# 5.7 HYDROLOGY AND WATER QUALITY

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential impacts of the proposed Museum House project to hydrology and water quality conditions in the City of Newport Beach. Hydrology deals with the distribution and circulation of water, both on land and underground. Water quality deals with the quality of surface and groundwater. Surface water includes lakes, rivers, streams, and creeks; groundwater is under the earth's surface.

- *Preliminary Water Quality Management Plan (WQMP): OCMA Museum House, 850 San Clemente Road, Newport Beach, County of Orange*, Fuscoe Engineering, Inc., March 10, 2016.

A complete copy of this study is included in the Technical Appendices to this Draft EIR (Volume II, Appendix I).

## 5.7.1 Environmental Setting

### 5.7.1.1 REGULATORY BACKGROUND

#### Federal

##### *Safe Drinking Water Act*

The federal Safe Drinking Water Act regulates drinking water quality nationwide and gives the US Environmental Protection Agency (EPA) the authority to set drinking water standards, such as the National Primary Drinking Water regulations, which protect drinking water by limiting the levels of specific contaminants that can adversely affect public health. All public water systems that provide service to 25 or more individuals must meet these standards. Water purveyors must monitor for contaminants on fixed schedules and report to the EPA when a maximum contaminant level (MCL) is exceeded. MCL is the maximum permissible level of a contaminant in water that is delivered to any user of a public water system. Contaminants include organic and inorganic chemicals (e.g., minerals), substances that are known to cause cancer, radionuclides (e.g., uranium and radon), and microbial contaminants (e.g., coliform and E. coli). The MCL list typically changes every three years as the EPA adds new contaminants or revises MCLs. The California Department of Public Health's Division of Drinking Water and Environmental Management is responsible for implementation of the Safe Drinking Water Act in California.

##### *Clean Water Act*

The federal Water Pollution Control Act (or Clean Water Act [CWA]) is the principal statute governing water quality. It establishes the basic structure for regulating discharges of pollutants into the waters of the United States and gives the EPA authority to implement pollution control programs, such as setting wastewater standards for industry. The statute's goal is to completely end all discharges and to restore, maintain, and preserve the integrity of the nation's waters. The CWA regulates direct and indirect discharge of pollutants; sets water quality standards for all contaminants in surface waters; and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under its

provisions. The CWA mandates permits for wastewater and stormwater discharges; requires states to establish site-specific water quality standards for navigable bodies of water; and regulates other activities that affect water quality, such as dredging and filling wetlands. The CWA funds the construction of sewage treatment plants and recognizes the need for planning to address nonpoint sources of pollution. Section 402 of the CWA requires a permit for all point source (a discernible, confined, and discrete conveyance, such as a pipe, ditch, or channel) discharges of any pollutant (except dredge or fill material) into waters of the United States.

### *National Pollutant Discharge Elimination System*

Under the National Pollutant Discharge Elimination System (NPDES) program (under Section 402 of the CWA), all facilities that discharge pollutants from any point source into waters of the United States must have a NPDES permit. The term "pollutant" broadly applies to any type of industrial, municipal, and agricultural waste discharged into water. Point sources can be publicly owned treatment works (POTWs), industrial facilities, and urban runoff. (The NPDES program addresses certain agricultural activities, but the majority are considered nonpoint sources and are exempt from NPDES regulation.) Direct sources discharge directly to receiving waters, and indirect sources discharge to POTWs, which in turn discharge to receiving waters. Under the national program, NPDES permits are issued only for direct, point-source discharges. The National Pretreatment Program addresses industrial and commercial indirect dischargers. Municipal sources are POTWs that receive primarily domestic sewage from residential and commercial customers. Specific NPDES program areas applicable to municipal sources are the National Pretreatment Program, the Municipal Sewage Sludge Program, Combined Sewer Overflows, and the Municipal Storm Water Program. Nonmunicipal sources include industrial and commercial facilities. Specific NPDES program areas applicable to these industrial/commercial sources are: Process Wastewater Discharges, Non-process Wastewater Discharges, and the Industrial Storm Water Program. NPDES issues two basic permit types: individual and general. Also, the EPA has recently focused on integrating the NPDES program further into watershed planning and permitting (USEPA 2012).

