4.6 Hydrology and Water Quality

4.6.1 Summary

Table 21 summarizes the identified environmental impacts, proposed Mitigation Measures, and residual impacts of the proposed project with regard to hydrology and water quality. Additional detail is provided in Section 4.6.3 (Impact Analysis).

Table 21 Impact and Mitigation Summary: Hydrology and Water Quality

Impact	Mitigation Measures	Residual Impact
Impact H-1. Construction of the proposed project could potentially result in an increase in pollutant discharges to waters of the State. This impact would be significant but mitigable.	**H-1(a) Accidental Spill Control and Environmental Training** The applicant shall prepare a Spill Response Plan and Spill Prevision, Control and Countermeasure Plan. The Spill Response Plan (SRP) in combination with the Spill Prevention, Control and Countermeasure (SPCC) Plan to be prepared for the proposed project shall include procedures for quick and safe clean-up of accidental spills. The SRP and/or SPCC shall prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and shall include an emergency response program to ensure quick and safe clean-up of accidental spills. Additionally, an environmental training program shall be established to communicate environmental concerns and appropriate work practices, including spill prevention and response measures to all field personnel. A monitoring program shall be implemented to ensure that the plans are followed during all construction activities. **Monitoring Action:** Prior to the issuance of a grading permit, the applicant shall submit a Spill Response Plan and Spill Prevention, Control and Countermeasure Plan to the Director of the Environmental Health Bureau for review and approval. **H-1(b) Maintain Vehicles and Equipment** All vehicles and equipment, including all hydraulic hoses, shall be maintained in good working order to minimize leaks that could escape the vehicle or contact the ground. **Monitoring Action:** A vehicle and equipment maintenance log shall be updated and provided by the applicant to the County of Monterey RMA – Planning Department on a monthly basis for the duration of project construction. **H-1(c) Design-level Drainage Analysis and Minimization of Runoff** A design-level drainage analysis shall be prepared by a qualified engineer on behalf of the applicant prior to issuance of a grading permit that shall identify existing drainage patterns across the project site and existing off-site stormwater discharge locations. The drainage analysis shall quantify the existing and predicted post-construction peak runoff rates and amounts both on-site and off-site immediately downgradient of the project site. The drainage analysis shall identify any changes to the location of down-gradient discharge of stormwater runoff and any potential impacts on off-site property that would result from those changes. Stormwater control measures shall be developed to maximize on-site infiltration of stormwater and minimize off-site stormwater discharge. These stormwater control measures shall	Implementation of Mitigation Measures H-1(a) through H-1(d) would reduce impacts related to violation of water quality standards or waste discharge requirements to a less than significant level.

Impact	Mitigation Measures	Residual Impact
	be designed to achieve conformance with Monterey County General Plan Safety Element Policy S-3.1 such that post-development, off-site peak flow discharge from the project site would not be greater than pre-development peak flow discharge. The stormwater control measures may include, as necessary, additional or expanded above-ground retention and/or detention basins, stormwater collection tanks, subsurface infiltration devices such as cisterns with permeable bottoms or perforated pipes, permeable pavement, and vegetated swales. The stormwater control measures required by this mitigation may be used, in whole or in part, to satisfy other NPDES permits and the Monterey County Code. **Monitoring Action:** The design-level drainage analysis shall be submitted to and approved by Monterey County RMA – Public Works, Monterey County RMA – Environmental Services, and Monterey County Water Resources Agency prior to issuance of a grading permit. The identified stormwater control measures shall be installed when appropriate during the construction process, including during grading, initial site preparation, excavation, and construction as necessary to control stormwater runoff and erosion during all phases of the construction process. The installation of sufficient stormwater control measures to achieve conformance with the Monterey County General Plan Safety Element Policy S-3.1 threshold of post-development peak flow discharge less than or equal to pre-development peak flow discharge shall be demonstrated to the County prior to issuance of construction permits. **H-1(d) Stormwater Control Plan, Operation and Maintenance Plan, and Maintenance Agreements** Prior to issuance of occupancy permits, the applicant shall submit a Stormwater Control Plan, prepared by a registered professional engineer, addressing the Post-Construction Stormwater Management Requirements (PCRs) for Development Projects in the Central Coast Region. The plan shall include the location of the drainage facilities and construction details. A report with supporting calculations shall also be provided. The Stormwater Control Plan shall be reviewed by a licensed Geotechnical Engineer to ensure conformance with the Preliminary Geotechnical Investigation (PCE 2017) or Engineering Geology Report. Prior to issuance of occupancy permits, the applicant shall submit an Operation and Maintenance Plan to RMA Environmental Services for review and approval. The plan shall be prepared by a registered Professional Engineer and include, at a minimum, the following: ▪ A site map identifying all structural Stormwater Control Measures requiring O&M practices to function as designed ▪ O&M procedures for each structural Stormwater Control Measure including, but not limited to, LID facilities, retention/detention basins, and proprietorship devices, and ▪ The O&M plan shall include short- and long-term maintenance requirements, recommended frequency of maintenance, and estimated cost for maintenance. **Monitoring Actions:** Prior to issuance of occupancy permits, the applicant shall enter into a Maintenance Agreement with Monterey County. The applicant shall submit a signed and	

Impact	Mitigation Measures	Residual Impact
	notarized Maintenance Agreement to RMA Environmental Services for review and approval prior to filing against the property deed with the County Recorder. The agreement shall clearly identify the responsible party for ongoing maintenance of structural Stormwater Control Measures. The Agreement shall contain provisions for an annual report to be prepared by a registered Professional Engineer. The annual report shall be submitted to RMA Environmental Services, for review and approval, no later than August 15th. All recommended maintenance shall be completed by October 15th of that same year. If maintenance is required, certification shall be provided that all recommended maintenance has been completed before the start of the rainy season.	
Impact H-2. Changes in on-site infiltration capacity would not result in a net deficit in aquifer volume or a lowering of the local groundwater table level. Impacts would be significant but mitigable.	Implementation of **Mitigation Measure H-1(c)** and **Mitigation Measure H-1(d)**, above, would ensure that the amount of on- and off-site stormwater runoff would be reduced to the maximum extent feasible and that the post-development peak discharge rate would not exceed the pre-development peak discharge rate. The stormwater control measures required by these Mitigation Measures would also ensure that infiltration is maximized such that changes in on-site infiltration would not result in a lowering of local groundwater levels or substantially interfere with groundwater recharge.	Implementation of Mitigation Measures H-1(c) and H-1(d) would reduce potential impacts to a less than significant level.
Impact H-3. Construction and operation of the proposed project would alter the on-site topography and drainage patterns and increase the amount of on-site impervious surface, which could increase the rate and amount of on- and off-site runoff and result in erosion, flooding, and the need for expanded stormwater drainage facilities. This impact would be significant but mitigable.	**Mitigation Measure H-1(c) and Mitigation Measure H-1(d)**, above, would ensure that the amount and rate of on- and off-site stormwater runoff would be reduced to the maximum extent feasible. No additional mitigation is required.	Implementation of Mitigation Measures H-1(c) and H-1(d) would reduce potential impacts to a less than significant level.
Impact H-4. Construction of the project could impede or redirect flood flows, expose people or structures to a significant risk of loss, injury or death involving flooding. However, compliance with existing regulations, including the requirements to appropriately elevate the project site above the FEMA 100-year flood	No Mitigation Measures required.	Impacts would be less than significant.

Impact	Mitigation Measures	Residual Impact
elevation would reduce impacts to a less than significant level.		
Impact H-5. The project's water demand could be met with a combination of water credits and water purchase as a precondition to obtaining a building permit from the County, the applicant would be required to obtain a Water Permit from the Monterey Peninsula Water Management District that would evaluate and certify that sufficient water supplies are available to serve the project from existing entitlements and resources. As such, this impact would be less than significant.	No Mitigation Measures required.	Impacts would be less than significant.

4.6.2 Setting

a. Regional Hydrology

The California Department of Water Resources (DWR) divides surface watersheds in California into 10 Hydrologic Regions (HRs). The project site is located in the Central Coast Hydrologic Region. This region covers approximately 7.22 million acres and includes all of Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara counties, as well as parts of San Benito, San Mateo, Santa Clara, and Ventura counties. Major geographic features that define the region include the Pajaro, Salinas, Carmel, Santa Maria, Santa Ynez, and Cuyama valleys; the coastal plain of Santa Barbara; and the Coast Range. The region is largely defined by the northwest-trending southern Coast Range, with a climate generally classified as Mediterranean. The region is the most groundwater-dependent hydrologic region in California; approximately 80 percent of the supply in the region is sourced from groundwater (DWR 2004; MPWMD 2014).

