 4.7.2 (Regulatory Framework) of the BECSP Program EIR, for applicable federal, state, and local regulations that would apply to the proposed project. No new regulations have been implemented since certification of the Program EIR.

The BECSP Development Code, which includes development standards, development regulations, and guidelines, governs all development actions with the BECSP area, including the proposed project site. The proposed project would be subject to development standards specific to the proposed project site's BECSP designation as Town Center Neighborhood, included as BECSP Section 2.1.4 (Town Center Neighborhood).

### ■ General Plan and BECSP Consistency Analysis

Mitigation measures BECSP MM4.7-3 and BECSP MM4.7-4 would require implementation of an adequate stormwater conveyance system for development in accordance with the BECSP, consistent with General Plan Objective U3.1. Compliance with existing regulations for the prevention of pollutants in stormwater runoff during construction and operation of the proposed project including National Pollution Discharge Elimination System (NPDES) General Permit for Construction Activities and associated Stormwater Pollution Prevention Plan (SWPPP); Municipal NPDES Permit and associated WQMP, Drainage Area Management Plan (DAMP), Local Implementation Plan (LIP); and, Municipal Code Chapter 17.05 Grading and Excavation Code would reduce the potential for erosion within the project site, consistent with General Plan Objective U3.3.

Additionally, the City of Huntington Beach currently operates an Emergency Preparedness Program to prepare for and respond effectively to major emergencies. It establishes and maintains an Emergency Management System that coordinates preparedness, response, and recovery phases for natural disasters and homeland security emergencies. The City's comprehensive Emergency Management Program includes all elements necessary to respond quickly and effectively to major emergencies, including risks from dam failure inundation. Therefore, implementation of the proposed project would not conflict with applicable General Plan policies.

## 4.7.3 Project Impacts and Mitigation

This section provides a discussion of impacts related to hydrology and water quality based on the Appendix G of the 2011 CEQA Guidelines thresholds of significance and the Municipal NPDES Permit requirements that must be considered during CEQA review, as follows:

- 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 that 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
- 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 inundation by seiche, tsunami, or mudflow
- Potentially impact stormwater runoff from construction activities
- Potentially impact stormwater runoff from post-construction activities
- Result in a potential for discharge of stormwater 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
- Result in the potential for discharge of stormwater to affect the beneficial uses of the receiving waters
- Create or contribute significant increases in the flow velocity or volume of stormwater runoff to cause environmental harm
- Create or contribute significant increases in erosion of the project site or surrounding areas

## ■ Stormwater Drainage, Runoff, and Water Quality

### **Operation**

In accordance with the DAMP, the MS4 Permit (adopted May 2009), the City's Municipal Code (Chapter 14.25), and City's LIP, and as required by mitigation measure BECSP MM4.7-1, a Preliminary WQMP was prepared for the site for the purpose of effectively mitigating impacts on downstream water quality and quantity through site design, source control, and treatment control BMPs in conjunction with operation and maintenance procedures. The WQMP was written to comply with the State Water Resources Control Board (SWRCB) Municipal NPDES Storm Water Permit, SARQCB's Order No. R8-2009-0030 as amended by Order No. R8-2010-0062, County of Orange Drainage Area Management Plan, and the City of Huntington Beach's Storm Water and Urban Runoff Management Ordinance. Furthermore, pursuant to the BECSP, the proposed project is defined as a priority project and would be

required to include both source control and treatment control BMPs, as well as Site Design BMPs, where applicable and feasible. Review and acceptance of the WQMP prior to issuance of a Precise Grading or Building permit for the proposed project would insure that operation of project would not violate any water quality standards or waste discharge requirements, or otherwise degrade water quality.