The NPDES has a variety of measures designed to minimize and reduce pollutant discharges. All counties with storm drain systems that serve a population of 50,000 or more, as well as construction sites one acre or more in size, must file for and obtain an NPDES permit. Another measure for minimizing and reducing pollutant discharges to a publicly owned conveyance or system of conveyances (including roadways, catch basins, curbs, gutters, ditches, man-made channels, and storm drains) designed or used for collecting and conveying stormwater is the EPA's Storm Water Phase II Final Rule. The Phase II Final Rule requires an operator (such as a city) of a regulated small municipal separate storm sewer system (MS4) to develop, implement, and enforce a program (e.g., best management practices [BMPs], ordinances, or other regulatory mechanisms) to reduce pollutants in post-construction runoff to the city's storm drain system from new development and redevelopment projects that result in the land disturbance of greater than or equal to one acre. The MS4 permit for the part of Orange County in the Santa Ana Regional Water Quality Control Board's (RWQCB) jurisdiction, Order No. R8-2009-0030, was issued by the Santa Ana RWQCB in 2009. The City of Newport Beach Public Works Department is the local enforcing agency of the MS4 NPDES permit.

### State

#### *Porter-Cologne Water Quality Act*

The Porter-Cologne Water Quality Act (Water Code sections 13000 et seq.) is the basic water quality control law for California. Under this Act, the State Water Resources Control Board (SWRCB) has ultimate control over state water rights and water quality policy. In California, the EPA has delegated authority to the SWRCB to issue NPDES permits. The state is divided into nine regions related to water quality and quantity characteristics. The SWRCB, through its nine RWQCBs carries out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a water quality control plan or basin plan that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions and problems. The City of Newport Beach is in the Santa Ana River Basin, Region 8, in the Newport Bay Watershed. The water quality control plan for the Santa Ana River Basin (8) was updated in 2008. This basin plan gives direction on the beneficial uses of the state waters in Region 8; describes the water quality that must be maintained to support such uses; and provides programs, projects, and other actions necessary to achieve the standards in the basin plan.

### Regional Plans

#### *Storm Water Pollution Prevention Plans*

Pursuant to the CWA, in 2001, the SWRCB issued a statewide general NPDES Permit for storm water discharges from construction sites (NPDES No. CAS000002). Under this Statewide General Construction Activity permit, discharges of stormwater from construction sites with a disturbed area of one or more acres are required to either obtain individual NPDES permits for stormwater discharges or to be covered by the General Permit. Coverage by the General Permit is accomplished by completing and filing a Notice of Intent with the SWRCB and developing and implementing a Storm Water Pollution Prevention Plan (SWPPP). Each applicant under the General Permit must ensure that a SWPPP is prepared prior to grading and is implemented during construction. A SWPPP includes assessments of site sediment risk and receiving-water risk. The SWPPP must list BMPs implemented on the construction site to protect stormwater runoff. The SWPPP must list BMPs implemented on the construction site to protect stormwater runoff, and must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a monitoring plan if the site discharges directly to a water body listed on the state's 303(d) list of impaired waters.

## 5.7.1.2 EXISTING CONDITIONS

### Regional Drainage

The project site is in the Newport Bay Watershed, which spans about 194 square miles of central Orange County, extending from the southwest foothills of the Santa Ana Mountains on the north to the Pacific Ocean on the south. The primary stream in the watershed is San Diego Creek, which extends 16 miles from the City of Lake Forest in the eastern part of the watershed to Upper Newport Bay in the southwest part of the watershed.

## Local Surface Waters and Drainage

Existing runoff flows toward the northwest and southwest portions of the site. Most of the site drainage is conveyed via existing ribbon gutters within the parking lot and is ultimately collected by an existing 21-foot catch basin on the adjacent private property on 888 San Clemente Drive, west of the project site.[1] The 18-inch catch basin outlet pipe conveys the storm flows into an existing private storm drain system in the 888 San Clemente Drive property, then to an existing 30-inch storm drain in Bombero Street, then to an existing 36-inch public storm drain in Santa Barbara Drive. The receiving waters for the project site are Upper Newport Bay and Lower Newport Bay.

