

3.8 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section describes existing hydrologic conditions on the project site and in its vicinity and analyzes the potential for development of the proposed project to affect water quality, groundwater supplies, groundwater recharge, site drainage, and flooding. All technical studies related to the discussion and analysis in this section are incorporated herein by this reference, and included in **Appendix 3.8**.

ENVIRONMENTAL SETTING

Regional Hydrology

The project site is situated within the Malibu Creek Watershed (a sub-watershed of the larger Malibu Hydrologic Unit), which encompasses approximately 110 square miles. The tributary area to Malibu Creek is approximately 75,000 acres (115 square miles) and drains portions of the Simi Hills and Santa Monica Mountains. Malibu Creek discharges runoff directly into the Pacific Ocean.

Malibu Lagoon lies at the terminus of the Malibu Creek watershed. Malibu Lagoon is a small, brackish estuary of approximately 13 acres (exclusive of adjacent associated land), it is one of only two remaining coastal marshes in Los Angeles County. The estuary provides migratory bird habitat, fish migration, and spawning habitat, and it affects adjoining water-based recreation at Surfrider Beach. The Lagoon typically remains “closed” to ocean influences much of the year by a natural sandbar, except for winter when ocean influences breach the sandbar and Creek flows help maintain the opening. This episodic breach, which occurs as a result of stream flows exceeding ocean influences, has led to greatly fluctuating salinity levels and has disturbed efforts to restore the Lagoon. Surfing and swimming are popular off the beaches in the immediate area and there is considerable concern over contaminated Lagoon water affecting recreational users.¹

Due to the steep and impervious nature of the Malibu Creek headlands, as well as the very rapid runoff of variable amounts of annual rainfall, there are no dependable local surface water supplies and very limited groundwater supplies within the watershed.²

¹ City of Malibu, *Malibu Legacy Park Project, Final Environmental Impact Report, Section 3H, Hydrology and Water Quality*, January 2009.

² City of Malibu, *Malibu Legacy Park Project, Final Environmental Impact Report, Section 3H, Hydrology and Water Quality*, January 2009.

Local Hydrology

Drainage and Flooding

Drainage on the project site occurs through topographically controlled sheetflow runoff from the north towards the south-southeast portions of the site. No indications of concentrated flows, such as gullies or excessive erosion, have been observed on, or adjacent to, the project site. Cross Creek Road conveys storm flows from the residential development north of the project site. These storm flows enter into existing catch basins at the intersection of Cross Creek Road and Civic Center Way.

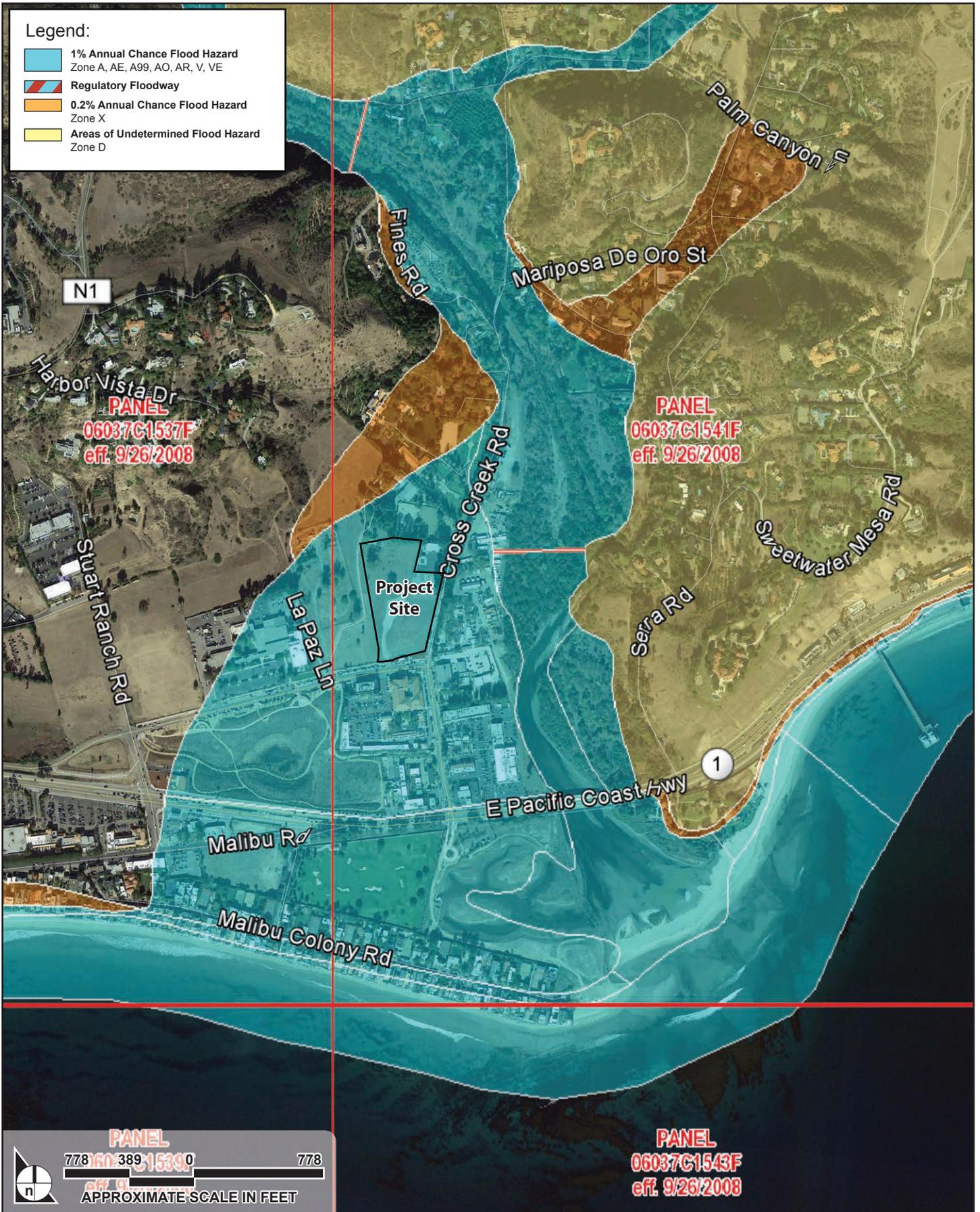
The City has been historically susceptible to major storm activity, as are most California coastal communities. Localized flooding occurs along the coast, Malibu Lagoon, and Malibu Creek, as well as within low-lying areas upstream, during peak storm events. One former underlying problem associated with area-wide drainage was that many outfalls into the Malibu Creek were underwater during the course of major storm events. Localized flooding continued until a given storm passed, Creek and Lagoon water levels receded, and consequently the flooded areas were then able to drain to their appropriate outfall. Replacement of the Pacific Coast Highway Bridge over Malibu Lagoon in 1995 raised the bridge profile to allow for an increased volume of stormwater flows to pass under the bridge unimpeded. No upstream flooding has occurred since the bridge was replaced.