The proposed project site is relatively flat with no distinct changes in elevation. The site is currently 95 percent impervious, with the remaining 5 percent consisting of landscaped areas.<sup>39</sup> The entire project site is developed with a clear means of drainage. No substructure drainage facilities are present on the project site. The majority of the site drains via sheet flow over asphalt pavement towards eight outlet points and into Beach Boulevard or Ellis Avenue. A portion of the site drains to a ribbon gutter that flows southerly, adjacent to the eastern property line and then westerly along the southern property line until discharging to a driveway into Beach Boulevard. Beach Boulevard and Ellis Avenue are developed streets with concrete curbs and gutter that help facilitate drainage towards catch basins located 70 feet south of and at the intersection of Beach Boulevard and Ellis Avenue. Stormwater is then routed through the Ellis Storm which drains in Sully-Miller Lake, within Huntington Central Park. Sully-Miller Lake is about 0.75 mile away from the project site and typically retains water year round. The lake has no discharge except for groundwater recharge.<sup>40</sup> According to the WQMP prepared for the project site, with implementation of the proposed project, on-site stormwater will be collected within area drainages and discharged to flow-through planters in landscaped areas where pollutants of concern will be treated. Flow-through planters and the overflows will drain to an underground storage tank, and a pump will discharge the storage tank to curb face within Beach Boulevard at a rate equal to or less than the existing 25-year flow. This will eventually sheet flow to the catch basin just south of the intersection of Beach Boulevard and Ellis Avenue, flowing easterly to Sully Miller Lake.<sup>41</sup>

According to the BECSP EIR, the storm drain system serving the proposed project site is currently constrained for build out of the City's General Plan and may be constrained for existing conditions. As such, the BECSP EIR concluded that future development in the vicinity of the project site would have potentially significant impacts on both existing and planned storm drain systems. To address this, implementation of modified mitigation measures BECSP MM4.7-3 and BECSP MM4.7-4 is required to assess the contribution of a project to potential system capacity constraints and provide for construction of necessary upgrades such that potential impacts to storm drain system capacities would not be substantial. As required by modified BECSP MM4.7-3, a site specific Hydrology Study was prepared to identify the potential effects of stormwater runoff from the site on the existing storm drain system and provides for site drainage design so as to not increase peak storm event flows over existing conditions for the design storm events. Additionally, BECSP MM4.7-4 requires that adequate capacity in the storm drain system is demonstrated to accommodate discharge from the proposed project. According to the Preliminary Hydrology Study, implementation will maintain a similar amount of impervious area as compared to existing site condition but would yield an increased runoff compared to the existing condition of a 25-year storm event. However, incorporation of on-site attenuation and detention system into project design, as described above and as recommended in the Hydrology Study, would mitigate the increased runoff and subsequently the proposed site runoff will conform to the current capacity of the

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<sup>39</sup> KHR Associates, *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California* (August 22, 2011).

<sup>40</sup> KHR Associates, *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California* (August 22, 2011).

<sup>41</sup> KHR Associates, *Water Quality Management Plan, Beach and Ellis Mixed Use* (September 2, 2011).

existing downstream storm drain system. Implementation of treatment control water qualities BMPs will pre-treat/treat urbanized runoff from the project site and minimize the project's pollution impact to levels acceptable to the state and local jurisdictions.<sup>42</sup>

The project site is not designated on the FEMA Flood Insurance Rate Map as a SFHA, and is not subject to 100-year flood hazards.<sup>43</sup> However, as required by mitigation measure BECSP MM4.7-4, a site-specific hydrology and hydraulic analysis was prepared in order to identify the effects of potential stormwater runoff from the project site on the existing drain flows for the 10-, 25-, and 100-year design storm events. As previously described, the Preliminary Hydrology Study concluded that implementation would yield an increased runoff compared to the existing condition of a 25-year storm event on the site, but incorporation of on-site attenuation and detention facilities in project design would mitigate the increased runoff. The site-specific WQMP identifies the incorporation of an underground storage tank into project design that would pump discharge to curb face within Beach Boulevard at a rate equal to or less than the existing 25-year flow, ensuring that the proposed site runoff will conform to the current capacity of the existing downstream storm drain system.