Approximately 85 percent of the project site is currently impervious, consisting of the museum building, parking lots, sidewalks, and a patio in the northwest part of the site.

## Surface Water Quality

Upper Newport Bay and Lower Newport Bay are both listed on the Section 303(d) List of Water Quality Limited Segments for contaminants specified in Table 5.7-1.

Table 5.7-1 Upper Newport Bay Water Quality Impairments

| Contaminant | Total Maximum Daily Load (TMDL) Status; Completion Date for Proposed TMDLs |
|---|---|
| **Upper Newport Bay** | |
| Chlordane (organochlorine pesticide) | Proposed 2019 |
| Copper | Proposed 2007 |
| DDT (organochlorine pesticide) | Proposed 2019 |
| Metals | Proposed 2019 |
| Nutrients | Completed |
| PCBs (polychlorinated biphenyls) | Proposed 2019 |
| Pesticides | Completed |
| Sediment Toxicity | Proposed 2019 |
| Sedimentation/Siltation | Completed |
| **Lower Newport Bay** | |
| Chlordane (organochlorine pesticide) | Proposed 2019 |
| Copper | Proposed 2007 |
| DDT (organochlorine pesticide) | Proposed 2019 |
| Indicator Bacteria | Completed |
| Nutrients | Completed |
| PCBs (polychlorinated biphenyls) | Proposed 2019 |
| Pesticides | Completed |
| Sediment Toxicity | Proposed 2019 |

Source: SWRCB 2013.

[1] Ribbon gutters are shallow, v-shaped gutters often located in the center of parking lot drive aisles.

### Groundwater

The project site is not above a groundwater basin mapped by the Department of Water Resources. The nearest such basin is the Coastal Plain of Orange County Groundwater Basin (basin), about 0.5 mile to the east and 0.6 mile to the north (DWR 2015).

Perched groundwater is defined as an accumulation of groundwater above the water table in an unsaturated zone, usually trapped above an impermeable soil layer such as clay or controlled by fractures in the rock. Perched groundwater was found in exploratory borings onsite at approximately 42 feet below the site grade (approximately 136 feet above mean sea level). The perched groundwater was found along the contact between marine terrace deposits and bedrock and extends four to six feet into the weathered/fractured bedrock below the contact.

### Groundwater Quality

Groundwater quality in the basin is not expected to constrain water supplies for the City of Newport Beach through 2035 (Malcolm Pirnie 2011).

## 5.7.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

HYD-1 Violate any water quality standards or waste discharge requirements.

HYD-2 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.

HYD-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial erosion or siltation on- or off-site.

HYD-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

HYD-5 Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

HYD-6 Otherwise substantially degrade water quality.

HYD-7 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.

HYD-8 Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

HYD-9 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.

HYD-10 Be subject to inundation by seiche, tsunami, or mudflow.

The Initial Study, included as Appendix A, substantiates that impacts associated with the following thresholds would either be less than significant or have no impact:

- Threshold HYD-2
- Threshold HYD-7
- Threshold HYD-8
- Threshold HYD-9
- Threshold HYD-10

These thresholds will not be addressed in the following analysis.

## 5.7.3 Environmental Impacts

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

| | |
|---|---|
| Impact 5.7-1: | Project development would decrease the amount of impervious surfaces on the site and would therefore decrease surface water flows into drainage systems within the watershed. [Thresholds HYD-4 and HYD-5] |

***Impact Analysis:*** Development of the project would decrease the amount of impervious area onsite from 1.7 acres or 85 percent of the project site, to 1.48 acres or 74 percent of the site.

As discussed above, existing site drainage is conveyed toward either the northwest or southwest portion of the project site, with the majority of runoff conveyed to the southwest to an existing 21-foot catch basin and ultimately to an existing 36-inch public storm drain in Santa Barbara Drive.