As depicted in **Figure 3.8-1**, the project site is located within the Federal Emergency Management Agency's (FEMA) flood designation Zone AO (Depth 2 feet). The FEMA definition for Zone AO is as follows:

Zone AO: *Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet: average depths of inundation are shown, but no flood hazard factors are determined.*

Development within the City must comply with the City's Floodplain Management Ordinance, which requires that all structures in Zone AO be elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the FEMA Flood Insurance Rate Map (FIRM) by at least 1 foot, or elevated at least 3 feet above the highest adjacent grade if no depth number is specified.³

³ City of Malibu Municipal Code, Section 15.20.100, *Floodplain Management Ordinance, Standards of Construction*, website: <http://qcode.us/codes/malibu/?cite=15>, accessed March 17, 2014.



SOURCE: Federal Emergency Management Agency, 2008

FIGURE 3.8-1

FEMA Flood Zones

The City contains a varied system of storm drainage facilities that convey stormwater flows from three main storm drain arteries along Malibu Road, Civic Center Way, and Cross Creek Road. The storm drain system that conveys stormwater flows from the project area is composed of two main storm drain arteries along Civic Center Way, and Cross Creek Road. The storm drain system for Cross Creek and Civic Center drains storm water into Legacy Park for pre-treatment and then on to the Civic Center Stormwater Treatment Facility to be screened and treated by ozone. The treated storm water is then returned back to Legacy Park for irrigation water. Numerous smaller pipe laterals tie into this larger drainage system at intermittent locations throughout the vicinity of the project site.

Earlier studies estimated that dry-weather runoff from the project area watershed is approximately 7,000 gallons per day (gpd) based on regional flow measurements and project area land use data.⁴ Dry-weather and stormwater runoff is currently treated in the City's existing stormwater treatment plant, known as the Civic Center Stormwater Treatment Facility (SWTF), which adjoins the project site along the southern boundary, within a public right-of-way. The SWTF, which began operation in February 2007, is able to process up to 1,400 gallons per minute (gpm) of stormwater runoff from the Civic Center Area. The runoff is first screened to remove gross pollutants at the three catchment drains, Malibu Road, Cross Creek Road, and Civic Center Way, and then pumped to the SWTF where it is filtered and disinfected through ozone treatment. These processes target the removal of trash, suspended solids, metals, and indicator bacteria (i.e., total coliform, fecal coliform, E. coli, and enterococcus). The treated runoff is then pumped to Legacy Park and used as irrigation for the park and the landscaping along Civic Center Way (also known as the "Linear Park").⁵

Hydrology calculations were performed by PCCE, Inc.⁶ to determine the volume of water flow and debris from a 50-year storm. The analysis also evaluated the proposed project's capability of managing flooding, drainage, debris, and runoff during a worst-case scenario 50-year storm. The analysis sectioned the project site into six on-site drainage areas. Each drainage area was evaluated separately, as each have different water flow rates and would drain to different places on the project site.

⁴ Malibu Civic Center Wastewater Treatment Facility Project Final EIR (November 2014), Section 4.7, *Hydrology and Water Quality*, <http://www.malibucity.org/documentcenter/view/10304>, December 2014.

⁵ City of Malibu, *Summary of Stormwater Management and Water Quality Improvements for Lower Malibu Creek and Lagoon Malibu Legacy Park Project*, May 14, 2008.

⁶ PCCE Inc., Civil Engineering and Design, *Drainage Study for 23401 Civic Center Way, Whole Foods at the Park*, April 6, 2011.

Groundwater

The project area is located within the Malibu Valley Groundwater Basin, a small groundwater basin in the Malibu Creek watershed.⁷ No active surface groundwater seeps or springs were observed on the project site. Groundwater is present at a depth of 9 to 10 feet.⁸

Earlier studies developed groundwater models, including estimated average annual rates for groundwater sources and sinks in the watershed. The studies estimated that the total average annual inflow to the alluvial aquifer is approximately 1.93 cubic feet per second (cfs) or 1.25 million gpd. The sources of recharge to the system are infiltration from Malibu Creek, infiltration from onsite wastewater treatment systems (OWTS), more commonly known as septic systems), irrigation return, upland runoff, and infiltration of precipitation.⁹

Directions of groundwater flow in the alluvial aquifer are generally to the south and southeast toward the Pacific Ocean and Malibu Lagoon. Average groundwater travel times to Malibu Creek and Lagoon are generally faster than to the ocean because of the high hydraulic conductivity of subsurface materials near the Creek and Lagoon. Earlier studies estimated that groundwater discharges to the Lagoon at a rate of roughly 0.90 cfs under flooded (closed) Lagoon conditions and 1.47 cfs under breached (open) Lagoon conditions. Analysis under both conditions revealed a very-slow-moving groundwater flow system, with as great as a 50-year travel time from the upstream OWTS to the Lagoon and/or ocean.

The earlier studies concluded that the shallow depth to the groundwater table in the project area indicates that a large portion of the groundwater is essentially under the influence of surface water. Approximately 42 percent of the groundwater flowing into the nearby Legacy Park project area is from percolation of OWTS discharges. Nitrate loading to the Lagoon was substantially higher in breached Lagoon conditions than in flooded Lagoon conditions.¹⁰

Water Quality

The Regional Water Quality Control Board's (RWQCB) Los Angeles Region Basin Plan identifies Malibu Creek as a threatened water body and Malibu Lagoon as an impaired water body. Malibu Creek, Malibu

⁷ Op Cit. City of Malibu, *Malibu Legacy Park Project Final EIR*.

⁸ GeoConcepts, Inc., *Limited Geologic and Soils Engineering Investigation, Lot A & B NW Corner of Cross Creek Road and Civic Center Way*, June 21, 1999.

⁹ City of Malibu, *Malibu Legacy Park Project, Final Environmental Impact Report, Section 3H, Hydrology and Water Quality*, January 2009.

¹⁰ City of Malibu, *Malibu Legacy Park Project, Final Environmental Impact Report, Section 3H, Hydrology and Water Quality*, January 2009.

Beach, and Surfrider Beach also appear on the United States Environmental Protection Agency (US EPA) list of impaired water bodies for 2010.¹¹ Water quality in the Malibu Creek watershed and Malibu Lagoon is potentially impacted by non-point source pollution from natural and wildlife sources, malfunctioning OWTs and runoff from horse corrals. Nutrient inputs are contributed by urban runoff and from the Tapia Wastewater Treatment Plant, which discharges tertiary-treated effluent into Malibu Creek.¹² Under the existing conditions, surface water runoff from the project site is not considered a major contributor to the water quality problems of Malibu Creek. Since the project site consists of an undeveloped lot generally covered with asphalt paving, gravel, bare soil, and highly disturbed, non-native grassland, it's most probable pollutants would be trash (potentially including food-borne bacteria), debris, and sedimentation that might be washed off the site during storms.