Based on the findings of this analysis, with implementation of mitigation measures BECSP MM4.7-1, which requires the submittal and approval of a site-specific WQMP prior to issuance of a Precise Grading or Building Permit, project site drainage will be designed so as not to violate any water quality standards or waste discharge requirements, or otherwise degrade water quality. Implementation of modified mitigation measures BECSP MM4.7-3 and BECSP MM4.7-4 would ensure that the proposed project would not increase peak storm event flows over existing conditions and storm drain capacity is not exceeded as a result of the proposed project. As such, the proposed project would result in ***less than significant*** impacts relating to water quality, drainage, and runoff.

### **Construction**

The proposed project would be subject to all existing regulations associated with the protection of water quality. The applicable waste discharge requirements (WDRs), the NPDES General Permit for construction activities, De Minimus Threat General Permit, and Municipal NPDES Permit are considered protective of water quality during construction and would, therefore, prevent a substantial violation of water quality standards and minimize the potential for contributing additional sources of polluted runoff during construction of the proposed project. These existing regulations, programs, and policies would ensure that the potential for discharge of polluted stormwater from construction sites to affect beneficial uses of receiving waters and water quality standards, where applicable, would not be substantial. Implementation of existing regulatory requirements would ensure that on-site erosion and siltation are minimized and that construction of the proposed project would not result in the exceedance of water quality standards during construction and a ***less than significant*** impact would occur.

Compliance with the existing regulatory requirements described above, as well as implementation of mitigation measure BECSP MM4.7-1, would ensure that construction and operation of the proposed project would not result in the violation of water quality standards and minimize the potential for contributing additional sources of polluted runoff. This impact would be ***less than significant***.

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<sup>42</sup> KHR Associates, *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California* (August 22, 2011).

<sup>43</sup> Federal Emergency Management Agency, Digital Flood Insurance Rate Map (DFIRM) (2004).

## ■ Deplete Groundwater Supplies or Interfere with Groundwater Recharge

According to the Preliminary WQMP prepared for the project site, the depth to groundwater at the site ranges from between 30 to 60 feet below the existing grade.<sup>44</sup> Although the proposed project does not include subterranean levels, the foundation of the proposed building would reach below grade levels. In the event that permanent dewatering activities are necessary on the project site, the proposed project would require coverage under the De Minimus Threat General Permit or an individual WDR/ NPDES Permit, and consequently would be subject to discharge quantity limitations, groundwater dewatering, and surface drainage. Additionally, the proposed project would be subject to mitigation measure BECSP MM4.7-2, which requires the preparation of a Groundwater Hydrology Study to determine if dewatering activities would interfere with nearby water supplies. This study shall also include recommendations on whether permanent groundwater dewatering is feasible. Implementation of mitigation measure BECSP MM4.7-2 and compliance with existing regulatory requirements would ensure that permanent groundwater dewatering does not cause or contribute to a lowering of the local groundwater table that would affect nearby water supply wells, such that impacts would be *less than significant*.

Although the project site is not a designated groundwater recharge area, as described under the Drainage and Downstream Conditions heading, runoff from the project site ultimately drains into Sully-Miller Lake, which has no discharge except for groundwater recharge. Therefore, the runoff from the project site would continue to contribute to groundwater recharge and would not affect City groundwater wells, resulting in a *less than significant* impact.

## ■ Alter Existing Drainage Patterns

Implementation of the proposed project would not alter the existing drainage pattern of streams or rivers and would not result in off-site erosion hazards. The project site is located within an entirely urbanized area and would discharge to the City streets, underground storm drain systems, and ultimately to Huntington Harbor. The project site is currently approximately 95 percent impervious. With implementation of the proposed project, the amount of impervious surface area will remain similar to existing conditions, but would yield increased runoff compared to the existing condition of a 25-year storm event. However, incorporation of on-site attenuation and detention system into project design, as recommended in the Hydrology Study and described in the WQMP prepared for the project site, would mitigate the increased runoff and subsequently the proposed site runoff will conform to the current capacity of the existing downstream storm drain system and would not result in flooding or erosion. To ensure that runoff from the site derived from the site does not result in flooding or erosion, mitigation measure BECSP MM4.7-4 would be implemented, which requires adequate storm drain capacity to be demonstrated and if capacity is not sufficient, corrective action would be taken, so as to avoid off-site flooding or erosion. Accordingly, this impact is considered *less than significant*.