Watersheds

The DWR subdivides Hydrologic Regions into Hydrologic Units (HUs), which are commonly known as watersheds. Within the Central Coast HR, the project site is located in the Carmel River HU (CDF 2004). The Central Coast Regional Water Quality Control Board (CCRWQCB) governs basin planning and water quality in the Carmel River HU (CCRWQCB, 2017). This 255 square mile, southeast-northwest trending watershed in the coast ranges of central Monterey County ranges in elevation between sea-level at the northwestern end and 4,500 to 5,000 feet near the southeastern headwaters of the Carmel River in the Santa Lucia Mountains (MPWMD 2014). The Carmel River watershed drains the Carmel Valley northwestward and feeds into the Carmel River, which meanders for 36 miles in a northwesterly direction merging with seven major stream tributaries

until it flows into the Pacific Ocean at Carmel Bay (MPWMD 2014). The terminus of the Carmel River with the Pacific Ocean is located approximately one mile west of the project site, just south of the City of Carmel-by-the-Sea, in Monterey County.

b. Surface Water

The approximately 3.8-acre project site sits on a river terrace associated with the Carmel River. The project site is generally flat and ranges in elevation from 26 feet to 30 feet above mean sea level with a slight slope generally towards the south and the Carmel River. Although the project site is located in a drainage area known as Hatton Canyon, which is shown in the National Hydrography Dataset (NHD) as an unnamed tributary flowing towards the south to the Carmel River, no defined stream channels cross the project site. Runoff and streamflow associated with the Hatton Canyon drainage area, also known as Drainage Area 29A (DA-29A) as defined in the County Service Area 50 Final Lower Carmel River Stormwater Management and Flood Control Report (CSA 50 Final Report), is intercepted upstream of the project site by an underground culvert and routed southward via a regional stormwater drainage system to the Carmel River (Balance Hydrologics 2014). A review of recent aerial imagery did not reveal the presence of any defined channels or riparian areas on the project site (USGS 2017).

The primary surface water resource in the vicinity of the site is the Carmel River, located approximately 1,000 feet to the south. The Carmel River and its seven main tributaries drain the Carmel Valley northwestward to where it discharges into Carmel Bay (MPWMD 2014). The Carmel River has an average annual runoff of 74,440 acre-feet (AF) for the period of record 1962-2013 (MPWMD 2014); however, due to the weather patterns of the region, surface water supplies can vary substantially year-to-year. There was no flow recorded for a 16-month period in portions of the river channel during the 1976-77 drought. The highest flow recorded by USGS was 368,000 AF during the 1982-83 El Niño event. Three of the largest flood events in the last 15 years include January 1995, March 1995, and February 1998. Recent drought flows for water year 2014 and 2015 were 12,140 and 13,420 AF, respectively. The most recent reported water year, 2016, had a flow of 41,710 AF (MPWMD 2016a), which is more than three times the drought flow in the river. Approximately 70 to 80 percent of the surface runoff in the Carmel River Watershed is generated from rainfall within the Los Padres National Forest (MPWMD 2014). Local drainages contribute to the Lower Carmel River/Lagoon Sub-Watershed of the Carmel River, although they do not convey significant volumes of runoff (The Watershed Institute 2004).

Surface Water Quality

Similar to many watersheds along the Central Coast of California, commercial and residential development is most dense near the coast and becomes progressively less dense in the upstream direction of the watershed. Stormwater runoff from urban and agricultural lands can be a source of water quality pollutants, including sediment, heavy metals, bacteria, pesticides, and fertilizers (RWQCB 2016). Failure to implement Best Management Practices (BMPs) and pollutant control measures for these pollutant sources can result in water quality degradation for nearby waterbodies (RWQCB 2016). Existing impairments to water quality in the Carmel River watershed and efforts to improve water quality and prevent further degradation are discussed below.

The Central Coast Regional Water Quality Control Board (CCRWQCB) regulates water quality in the Carmel River watershed and establishes water quality objectives and requirements for the quality of point and nonpoint sources of discharge through the Water Quality Control Plan for the Central Coastal Basin (Basin Plan). A point source of discharge is defined as waste emanating from a single,

identifiable point such as a wastewater treatment plant. A nonpoint source of discharge results from drainage and percolation of agricultural and urban stormwater runoff.

The Basin Plan defines beneficial uses of the Carmel River as municipal and domestic supply, agricultural supply, industrial process supply, groundwater recharge, freshwater replenishment, contact and noncontact recreation, commercial and sport fishing, warm and cold freshwater habitat, migration of aquatic organisms, reproduction and early development of fish, wildlife habitat, preservation of biological habitats of special significance, and support of habitats necessary for the survival and successful maintenance of rare, threatened, or endangered species (RWQCB 2016).

The Central Coast RWQCB assessed the Carmel River for potential pollutants that may impair one or more of its beneficial uses and found that this water body meets applicable water quality standards for the assessed pollutants. Therefore, the Carmel River is not included on the 2012 Clean Water Act Section 303(d) list of impaired water bodies (SWRCB 2017). Tularcitos Creek, a tributary to the Carmel River and the nearest impaired waterbody to the project site, is listed on the 2012 303(d) list as impaired by Chloride, Fecal Coliform, and Sodium (SWRCB 2017). A Total Maximum Daily Load (TMDL) is required to address each of these pollutants but none has been developed as of this date. The confluence of Tularcitos Creek and the Carmel River lies approximately 14 miles upstream of the proposed project site and therefore the creek is hydrologically disconnected from the project site. Although the creek is located nearby to the project site, existing impairments in the creek are unrelated to past or present activities on the site. The Pacific Ocean at Stillwater Cove, which is located downstream of the project site approximately three miles north of the mouth of the Carmel River, is listed on the 2012 303(d) list as impaired by bacteria (Enterococcus). A TMDL is required to address this pollutant, but has not yet been developed. Stillwater Cove is downstream of the proposed project site.

The Monterey Peninsula Water Management District (MPWMD) has monitored surface-water quality in the Carmel River since 1991. This monitoring is used to help assess whether or not water-quality criteria for aquatic life are being met in various reaches of the Carmel River, and whether habitats for resources such as the South-Central Coast steelhead (*Oncorhynchus mykiss*) and California red-legged frogs (*Rana aurora draytonii*) are being sustained or impaired in the Carmel River (MPWMD 2017). Ambient conditions in surface waters are measured by dissolved oxygen, carbon dioxide, pH, temperature, turbidity, conductivity, and salinity, while groundwater is monitored for specific conductance, total alkalinity, pH, chloride, sulfate, ammonia nitrogen, nitrate nitrogen, total organic carbon, calcium, sodium, magnesium, potassium, iron, manganese, orthophosphate, and boron.

MPWMD has found that, in general, dissolved oxygen, carbon dioxide, and pH levels in the main stem of the Carmel River meet the Basin Plan objectives set by the CCRWQCB. However, average daily water temperature during the late summer and fall commonly exceeds the range for optimum steelhead growth (50-60°F). Monitoring stations along the river show that water temperature during these months remains in a stressful range and can reach levels that threaten aquatic life (above 70°F). Linear trend analysis of data from the eight-year period between 1996 and 2004 at the Garland Park station, where water temperature annually exceeded 70°F, showed a slight downward trend in maximum daily water temperature. This may have been due to the recovery of the riparian zone upstream and the shade it provides along the river. Additional data collected between 2004 and 2008 continue to show temperatures exceeding objectives, particularly at or downstream of existing reservoirs. Water temperature in winter and spring is frequently in the range that is considered optimal for steelhead growth (MPWMD 2017). A recent study showed a statistically

significant downward trend in surface water temperature along the length of the Carmel River during a 16-year period from 1996 to 2011 (MPWMD 2014).

Turbidity in the main stem of the Carmel River is normally low, except during the winter months when storm runoff events can elevate turbidity for several days during and after a storm event. Very wet years, such as in 1998, can cause extensive landslides and bank erosion, which can increase turbidity in the main stem for up to several months. This elevated turbidity in the river signifies an increased amount of sediment transport from the watershed to the mouth of the river, which includes the Carmel River Lagoon. Water quality in the lagoon typically declines during late summer and fall as freshwater inflows cease and a sand bar forms that closes off the mouth of the river. Subsequently, ocean waves start to overtop the sandbar at the mouth of the river. Water temperature often exceeds 70°F, which is above Basin Plan guidelines. Dissolved oxygen levels also periodically drop below guidelines (not less than 7.0 mg/L), probably due to a combination of increasing water temperature and decomposition of marine organic material washed into the lagoon by high ocean waves (MPWMD, 2017).

The Carmel River watershed discharges into the Pacific Ocean in the Carmel Bay Area of Special Biological Significance (ASBS), a 6.2-mile section of the coastline bordering the City of Carmel-by-the-Sea, which was designated by the State Water Resources Control Board (SWRCB) as requiring protection (SWRCB 2017b). The Carmel Bay ASBS is contained within the federally protected Monterey Bay National Marine Sanctuary (MBNMS), which runs 276 miles from Marin County in the north to northern San Luis Obispo County in the south and extends an average of 30 miles offshore. The Carmel Bay State Marine Conservation Area (SMCA) and a portion of the Carmel Pinnacles State Marine Reserve (SMR) are contained within the Carmel Bay ASBS. The Carmel Bay ASBS is affected by various types of runoff, including stormwater runoff that enters the bay from the Carmel Valley, City of Carmel-by-the-Sea, and the Pebble Beach area watersheds (County of Monterey 2014). Under existing conditions, runoff leaving the project site enters the Carmel River as overland flow or through the regional stormwater drainage system and travels to the Carmel Bay. Pollutants potentially present in stormwater runoff from the project site and the surrounding area include fertilizers, pesticides, metals, hydrocarbons, trash, and bacteria.

c. Groundwater

The project site overlays the Carmel Valley Alluvial Aquifer (CVAA; also referred to as the Carmel Valley Groundwater Basin by the California Department of Water Resources [DWR]). The CVAA has a surface area of approximately 5,160 acres, or eight square miles (DWR 2004). This area has been defined by MPWMD and SWRCB as the water-bearing strata directly associated with the Carmel River (MPWMD 2014). The aquifer underlying and closely paralleling the surface course of the Carmel River is water flowing in a subterranean stream and subject to the jurisdiction of the SWRQB (DWR 2004). The groundwater basin consists of younger alluvium and river deposits, and older alluvium and terrace deposits. These deposits are underlain by Monterey Shale and Tertiary sandstone units. The primary water bearing formation is the younger alluvium with a typical thickness of 50 to 100 feet. The younger alluvium consists of boulders, gravel, sand, silt, and clay. The thickness varies from approximately 30 feet in the upper basin to about 180 feet near the mouth of the basin (DWR 2004). The Carmel River is the primary source of recharge for the basin contributing approximately 85 percent of net recharge (DWR 2004).