REGULATORY SETTING

Federal Regulations

Clean Water Act

The 1972 amendments to the Federal Water Pollution Control Act, later referred to as the Clean Water Act (CWA), prohibit the discharge of any pollutant to navigable waters of the United States from a point source unless the discharge is authorized by a National Pollution Discharge Elimination System (NPDES) permit. In 1990, the US EPA promulgated final regulations that established Phase 1 requirements for the NPDES program to address, among other discharges, nonpoint source discharges from large construction activities of 5 acres or more of land. Under Phase I of the NPDES storm water program, storm water discharges have been primarily regulated for (1) specific industrial categories, (2) construction sites greater than 5 acres, and (3) municipal separate storm sewer systems (MS4s) serving populations greater than 100,000. NPDES Phase II regulations expand the existing NPDES storm water program (Phase I) to address storm water discharges from small MS4s (those serving less than 100,000 persons) and construction sites that disturb one to five acres.

Under the CWA, the State of California is required to issue a list of all impaired water bodies in the state. An impaired water body, by definition provided in CWA Section 303(d) is a body that does not meet water quality regulations and therefore have imposed Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of wastewater allowed to be discharged into a given water body each day. The

¹¹ US EPA 2010 *Waterbody Report for Malibu Lagoon*, website: http://iaspub.epa.gov/tmdl_waters10/attains_waterbody.control?p_au_id=CAE4042100019990201160355&p_cycle=2010&p_state=CA&p_report_type=, accessed March 12, 2014.

¹² Los Angeles Regional Water Quality Control Board. 2011. *State of the Watershed, Report on Water Quality, the Santa Monica Bay Watershed Management Area*. Second edition. November.

State Water Resources Control Board (SWRCB), Division of Water Quality issues the listings of impaired water bodies, and the 2010 list included Malibu Creek, Malibu Lagoon, Malibu Beach, and Surfrider Beach as impaired water bodies with imposed TMDLs.¹³

State Regulations

California Coastal Act

The California Coastal Act, Public Resources Code 3 Section 30000 et seq., established the permanent California Coastal Commission (CCC), whose mandate is to protect and enhance the resources of the coastal zone mapped by the state legislature. The goals of the Coastal Act are:

- Protect, maintain and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources;
- Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state;
- Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners;
- Assure priority for coastal-dependent and coastal-related development over other development on the coast; and
- Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Implementation of Coastal Act policies designed to achieve the aforementioned goals is accomplished primarily through the preparation of a Local Coastal Program (LCP), reviewed and approved by the CCC. The City's LCP, which was adopted by the CCC in September, 2002, are described further in the Local Regulations section.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act ("Porter-Cologne" or "the Act") established the State Water Resources Control Board (State Water Board) and divided the state into nine regional basins, each

¹³ US EPA 2010 Waterbody Report for Malibu Lagoon, website: http://iaspub.epa.gov/tmdl_waters10/attains_waterbody.control?p_au_id=CAE4042100019990201160355&p_cycle=2010&p_state=CA&p_report_type=, accessed March 12, 2014.

with an RWQCB. The State Water Board is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies.

The Act authorizes the State Water Board to draft state policies regarding water quality in accordance with CWA Section 303. In addition, the Porter-Cologne Act authorizes the State Water Board to issue WDRs for projects that would discharge to state waters. Porter-Cologne requires that the State Water Board or the RWQCB adopt water quality control plans, otherwise referred to as basin plans, for the protection of water quality. A basin plan must:

- Identify beneficial uses of water to be protected;
- Establish water quality objectives for the reasonable protection of the beneficial uses; and
- Establish a program of implementation for achieving the water quality objectives.

Basin plans also provide the technical basis for determining WDRs, taking enforcement actions, and evaluating clean water grant proposals. Basin plans are updated and reviewed every three years in accordance with Article 3 of Porter-Cologne and CWA Section 303(c).

City of Malibu Local Coastal Program

The project lies entirely within with the California Coastal Zone as defined by the California Coastal Act. Section 30231 of the Coastal Act requires the use of means to maintain and enhance water quality, including managing wastewater discharges, controlling runoff, protecting groundwater and surface water, encouraging wastewater recycling, and protecting streams. The Coastal Act requires that its goals and policies be implemented by local government through the Local Coastal Program (LCP) process. The Malibu LCP is composed of two parts: the Land Use Plan (LUP) and the Local Implementation Plan (LIP); both were certified by the California Coastal Commission on September 13, 2002.

Coastal Zone Act Reauthorization Amendments

The 1990 Coastal Zone Act Reauthorization Amendments (CZARA) identified polluted runoff as a significant factor in coastal water degradation for shore-side municipalities. To better address polluted water in the coastal zone, Congress added CZARA Section 6217, which required, among other things, the preparation of a State coastal non-point source pollution control program. The purpose of the program is to implement polluted runoff management measures and enforceable policies to restore and protect coastal waters. California's specific response to Section 6217 (the state's Coastal Non-point Pollution Control Program or CNPCP) continues to be developed by the SWRCB and the Coastal Commission in consultation with the National Oceanographic and Atmospheric Administration (NOAA) and the

US EPA. It is clear that it will be incumbent upon local governments in coastal zone areas to implement more stringent water quality protection measures to address polluted runoff. The primary objectives of the CZARA program are reflected in the revised NPDES permitting requirements discussed above.

Local Regulations

Municipal NPDES Permit

The City is a co-permittee under the *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach* MS4 (Order No. R4-2012-0175, NPDES Permit No. CAS004001). The permit covers an area of approximately 3,100 square miles and serves a population of about 10 million. The MS4 Permit was created for the purpose of protecting the beneficial uses of receiving waters in the Los Angeles region by ensuring that MS4s in the County of Los Angeles are not causing or contributing to exceedances of applicable water quality objectives. Currently the City, in collaboration with the County and Flood Control, are working together to develop an Enhanced Watershed Management Program (EWMP). A final EWMP is scheduled to be submitted to the RWQCB in June 2015.

City of Malibu Local Coastal Program

The California Coastal Act requires that its goals and policies be implemented by local governments through the Local Coastal Program (LCP). The Malibu LCP consists of two subparts, the Land Use Plan (LUP) and the Local Implementation Plan (LIP).

LCP Land Use Plan

The LUP includes policies related to hydrology and water quality pollution control from new developments, erosion and sedimentation, and grading and landform modifications. Specific techniques are required by the LUP, including limiting increases in the extent of impervious surfaces, and limiting land disturbance activities, such as clearing or grading. The LUP also requires BMPs to reduce the effects of storm water runoff, construction erosion or runoff, and storm water contamination, among others. LUP policies related to hydrology and water quality are listed below.

LUP Policy 3.78 New development shall prevent or reduce nonpoint-source pollution in the near-shore environment through implementation of the nonpoint-source pollution and private sewage disposal system policies.

LUP Policy 3.79 Grading and landform alteration shall be limited to minimize impacts from erosion and sedimentation on marine resources.