The proposed project would alter the site drainage characteristics, but would not increase surface water flows or create runoff that would exceed existing capacity. As discussed below, runoff from the site would continue to flow similar to existing conditions. The project runoff would flow in a southwesterly direction toward the entrance of the proposed project along San Clemente Drive. The onsite runoff would be intercepted by proposed onsite storm drain lines and enter into proposed proprietary modular wetland systems onsite for water quality treatment or onsite landscaped areas, which are considered self-treating. Runoff would then flow offsite into an existing 18-inch offsite private reinforced concrete pipeline and into the existing 30-inch storm drain in Bombero Street, then to an existing 36-inch public storm drain in Santa Barbara Drive. Flows would ultimately discharge to the Upper Newport Bay.

The project would biotreat the design capture volume (DCV) of runoff from the site in post-project conditions—that is, runoff from an 85th percentile, 24-hour storm (similar to the intensity of a two-year, 24-hour storm). The DCV is 3,583 cubic feet for the entire site. The project site in post-project conditions can be divided into two sections:

1. Runoff from a 1.88-acre area would be treated by three proposed modular wetland systems in the southern and southwestern parts of the site. The design capture volume for this area would be 3,583 cubic feet. The design treatment flow rates for this area would be 0.363 cubic feet per second (cfs), and the treatment capacity of the three wetland systems combined would be 0.372 cfs.

2. Runoff from a 0.12-acre area would flow into proposed landscaped areas and would be considered self-treating.

Overall, the proposed project would result in the conveyance of less water to the storm drain system, since the new development would reduce the impervious area at the project site. Consequently, hydromodification measures would not be required, but BMPs would be required to treat the water quality of drainage associated with the proposed impervious areas in the new development. Development of the project would not cause flooding on- or off-site, and impacts on storm drainage capacity would be less than significant.

**Impact 5.7-2:** **There is the potential for short-term, unquantifiable increases in pollutant concentrations from the site during construction. After project development, the quality of storm runoff may be altered. [Thresholds HYD-1, HYD-3, and HYD-6]**

*Impact Analysis:*

## Construction

### *Potential Pollutants*

Project construction could generate the following categories of water pollutants:

#### *Bacteria and Viruses*

Bacteria and viruses are microorganisms that thrive under certain environmental conditions. Water contamination by animal or human fecal wastes and contamination by excess organic wastes are common causes of proliferation of these microorganisms. Water containing excessive bacteria and viruses can alter the aquatic habitat and harm humans and aquatic life.

#### *Metals*

Metals of concern as water contaminants include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors; metals are also raw materials used in nonmetal products such as fuels, adhesives, and paints. At the low concentrations naturally occurring in soil, metals may not be toxic. However, certain metals at higher concentrations can be harmful to aquatic life and to humans. Humans can be impacted from groundwater contaminated with metals. Metals can become concentrated in

fish and shellfish and can subsequently harm humans who consume those animals. Environmental concerns have already led to restrictions on some uses of metals.

### *Nutrients*

Nutrients are inorganic substances such as nitrogen and phosphorous; the primary sources of these substances in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams causes overgrowth of aquatic plants and algae, which can lead to excessive decay of organic matter in the water, loss of oxygen in the water, and eventual death of aquatic organisms.

### *Pesticides*

Relatively low concentrations of the active ingredients in pesticides can be toxic in water. Excessive or improper use of pesticides can cause toxic contamination in runoff.

### *Organic Compounds*

Organic compounds are carbon based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds at certain concentrations can be hazardous to life or health. Toxic levels of solvents and cleaning compounds can be discharged to storm drains during cleaning and rinsing operations.

### *Sediments*

Sediments are solid materials that erode from the land surface. Sediments can increase the turbidity (cloudiness) of water, clog fish gills, reduce spawning habitat, lower survival rates of young aquatic organisms, smother bottom-dwelling organisms, and suppress aquatic vegetation growth.

### *Trash and Debris*

Trash and debris such as paper, plastic, polystyrene foam, aluminum, and biodegradable organic matter (e.g., leaves, grass cuttings, and food waste) may significantly impair aquatic habitat and the recreational value of a water body. In addition, trash impacts water quality by increasing biochemical oxygen demand.

### *Oxygen-Demanding Substances*

Microbial biodegradation of organic compounds such as proteins, carbohydrates, and fats causes increased oxygen demand in water. A second category of oxygen-demanding substances is chemicals, such as ammonia and hydrogen sulfide that react with dissolved oxygen in water to form other compounds. The oxygen demand of a substance can deplete dissolved oxygen in a water body and possibly result in septic conditions. A reduction of dissolved oxygen is harmful to aquatic life and can generate hazardous compounds such as hydrogen sulfides.