Groundwater Quality

The Basin Plan defines the beneficial uses of groundwater in the CVAA as agricultural water supply (AGR), municipal and domestic water supply (MUN), and industrial use (IND). The Basin Plan established water quality objectives for groundwater (including the CVAA) for bacteria, chemical constituents, organic chemicals, radioactivity, and tastes and odors (RWQCB 2016). Groundwater quality constituents of concern in the CVAA are nitrates from septic tanks, iron, and manganese (DWR 2014). MPWMD has maintained a groundwater-quality monitoring program in the Carmel Valley Aquifer since 1981. The sampling schedule for Carmel Valley is staggered, with upper valley wells sampled in spring and lower Carmel Valley wells in fall, to coincide with the historically higher nitrate concentrations in these respective areas. MPWMD is particularly interested in tracking indicators of potential seawater intrusion in the coastal portion of Carmel Valley. Test wells near the Carmel Bay show there is a slight increasing trend in Specific Electrical Conductance (SEC) and Chloride from 2008 to 2015, after a noticeable decline from 2006 to 2008. Testing 6.72 miles from the river mouth show both an increasing trend in SEC and Chloride from 2008 to 2011, after a noticeable decline from 2006 to 2008, but in 2012 both constituents were lower than in 2011 (MPWMD 2016). Groundwater withdrawals for water supply in the lower portion of the basin must be treated for iron and manganese prior to distribution (DWR 2014).

Groundwater Levels

Approximately 85 percent of the water entering the Carmel River Aquifer percolates through the bed of the Carmel River. Tributary drainages, infiltration of precipitation, subsurface inflow, and return flow from irrigation and septic systems provide additional recharge (CRWC 2016). Although the storage capacity for the CVAA is not known with certainty, estimates range from 36,000 to 60,000 acre-feet (DWR 2004). Groundwater levels in the CVAA recover rapidly with the presence of surface water and range from five to 30 feet below ground surface (bgs) when the basin is fully recharged (DWR 2004). Groundwater levels typically fluctuate between 5 and 15 feet during normal years and can experience declines up to 50 feet during drought years (DWR 2004).

Due to groundwater pumping by private well owners and California American Water (CalAm) during the spring and summer, the Carmel River commonly does not flow to the ocean during the summer and fall. The lower six miles of the river is dewatered during normal years and runs dry up to nine miles from its terminus during dry years (MPWMD 2014). In 1995, the SWRCB issued Order No. WR 95-10, which found that CalAm was diverting more water from the Carmel River than it was allowed. On October 21, 2009, the SWRCB issued Cease and Desist Order (CDO) WR 2009-0060, *Authorizing and Imposing a Moratorium on Certain New or Expanded Water Service Connections for the California-American Water Company in its Monterey District*, to prescribe a series of substantial cutbacks to CalAm's pumping from the Carmel River alluvial aquifer from 2010 through December 2016. Under the SWRCB CDO, CalAm's customers may be subject to water rationing, a moratorium on water permits for new construction and remodels, and fines if pumping limits are exceeded. Recently, the SWRCB issued an amendment to extend CalAm's CDO until December 31, 2021 (Order WR 2016-0016). The revised order accommodates the anticipated pace of approval and implementation of several proposed projects, including the Monterey Peninsula Water Supply Project, the Pure Water Monterey Ground Water Replenishment Project, and the Aquifer Storage and Recovery Project (each described below under *Water Supply Sources*). The revised order maintains an effective diversion limit of 8,310 afy through 2021, contingent on the achievement of milestones towards the proposed water supply projects. For each milestone that is missed, the effective diversion limit is reduced by 1,000 afy until the diversion is reduced down to the legal limit.

Water Supply Sources

CalAm derives supply from wells in the CVAA (described above) and the Seaside Groundwater Basin. The Seaside Groundwater Basin is oversubscribed resulting in an adjudication of the basin and actions to reduce basin withdrawals to a sustainable level over time (Monterey County 2015b).

On March 24, 2011, the California Public Utilities Commission approved CalAm's request for a moratorium in its Monterey District service area (which serves areas of the Monterey Peninsula, from Sand City and Seaside in the north, to Carmel Highlands in the south) for new or expanded water service connections for projects that obtained all of their governmental permits after October 20, 2009.

Following the SWRCB Order 95-10 and COD WR 2009-0060, CalAm stated that the significant decrease in the use of the CVAA for the area's water supply could not be achieved without a new water project and has protested the COD in Monterey County Superior Court. Since Order 95-10 was issued, CalAm states that water consumption has been decreased by more than 20 percent through water conservation efforts.

To help reduce its reliance on water from the Seaside Area Subbasin and from the Carmel River watershed, CalAm has proposed the Monterey Peninsula Water Supply Project (MPWSP) as a potential new, reliable water supply for its customers. The MPWSP would include construction and operation of an ocean water desalination plant. Analysis for the MPWSP under NEPA and CEQA is currently underway.

The Pure Water Monterey Ground Water Replenishment Project (GWR) has also been proposed by the MPWMD and the Monterey Regional Water Pollution Control Agency (MRWPCA) as part of the regional water supply solution. The GWR proposes to purify wastewater, agricultural water, and stormwater using an advanced water treatment system with subsequent injection of the purified water into the Seaside Basin for later extraction and distribution as potable water. Construction for this project is currently underway.

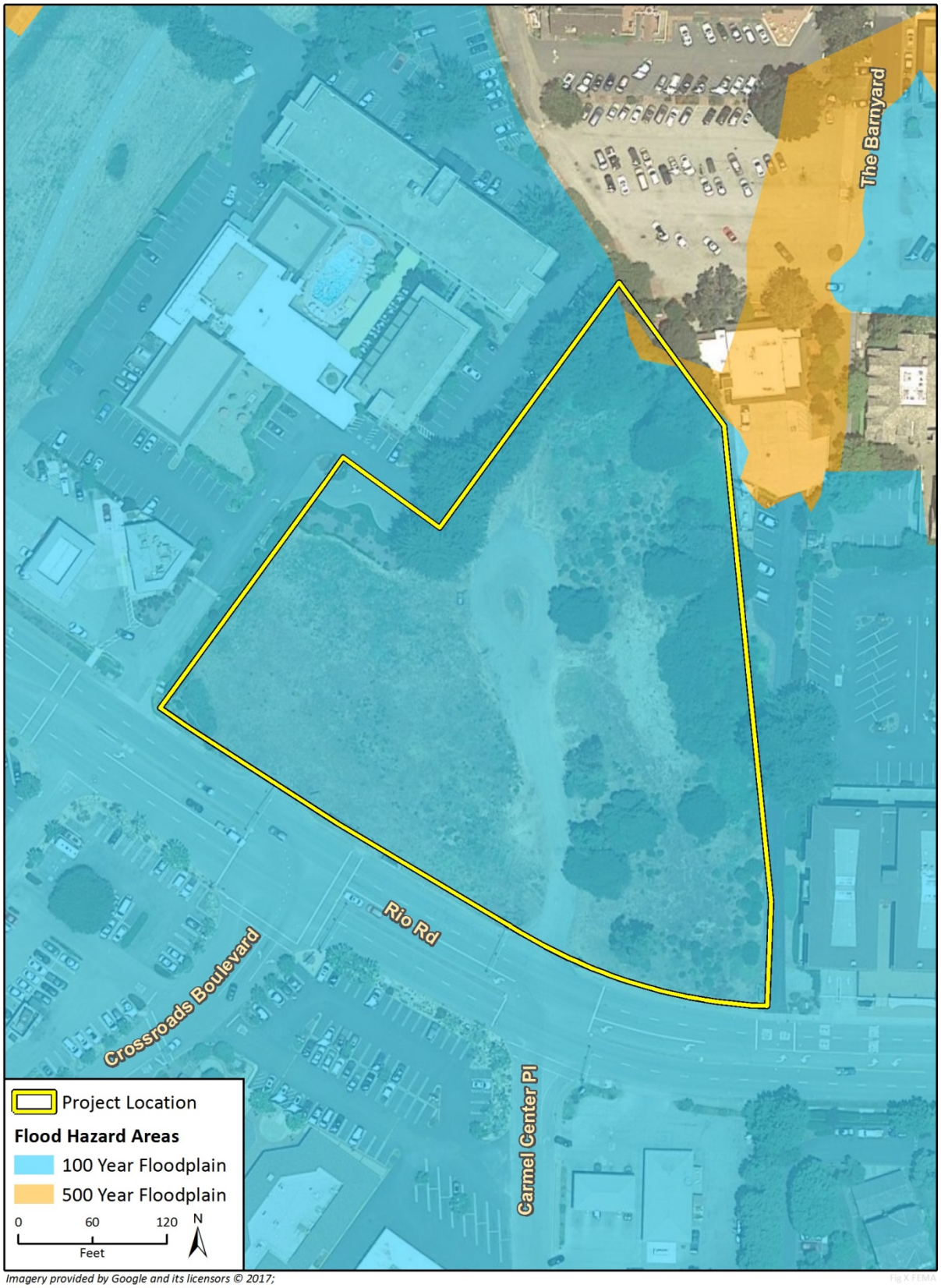
The Aquifer Storage and Recovery project is a partnership between MPWMD and CalAm that would divert excess Carmel River winter flows via CalAm's distribution system to injection wells in the Seaside Groundwater Basin. The initial phase of this project is operational, and a subsequent phase would inject water produced by a desalination facility into the groundwater basin.