- LUP Policy 3.95** New development shall be sited and designed to protect water quality and minimize impacts on coastal waters by incorporating measures designed to ensure the following:
- Protecting areas that provide important water quality benefits, areas necessary to maintain riparian and aquatic biota, and/or areas that are susceptible to erosion and sediment loss;
 - Limiting increases of impervious surfaces;
 - Limiting land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and
 - Limiting disturbance of natural drainage features and vegetation.
- LUP Policy 3.96** New development shall not result in the degradation of the water quality of groundwater basins or coastal surface waters, including the ocean, coastal streams, or wetlands. Urban runoff pollutants shall not be discharged or deposited such that they adversely affect groundwater, the ocean, coastal streams, or wetlands, consistent with the requirements of the Los Angeles Regional Water Quality Control Board’s municipal stormwater permit and the California Ocean Plan.
- LUP Policy 3.97** Development must be designed to minimize, to the maximum extent feasible, the introduction of pollutants of concern that may result in significant impacts on runoff from impervious areas. To meet the requirement to minimize “pollutants of concern,”¹⁴ new development shall incorporate a BMP or a combination of BMPs best suited to reduce pollutant loading to the maximum extent feasible.
- LUP Policy 3.99** Post-development peak stormwater runoff discharge rates shall not exceed the estimated pre-development rate. Dry-weather runoff from new development must not exceed the pre-development baseline flow rate to receiving water bodies.

¹⁴ Pollutants of concern are defined in the Standard Urban Stormwater Mitigation Plan for Los Angeles County and Cities in Los Angeles County as consisting of “any pollutants that exhibit one or more of the following characteristics: current loadings or historic deposits of the pollutant are impacting the beneficial uses of a receiving water, elevated levels of the pollutant are found in sediments of a receiving water and/or have the potential to bioaccumulate in organisms therein, or the detectable inputs of the pollutant are at a concentrations or loads considered potentially toxic to humans and/or flora or fauna.”

- LUP Policy 3.100** New development shall be sited and designed to minimize impacts on water quality from increased runoff volumes and non-point-source pollution. All new development shall meet the requirements of the Los Angeles Regional Water Quality Control Board in its Standard Urban Stormwater Mitigation Plan for Los Angeles County and Cities in Los Angeles County (March 2000) or subsequent versions of this plan.¹⁵
- LUP Policy 3.102** Post-construction structural BMPs (or suites of BMPs) should be designed to treat, infiltrate, or filter the amount of stormwater runoff produced by all storms up to and including the 85th percentile,¹⁶ 24-hour storm event for volume-based BMPs and/or the 85th percentile, 1-hour storm event (with an appropriate safety factor, i.e., 2 or greater) for flow-based BMPs. This standard shall be consistent with the most recent Los Angeles Regional Water Quality Control Board Municipal Stormwater Permit for the Malibu region or the most recent California Coastal Commission Plan for Controlling Polluted Runoff, whichever is more stringent.
- LUP Policy 3.106** Commercial development shall use BMPs to control the runoff of pollutants from structures, parking and loading areas.
- LUP Policy 3.107** Restaurants shall incorporate BMPs designed to minimize runoff of oil and grease, solvents, phosphates, and suspended solids to the storm drain system.
- LUP Policy 3.110** New development shall include construction phase erosion control and polluted runoff control plans. These plans shall specify BMPs that will be implemented to minimize erosion and sedimentation, provide adequate sanitary and waste disposal facilities and prevent contamination of runoff by construction chemicals and materials.
- LUP Policy 3.111** New development shall include post-development phase drainage and polluted runoff control plans. These plans shall specify site design, source control and

¹⁵ All new development projects equal to one (1) acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area must retain on site the Storm Water Quality Design Volume (SWQDv). The SWQDv is defined as the greater of the 0.75-inch, 24 hour storm event or the 85th percentile, 24-hour storm event. For instances where it is technically infeasible to retain the volume of runoff on site, the applicant may use on-site biofiltration. However, the new project must bio-filtrate 1.5 times the portion of the SWQDv that is not retained on-site.

¹⁶ Generally speaking, on a long-term basis, spanning many years, 85 percent of rain events are smaller than the 85th percentile event, while 15 percent of events are larger.

treatment control BMPs that will be implemented to minimize post-construction polluted runoff, and shall include the monitoring and maintenance plans for these BMPs.

LUP Policy 3.112 Storm drain stenciling and signage shall be provided for new storm drain construction in order to discourage dumping into drains. Signs shall be provided at creek public access points to similarly discourage creek dumping.

LUP Policy 3.113 Outdoor material storage areas shall be designed using BMPs to prevent stormwater contamination from stored materials.

LUP Policy 3.114 Trash storage areas shall be designed using BMPs to prevent stormwater contamination by loose trash and debris.

LUP Policy 3.115 Permits for new development shall be conditioned to require ongoing maintenance where maintenance is necessary for effective operation of required BMPs. Verification of maintenance shall include the permittee's signed statement accepting responsibility for all structural and treatment control BMP maintenance until such time as the property is transferred and another party takes responsibility.

LUP Policy 3.116 The City, property owners, or homeowners associations, as applicable, shall be required to maintain any drainage device to insure it functions as designed and intended. All structural BMPs shall be inspected, cleaned, and repaired when necessary prior to September 30th of each year. Owners of these devices will be responsible for insuring that they continue to function properly and additional inspections should occur after storms as needed throughout the rainy season. Repairs, modifications, or installation of additional BMPs, as needed, should be carried out prior to the next rainy season.

LUP Policy 3.117 Public streets and parking lots shall be swept frequently to remove debris and contaminant residue. For private streets and parking lots, the property owner shall be responsible for frequent sweeping to remove debris and contaminant residue.

LUP Policy 3.119 New development that requires a grading permit or Local SWPPP shall include landscaping and re-vegetation of graded or disturbed areas, consistent with Policy 3.50. Any landscaping that is required to control erosion shall use native

or drought-tolerant noninvasive plants to minimize the need for fertilizer, pesticides, herbicides, and excessive irrigation. Where irrigation is necessary, efficient irrigation practices shall be required.

LUP Policy 3.120 New development shall protect the absorption, purifying, and retentive functions of natural systems that exist on the site. Where feasible, drainage plans shall be designed to complement and utilize existing drainage patterns and systems, conveying drainage from the developed area of the site in a non-erosive manner. Disturbed or degraded natural drainage systems shall be restored, where feasible, except where there are geologic or public safety concerns.

LUP Policy 4.2 All new development shall be sized, designed, and sited to minimize risks to life and property from geologic, flood, and fire hazard.

LUP Policy 4.9 Buildings within flood prone areas subject to inundation or erosion shall be prohibited unless no alternative building site exists on the property and proper mitigation measures are provided to minimize or eliminate risks to life and property from flood hazard.

LUP Policy 4.10 New development shall provide adequate drainage and erosion control facilities that convey site drainage in a non-erosive manner in order to minimize hazards resulting from increased runoff, erosion and other hydrologic impacts to streams.

LUP Policy 5.49 All new development shall comply with the City's water conservation and wastewater regulations.

LCP Local Implementation Plan (LIP)

The LIP implements the policies of the California Coastal Act and the LUP to protect, maintain, and enhance the overall quality of the environment. The LIP chapters pertaining to hydrology and water quality and applicable to the project are as follows:

LIP Chapter 8, Grading, includes provisions to keep the amount of grading to an absolute minimum, with limits on the maximum amount of grading, the maximum height of cuts and fills, maximum grade, and seasonal restrictions on grading.