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<sup>44</sup> KHR Associates, *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California* (August 22, 2011).

## ■ Flood Hazard Areas and Flooding

The proposed project site is not located within a 100-year flood hazard area. As such, *no impact* associated with risks to people or structures from placement of housing or structures within a flood hazard area would occur.

The City of Huntington Beach is located in the lower basin of the Santa Ana River Basin. The lower basin is protected from flooding by Prado Dam, which is located 27 miles northeast of the City in Riverside County. The northern portion of the Corridor is located within the inundation area of the Prado Dam. Recently completed channel modifications along the Santa Ana River from Prado Dam to the Pacific Ocean would provide protection from inundation in the event of dam failure. Therefore, the possibility of significant risk of loss, injury, or death from flooding would be negligible and impacts would be *less than significant*.

## ■ 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. The proposed project site is not located in an identified tsunami run-up area.

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. Due to the lack of the presence of enclosed bodies of water in the vicinity of the subject site, seiches are not considered to be a seismic hazard to the project site.

Mudflow hazards typically occur where unstable hillslopes are located above gradient, where site soils are unstable and subject to liquefaction, and when substantial rainfall saturates soils causing failure. The proposed project has no potential for slope instability. The surrounding area is relatively flat with no pronounced slopes, and there are no known landslides near the project site nor is the project site in the path of any known or potential landslides. Therefore, the proposed project would result in a less than significant impact due to seiche, tsunami, or mudflow.

As potentially significant impacts related to hydrology and water quality would be mitigated through implementation of mitigation measures BECSP MM4.7-1 through BECSP MM4.7-4 and all impacts were determined to be less than significant in this or the BECSP EIR analysis, impacts of the proposed project to hydrology and water quality would be *less than significant*.

### **Applicable Mitigation of the BECSP EIR**

*BECSPMM4.7-1 City of Huntington Beach shall require Applicants for new development and significant redevelopment projects within the Specific Plan area, including the proposed project, to prepare a project Water Quality Management Plan (WQMP) in accordance with the DAMP requirements and measures described below and with all current adopted permits. The WQMP shall be prepared by a Licensed Civil Engineer and submitted for review and acceptance prior to issuance of a Precise Grading or Building permit.*

BMPs in the WQMP shall be designed in accordance with the Municipal NPDES Permit, Model WQMP, Technical Guidance Documents, DAMP, and City of Huntington Beach LIP. As noted in the Specific Plan, all development projects shall include site design and source control BMPs in the project WQMP. Additionally, new development or significant redevelopment projects and priority projects shall include LID principles to reduce runoff to a level consistent with the maximum extent practicable and treatment control BMPs in the WQMP.

If permanent dewatering is required and allowed by the City, the developer shall submit an application to RWQCB and follow the procedures as stated in Order No R8-2009-0003. The Applicant shall include a description of the dewatering technique, discharge location, discharge quantities, chemical characteristics of discharged water, operations and maintenance plan, and WDID number for proof of coverage under the De Minimus Threat General Permit or copy of the individual WDR in the WQMP. Additionally, the WQMP shall incorporate any additional BMPs as required by the City Public Works Department.

The WQMP shall include the following additional requirements:

Project and Site Characterization Requirements

- Entitlement Application numbers and site address shall be included on the title sheet of the WQMP
- In the project description section, explain whether proposed use includes on-site food preparation, eating areas (if not please state), outdoor activities to be expected, vehicle maintenance, service, washing cleaning (if prohibited on-site, please state)
- All potential pollutants of concern for the proposed project land use type as per Table 7.II-1 of the Orange County Model Water Quality Management Plan shall be identified
- A narrative describing how all potential pollutants of concern will be addressed through the implementation of BMPs and describing how site design BMP concepts will be considered and incorporated into the project design shall be included
- Existing soil types and estimated percentages of perviousness for existing and proposed conditions shall be identified
- In Section I of the WQMP, state verbatim the Development Requirements from the Planning Department's letter to the Applicant
- A site plan showing the location of the selected treatment control BMPs and drainage areas shall be included in the WQMP
- A Geotechnical Report shall be submitted to address site conditions for determination of infiltration limitations and other pertinent characteristics.

