This section of the EIR evaluates individual resource and cumulative impacts to surface water hydrology and water quality resulting from the proposed project. The analysis of surface water hydrology and water quality presented in this section is based on a *Geological and Geotechnical Feasibility Study* prepared by D&M Consulting Engineers in August 2001, a *Preliminary Drainage Report* prepared by Whitson Engineers in March 2007, and review of other available literature. These reports discuss surface erosion and drainage, and the potential for flooding. The *Geological and Geotechnical Feasibility Study* is included as **Appendix E** and the *Preliminary Drainage Report* is included as **Appendix G**.

3.7.1 ENVIRONMENTAL SETTING

CLIMATE

The climate within the project area is semiarid, with average annual precipitation ranging from 14 inches near the Salinas Valley, to approximately 20 inches along the ridges skirting the southern boundary of the basin. Typically, 90 percent of annual precipitation occurs between October and March, with negligible amounts falling in summer. The rainfall intensity in this area is approximately 0.5 inches per hour. This seasonal rainfall pattern combined with the presence of sandy soils throughout most of the watershed area results in natural vegetation that is typically xerophytic and drought-tolerant.

HYDROLOGY

The project site is located in the southeastern section of the Monterey Peninsula watershed. The Monterey Peninsula watershed contains 75,113 acres and experiences on average 14.9 inches of rain annually. The Monterey Peninsula watershed consists of a hilly coastal plain that slopes northward toward the Salinas Valley and westward toward Monterey Bay. The watershed includes the City of Monterey, the City of Sand City, portions of the City of Seaside and City of Del Rey Oaks, and portions of unincorporated Monterey County. The area is characterized by young, active dunes near the coast, and mature dunes on the former Fort Ord to the east. Land surface elevations range from sea level at the beach to approximately 900 feet near the eastern boundary of the basin. The watershed recharges the groundwater aquifers primarily from infiltration of precipitation, with minor additional amounts contributed by deep percolation of irrigation water, leaky pipes, septic systems, injection wells, and possibly stream flow.

SURFACE DRAINAGE

The elevation of the project site varies approximately 700 feet, ranging from approximately 330 feet above sea level in the northeastern portion to approximately 1,020 feet above sea level in the southeastern portion. According to the slope density map prepared by Whitson Engineering, the 17 residential lots proposed for development contain approximately 96 acres with slopes in excess of 30 percent slopes; approximately 40 acres with slopes ranging from 20 to 30 percent; and approximately 23 acres with slopes ranging from 0 to

20 percent. Water on the project site it is either absorbed into the soil and slowly percolates into the groundwater or flows across the surface of the soil when the soil is saturated or precipitation rate is greater than the absorption rate. In areas with no vegetative coverage, evidence of high erosion from surface runoff is evident in gullies that scar the hillside.

The existing onsite natural drainages are ephemeral and carry flows from winter storms to the El Toro Creek, which is located approximately 0.7 miles northwest of the project site. San Benancio Creek and Watson Creek are two tributary creeks of the El Toro Creek. El Toro Creek flows to the Salinas River to the northeast and eventually to the Pacific Ocean near Moss Landing. There are no streams or rivers on the project site.

SURFACE WATER QUALITY

Within the *Toro Area Plan* planning area, surface water quality is an issue only for the Salinas River. During dry months of summer and fall, the flow of the Salinas River is minimal. With a reduced flow, pollutants remain concentrated and water quality deteriorates. Pollutants from agricultural lands and from sewage treatment facilities have severely degraded the Salinas River, particularly in the segment from State Route 68 northward. This portion of the Salinas River has been listed by the state as one of the five dirtiest in California.

FLOODING POTENTIAL

Flood hazards from long-cycle storms can occur at most locations however are most common within areas designated as a 100-year flood zone by the Federal Emergency Management Agency (FEMA). The project site is not located within a 100-year flood zone. Since the project site is located approximately 15 miles inland from the coast at an elevation of approximately 330 feet or more above sea level, potential flooding due to seismically induced waves (tsunami or seiche) is slim to none. Small stock reservoirs in the vicinity of the project site have the potential to cause some uncontrolled runoff, however the potential for inundation from a reservoir failure is considered very low.