LIP Chapter 9, Hazards, includes measures to ensure that new development minimizes risks to life and property from hazards, including floods and tsunamis.

LIP Chapter 17, *Water Quality Protection*, provides application submittal requirements, development standards, and other measures to ensure that new development is sited and designed to conserve natural drainage features and vegetation, to prevent the introduction of pollutants into coastal waters, and to protect the overall quality of coastal waters and resources. LIP Chapter 17 states that all development should consider site-design, source-control, and treatment control BMPs to prevent polluted runoff and water quality impacts resulting from development. In addition, projects should be designed to control post development peak runoff rates and volumes to maintain or reduce predevelopment downstream erosion rates.

City of Malibu Municipal Code

The City's Municipal Code (MMC) includes the laws of the City. Title 17 of the MMC specifically discusses the zoning regulations pertaining to new development. The following MMC sections pertain to hydrology and water quality:

Section 13.04.100 Storm water management plan for new development. Prior to issuance of a building permit for any new development (on undeveloped land) or final map approval for any subdivision of property the applicant shall be required to have approval of a storm water management plan from the department of public works and the department of environmental and building safety.

Section 13.04.110 Standard Urban Storm Water Mitigation Plan (SUSMP) requirements for new development and redevelopment projects. Projects for new development and redevelopment, if subject to discretionary project approval in the zoning ordinance of the city, shall require a storm water mitigation plan that complies with the current MS4 permit.

City of Malibu Floodplain Management Ordinance

Title 15.20 of the MMC is the Floodplain Management Ordinance. The purpose of the ordinance is to minimize public and private losses due to flooding within flood hazard areas. The MMC dictates certain construction standards that are required to be used in flood hazard areas. The MMC includes the following methods and provisions:

- Restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards or result in damaging increases in erosion or flood heights or velocities;

- Require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;

Control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;

- Control filling, grading, dredging, and other development that may increase flood damage; and
- Prevent or regulate the construction of flood barriers that will unnaturally divert flood waters or may increase flood hazards in other areas.

City of Malibu Ordinance 377 – Uniform Plumbing Code

The City of Malibu has adopted the California Plumbing Code, 2013 Edition (Part 5 of Title 24 of the California Code of Regulations), which constitutes the City of Malibu Uniform Plumbing Code (UPC). UPC Appendix H (Private Sewage Disposal Systems), Subsection H 1.11 states, “Commercial building and multiple family dwellings to be constructed, or remodeled, after the effective date of this section shall have an on-site wastewater treatment system which provides tertiary sewage effluent treatment as defined by the Building Official, prior to final sewage effluent disposal, unless otherwise approved by the Building Official.” However, as the proposed project will be connecting to the new Civic Center Wastewater Treatment Facility, no OWTS is included as part of the proposed project. As a result, it will not be subject to this Ordinance. Refer to **Section 3.14.4, Wastewater**, for further discussion and analysis.

The City of Malibu’s SEMS/NIMS Emergency Operations Plan 2012

The City of Malibu’s *SEMS/NIMS Emergency Operations Plan 2012* (EOP) is a preparedness document designed to be read, understood, and exercised prior to an emergency. It is designed to include the City of Malibu as part of the Los Angeles Operational Area, California *Standardized Emergency Management System* (SEMS) and *National Incident Management System* (NIMS). It provides the groundwork for planning and training to facilitate optimum performance in response to a major emergency or disaster situation in the City. Following prescribed SEMS methodology also assures the City of receiving federal and state reimbursement for emergency response and recovery costs.¹⁷

Each City department is responsible for assuring the maintenance of appropriate and current standard operating procedures and checklists that detail how assigned responsibilities are performed during a major disaster.

¹⁷ City of Malibu SEMS/NIMS Emergency Operations Plan 2012, website: <https://www.malibucity.org/DocumentCenter/View/68>, accessed March 17, 2014.

The City's Tsunami Response Plan is included in the EOP. The Tsunami Response Plan summarizes emergency response in the event of a tsunami, including alerts and warnings, evacuation procedures and routes, and damage assessment following the event.

PROPOSED PROJECT IMPROVEMENTS

The Whole Foods and the Park Shopping Center project (proposed project) would be constructed on a currently underutilized site within the Civic Center Area of the City of Malibu totaling approximately 256,168 square feet (sf). Development under the proposed project would consist of a new 38,425 square foot (sf) neighborhood shopping center designed to be anchored by a Whole Foods Market (24,549 sf) and four smaller commercial buildings (3,015 sf, 3,086 sf, 3,592 sf, and 4,183 sf, respectively). Portions of each of the proposed structures would exceed the 18-foot height limit, to a maximum of 24 feet above existing grade for flat roof areas and up to 28 feet above existing grade for pitched roof areas. This height increase above 18 feet is due, in part, to the fact that the building finish floors must be raised to meet FEMA and MMC Floodplain Management Ordinance requirements. The buildings surround a central parking area, with walkways, landscaping and outdoor amenities integrated throughout.

The proposed project is intended provide a variety of community and visitor-serving goods and services, including retail and restaurant uses, with additional space designed for outdoor dining. Primary vehicle access would be provided from a driveway on Civic Center Way that would be designed to align with the driveway serving the existing commercial office complex across the street. Secondary access would be provided by a driveway on Cross Creek Road, a private street.

For wastewater disposal, the project proposes to connect to the future Civic Center Water Treatment Facility (CCWTF) system via points of connection to the projected Phase 1 pipelines in either Civic Center Way or Cross Creek Road. An OWTS is not included as part of the proposed project design. Refer to **Section 3.14.4, Wastewater**, for further discussion and analysis.

Currently, approximately 10 percent of the project site is considered impermeable as it is covered with asphalt paving. Post-development impermeable area would increase to approximately 73 percent of the project site, resulting in a proportional increase in runoff generated and a potential decrease in stormwater infiltration into groundwater. As required by the NPDES MS4 Permit, the Malibu LCP, and the MMC, a Draft Water Quality Mitigation Plan (WQMP) has been prepared for the proposed project (included in **Appendix 3.8**). The final WQMP will be supported by a final hydrology and hydraulic study that identifies all areas of contributory runoff on the property. The Draft WQMP has incorporated drainage control measures to avoid routing rooftop or parking lot runoff directly to the roadway or into the City's nearby storm drain system. Stormwater runoff would instead be directed through media

filtration, vegetated swales, and biofilters. Refer to **Figure 3.8-2, Proposed Water Quality Mitigation Plan**.

To maximize stormwater interception and infiltration, permeable outdoor areas would incorporate a storm water management feature known as biofiltration. Biofiltration is a technique that typically uses, plants in channels, or strips to capture and biologically degrade pollutants carried by stormwater runoff. As an additional benefit, biofiltration can also reduce the velocity and volume of stormwater runoff. Biofiltration is provided by both biofiltration strips and biofiltration swales. Biofiltration strips, also known as vegetated buffer strips, are vegetated sections of land over which stormwater flows as sheet flow. Biofiltration swales (bio-swales) are vegetated channels that receive and direct the concentrated flow of stormwater. Suitable vegetation for biofiltration applications includes herbaceous plants, grasses, and ground cover.