### *Oil and Grease*

Oil and grease in water bodies decrease their aesthetic value as well as water quality; one of the most important sources of oil and grease is leakage from motor vehicles.

### *Stormwater Pollution Prevention Plan*

The project applicant would prepare and implement a SWPPP specifying BMPs for minimizing stormwater pollution from construction activities. Categories of BMPs are described in Table 5.7-2, below. The SWPPP would estimate sediment risk for the project site and for receiving waters and specify erosion control and sediment control BMPs adequate to address the identified risks. Construction water quality impacts would be less than significant after implementation of BMPs.

Table 5.7-2 Construction Best Management Practices

| Category | Purpose | Examples |
|---|---|---|
| Erosion Controls and Wind Erosion Controls | Cover and/or bind soil surface, to prevent soil particles from being detached and transported by water or wind | Mulch, geotextiles, mats, hydroseeding, earth dikes, swales |
| Sediment Controls | Filter out soil particles that have been detached and transported in water. | Barriers such as straw bales, sandbags, fiber rolls, and gravel bag berms; desilting basin; cleaning measures such as street sweeping |
| Tracking Controls | Minimize the tracking of soil offsite by vehicles | Stabilized construction roadways and construction entrances/exits; entrance/outlet tire wash. |
| Non-Storm Water Management Controls | Prohibit discharge of materials other than stormwater, such as discharges from the cleaning, maintenance, and fueling of vehicles and equipment. Conduct various construction operations, including paving, grinding, and concrete curing and finishing, in ways that minimize non-stormwater discharges and contamination of any such discharges. | BMPs specifying methods for: paving and grinding operations; cleaning, fueling, and maintenance of vehicles and equipment; concrete curing; concrete finishing. |
| Waste Management and Controls (i.e., good housekeeping practices) | Management of materials and wastes to avoid contamination of stormwater. | Spill prevention and control, stockpile management, and management of solid wastes and hazardous wastes. |

Source: CASQA 2003.

## Operations

### *Potential Pollutants*

Project operation could generate the same categories of pollutants as project construction.

### *Water Quality Management Plan*

The preliminary water quality management plan (WQMP) prepared for the project specifies four categories of BMPs to be implemented by the project: site design BMPs, structural source control BMPs, nonstructural source control BMPs, and low-impact development BMPs. The City of Newport Beach requires that all new development prepare and submit a WQMP to the City for review and approval prior to the issuance of grading permits.

*Site Design BMPs*

Site design BMPs are intended to reduce or eliminate post-project runoff. The project WQMP includes the following site design BMPs:

- **Minimize Impervious Area:** Impervious surfaces have been minimized by incorporating landscaped areas throughout the site surrounding the proposed building. Landscaping would be provided throughout the site in the common areas and around the perimeter of the building.

- **Preserve Existing Drainage Patterns and Time of Concentration:** Runoff from the site would continue to flow similar to existing conditions. Low-flows and first-flush runoff would drain to on- and offsite modular wetland systems for water quality treatment via biofiltration.

- **Disconnect Impervious Areas:** Landscaping would be provided adjacent to sidewalks and between the proposed buildings. Low-flows and first-flush runoff would drain to on- and offsite modular wetland systems for water quality treatment via biofiltration.

- **Native and/or Drought-Tolerant Landscaping:** Native and/or drought-tolerant landscaping would be incorporated into the site design, consistent with City guidelines.

*Structural Source Control BMPs*

Source control BMPs reduce the potential for pollutants to enter runoff. The project WQMP includes the following structural source control BMPs:

- Provide storm drain system stenciling and signage

- Use efficient irrigation systems and landscape design, water conservation, smart controllers, and source control.

*Nonstructural Source Control BMPs*

The project WQMP includes the following nonstructural source control BMPs:

- **Education for Property Owners, Tenants, and Occupants:** Educational materials will be provided to tenants, including brochures and restrictions to reduce pollutants from reaching the storm drain system. Examples include tips for pet care, household tips, and proper household hazardous waste disposal. Tenants will be provided with these materials by the property management prior to occupancy, and periodically thereafter.