d. Flood Hazards

FEMA Flood Hazard Zones

The Federal Emergency Management Agency (FEMA) establishes base flood heights for the 100-year flood zone and the 500-year flood zone. The 100-year flood zone is defined as the area that could be inundated by a flood which has a one percent probability of occurring in any given year, or once every 100 years. The 500-year flood zone is defined as the area that could be inundated by a flood which has a 0.2 percent probability of occurring in any given year, or once in 500 years. As shown in Figure 22, which presents data from the Digital Flood Insurance Rate Map for the area, almost the entire project site is located in a 100-year flood hazard zone, Zone AE (FEMA 2017). A very small area in the northernmost portion of the project site is located in the 500-year floodplain, and an even smaller area in the same portion of the project site is located outside of both the 100-year and 500-year floodplains. The 100-year floodplain on the project site is primarily associated with

Figure 22 FEMA Flood Zones



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Additional data provided by FEMA, 2017.

overbank flows from the main stem of the Carmel River, and to a lesser extent with interior drainage that overwhelms the existing stormwater drainage system (Balance Hydrologics 2014). The project site is located in the Hatton Canyon drainage area, also known as DA-29A (Balance Hydrologics 2014). The Hatton Canyon channel is predicted to overtop its banks immediately upstream from the inlet to the 72-inch diameter storm drain during large flood events (Balance Hydrologics 2014). Flood modeling results for this drainage predict a peak overflow rate of 288 cfs and an overtopping volume of 17 acre-feet during a 100-year storm event (Balance Hydrologics 2014). The CSA 50 Final Report recommends several flood control improvements to protect properties in the DA-29A drainage area, including levee improvements, installation of a backflow preventer at the outlet of the DA-29A stormwater trunk line, and increasing the capacity of the DA-29A trunk line (Balance Hydrologics 2014).

Dam Inundation

The site is not susceptible to flooding due to the failure of a dam. The Los Padres Dam is the nearest dam, located approximately 23 miles to the southwest of the project. The storage capacity of the Los Padres Reservoir has been reduced due to sedimentation from its original capacity of 3,130 acre-feet to its current capacity of approximately 1,785 acre-feet. Even if the Los Padres Dam were to fail when the reservoir was full, the amount of water that would be released would not result in substantial flooding at the project site, which lies more than 20 miles downstream of the dam. Peak flow in the Carmel River near the project site following failure of the Los Padres Dam would be substantially less than the FEMA estimated 100-year flood event peak flow of 23,300 cubic feet per second (cfs).

Tsunami and Seiche and Mudflow

A tsunami is a series of waves generated by an impulsive disturbance in the ocean or in a small, connected body of water. Tsunamis are produced when movement occurs on faults in the ocean floor, usually during very large earthquakes. Sudden vertical movement of the ocean floor by fault movement displaces the overlying water column, creating a wave that travels outward from the earthquake source. An earthquake anywhere in the Pacific can cause tsunamis around the entire Pacific basin. Since the Pacific Rim is highly seismically active, tsunamis are not uncommon.

A seiche is a standing wave oscillating in a body of water and may occur in any enclosed or semi enclosed bodies of water such as bays and lakes. Seiches are typically caused by strong wind and rapid changes in atmospheric pressure. They can also form along ocean shelves and harbors due to earthquakes, tsunamis, or severe storm fronts.

The outlet of the Carmel River and Carmel Valley is susceptible to tsunamis and seiches due to its location along the Pacific Coast and within Carmel Bay. According to the Tsunami Inundation Map for Emergency Planning for the Monterey Quadrangle, a tsunami could inundate up to 0.6-mile inland from the mouth of the Carmel River (California Emergency Management Agency [CalEMA] 2009).The project site is located approximately 1.1-mile east of the shoreline with an elevation of approximately 25 feet above mean sea level (amsl).

Mudflow can occur following heavy precipitation when soils become highly saturated and flow downslope. The soil-water mixture behaves more as a liquid than a landslide. The project site is generally flat, with a very slight slope towards the south. Much of the land surrounding the project site is either developed and paved or covered with mature, established vegetation. Stormwater runoff is managed through a regional stormwater conveyance system.

e. Regulatory Setting

Federal

Federal Clean Water Act

In 1972, Congress passed the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), with the goal of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Section 319 mandates specific actions for the control of pollution from non-point sources. The EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the SWRCB and the RWQCBs.

Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body's designated beneficial use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Water quality standards applicable to the project are contained in the Basin Plan (RWQCB 2016).

Section 303(d) of the CWA bridges the technology based and water quality-based approaches for managing water quality. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the USEPA administrator deems they are appropriate), states are to develop "total maximum daily loads" (TMDL). TMDLs are established at the level necessary to implement the applicable water quality standards. A TMDL must account for all sources of the pollutants that caused the water to be listed. Carmel River near the project site is not an impaired water body and is not subject to any TMDLs.

Section 404 of the CWA prohibits the discharge of any pollutants into "waters of the United States," except as allowed by permit. Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (Corps) to issue permits for and to regulate the discharge of dredged or fill materials into wetlands or other waters of the United States. Under the CWA and its implementing regulations, "waters of the United States" are broadly defined to consist of rivers, creeks, streams, and lakes extending to their headwaters, including adjacent wetlands.

National Pollution Discharge Elimination System (NPDES)

The goal of the NPDES regulations is to improve the quality of stormwater discharged to receiving waters through the use of Best Management Practices (BMPs). The NPDES permit system was established in the CWA to regulate point source discharges (a municipal or industrial discharge at a specific location or pipe) and certain types of diffuse discharges, including urban stormwater and construction site runoff.

The SWRCB permits regulated construction activities under NPDES General Permit for Storm Water Discharges Associated with Construction Activity (adopted September 2, 2009) (the "Construction General Permit"). Every construction project that disturbs one or more acres of land surface or that is part of a common plan of development or sale that disturbs more than one acre of land surface requires coverage under this Construction General Permit. To obtain coverage under this Construction General Permit, the landowner or other applicable entity must file Permit Registration

Documents (PRDs) prior to the commencement of construction activity, which include a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), and other documents required by the Construction General Permit, and mail the appropriate permit fee to the SWRCB. Since the proposed project would disturb more than one acre (3.8 acres), construction of the project would be subject to these Construction General Permit requirements.

Construction activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least one acre of total land area. The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges; and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges. BMPs are intended to reduce impacts to water quality.

State

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act establishes the SWRCB and each RWQCB as the principal State agencies for coordinating and controlling water quality in California. Specifically, the Porter-Cologne Act authorizes the SWRCB to adopt, review, and revise policies for all surface waters and groundwater of the State and directs the RWQCBs to develop regional Basin Plans.

The Central Coast RWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters in its jurisdiction. As described previously, water quality objectives for receiving waters within Monterey County are specified in the Basin Plan prepared by the Central Coast RWQCB in compliance with the federal CWA and the State Porter Cologne Act. The principal elements of the Basin Plan are a statement of beneficial water uses protected under the plan; water quality objectives necessary to protect the designated beneficial water uses; and strategies and time schedules for achieving the water quality objectives. Together, narrative and numerical objectives define the level of water quality that shall be maintained in the region. The water quality objectives are achieved primarily through the establishment and enforcement of waste discharge requirements (WDRs).