3.7.2 REGULATORY SETTING

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PROGRAM

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. In most cases, the NPDES permit program is administered by authorized states. Since its introduction in 1972, the NPDES permit program is responsible for significant improvements to our Nation's water quality.

PORTER-COLOGNE WATER QUALITY CONTROL ACT

In 1969, the State Legislature enacted the Porter-Cologne Water Quality Control Act, one of the nation's strongest pieces of anti-pollution legislation. This state law was so influential that portions were used as the basis of the Federal Water Pollution Control Act Amendments of 1972 (commonly known as the Clean Water Act).

The Clean Water Act requires the states or the U.S. Environmental Protection Agency to set standards for surface water quality, mandate sewage treatment and regulate wastewater discharges into the nation's surface waters. Within California the State assumes responsibility for implementing the Clean Water Act. This involves combining state and federal guidelines to develop water quality standards, issue discharge permits and operate the grants program.

DICKEY WATER POLLUTION ACT

The Dickey Act acknowledged that California's water pollution problems are primarily regional and depend on precipitation, topography, and population, as well as recreational, agricultural, and industrial development, all of which vary greatly from region to region, thus creating a need for a "State Water Pollution Control Board."

The Dickey Act established nine regional water pollution control boards located in each of the major California watersheds. Their primary responsibility is overseeing and enforcing the state's pollution abatement program. Gubernatorial appointees, representing water supply, irrigated agriculture, industry, and municipal and county government in that region, serve on each Regional Water Board.

Nine Regional Water Quality Control Boards (RWQCB) represent the major watersheds of the state. These regional boards serve as the frontline for state and federal water pollution control efforts. The Central Coast Region spans from Santa Clara County south to northern Ventura County. This region has 378 miles of coastline, including Santa Cruz and the Monterey Peninsula, the agricultural valleys of Salinas and Santa Maria, and the Santa Barbara coastal plain.

COUNTY OF MONTEREY

Monterey County General Plan

Policies

5.1.1 Vegetation and soil shall be managed to protect critical watershed areas.

5.2.2 The County shall establish special procedures for land use, building locations, grading operations, and vegetation removal adjacent to all waterways and significant water features.

21.2.1 The County shall require all new and existing development to meet federal, state, and County water quality regulations.

Chapter 19.10.050, Monterey County Code - Drainage Control Ordinance

Chapter 19.10.050 of the Monterey County Code, requires that storm water runoff from subdivisions be collected and conveyed by an approved storm drainage system. Detention ponds, drainage swales and/or check dams may be required to reduce offsite peak storm flow generated by projects during a 100-year storm event. The maintenance of the on-site drainage facilities, including detention ponds, shall be the responsibility of a homeowners association or other similar entity, where applicable, and provisions for annual inspection and maintenance shall be included in the conditions, covenants and restrictions. Improvements shall be designed to meet Monterey County Resources Agency Design Criteria and improvement plans shall be submitted to the Monterey County Water Resources Agency for review and approval. Drainage improvements for runoff from impervious surfaces shall be engineered to minimize erosion through the use of rocked culvert inlets and outfalls, energy reducers and location of culverts. Design features shall include reseeding exposed slopes as well as minimizing the use of artificial slopes. Improvements shall be constructed in accordance with the approved plans.

Chapter 16.12.070, Monterey County Code - Erosion Control Ordinance

Chapter 16.12.070 of the *Monterey County Code*, requires that development activities control runoff to prevent erosion during a ten year storm. 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, shall be carried in non-erodible channels or conduits to the nearest drainage course designated for such purpose or to onsite percolation devices with appropriate energy dissipaters to prevent erosion at the point of discharge. Runoff from disturbed areas shall 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. (Ordinance 2806, 1981). In addition, Chapter 16.12.090 of the *Monterey County Code* prohibits grading activities of more than one acre per year per site between October 15th and April 15th, in water supply watersheds, and high erosion hazard areas, unless authorized by the Director of Building Inspection.