Project-Based Treatment Control BMPs

- Infiltration-type BMPs shall not be used unless the Geotechnical Report states otherwise. Depth to seasonal high groundwater is determined to provide at least a 10-foot clearance between the bottom of the BMP and top of the water table.
- Wet swales and grassed channels shall not be used because of the slow infiltration rates of project site soils, the potentially shallow depth to groundwater, and water conservation needs
- If proprietary Structural Treatment Control devices are used, they shall be sited and designed in compliance with the manufacturers design criteria

- *Surface exposed treatment control BMPs shall be selected such that standing water drains or evaporates within 24 hours or as required by the County’s vector control*
- *Excess stormwater runoff shall bypass the treatment control BMPs unless they are designed to handle the flow rate or volume from a 100-year storm event without reducing effectiveness. Effectiveness of any treatment control BMP for removing the pollutants of concern shall be documented via analytical models or existing studies on effectiveness.*
- *The project WQMP shall incorporate water efficient landscaping using drought tolerant, native plants in accordance with Landscape and Irrigation Plans as set forth by the Applicant (see below)*
- *Pet waste stations (stations that provide waste pick-up bags and a convenient disposal container protected from precipitation) shall be provided and maintained*
- *Building materials shall minimize exposure of bare metals to stormwater. Copper or Zinc roofing materials, including downspouts, shall be prohibited. Bare metal surfaces shall be painted with non-lead-containing paint*

*The following BMPs shall not be used because they have not been shown to be effective in many situations. Therefore, unless sufficient objective studies and review are available and supplied with the WQMP to correctly size devices and to document expected pollutant removal rates the WQMP shall not include:*

- *Hydrodynamic separator type devices as a BMP for removing any pollutant except trash and gross particulates*
- *Oil and Grit separators*

*Any Applicant proposing development in the Specific Plan Area is encouraged to consider the following BMPs:*

- *Sand filters or other filters (including media filters) for rooftop runoff*
- *Dry swales. A dry swale treatment system could be used if sufficient area, slope gradient, and length of swale could be incorporated into the project design. Dry swales could remove substantial amounts of nutrients, suspended solids, metals, and petroleum hydrocarbons*
- *Other proprietary treatment devices (if supporting documentation is provided)*

*Non-Structural BMPs*

*The WQMP shall include the following operations and maintenance BMPs under the management of an applicant or property manager, where applicable. The Applicant shall fund and implement an operational and maintenance program that includes the following:*

- *The Applicant shall dictate minimum landscape maintenance standards and tree trimming requirements for the total project site. Landscape maintenance shall be performed by a qualified landscape maintenance company or individual in accordance with a Chemical Management Plan detailing chemical application methods, chemical handling procedures, and worker training. Pesticide application shall be performed by a certified applicator. No chemicals shall be stored on-site unless in a covered and contained area and in accordance with an approved Materials Management Plan. Application rates shall not exceed labeled rates for pesticides, and shall not exceed soil test rates for nutrients. Slow release fertilizers shall be used to prevent excessive nutrients in stormwater or irrigation runoff.*
- *The Applicant or property manager shall have the power and duty to establish, oversee, guide, and require proper maintenance and tree trimming procedures per the ANSI A-300 Standards*

as established by the International Society of Arborist. The Applicant or property manager shall require that all trees be trimmed by or under the direct observation/direction of a licensed/certified Arborist for the entire area. The Applicant shall establish minimum standards for maintenance for the total community, and establish enforcement thereof for the total community. The property manager shall rectify problems arising from incorrect tree trimming, chemical applications, and other maintenance within the total community.