The RWQCBs have primary responsibility for issuing WDRs. The RWQCBs may issue individual WDRs to cover individual discharges or general WDRs to cover a category of discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders (CAOs) or Cease and Desist Orders (CDOs), assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

State Water Resources Control Board Order WR 2016-0016

In 1995, the SWRCB adopted WR 95-10, which found that CalAm was diverting more water from the Carmel River than they were allocated. WR 95-10 ordered them to decrease their water diversion to their legally allocated amount. In 2009, the SWRCB issued a cease and desist order (CDO) (WR 2009-0060) against CalAm because they had continued to draw 10,730 acre feet annually, which is 7,150 acre feet more than they are allocated, for the 13 years after WR 95-10 was adopted. As a result of the CDO, CalAm would have to decrease the amount of water diverted from the Carmel to 3,376

acre-feet by 2016. This is a 70 percent reduction in the amount of water diverted from 2009 to 2016. That reduction target was based on the assumption that a regional desalination plant would be built, enabling the area's municipal water needs to be met by new water supplies. It subsequently became clear that no desalination plant will be in operation by the end of 2016, and CalAm proposed modifying the compliance schedule to accommodate the anticipated pace of approval and implementation of several proposed water supply and conservation projects. The adopted Order WR 2016-0016 sets water supply and conservation project milestones, an effective diversion limit of 8,310 acre-feet per annum (afa) through December 31, 2021, and effective diversion limit penalties for failure to achieve water supply milestones.

Central Coast Regional Water Quality Control Board Resolution No. R3-2013-0032

The Central Coast RWQCB adopted post-construction requirements that municipal stormwater permittees must apply to new development and redevelopment projects that create or replace certain amounts of impervious surface to protect the beneficial uses of waters of the State. The performance requirements include site design and runoff reduction measures, water quality treatment measures, stormwater control plan requirements, runoff retention requirements, and peak runoff management requirements. The County's Resource Management Agency – Environmental Services Divisions implements this requirement on behalf of Monterey County.

Local

Monterey County 2010 General Plan

The Monterey County General Plan contains numerous policies related to hydrology and water quality. Policy OS-3.3 requires evaluation and design components to minimize and avoid potential hazards related to drainage, water quality and stream stability associated with new development and changes in land use designations. Policy OS-4.2 requires direct and indirect discharges of harmful substances into waterbodies to remain below state and federal standards. The Safety Element requires BMPs to protect groundwater and surface water quality, to ensure conformance with floodplain development standards, and to maintain and mitigate post-construction peak-flow drainage impacts. The Public Services Element requires the provision of adequate public facilities and services (including an adequate water supply and adequate stormwater drainage systems) and the implementation of measures to minimize runoff and enhance groundwater recharge. Policy PS-3.1 requires the demonstration of a long-term sustainable water supply for all new developments.

Carmel Valley Master Plan

The project site is located within unincorporated Monterey County in the Carmel Valley Master Plan (CVMP) area. Applicable CVMP policies related to hydrology and water quality include requirements that construction and operation of new development: reduce potential erosion by limiting the amount of land cleared at any one time; incorporate designs with water reclamation, conservation and new source production; not create adverse impacts on groundwater quality or quantity; and not impact the flow or vegetation of the Carmel River.

Monterey County Code, Chapter 16.98, Grading

Monterey County Code Chapter 16.08 regulates grading activities. The purpose of these regulations is to minimize erosion, protect fish and wildlife, and to otherwise protect the environment. A grading permit is required for all activities that would exceed 100 cubic yards of grading. Section

16.08.330 requires that where grading operations obstruct and/or otherwise impair the flow or runoff of a drainage course, appropriate drainage facilities are required to be implemented to convey flows past the point of obstruction. Monterey County Code Chapter 16.08 also contains measures to protect water quality from grading related activities and associated erosion. These requirements are codified in Section 16.08.340 of the Monterey County Code, which requires that all areas disturbed in connection with grading related activities shall be consistently maintained to control erosion. The project would be required to comply with these requirements.

Monterey County Code, Chapter 16.12, Erosion Control

Monterey County Code Chapter 16.12 requires that development activities control runoff to prevent erosion. Per Section 16.12.060, an erosion control plan is required to be submitted to the County of Monterey prior to any land disturbing activities. This plan is required to indicate methods to control erosion. Per Section 16.12.070, runoff control must be implemented to control runoff from a 10-year storm event. All runoff must be detained or dispersed so that the runoff rate does not exceed the pre-development level. Any concentrated runoff which cannot be effectively detained or dispersed without causing erosion is to be carried in non-erodible channels or conduits to the nearest drainage course designated for such purpose or to on-site percolation devices with appropriate energy dissipaters to prevent erosion at the point of discharge. Runoff from disturbed areas must be detained or filtered by berms, vegetated filter strips, catch basins, or other means as necessary to prevent the escape of sediment from the disturbed area. The project would be required to comply with these requirements.

Monterey County Code, Chapter 16.14, Urban Stormwater Quality Management and Discharge Control

Monterey County Code Chapter 16.14 of the Monterey County Code contains regulations to enhance watercourses within the unincorporated urbanized areas of Monterey County by, amongst other things, controlling the entry of urban pollutants into stormwater runoff that may enter the County storm drain system. This chapter assures consistency with the Clean Water Act and the State stormwater general permit and applies to all dischargers or potential dischargers located within the County's unincorporated urbanized areas that discharge into the County storm drain system, with the exception of agriculture. To protect stormwater quality, this chapter prohibits specific discharges and conditions, and establishes requirements for containment and notification of spills. Further, this chapter gives the County authority to conduct inspections and establishes requirements for reporting potential violations. The project would be required to comply with the County's Stormwater Quality Management and discharge control requirements.

Monterey County Code, Chapter 16.16, Flood Control and Floodplain Management

Monterey County Code Chapter 16.16 contains regulations for floodplains. This chapter discusses general and specific standards to prevent flood damage and applies to all development in Special Flood Hazard Areas identified on FEMA Flood Insurance Rate Maps (FIRMs). These requirements apply to all areas within the 100-year floodplain, as well as areas within 200 feet of a river or 50 feet of a water course. Monterey County Code Section 16.16.050(k) requires a setback of 200 feet from the top of the bank of a river and 50 feet from the top of the bank of a watercourse. Encroachment within these setbacks is prohibited unless it can be proven that: 1) the proposed development would not significantly reduce the capacity of existing rivers or watercourses or otherwise adversely affect any other properties by increasing stream velocities or depths, or diverting the flow; and 2)

the proposed new development would be safe from flow related erosion and would not cause flow related erosion hazards or otherwise aggravate flow erosion hazards.

Monterey Peninsula Water Management District (MPWMD)

The Monterey Peninsula Water Management District (MPWMD) is charged with the integrated management of all ground and surface water resources in the Monterey Peninsula area. MPWMD Rule 30 requires the District to establish a specific Allocation for each Jurisdiction and provides that the District also may establish Water Entitlements as necessary to manage water supplies throughout the District. The project will require a Water Entitlement from MPWMD.

4.6.3 Impact Analysis

a. Methodology and Significance Thresholds

This section describes the potential environmental impacts of the proposed project relevant to hydrology and water quality. The impact analysis is based on an assessment of baseline conditions for the proposed project area, including climate, topography, watersheds and surface waters, groundwater, and floodplains, as described in Section 4.6.2, Setting. This analysis identifies potential impacts based on the predicted interaction between the affected environment and construction and operation of the proposed project, and recommends Mitigation Measures, when necessary, to avoid or minimize impacts.

In accordance with Appendix G of the *CEQA Guidelines*, impacts would be significant if the proposed project would result in any of the following:

1. Violate any water quality standards or waste discharge requirements;
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;
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 substantial erosion or siltation on- or off-site;
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;
5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
6. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
7. Otherwise substantially degrade water quality;
8. 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;
9. Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
10. 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;
11. Be subject to inundation by seiche, tsunami, or mudflow; and/or

12. Have insufficient water supplies available to serve the project from existing entitlements and resources, such that new or expanded entitlements are needed.

As discussed above in Section 4.6.2, Setting, the project site would not be subject to inundation by seiche, tsunami, or mudflow. As discussed in Section 2, *Project Description*, the project does not include housing; therefore, it would not expose housing within a 100-year flood hazard area. These potential impacts were found to be not relevant to the proposed project site and therefore are not discussed further in this section. Further discussion regarding Thresholds 8 and 11 can be found in Section 4.9, *Effects Found not to be Significant.*

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project violate any water quality standards or waste discharge requirements?
Threshold 7:	Would the project otherwise substantially degrade water quality?

Impact H-1 CONSTRUCTION OF THE PROPOSED PROJECT COULD POTENTIALLY RESULT IN AN INCREASE IN POLLUTANT DISCHARGES TO WATERS OF THE STATE. THIS IMPACT WOULD BE SIGNIFICANT BUT MITIGABLE.

Construction

Construction of the proposed project would include grading and fill activities, construction of four commercial retail buildings totaling 42,310 square-feet, construction of parking areas, sidewalk improvements, landscaping, installation and potential realignment of utilities, abandonment of two existing on-site wells, and construction and/or improvement of drainage facilities. The topography of the site, the amount of soil disturbance, the duration that disturbed soil would be exposed, the amount of rainfall and wind that would occur during construction, and the proximity of the nearest waterbody all affect the potential for water quality degradation during construction.

Construction of the proposed project could result in soil erosion due to earth-moving activities such as excavation and trenching for foundations and utilities, soil compaction and moving, cut and fill activities, and grading. Although the project site is generally flat, runoff from DA-29A during a large storm event can occur as sheet flow and peak runoff rates during a 100-year storm are predicted to reach 288 cubic feet per second (Balance Hydrologics 2014). This amount of runoff has the potential to result in substantial amounts of erosion, resulting in off-site sediment transport via stormwater. The types of pollutants contained in runoff from construction sites would be typical of urban areas, and may include sediments and contaminants such as oils, fuels, paints, and solvents. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported downstream to the Carmel River and ultimately into the Pacific Ocean in the Carmel Bay Area of Special Biological Significance, contributing to degradation of water quality.