The proposed project would include Site Design Best Management Practices (BMPs), Source Control BMPs, and Treatment Control BMPs that retain on-site the Stormwater Quality Design Volume (SWQDv), or where it is technically infeasible to retain on-site, the project would bio-filtrate 1.5 times the SWQDv that is not retained on-site. The SWQDv is defined as the greater of the 85th percentile, 24-hour storm event or the 0.75-inch, 24-hour storm event. In addition, stormwater overflows requiring detention from the project site have been provided in the design of the biofilters. The proposed biofilters capture and treat the storm water runoff through an engineered soil media. The storm water that has passed through the engineered soil media is then captured and discharged into the City's storm drain system. The filtering process with the biofilters causes the storm water runoff to collect within the biofilters and restricts the amount of storm water runoff discharged from the project site.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

In order to assist in determining whether a project will have a significant effect on the environment, the *California Environmental Quality Act (CEQA) Guidelines* identify criteria for conditions that may be deemed to constitute a substantial or potentially substantial adverse change in physical conditions. Specifically, Appendix G of the *State CEQA Guidelines* (Environmental Checklist Form) lists the following items to be considered when determining whether a project may be deemed to have a significant impact related to hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies, or interfere substantially with groundwater recharge such that there would be net deficit in aquifer volume or a lowering of the local groundwater table;



- C) 18x18 CATCH BASIN W/ ABTECH 1414H
- F) GRASSY SWALE
- H) TRENCH DRAIN(FG-TDOF12)
- K) 4" DOWNSPOUT W/FG-DS-4)
- L) 6" DOWNSPOUT W/FG-DS-6)
- S) EPIC STORMWATER TREATMENT



116 58 0 116
 APPROXIMATE SCALE IN FEET

SOURCE: PCCE, Inc., 2011

FIGURE 3.8-2

Proposed Water Quality Mitigation Plan



- 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-site 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-site or off-site;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems to 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 flow;
- Expose people or structures to a significant risk, loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Result in inundation by seiche, tsunami, or mudflow.

Impact Analysis

Threshold 3.8-1 Violate any water quality standards or waste discharge requirements.

Portions of the proposed project site would be paved for the building foundations and parking lots which would alter drainage patterns on the site. The NPDES requires that a Notice of Intent (NOI) be filed with the SWRCB for construction activities greater than 1 acre. By filing an NOI, the developer agrees to conditions outlined in the NPDES General Permit for Discharge from Construction Activities (General Permit). The General Permit requires all owners of land where construction activity occurs to:

- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the nation,
- Develop and implement a storm water pollution prevention plan (SWPPP), and
- Perform inspections of storm water pollution prevention measures (control practices).

Recent updates to the General Permit (FRL-9640-8; EPA-HQ-OW-2010-0782, adopted February 2012) requires permittees to implement specific sampling and analytical procedures to determine whether Best Management Practices (BMPs) implemented on a construction site are:

- Preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment, silt or turbidity; and

- Preventing other pollutants that are known or should be known by permittees to occur on construction sites and that cannot be visually observed or detected in storm water discharges, from causing or contributing to exceedances of water quality objectives.

Pursuant to Section 17.4.1 of the LCP, prior to the issuance of a grading or building permit, the applicant shall be required to prepare and submit an Erosion and Sediment Control Plan for approval (MS4 Permit Section VI.D.8.h.ii) that identifies BMPs during the construction phases of development to minimize or prevent construction-related polluted runoff. BMPs include practices such as installing sandbag barriers, temporary desilting basins near inlets, gravel driveways, dust controls, employee training, and other general good housekeeping practices that help prevent water quality contamination. With the implementation of the BMPs, short-term water quality impacts would be reduced to less than significant levels. In the remote event that there is any stormwater runoff from the project site during construction, it would be directed to the catchment drain in Civic Center Way where the runoff would be screened to remove gross pollutants, and then pumped to the SWTF where it is filtered and disinfected through ozone treatment. These processes target the removal of trash, suspended solids, metals, and indicator bacteria (i.e., total coliform, fecal coliform, E. coli, and enterococcus). The treated runoff would then be pumped to Legacy Park and used as irrigation for the park and the landscaping along Civic Center Way (also known as the “Linear Park”).

Post-development storm water runoff has the potential to contribute pollutants to the storm water conveyance system and ultimately to the ocean. The quality of storm water is generally affected by the length of time since the last rainfall, the rainfall intensity, the urban uses of the area, and the quantity of transported sediment. The EPA considers street and parking lot surfaces to be the primary source of storm water pollution in urban areas. Post-construction phase water quality requirements are required as stated in Section 17.4.2 of the LCP. Section 17.4.2 of the LCP requires post construction plans detailing how stormwater and polluted runoff will be managed or mitigated during the life of the project. A WQMP is required for all development that requires a Coastal Development Permit and shall require the implementation of appropriate site design and source control BMPs from Section 17.6 of the LIP and Appendix A to minimize or prevent post-construction polluted runoff. With the preparation, approval and successful implementation of a WQMP, impacts to water quality would be mitigated less than significant levels.

As previously discussed, compliance with the requirements NPDES MS4 Permit (Section VI.D.7.c), and the Malibu LCP and the MMC would be provided through the implementation of the WQMP which shall include Site Design Best Management Practices (BMPs), Source Control BMPs, and Treatment Control BMPs that retains on-site the Stormwater Quality Design Volume (SWQDv), or where it is technically infeasible to retain on-site, the project shall bio-filtrate 1.5 times the SWQDv that is not retained on-site.

The SWQD_v is defined as the greater of the 85th percentile, 24-hour storm event or the 0.75-inch, 24-hour storm event.

For wastewater disposal, the project proposes to connect to the future CCWTF system via points of connection to the projected Phase 1 pipelines in either Civic Center Way or Cross Creek Road. An OWTS is not included as part of the proposed project design. Therefore there would be no project impacts related a violation of wastewater discharge requirements. Refer to **Section 3.14.4, Wastewater**, for further discussion and analysis.

Mitigation Measures

In order to ensure that the proposed project does not violate any water quality standards or waste discharge requirements during construction or operation, the following Mitigation Measures are recommended:

- 3.8-1:** Prior to issuance of any building or grading permit or Certificate of Occupancy, the project proponent shall submit proof of compliance with all requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit, including the submittal of an Erosion and Sediment Control Plan (MS4 Permit Section VI.D.8.h.ii) for approval.
- 3.8-2:** Prior to issuance of any building or grading permits, the project proponent must submit, to the City, and receive final approval of a Water Quality Mitigation Plan (WQMP). The WQMP shall be supported by a final hydrology and hydraulic study that identifies all contributory runoff areas on the property and shall substantially conform to the submitted concept grading and drainage plan. The WQMP shall meet all the requirements of the City's current Municipal Separate Stormwater Sewer System (MS4) permit Section VI.D.7.c. The following elements shall be included within the WQMP:
- Site Design Best Management Practices (BMPs)
 - Source Control BMPs
 - Treatment Control BMPs that retains on-site the Stormwater Quality Design Volume (SWQD_v), or where it is technically infeasible to retain on-site, the project shall bio-filtrate 1.5 times the SWQD_v that is not retained on-site. The SWQD_v is defined as the greater of the 85th percentile, 24-hour storm event or the 0.75-inch, 24-hour storm event.
 - Drainage Improvements

- A plan for the maintenance and monitoring of the proposed treatment BMPs for the expected life of the structure.