- Landscape irrigation shall be performed in accordance with an Irrigation Management Plan to minimize excess irrigation contributing to dry- and wet-weather runoff. Automated sprinklers shall be used and be inspected at least quarterly and adjusted yearly to minimize potential excess irrigation flows. Landscape irrigation maintenance shall be performed in accordance with the approved irrigation plans, the City Water Ordinance and per the City Arboricultural and Landscape Standards and Specifications.
- Proprietary stormwater treatment systems maintenance shall be in accordance with the manufacturer's recommendations. If a nonproprietary treatment system is used, maintenance shall be in accordance with standard practices as identified in the current CASQA (2003) handbooks, operations and maintenance procedures outlined in the approved WQMP, City BMP guidelines, or other City-accepted guidance.
- Signage, enforcement of pet waste controls, and public education would improve use and compliance, and therefore, effectiveness of the program, and reduce the potential for hazardous materials and other pollution in stormwater runoff. The Applicant shall prepare and install appropriate signage, disseminate information to residents and retail businesses, and include pet waste controls (e.g., requirements for pet waste cleanup, pet activity area restrictions, pet waste disposal restrictions) in the any agreement, tenant lease (regarding rental property) or Conditions, Covenants, and Restrictions (regarding for-sale property).
- Street sweeping shall be performed at an adequate frequency to prevent build up of pollutants (see <http://www.fhwa.dot.gov/environment/ultraurb/uubmp3p7.htm> for street sweeping effectiveness).
- The Applicant shall develop a maintenance plan for BMPs and facilities identifying responsible parties and maintenance schedules and appropriate BMPs to minimize discharges of contaminants to storm drain systems during maintenance operations.
- Reporting requirements: the Applicant or property manager shall prepare an annual report and submit the annual report to the City of Huntington Beach documenting the BMPs operations and maintenance conducted that year. The annual report shall also address the potential system deficiencies and corrective actions taken or planned.

#### Site Design BMPs

Any Applicant proposing development in the Specific Plan Area is required to incorporate LID principles as defined in the Municipal NPDES Permit and is encouraged to consider the following BMPs, if allowed in accordance with the Geotechnical Report and limitations on infiltration BMPs:

- Use of porous concrete or asphalt (if acceptable to the Geotechnical Engineer and where infiltration will not adversely affect groundwater) or other pervious pavement for driveways, paths, sidewalks, and courtyards/open space areas, to the maximum extent practicable, would reduce pollutants in stormwater runoff as well as provide some detention within the material void<sup>45</sup> space.

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<sup>45</sup> Void space is the empty space between individual particles.

*If porous paver blocks are used, they shall be adequately maintained to provide continued porosity (effectiveness)*

- *Incorporation of rain gardens or cisterns to reuse runoff for landscape irrigation*
- *Green roofs to reduce runoff and treat roof pollutants*
- *Site design and landscape planning to group water use requirements for efficient irrigation*

*BECSP MM4.7-2 The City of Huntington Beach shall require that any Applicant prepare a Groundwater Hydrology Study to determine the lateral transmissivity of area soils and a safe pumping yield such that dewatering activities do not interfere with nearby water supplies. The Groundwater Hydrology Study shall make recommendations on whether permanent groundwater dewatering is feasible within the constraints of a safe pumping level. The Applicant's engineer of record shall incorporate the Hydrology Study designs and recommendations into project plans. If groundwater dewatering is determined allowable by the City, the Applicant shall submit an application to the RWQCB for dewatering purposes, per the De Minimus Permit Number R8-2009-0003. If safe groundwater dewatering is determined to not be feasible, permanent groundwater dewatering shall not be implemented. The City Director of Public Works, OCWD, and other regulatory agencies shall approve or disapprove any permanent groundwater dewatering based on the Groundwater Hydrology Study and qualified Engineers' recommendations.*

Mitigation measure BECSP MM4.7-3 has been modified to reflect the existing and proposed site characteristics, as well as the specific hydrologic conditions of the proposed project site and the Huntington Beach Channel.