Construction of the proposed project could also potentially result in the accidental release of hazardous materials such as diesel fuel, gasoline, lubricant oils, hydraulic fluid, antifreeze, transmission fluid, cement slurry, and other fluids required for the operation of construction vehicles or equipment. Motorized equipment used at the project site during construction could also leak the previously described hazardous fluids due to inadequate or improper maintenance, unnoticed or unrepaired damage, improper refueling, or operator error. These accidentally released or leaked hazardous materials could directly or indirectly impact water quality. Direct contamination

of surface water is unlikely because no defined stream channels or perennial waters are present on the project site; the closest waterbody to the project site is the Carmel River, which is located approximately 1,000 feet to the south. However, accidental spills or releases of hazardous materials could indirectly impact water quality through runoff during a subsequent storm event, when the spilled material could come in contact with or be washed into flowing water and eventually enter the Carmel River. Similarly, groundwater could be contaminated through direct or indirect contact with potentially harmful or hazardous materials.

Because construction of the proposed project would disturb one or more acres of land surface, it would be subject to the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) adopted by the SWRCB. Compliance with the permit requires each qualifying development project to file a Notice of Intent with the SWRCB. Permit conditions require development of a SWPPP, which must describe the site, the facility, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of construction sediment and erosion control measures, maintenance responsibilities, and non-stormwater management controls. Inspection of construction sites before and after storms is also required to identify stormwater discharge from the construction activity and to identify and implement erosion controls, where necessary.

Implementation of the required SWPPP would reduce the potential for accidentally released or leaked hazardous materials to contaminate a waterbody following a storm event. Implementation of mitigation to develop a spill response plan and an environmental training program and to properly maintain vehicles and equipment would further reduce the risk of water quality degradation through the accidental release or leak of hazardous materials.

The proposed project would involve more than 100 cubic yards of grading and would require a grading permit and an erosion control plan in accordance with Monterey County Code. The grading permit includes requirements to consistently maintain the construction site to control erosion. The erosion control plan requires control of runoff from a 10-year storm event, and all runoff must be detained or dispersed so that the runoff rate does not exceed the pre-development level. Concentrated runoff that would result in erosion must be directed via non-erodible channels (such as a storm drainage pipe or culvert) to the nearest drainage that is approved for receipt of stormwater flows or to on-site percolation devices such as infiltration basins. Runoff from disturbed areas must be detained or filtered to prevent the escape of sediment from the disturbed area.

General Plan Safety Element Policy S-3.2 requires implementation of BMPs to protect groundwater and surface water quality. Water quality BMPs would be implemented through development of the required SWPPP, which will specify a range of management practices and physical solutions to reduce or prevent polluted runoff from leaving the project site. CVMP Safety Element Policy CV-4.1 limits the amount of land cleared at any one time to the area that can be developed during one construction season. This limitation will be included in the grading permit that the County would issue for the proposed project.

Compliance with the regulations discussed above would reduce the risk of water degradation on- and off-site from soil erosion and other pollutants related to construction activities. Implementation of mitigation to develop a design-level drainage analysis and identify measures to reduce runoff by promoting infiltration would further reduce the potential for soil erosion and contaminated runoff. Because violations of water quality standards and waste discharge requirements and the potential for water quality degradation would be minimized, impacts to water quality from construction of the proposed project would be less than significant with implementation of mitigation.

Operation

Operation of the proposed project would result in a substantial net increase of impervious surfaces. All but a small portion of the project site is currently unpaved and development of the proposed project would result in impervious surfaces such as rooftops and pavement covering a majority of the site. Without implementation of appropriate project design elements, BMPs, and pollutant control measures, volumes or rates of discharge and associated pollutants in runoff would increase compared to current conditions. Additionally, operation of the proposed project could potentially result in the addition of contaminants into the stormwater runoff entering the local stormwater drainage system. If stormwater controls are not designed or maintained properly, runoff from the project site could contain contaminants such as oil, grease, metals, and landscaping chemicals (pesticides, herbicides, fertilizers, etc.) that could enter the local stormwater drainage system and ultimately degrade surface water and groundwater quality. The current plans for the proposed project describe several stormwater quality management measures, such as bioswales, green roofs, and permeable pavement. The required Stormwater Control Plan would describe these stormwater quality management measures at an engineering level of detail and would quantify the volume of stormwater that would be treated and the volume of post-development runoff that would leave the project site during both average and peak flow conditions. With implementation of the required Stormwater Control Plan and compliance with applicable regulations, this impact would be less than significant.

General Plan Safety Element Policy S-3.3 requires installation of drainage facilities concurrent with new development to mitigate the post-development peak flow impact of new development. Mitigation is required, as described below, to ensure that post-construction peak discharge from the project site would not exceed pre-development peak discharge, consistent with these policies. Monterey County General Plan Safety Element Policy S-3.1 requires that on-site improvements or other methods for storm water detention shall be required to maintain post-development, off-site, peak flows at no greater than predevelopment levels, where appropriate, as determined by the Monterey County Water Resources Agency. Monterey County Water Resources has reviewed the project and recommends the stormwater detention facilities be designed to maintain pre-development runoff for up to the 10-year storm event. It is recommended that stormwater runoffs in exceedance of the 10-year storm event be conveyed through the stormwater drainage system. Mitigation is included to ensure that on-site improvements or other methods for stormwater detention would maintain post-development, off-site peak flows for up to a 10-year storm event, in accordance with Policy S-3.1. . In order to minimize potential impacts resulting from stormwater discharge rates, and consistent with the 2010 General Plan, mitigation is included to require the development of a final, design-level drainage analysis that would include a detailed evaluation of the potential drainage impacts associated with the project, including identification of measures to reduce runoff by promoting infiltration.

Mitigation Measures

The following Mitigation Measures are required to ensure that adequate prevention and response is implemented for the accidental release of hazardous materials, that the amount and rate of on- and off-site stormwater runoff would be reduced to the maximum extent feasible, and that stormwater runoff during construction and operation of the proposed project would be treated prior to discharge off-site to ensure that contaminated runoff does not enter the local stormwater drainage system or nearby waterbodies.

H-1(a) Accidental Spill Control and Environmental Training

The applicant shall prepare a Spill Response Plan and Spill Prevision, Control and Countermeasure Plan. The Spill Response Plan (SRP) in combination with the Spill Prevention, Control and Countermeasure (SPCC) Plan to be prepared for the proposed project shall include procedures for quick and safe clean-up of accidental spills. The SRP and/or SPCC shall prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and shall include an emergency response program to ensure quick and safe clean-up of accidental spills. Additionally, an environmental training program shall be established to communicate environmental concerns and appropriate work practices, including spill prevention and response measures to all field personnel. Monitoring Action: Prior to the issuance of a grading permit, the applicant shall submit a Spill Response Plan and Spill Prevention, Control and Countermeasure Plan to the Director of the Environmental Health Bureau for review and approval. A monitoring program shall be implemented to ensure that the plans are followed during all construction activities.

H-1(b) Maintain Vehicles and Equipment

All vehicles and equipment, including all hydraulic hoses, shall be maintained in good working order to minimize leaks that could escape the vehicle or contact the ground. A vehicle and equipment maintenance log shall be updated and provided by the applicant to the County of Monterey RMA – Planning Department on a monthly basis for the duration of project construction.

H-1(c) Design-level Drainage Analysis and Minimization of Runoff

A design-level drainage analysis shall be prepared by a qualified engineer on behalf of the applicant prior to issuance of a grading permit that shall identify existing drainage patterns across the project site and existing off-site stormwater discharge locations. The drainage analysis shall quantify the existing and predicted post-construction peak runoff rates and amounts both on-site and off-site immediately downgradient of the project site. The drainage analysis shall identify any changes to the location of down-gradient discharge of stormwater runoff and any potential impacts on off-site property that would result from those changes. Stormwater control measures shall be developed to maximize on-site infiltration of stormwater and minimize off-site stormwater discharge. These stormwater control measures shall be designed to achieve conformance with Monterey County General Plan Safety Element Policy S-3.1 such that post-development, off-site peak flow discharge from the project site would not be greater than pre-development peak flow discharge up to the 10-year storm event. The stormwater control measures may include, as necessary, additional or expanded above-ground retention basins, stormwater collection tanks, subsurface infiltration devices such as cisterns with permeable bottoms or perforated pipes, permeable pavement, and vegetated swales. The stormwater control measures required by this mitigation may be used, in whole or in part, to satisfy the erosion and runoff control standards of other NPDES permits and the Monterey County Code.

Monitoring Action: The design-level drainage analysis shall be submitted to and approved by Monterey County RMA – Public Works, Monterey County RMA – Environmental Services, and Monterey County Water Resources Agency prior to issuance of a grading permit. The identified stormwater control measures shall be installed when appropriate during the construction process, including during grading, initial site preparation, excavation, and construction as necessary to control stormwater runoff. The installation of sufficient stormwater control measures to achieve conformance with the Monterey County General Plan Safety Element Policy S-3.1 threshold of post-

development peak flow discharge less than or equal to pre-development peak flow discharge shall be demonstrated to the County prior to issuance of occupancy permits.