- **Activity Restrictions:** The homeowner's association (HOA) shall develop ongoing restrictions on activities that could adversely affect water quality, such as handling and disposal of contaminants, fertilizer and pesticide application, litter control and pick-up, and vehicle or equipment repair and maintenance in nondesignated areas.

- **Common Area Landscape Management:** The HOA will have common area landscapes managed in order to minimize pollution from fertilizers, pesticides, and wastes, and use water-efficient landscaping practices.

- **BMP Maintenance:** The HOA will be responsible for the implementation and maintenance of each applicable nonstructural BMP, as well as scheduling inspections and maintenance of all applicable structural BMP facilities through its staff, landscape contractor, and/or any other necessary maintenance contractors.

- **Common Area Litter Control:** The HOA will be responsible for performing trash pickup and sweeping littered common areas weekly or whenever necessary.

- **Employee Training:** All employees of the HOA and any contractors will require training to ensure that employees are aware of maintenance activities that may result in pollutants reaching the storm drain. Training will include spill cleanup procedures, proper waste disposal, housekeeping practices, etc.

- **Common Area Catch Basin Inspection:** All on-site catch basin inlets and drainage facilities shall be inspected and maintained by the HOA at least once a year prior to the rainy season, no later than October 1st of each year.

- **Street Sweeping Private Streets and Parking Lots:** The HOA shall be responsible for sweeping, quarterly, all on-site drive aisles and parking areas within the project.

*Low-Impact Development BMPs:*

Low impact development (LID) BMPs are required in addition to site design measures and source controls to reduce pollutants in stormwater discharges. LID BMPs are engineered facilities that are designed to retain or biotreat runoff on the project site. The MS4 Storm Water Permit (Order R8-2009-0030) requires the evaluation and use of LID features using the following hierarchy of treatment: infiltration, evapotranspiration, harvest/reuse, and biotreatment. The following table reproduces the project's required LID BMPs as detailed in the preliminary WQMP (see Appendix I).

Table 5.7-3 Proposed Low-Impact Development BMPs

| Category | Definition | Project BMPs |
|---|---|---|
| Hydrologic Source Controls (HSCs) | HSCs are a hybrid between site design practices and LID BMPs. HSCs are distinguished from site design BMPs in that they do not reduce the tributary area or reduce the imperviousness of a drainage area; rather they reduce the runoff volume that would result from a drainage area with a given imperviousness compared to what would result if HSCs were not used. | – Impervious area reduction (e.g. permeable pavers, site design, landscaping)<br><br>The ground level of the project would consist of 100 percent landscaping, and therefore can be considered "self-retaining." It would function similar to green roofs by retaining runoff in the plants and soil pore space, making it available for subsequent evapotranspiration |
| Infiltration BMPs | Infiltration BMPs capture, store and infiltrate storm water runoff. These BMPs are engineered to store a specified volume of water and have no design surface discharge (underdrain or outlet structure) until this volume is exceeded. | None |
| Evapotranspiration BMPs | Evapotranspiration (ET) BMPs are a class of retention BMPs that discharges stored volume predominately to ET, though some infiltration may occur. ET includes both evaporation and transpiration, and ET BMPs may incorporate one or more of these processes. | – Impervious surfaces<br>– Biotreatment |
| Harvest and Reuse BMPs | Harvest and use, also known as rainwater harvesting, BMPs are LID BMPs that capture and store storm water runoff for later use. These BMPs are engineered to store a specified volume of water and have no design surface discharge until this volume is exceeded. Harvest and use BMPs include both above-ground and below-ground cisterns. | None |
| Biotreatment BMPs | Biotreatment BMPs are a broad class of LID BMPs that reduce storm water volume to the maximum extent practicable, treat storm water using a suite of treatment mechanisms characteristic of biologically active systems, and discharge water to the downstream storm drain system or directly to receiving waters. | – Proprietary vegetated biotreatment systems<br><br>The project would implement three proprietary biotreatment systems and stormwater planters for water quality treatment to treat all pollutants of concern to a medium to high level of effectiveness. These systems were selected based on their ability to treat the project's pollutants of concerns to a medium or high effectiveness. |

Source: Fuscoe 2016.