A copy of the WQMP shall be filed against the property to provide constructive notice to future property owners of their obligation to maintain the water quality measures installed during construction prior to the issuance of grading or building permits.

The WQMP shall be submitted to Public Works and the fee applicable at time of submittal for the review of the WQMP shall be paid prior to the start of the technical review. The WQMP shall be approved prior to the Public Works Department's approval of any permits. The Public Works Department shall tentatively approve the plan and shall keep a copy on file until the completion of the project. Once the project is completed, the Public Works Department shall verify the installation of the BMPs. If there are proposed revisions to the drainage system or treatment control BMPs, the applicant shall submit the modification to the Public Works Department for review and subsequent approval. Following the Public Works Department final approval of the WQMP, the original signed and notarized document shall be recorded with the County Recorder. A certified copy of the WQMP shall be submitted to the Public Works Department prior to the issuance of the Certificate of Occupancy.

The WQMP shall include a maintenance covenant; a report documenting compliance shall be submitted to the City for review on an annual basis for the life of the project.

Residual Impacts

With implementation of the mitigation measures listed above, the proposed project would not violate any water quality standards or waste discharge requirements during either construction or operation, and impacts would be less than significant.

Threshold 3.8-2 Substantially deplete groundwater supplies, or interfere substantially with groundwater recharge such that there would be net deficit in aquifer volume or a lowering of the local groundwater table.

The proposed project includes the construction of a shopping center. Currently approximately 10 percent of the project site is impermeable; post-development impermeable area would increase to approximately 73 percent of the project site, resulting in a proportional increase in runoff generated and a potential decrease in stormwater infiltration into groundwater. The project would not include the withdrawal or use of groundwater supplies, however the project would introduce irrigation water that could percolate

into the groundwater supply. Due to concerns of excess irrigation water causing “groundwater mounding”¹⁸ in the regional area, a Limited Hydrologic Analysis was performed by EPD Consultants in July 2010. According to this analysis, there is no potential for groundwater mounding as a result of the proposed development.¹⁹

Although only about 5 percent of the irrigation water would re-enter the groundwater basin, normal precipitation events would be collected and directed towards landscaping or drainage improvement areas on-site. As discussed above (**Threshold 3.8-1**) the proposed project would implement a WQMP to contain and treat as much stormwater on-site as feasible (via site design, source control, and treatment control BMPs) prior to discharge into the municipal drainage system. In addition, nearly all stormwater is anticipated to remain and be recharged on-site. Therefore the proposed project would not 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 and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts

Impacts would be less than significant after implementation of proposed project improvements.

Threshold 3.8-3 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 that would result in substantial erosion or siltation on-site or off-site.

The proposed project involves the development of a shopping center on an undeveloped site in the Civic Center Area of the City of Malibu. As discussed above (**Threshold 3.8-1**), the proposed project would implement a WQMP which shall include Site Design Best Management Practices (BMPs), Source Control BMPs, and Treatment Control BMPs that retain on-site the Stormwater Quality Design Volume (SWQDV), or where it is technically infeasible to retain on-site, the project shall bio-filtrate 1.5 times the SWQDV that

¹⁸ Groundwater mounding is a phenomenon that can alter groundwater flow rates and direction; however, the effects are usually localized and may be temporary, depending upon the frequency and duration of the surface recharge events.

¹⁹ EPD Consultants, *Limited Hydrologic Analysis, Proposed Whole Foods in the Park Shopping Center, 23401 Civic Center Way, Malibu, California, July 6, 2010.*

is not retained on-site. The SWQDv is defined as the greater of the 85th percentile, 24-hour storm event or the 0.75-inch, 24-hour storm event.

As previously discussed, the WQMP would be designed to handle runoff from the project site from a SWQDv storm event and further, would ensure that all stormwater discharged into the municipal drainage system is within water quality standards and will not increase erosion or sedimentation on- or off-site. Impacts would be less than significant.

Mitigation Measures

Implementation of **Mitigation Measures 3.8-1** and **3.8-2**, above.

Residual Impacts

Impacts would be less than significant after implementation of proposed project improvements and implementation of **Mitigation Measures 3.8-1** and **3.8-2**.

Threshold 3.8-4 **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 that would result in flooding on-site or off-site.**

Threshold 3.8-5 **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.**

Threshold 3.8-6 **Otherwise substantially degrade water quality.**

As discussed above (**Threshold 3.8-1**) the proposed project would implement a WQMP, which shall include Site Design Best Management Practices (BMPs), Source Control BMPs, and Treatment Control BMPs that retain on-site the Stormwater Quality Design Volume (SWQDv), or where it is technically infeasible to retain on-site, the project shall bio-filtrate 1.5 times the SWQDv that is not retained on-site. The SWQDv is defined as the greater of the 85th percentile, 24-hour storm event or the 0.75-inch, 24-hour storm event.

Therefore implementation of the proposed project and the proposed use of biofiltration would not exceed the capacity of existing or planned storm drain facilities, provide substantial additional sources of polluted runoff, or otherwise substantially degrade water quality. Impacts would be less than significant.

Mitigation Measures

Implementation of **Mitigation Measures 3.8-1** and **3.8-2**, above.

Residual Impacts

Impacts would be less than significant after implementation of proposed project improvements and implementation of **Mitigation Measures 3.8-1** and **3.8-2**.

Threshold 3.8-7 **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.**

The project site is located within FEMA's flood designation Zone AO (depth 2 feet). Zone AO is defined as areas of 100-year shallow flooding where depths are between 1 and 3 feet. The proposed project includes the construction of a shopping center with the proposed building pads raised to meet FEMA and MMC Floodplain Management Ordinance requirements. No housing is being proposed. Therefore no impacts will occur.

Mitigation Measures

No mitigation measures are required.

Residual Impacts

No impacts would occur.

Threshold 3.8-8 **Place within a 100-year flood hazard area structures that would impede or redirect flood flow.**

The proposed project includes the construction of a commercial shopping center. This will include the construction of buildings and building pads that would be raised to meet FEMA and MMC Floodplain Management Ordinance requirements, which could impede or redirect flood flow. As discussed above (**Threshold 3.8-1**) the proposed project would implement a WQMP to contain as much stormwater on-site (via site design, source control, and treatment control BMPs) prior to its discharge into the municipal drainage system. As previously discussed, the stormwater treatment BMPs would be adequate to handle runoff from the project site during a SWQDv storm event. In the event stormwater flows exceed the capacity for on-site retention and treatment (e.g. during a 100-year storm event), the proposed project

would direct the excess to the detention basin in Legacy Park for processing at the City's SWTF. Implementation of the WQMP would ensure that impacts are less than significant.