H-1(d) Stormwater Control Plan, Operation and Maintenance Plan, and Maintenance Agreements

Prior to issuance of occupancy permits, the applicant shall submit a Stormwater Control Plan, prepared by a registered professional engineer, addressing the Post-Construction Stormwater Management Requirements (PCRs) for Development Projects in the Central Coast Region. The plan shall include the location of the drainage facilities and construction details. A report with supporting calculations shall also be provided. The Stormwater Control Plan shall be reviewed by a licensed Geotechnical Engineer to ensure conformance with the *Preliminary Geotechnical Investigation* (PCE 2017) or Engineering Geology Report. Prior to issuance of occupancy permits, the applicant shall submit an Operation and Maintenance Plan to RMA Environmental Services for review and approval. The plan shall be prepared by a registered Professional Engineer and include, at a minimum, the following:

- A site map identifying all structural Stormwater Control Measures requiring O&M practices to function as designed
- O&M procedures for each structural Stormwater Control Measure including, but not limited to, LID facilities, retention/detention basins, and proprietorship devices, and
- The O&M plan shall include short- and long-term maintenance requirements, recommended frequency of maintenance, and estimated cost for maintenance.

MONITORING ACTION

Prior to issuance of occupancy permits, the applicant shall enter into a Maintenance Agreement with Monterey County. The applicant shall submit a signed and notarized Maintenance Agreement to RMA Environmental Services for review and approval prior to filing against the property deed with the County Recorder. The agreement shall clearly identify the responsible party for ongoing maintenance of structural Stormwater Control Measures. The Agreement shall contain provisions for an annual report to be prepared by a registered Professional Engineer. The annual report shall be submitted to RMA Environmental Services, for review and approval, no later than August 15th. All recommended maintenance shall be completed by October 15th of that same year. If maintenance is required, certification shall be provided that all recommended maintenance has been completed before the start of the rainy season.

Significance After Mitigation

Implementation of the above Mitigation Measures would reduce potential impacts to a less than significant level.

Threshold 2:	Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level?

Impact H-2 CHANGES IN ON-SITE INFILTRATION CAPACITY WOULD NOT RESULT IN A NET DEFICIT IN AQUIFER VOLUME OR A LOWERING OF THE LOCAL GROUNDWATER TABLE LEVEL. IMPACTS WOULD BE SIGNIFICANT BUT MITIGABLE.

Implementation of the proposed project would involve the development of four commercial retail buildings and associated parking areas and landscaping on a currently unpaved and undeveloped 3.8-acre lot. Although two groundwater wells currently exist on the project site, the proposed project would not include the use of groundwater resources and the two on-site wells would be abandoned prior to construction of the proposed project. Construction of the proposed project would convert a majority of the generally permeable, unpaved 3.8-acre project site to impervious surface, including building rooftops and parking areas. The proposed project would include stormwater control measures, such as stormwater detention swales, to reduce the rate and amount of runoff and to promote infiltration of stormwater. The proposed project would also include rainwater harvesting to provide a supplemental source of landscape irrigation water. A portion of this harvested rainwater may infiltrate into the alluvial aquifer during irrigation of the landscaping, depending on the antecedent soil moisture, the water landscaping water demands, and the amount of irrigation water that is applied. Mitigation Measures H-1(c) and H-1(d), described above under Impact H-1, would ensure that post-development, off-site peak flow drainage from the project site would not be greater than pre-development peak flow drainage. The stormwater control measures required by those Mitigation Measures would also maximize on-site infiltration such that construction of the proposed project would not substantially interfere with groundwater recharge. Water supply and sources of water to serve the proposed development are discussed in more detail under Impact H-5 below. As proposed, the project would be served by Cal-Am water and would utilize off-sets in existing groundwater demands. With appropriate entitlements and off-sets in place, the 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 due to increased withdrawals.

Mitigation Measures

Implementation of Mitigation Measures H-1(c) and H-1(d) would ensure that the amount of on- and off-site stormwater runoff would be reduced to the maximum extent feasible and that the post-development peak discharge rate would not exceed the pre-development peak discharge rate. The stormwater control measures required by these Mitigation Measures would also ensure that infiltration is maximized such that changes in on-site infiltration would not result in a lowering of local groundwater levels or substantially interfere with groundwater recharge.

Significance After Mitigation

Implementation of Mitigation Measures H-1(c) and H-1(d) would reduce potential impacts to a less than significant level.

Threshold 3:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
Threshold 4:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
Threshold 5:	Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
Threshold 6:	Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Impact H-3 CONSTRUCTION AND OPERATION OF THE PROPOSED PROJECT WOULD ALTER THE ON-SITE TOPOGRAPHY AND DRAINAGE PATTERNS AND INCREASE THE AMOUNT OF ON-SITE IMPERVIOUS SURFACE, WHICH COULD INCREASE THE RATE AND AMOUNT OF ON- AND OFF-SITE RUNOFF AND RESULT IN EROSION, FLOODING, AND THE NEED FOR EXPANDED STORMWATER DRAINAGE FACILITIES. THIS IMPACT WOULD BE SIGNIFICANT BUT MITIGABLE.

The proposed project would alter the existing drainage pattern of the site through the introduction of impervious surfaces and project infrastructure. The introduction of impervious surfaces and other project features, such as parking lots, rooftops, driveways, and walkways, could increase the rate and/or amount of surface runoff. The rate and amount of surface runoff is determined by multiple factors, including the following: amount and intensity of precipitation; amount of other imported water that enters a watershed; and amount of precipitation and imported water that infiltrates to the groundwater. Infiltration is determined by several factors, including soil type, antecedent soil moisture, rainfall intensity, the amount of impervious surfaces within a watershed, and topography. The rate of surface runoff is largely determined by topography and the intensity of rainfall over a given period of time.

The proposed project would not alter precipitation amounts or intensities. Project landscaping would be irrigated with a combination of potable water supplied by CalAm and harvested rainwater. As described in Section 2.5, Project Characteristics, the proposed project would utilize native and drought tolerant landscaping that would be irrigated through a water efficient, subsurface irrigation system to minimize landscaping water demand. This subsurface irrigation system would reduce the potential for irrigation activities to result in additional runoff leaving the project site. However, construction would include earth-disturbing activities which may affect site-specific infiltration and permeability during construction (temporary) and during operation (permanent). Temporary changes to on-site permeability would be minimal and limited to covered stockpiles, impermeable surfaces of construction staging areas, and temporarily compacted soils. Permanent impervious areas that would be introduced by the proposed project include impervious parking areas, rooftops, driveways, and walkways. In addition, site preparation would likely result in long-term changes to the infiltration capacity of permeable surfaces due to soil compaction.

In addition to increasing the amount of total annual runoff, the introduction of impervious surfaces would increase the rate of peak runoff leaving the project site. Increases in the amount and rate of runoff could result in increased erosion and sediment transport off-site. The potential erosion and

sedimentation impacts of increased runoff are discussed above under Impact H-1. The magnitude of change in peak runoff that would result from implementation of the proposed project is unknown at this time. Mitigation Measure H-1(c), which would require completion of a design-level drainage analysis prior to commencement of construction activities, would result in the quantification of the change in the peak runoff rate and the development and implementation of measures to reduce post-development peak runoff both on- and off-site such that it would not exceed the pre-development peak discharge rate.

Along with changes to the amount and rate of on- and off-site runoff, construction and operation of the proposed project would result in changes to drainage patterns across the project site and discharge locations for off-site runoff. Grading of the project site would alter on-site topography, which would alter on-site drainage patterns. The presence of parking areas and commercial retail structures would redirect runoff across the project site. Currently, on-site runoff occurs as sheet flow generally towards the south. Development of the proposed project would include installation of new on-site storm drains to intercept stormwater upslope of the project site and route that stormwater to the existing regional stormwater drainage system. Some on-site runoff would be intercepted and detained in biofiltration swales. As required by Mitigation Measure H-1(c), as described above, stormwater control measures would be implemented such that the rate of post-development peak discharge of stormwater would not exceed the pre-development peak discharge rate. Therefore, no expansion of the regional stormwater drainage system would be required with construction of the proposed project. The proposed project would also include stormwater detention swales that would reduce post-development peak runoff rates and filter suspended sediment and other pollutants in the stormwater runoff.

Compliance with existing regulations and implementation of required Mitigation Measures would ensure that development carried out under the proposed project would maximize on-site infiltration and minimize off-site runoff, and would not result in the discharge of stormwater that would result in off-site erosion or flooding or exceed the stormwater conveyance capacity of existing or planned stormwater drainage systems.

Mitigation Measures

Mitigation Measures H-1(c) and H-1(d) would ensure that the amount and rate of on- and off-site stormwater runoff would be reduced to the maximum extent feasible. No additional mitigation is required.

Significance After Mitigation

Implementation of Mitigation Measures H-1(c) and H-1(d) would reduce potential impacts to a less than significant level.