As detailed in Table 5.7-3, the project WQMP prescribes biotreatment through installation of proprietary modular wetland systems onsite. The proposed wetland systems would have capacity to treat runoff from the site from an 85th percentile, 24-hour storm (similar to a two-year, 24-hour storm).

The proposed project would have substantially the same drainage characteristics as the current site, except that the project would have more pervious surfaces, thus resulting in less overall runoff. Moreover, the BMPs and LID technologies incorporated by the proposed project, which would update existing hydrology controlling structures, would more efficiently and more effectively minimize hydrology and water quality impacts than existing improvements. . Water quality impacts from project operation would be less than significant after implementation of the BMPs detailed in the WQMP.

## 5.7.4 Cumulative Impacts

### Hydrology and Drainage

The area considered for hydrology and drainage impacts is the Newport Bay Watershed. Other projects in the Newport Bay Watershed would increase amounts of impervious surfaces and thus could generate increased runoff from the affected project sites. Other projects would prepare and implement WQMPs specifying BMPs—including LID BMPs—that would minimize runoff from those sites. Therefore, related projects are not expected to cause substantial increases in runoff and are not expected to require construction of substantial new or expanded municipal storm drainage systems. Cumulative impacts would be less than significant, and project impacts would not be cumulatively considerable.

### Water Quality

The area considered for water quality impacts is the part of Orange County in the Santa Ana Regional Water Quality Control Board's jurisdiction, the area subject to the relevant MS4 Permit.

Other projects would prepare and implement WQMPs specifying BMPs to be implemented for those projects that would minimize runoff from those sites and reduce contamination of runoff with pollutants. Other projects disturbing one or more acre of soil would also prepare and implement SWPPPs identifying BMPs to be used for the construction phases of those projects to minimize runoff, erosion, and stormwater pollution. Thus, related projects are not expected to cause substantial increases in stormwater pollution. Cumulative impacts would be less than significant, and project impacts would not be cumulatively considerable.

## 5.7.5 Existing Regulations and Standard Conditions

### Existing Regulations

#### *Federal*

- United States Code, Title 33, Sections 1251 et seq.: Clean Water Act
- Code of Federal Regulations Title 40 Parts 122 et seq.: National Pollutant Discharge Elimination System (NPDES)

*State*

- California Water Code Sections 13000 et seq.: Porter-Cologne Water Quality Act
- Order No. 2012-0006-DWQ, Statewide General Construction Permit, State Water Resources Control Board

### City of Newport Beach Standard Conditions of Approval

- The City of Newport Beach requires all new development and significant redevelopment projects to prepare and submit a Water Quality Management Plan (WQMP) to the City for review and approval. Prior to issuance of grading or building permits, the project applicant shall have an approved final Project WQMP.
- Prior to the issuance of the grading permit, the applicant shall submit a Water Quality Management Plan (WQMP) specifically identifying the Best Management Practices (BMP's) that will be used on site to control predictable pollutant runoff. The plan shall identify the types of structural and non-structural measures to be used. The plan shall comply with the Orange County Drainage Area Management Plan (DAMP). Particular attention should be addressed to the appendix section "Best Management Practices for New Development." The WQMP shall clearly show the locations of structural BMP's, and assignment of long term maintenance responsibilities (which shall also be included in the Maintenance Agreement). The plan shall be prepared to the format of the DAMP title "Water Quality Management Plan Outline" and be subject to the approval of the City.

## 5.7.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.7-1 and 5.7-2.

## 5.7.7 Mitigation Measures

No mitigation measures are required.

## 5.7.8 Level of Significance After Mitigation

Impacts would be less than significant.

## 5.7.9 References

Fuscoe Engineering. 2016, March 10. Preliminary Water Quality Management Plan (WQMP): OCMA Museum House, 850 San Clemente Road, Newport Beach, County of Orange.

US Environmental Protection Agency (USEPA). 2012, September 26. Water Permitting 101. http://www.epa.gov/npdes/pubs/101pape.pdf.