*BECSP MM4.7-3 The City of Huntington Beach shall require that the Applicant's Licensed Civil Engineer for each site-specific development prepare a Hydrology and Hydraulic Study to identify the effects of potential stormwater runoff from the specific development on the existing storm drain flows for the 10-, 25-, and 100-year design storm events. The drainage improvements shall be designed and constructed as required by the Department of Public Works to mitigate impact of increased runoff due to development, or deficient, downstream systems. Design of all necessary drainage improvements shall provide mitigation for all rainfall event frequencies up to a 100-year frequency. The Applicant shall design site drainage and document that the proposed development would not increase peak storm event flows over pre-1986 Qs, which must be established by the hydrology study. If the analyses shows that the City's current drainage system cannot meet the volume needs of the project runoff, the applicant shall be required to attenuate site runoff to an amount not to exceed the 25-year storm as determined using pre-1986 criteria. As an option, the applicant may choose to explore low-flow design alternatives, downstream attenuation or detention, or upgrade the City's stormwater system to accommodate the impacts of the new development, at no cost to the City. The Hydrology and Hydraulic Study shall also incorporate all current adopted Municipal NPDES Permit and City requirements for stormwater flow calculations and retention/detention features in effect at the time of review.*

*BECSP MM4.7-4 The City of Huntington Beach shall require that adequate capacity in the storm drain system is demonstrated from the specific development site discharge location to the nearest main channel to accommodate discharges from the specific development. If capacity is demonstrated as adequate, no upgrades will be required. If capacity is not adequate, the City of Huntington Beach shall identify corrective action(s) required by the specific development Applicant to ensure adequate capacity. Corrective action could include, but is not limited to:*

- *Construction of new storm drains, as identified in the MPD or based on the Hydrology and Hydraulic Study, if the Hydrology and Hydraulic Study identifies greater impacts than the MPD*
- *Improvement of existing storm drains, as identified in the MPD or based on the Hydrology and Hydraulic Study, if the Hydrology and Hydraulic Study identifies greater impacts than the MPD*
- *In-lieu fees to implement system-wide storm drain infrastructure improvements*
- *Other mechanisms as determined by the City Department of Public Works.*
- *For nonresidential areas, if redevelopment would result in an impervious fraction of less than 0.9 and does not increase the directly connected impervious area compared to existing conditions, runoff is expected to remain the same or less than as assessed in the MPD and only MPD improvements would be required.*

*Because some storm drain system constraints may be located far downgradient from the actual development site, several properties may serve to contribute to system capacity constraints. Therefore, the City Department of Public Works shall assess each site development and system characteristics to identify the best method for achieving adequate capacity in the storm drain system. Drainage assessment fees/districts to improve/implement storm drains at downstream locations or where contributing areas are large are enforced through Municipal Code (Section 14.20).*

*The City Department of Public Works shall review the Hydrology and Hydraulic Study and determine required corrective action(s) or if a waiver of corrective action is applicable. The site-specific development Applicant shall incorporate required corrective actions into their project design and/or plan. Prior to receiving a Certificate of Occupancy or final inspection, the City Department of Public Works shall ensure that required corrective action has been implemented.*

#### **4.7.4 Cumulative Impacts**

Project-related impacts for environmental issue areas that did not require substantial additional analysis from what was provided in the BECSP EIR are considered to be less than significant with mitigation. In addition, the proposed project would not result in impacts different from or greater than previously analyzed in the BECSP EIR. Therefore, additional cumulative impact analysis is not required for these issue areas, including Hydrology and Water Quality.

#### **4.7.5 References**

- Federal Emergency Management Agency. Digital Flood Insurance Rate Map (DFIRM), 2004.
- Huntington Beach, City of. *Beach and Edinger Corridors Specific Plan Environmental Impact Report*, November 2009.
- . *City of Huntington Beach General Plan*, May 13, 1996.
- KHR Associates. *Preliminary Hydrology Study Beach and Ellis Mixed-Use, Huntington Beach, California*, August 22, 2011.
- . *Water Quality Management Plan, Beach and Ellis Mixed Use*, September 2, 2011.
- SCS Engineers. *Phase I Environmental Assessment Shell Station and Town Country Plaza, 18502 and 18510 to 18552, Beach Boulevard, Huntington Beach, CA 92648*, January 22, 2007.