3.7.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring a project's environmental impacts are based on CEQA Guidelines and standards used by the County of Monterey. For the purposes of this EIR, impacts are considered significant if the following could result from implementation of the proposed project:

1) Violate any water quality standards or waste discharge requirements;

2) 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; or increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

3) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage system or provide substantial additional sources of polluted runoff;

4) Otherwise substantially degrade water quality;

5) Place housing within a federally identified and mapped 100-year flood hazard area;

6) Place structures within a 100-year flood hazard area which would impede or redirect flood flow;

7) Expose people or structures to a significant risk of loss, injury or death involving flooding; or

8) Inundation by seiche, tsunami or mudflow.

METHODOLOGY

Available information pertaining to surface water hydrology and water quality within and in the vicinity of the project site was reviewed during this analysis, including, but not limited to, *Monterey County General Plan* (Monterey County 1982); and the *Toro Area Plan* (Monterey County 1983). A *Geological and Geotechnical Feasibility Study* was prepared by D&M Consulting Engineers in August 2001 and is included as Appendix E. This report specifically addressed surface erosion and drainage, and the potential for flooding from tsunami, seiche and 100-year storm event. A *Preliminary Drainage Report* for the Encina Hills Subdivision was prepared by Whitson Engineers in March 2007 and is included as **Appendix G**. This report estimated pre-development, post development and post development with adjacent properties storm water runoff; and calculations for potential detention basins.

PROJECT IMPACTS AND MITIGATION MEASURES

Short-Term Erosion and Water Quality

Impact 3.7-1 During grading and construction activities, erosion of exposed soils may occur and pollutants generated by site development activities may result in water quality impacts if erosion control measures are not implemented. This is considered a **potentially significant impact**.

Development of the proposed project would involve grading approximately 2,000 cubic yards of soil for development of roads, utilities, and building pads. Once vegetation is removed at the project site, the exposed and disturbed soil would be susceptible to high rates of erosion from wind and rain if grading were to occur between October 15 and April 15, resulting in sediment transport from the project site and potentially deep scarring of the landscape.

Delivery, handling and storage of construction materials and wastes, as well as use of construction equipment on-site during the construction phase of the project, will introduce a risk for storm water contamination, which could impact water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination of storm water. Some hydrocarbon compound pollution associated with oil and grease can be toxic to aquatic organisms at low concentrations. Staging areas, or building sites can be the source of pollution due to paints, solvents, cleaning agents, and metals contained in the surface of equipment and materials. The impacts associated with metal pollution of storm water include toxicity to aquatic organisms, bioaccumulation of metals in aquatic animals, and potential contamination of drinking supplies. Pesticide use (including herbicides, fungicides, and rodenticides) associated with site preparation work is another potential source of storm water contamination. Pesticide impact to water quality includes toxicity to aquatic species and bioaccumulation in larger species through the food chain. Gross pollutants such as trash, debris, and organic matter are additional potential pollutants associated with the construction phase of the project. Potential impacts include health hazards and aquatic ecosystem damage associated with bacteria, viruses and vectors, which can be harbored by pollutants.

Implementation of mitigation measure **MM 3.5-6** would require that the project applicant prepare a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the NPDES Construction Activities general permit which would include an erosion control plan in accordance with Chapter 16.12 of *Monterey County Code* and construction-phase housekeeping measures for control of contaminants. The plan shall be prepared by a registered civil engineer, professional forester, landscape architect, registered geologist, certified engineering geologist, or approved erosion control specialist and submitted for approval prior to permit issuance for building, grading, or land clearing. The erosion and sediment control plan shall demonstrate how the proposed project would effectively minimize soil erosion and sedimentation from the project site and must also provide for the control of runoff from the site. The SWPPP will also set forth the best management practices monitoring and maintenance schedule and responsible entities during the construction and post-construction phases. Implementation of mitigation measure **MM 3.5-6** would reduce short-term erosion and impacts to surface water quality to a **less than significant** level.

Long-Term Surface Water Runoff

Impact 3.7-2 Implementation of the proposed project would alter the existing drainage pattern and increase the amount of impervious surfaces on the project site

due to construction of residences, roadways, driveways, and foundations. This would be considered a **potentially significant impact**.