Mitigation Measures

Implementation of **Mitigation Measures 3.8-1** and **3.8-2**, above.

Residual Impacts

Impacts would be less than significant after implementation of project improvements and implementation of **Mitigation Measures 3.8-1** and **3.8-2**.

Threshold 3.8-9 **Expose people or structures to a significant risk, loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.**

The proposed project site is not within the projected inundation area as a result of the failure of a levee or dam. The proposed project includes the construction of a shopping center. This will include the construction of buildings and building pads that would be raised to meet FEMA and MMC Floodplain Management Ordinance requirements to protect employees and patrons from the risk of loss, injury, or death involving flooding. As discussed above (**Threshold 3.8-1**) the proposed project would implement a WQMP which shall include Site Design Best Management Practices (BMPs), Source Control BMPs, and Treatment Control BMPs that retain on-site the Stormwater Quality Design Volume (SWQDV), or where it is technically infeasible to retain on-site, the project shall bio-filtrate 1.5 times the SWQDV that is not retained on-site. The SWQDV is defined as the greater of the 85th percentile, 24-hour storm event or the 0.75-inch, 24-hour storm event. In the event stormwater flows exceed the capacity for on-site retention and treatment (e.g. during a 100-year storm event), the proposed project would direct the excess to the detention basin in Legacy Park for processing at the City's SWTF. Implementation of the WQMP would ensure that impacts are less than significant.

Mitigation Measures

Implementation of **Mitigation Measures 3.8-1** and **3.8-2**, above.

Residual Impacts

Impacts would be less than significant after implementation of proposed project improvements and implementation of **Mitigation Measures 3.8-1** and **3.8-2**.

Threshold 3.8-10 Expose people or structures to a significant risk, loss, injury, or death involving inundation by seiche, tsunami, or mudflow.

A significant impact may occur if a project site is sufficiently close to the ocean or other water body to be potentially at risk of the effects of seismically induced tidal phenomena (i.e., seiche and tsunami), or if the project site is located adjacent to a hillside area with soil characteristics that would indicate potential susceptibility to mudslides or mudflows.

The California Emergency Management Agency (CalEMA), the University of Southern California (USC), and the California Geological Survey (CGS) have prepared a series of tsunami inundation maps to assist cities and counties in identifying their tsunami hazard. The map for the Malibu Beach Quadrangle, dated March 1, 2009, shows that the proposed project site is outside of the projected tsunami inundation area. Furthermore, as previously discussed, the City of Malibu has prepared a Tsunami Response Plan, which is included in the City's EOP. The Tsunami Response Plan summarizes emergency response in the event of a tsunami, including alerts and warnings, and evacuation stratagems, mitigating the potential risk to employees and patrons at the project site from tsunamis. The topography of the project site and surrounding area is relatively flat. Therefore, the potential for mudflows to impact the project site would be highly unlikely. As such, impacts related to risk of loss, injury, or death by seiche, tsunami, or mudflow would be less than significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts

Impacts would be less than significant.

Cumulative Impacts

Development of the proposed project in conjunction with the related projects identified in **Section 3.0 Environmental Impact Analysis, Table 3.0-1, List of Related Projects**, would result in the further development of uses in an area that contains a mix of developed and undeveloped land. None of the related projects are immediately adjacent to the project site, and they would not be utilizing the same storm drain inlets as the proposed project. Similar to the proposed project, in accordance with the City's LCP-LIP, all related projects would be required to develop a WQMP to reduce impacts upon water quality.

In addition, because the City currently does not maintain a publicly owned and operated sewer system, the properties within the Civic Center area are now served by private OWTSs. Previous studies conducted in the Civic Center Area have indicated that pathogens and nitrogen in wastewater released from OWTS, which represent a category of potential non-point source pollution, may have impaired underlying groundwater within the Malibu Creek Watershed and the Malibu Valley Groundwater Basin.

In response to the findings of these studies, an amendment to the RWQCB's "Water Quality Control Plan for the Coastal Watersheds of Ventura and Los Angeles Counties," also known as the Basin Plan,²⁰ went into effect on December 23, 2010, for the Malibu Civic Center Area. The amendment (Resolution No. R4-2009-007) was adopted by the RWQCB and ratified by the SWRCB (Resolution No. 2010-0045) to institute a prohibition on new and existing discharges from OWTS in the Malibu Civic Center Area (Prohibition). The Prohibition applies to the "Malibu Civic Center Area," defined as portions of the lower Winter Canyon watershed, Malibu Valley watershed and adjacent coastal strips between and including Amarillo Beach and Surfrider Beach, and also known as the Prohibition Zone (**refer to Figure 3.14.4-1, City of Malibu Prohibition Zone and Phasing Map**). The Prohibition calls for discharges from OWTS in the commercial core of the Civic Center Area (Area) to cease by November 2015, and for residential properties in the Area to cease discharge by November 2019.

To address the Prohibition, the City entered into a memorandum of understanding (MOU) with the RWQCB and SWRCB to develop a wastewater treatment plant to handle existing and potential future wastewater treatment needs in the Prohibition Zone. The MOU directs the City to design and construct a centralized wastewater treatment facility and to fund it by way of an assessment district. The MOU states that the facility may utilize deep well injection without the use of reverse osmosis, and sets forth a specific schedule and phasing map for properties to cease discharge (i.e., stop the use of OWTSs) and to connect to the new Civic Center Water Treatment Facility (CCWTF) as follows: Phase 1, for the Civic Center Area commercial-core, by November 2015; and Phase 2, the remaining commercial, institutional, residential and multi-family properties in the Area, by November 2019.²¹ A third phase of properties may have to cease discharge at a later date, depending on the water quality monitoring results from instituting the first two phases as prescribed in the MOU. As with the proposed project, it is anticipated that all new development within the Prohibition Zone would be required to connect to the CCWTF. Therefore cumulative impacts related to groundwater quality would be less than significant.

²⁰ Los Angeles Regional Water Quality Control Board, *Water Quality Control Plan*, 1994.

²¹ Phase 1 of the wastewater treatment facility infrastructure associated with raw wastewater collection and recycled water distribution would be constructed beginning around October 2015 with completion anticipated in April 2017. The MOU was amended in December 2014 to allow properties in Phase 1 of the Prohibition Area (primarily the commercial core of the Civic Center) to connect by June 2017 and Phase 2 (primarily residential properties) to connect by November 2022.

As with the proposed project the related projects would be required to identify potential impacts related to hazards related to flooding, seiche, tsunami, and mudflows and provide mitigation measures to reduce such impacts to the extent feasible. As these conditions are typically site-specific, the proposed project would not contribute to impacts resulting from related projects.

Based on the foregoing, the proposed project's contribution to hydrology and water quality impacts would not be cumulatively considerable, and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts

Impacts would be less than significant.