Threshold 9:	Would the project place structures within a 100-year flood hazard area which would impede or redirect flood flows?
Threshold 10:	Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Impact H-4 CONSTRUCTION AND OPERATION OF THE PROPOSED PROJECT COULD RESULT IN THE IMPEDANCE OR REDIRECTION OF FLOOD FLOWS AND THE EXPOSURE OF PEOPLE AND STRUCTURES TO A SIGNIFICANT RISK OF LOSS, INJURY, OR DEATH INVOLVING FLOODING. HOWEVER, COMPLIANCE WITH EXISTING REGULATIONS, INCLUDING THE REQUIREMENT TO ELEVATE THE PROJECT SITE ABOVE THE FEMA 100-YEAR FLOOD ELEVATION WOULD REDUCE IMPACTS TO A LESS THAN SIGNIFICANT LEVEL.

As described in the CSA-50 Final Report (Balance Hydrologics 2014), the site is exposed to flood risks from two distinct flooding sources: overbank flows from the Carmel River and overland flows from the Hatton Canyon drainage known as DA-29A. The entire project site is located within a Special Flood Hazard Area (100-year floodplain) mapped by FEMA and analyzed in the CSA-50 Report. The primary source of this flood hazard is overbank flows from the main stem of the Carmel River due to channel overtopping. The CSA-50 Report also shows that backwater flooding through the DA-29A trunk storm drain line can contribute to flooding at the project site (Balance Hydrologics 2014).

Although the proposed project does not include housing, employees and customers of the new retail development could be exposed to a risk of loss, injury, or death during a flood event. Also, the proposed new structures could impede or redirect flood flows and consequently exacerbate existing flood hazards either on- or off-site.

To demonstrate that the project would not adversely impede or redirect flood flows, a *Hydraulic Analysis* was prepared for the project by Balance Hydrologics, Inc. dated June 1, 2018 (Attached in Appendix H). This hydraulic analysis is a requirement for new development located in a FEMA Zone AE without floodway defined. The project proposes to elevate the site above the 100-year FEMA base flood elevation to an elevation of 32 feet NAVD88. The placement of fill would ensure that the site is reasonably protected from flooding and that potential flood hazards would be reduced. When placing fill, the effect of the fill must be quantified, and per MCC 16.16.050.J.1 “until a regulatory floodway is adopted, no new construction, substantial development, or other development, (including fill) shall be permitted with Zones AE, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other development, will not increase the water surface elevation of the base flood elevation more than one foot at any point.” The *Hydraulic Analysis* (Balance Hydrologics 2018) prepared for the project demonstrates the project would result in a maximum of a +0.04 change in the base flood elevation, as shown in Table 22.

Table 22 Difference in Base Flood Elevation between the Effective and Post-Fill Model in the North Overbank

Mode Cross-Section	Effective Base Flood Elevation (ft, NAVD 88)	Post-Fill Base Flood Elevation (ft, NAVD 88)	Change (ft)
6708	37.62	37.62	0.00
6636	37.10	37.10	0.00
6557	35.06	35.06	0.00
6208	34.97	34.97	0.00
5826	34.79	34.79	0.00
5470	34.01	34.01	0.00
5275	32.75	32.75	0.00
4966	28.47	28.51	+0.04
4796	28.35	28.36	+0.01
4631	28.21	28.21	0.00
4458	28.16	28.16	0.00
4362	28.15	28.15	0.00
4243	28.14	28.14	0.00

Source: County of Monterey

As demonstrated in the hydraulic analysis, the project would not substantially impede or redirect flood flows. This is, in part, due to the wide floodplain that spans the entire north overbank portion of the Carmel River floodplain. The wide floodplain, as shown in the cross-sections detailed in the *Hydraulic Analysis* (Balance Hydrologics, 2018), has sufficient flow area to distribute the effect of the proposed fill without resulting in impeded or redirect flood flows.

Prior to construction of the project, the applicant would be required to prepare and submit to FEMA a Conditional Letter of Map Revision Based on Fill (CLOMR-F). Through this regulatory review, the applicant would be required to formally remove the project site from the FEMA 100-year floodplain through the placement of fill in that area. To do so, the applicant would be required to prepare and submit to FEMA prior to commencement of construction activities a Conditional Letter of Map Revision Based on Fill (CLOMR-F). FEMA would then review the CLOMR-F and determine based on final site design plans whether or not the proposed development would be eligible to be removed from the Special Flood Hazard Area. If FEMA accepts the CLOMR-F, then following construction the applicant would need to demonstrate that the proposed project "as-built" matches the submitted final site designs that were used to support the CLOMR-F. After FEMA determines that the project "as-built" matches the previously submitted final site design plans, the agency would issue a Letter of Map Revision Based on Fill (LOMR-F) to remove the project site from the Special Flood Hazard Area.

Compliance with existing regulations regarding floodplain development and post-development off-site runoff, including Monterey County Code Chapter 16.16, Flood Control and Floodplain Management requirements for development within a floodplain, would reduce potential adverse effects related to flooding to a less than significant level.

Threshold 12: Would the project have sufficient water supplies to serve the project from existing entitlements and resources, or are new or expanded entitlements are needed?

Impact H-5 **THE PROJECT'S WATER DEMAND COULD BE MET WITH A COMBINATION OF WATER CREDITS AND WATER PURCHASE. AS A PRECONDITION TO OBTAINING A BUILDING PERMIT FROM THE COUNTY, THE APPLICANT WOULD BE REQUIRED TO OBTAIN A WATER PERMIT FROM THE MONTEREY PENINSULA WATER MANAGEMENT DISTRICT THAT WOULD EVALUATE AND CERTIFY THAT SUFFICIENT WATER SUPPLIES ARE AVAILABLE TO SERVE THE PROJECT FROM EXISTING ENTITLEMENTS AND RESOURCES. AS SUCH, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.**

Based on projected uses, the applicant estimates that the project would require 4.49 acre feet of allocated water per year (AFY). Actual project water demand would depend on the ultimate configuration and types of businesses. For example, a supermarket would use approximately 0.00007 acre feet per square foot (AF/SF) while a coffee shop or bakery would use 0.0002 AF/SF; a sit-down restaurant would use 0.020 AF/seat (MPWMD 2015). While the gross leasable area would not exceed 42,310, the size of the grocer and the makeup of retail and professional services included in the remainder of the gross leasable area is currently unknown. If the project includes a relatively high proportion of sit-down restaurants, the water demand associated with the project would be substantially higher than estimated by the applicant.

Table 23 below provides a conservative estimate of project water demand based on MPWMD non-residential water use factors and assumptions. Actual water demand may be incrementally r lower, depending on the precise tenant mix at project occupancy. As shown in the table, water demand could potentially exceed the applicant's estimate of 4.49 AFY.

Table 23 Example Water Demand Estimate

Type of Use	Size (SF)[1]	Water Use Factor	Water Demand (AF)
Group I (family grocery, supermarket, retail, nail salon)	30,000	0.00007 AF/SF	2.10
Group II (bakery, coffee house, deli, ice cream shop, pizza, sandwich shop)	10,000	0.0002 AF/SF	2.00
Group II: restaurant (general/bar)	2,310	0.020 AF/seat[2]	3.08
Total	42,310		7.18

[1] The breakdown per building shown herein and on the site plan (Figure 4) is preliminary and subject to change. However, the gross leasable area would not exceed 42,310.

[2] Analysis assumes 15 SF per seat; as such a 2,310 restaurant could include up to 154 seats.

The applicant proposes to acquire water supply for the proposed project through three sources:

- A credit from adjacent property holdings of 1.519 AFY
- Additional water credits from renovations to the adjacent Carmel Mission Inn
- Purchase from the Malpaso Water Company

The project applicant, Carmel Properties Company, already has the 1.519 AFY credit from adjacent property holdings, which would be applied to the project site. A portion of the remaining water demand would be credited through water savings anticipated from renovations to the Carmel Mission Inn, which is also owned by Carmel Properties Company.

Additional water needed for the project, which could not be met from either existing or anticipated future water credits from adjacent properties, would be purchased from the Malpaso Water

Company. In July 2015, the Malpaso Water Company received approval to sell 80 AFY of water to commercial and residential users in Carmel and the Carmel Valley through the CalAm distribution system (MPWMD 2015). The applicant submitted a preliminary application to Malpaso Water Company for 2.50 AFY, but the Malpaso Water Company has not approved the application or confirmed its ability to provide the requested water as of the date of this analysis. Because of these uncertainties, the County has not been able to independently verify these identified water sources and cannot determine that they are sufficient to supply the proposed project. However, prior to issuance of a building permit by the County, the applicant would be required to obtain a Water Permit from MPWMD per Rule 23. Prior to issuance of the Water Permit, MPWMD's General Manager must ensure that the total quantity of water permitted for all projects, including the current application, within a Jurisdiction shall not exceed that Jurisdiction's total Allocation. The proposed project would be located within the Jurisdiction of Monterey County, as defined by MPWMD. If sufficient water supplies to serve the proposed project are not available from the Jurisdiction's Allocation, the Water Permit application must be denied and returned to the applicant to secure additional water resources.

Because the project applicant would be required to obtain an MPWMD Water Permit prior to issuance of a County building permit, and because the Water Permit process requires that water quantities requested stay within the identified allocation, the project could not be constructed without verification of adequate water supplies. As such, impacts related to water supply would be less than significant.

Mitigation Measures

No mitigation is required.