Implementation of the proposed project would convert approximately 164 acres of undeveloped land into 17 rural residential lots and approximately 9,500 linear feet of paved roadways. Development associated with the proposed project would alter the existing drainage pattern and increase the amount of impervious surfaces on the project site due to construction of residences, roadways, driveways, and foundations. New impervious surfaces would reduce infiltration of runoff into the ground and increase the volume and rate of storm water runoff. A majority of the surface water runoff on the project site would be collected onsite via a storm water drainage system installed within the right-of-way of proposed roadways. According to the *Preliminary Drainage Report*, water collected in the storm water drainage system will discharge into detention basins located throughout the project site and offsite on property owned by the project applicant. These alterations will change the existing drainage pattern and increase the probability for erosion to occur. As discussed in **Section 3.5, Geology and Soils,** the project site is highly susceptible to erosion.

The *Preliminary Drainage Report* identified 11 watersheds of El Toro Creek on the project site. These watersheds have been identified as Watersheds A, B, C, D, E, F, G, H, I, J, and K as shown in **Figure 3.7-1, Watersheds and Proposed Detention Basins.** Watersheds A, B, C and H would include no development; therefore, there would be no change in the existing drainage patterns or increase in runoff. The existing drainage patterns within the remaining seven watersheds (Watersheds D, E, F, G, I, J and K) would be altered by the proposed project and potential development on adjacent property within these watersheds. According to the *Preliminary Drainage Report,* post development runoff within the watersheds would be generated by the development of approximately 5.1 acres of impervious surface area on the project site (approximately 3.1 percent of the project site) and approximately 8.3 acres of impervious surface area developed on 14 adjacent lots (approximately 2.8 percent of the adjacent property area), which are currently undeveloped. The amount of impervious surface area is based on buildout of approximately 10,000 square feet on each lot and 83,900 square feet of roadways. The estimated pre-development, post-development, and post-development including adjacent properties runoff rates are summarized in **Table 3.7-1, Estimated Runoff and Detention Requirements.**

TABLE 3.7-1
ESTIMATED RUNOFF AND DETENTION REQUIREMENTS

Watersheds	Pre-Development		Post-Development			Post-Development with Adjacent Properties		
	10-Year Runoff (cfs)	100-Year Runoff (cfs)	10-Year Runoff (cfs)	100-Year Runoff (cfs)	Detention Required (cf)	10-Year Runoff (cfs)	100-Year Runoff (cfs))	Detention Required (cf)
A	6.6	9.9	No Change		0	No Change		0
B	8.9	13.3	No Change		0	No Change		0
C	1.9	2.8	No Change		0	No Change		0
D	10.8	16.2	12.4	18.6	9,363	12.4	18.6	9,363
E	2.5	3.8	2.7	4.1	1,865	2.7	4.1	1,865
F	30.4	45.5	33.4	50.1	23,585	34.8	52.1	26,076
G	24.2	36.4	25.5	38.3	16,897	28.0	42.1	21,429
H	0.3	0.4	No Change		0	No Change		0
I	2.4	3.6	2.6	3.9	1,807	2.8	4.2	2,152
J	1.0	1.5	1.1	1.7	799	1.1	1.7	799
K	12.1	18.1	12.6	18.9	8,108	12.8	19.1	8,438
Subtotals	**101.1**	**151.5**	**88.6**	**133.0**	**59,484**	**90.7**	**136.0**	**63,580**

Notes: cfs = cubic feet per second, cf = cubic feet

Source: Whitson Engineers 2007

Storm water runoff on the project site would be collected through a new storm drain collection system that discharges in several detention basins located throughout the project site and on adjacent property. The locations of these proposed detention basins are shown in **Figure 3.7-1, Watersheds and Proposed Detention Basins.** The proposed detention basins were designed to accommodate not only the runoff generated by the proposed project but also the runoff generated by the adjacent properties within the same watersheds. The size and location of proposed detention basins are summarized in **Table 3.7-2, Proposed Detention Basins**.

Insert Figure 3.7-1, Watersheds and Proposed Detention Basins

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TABLE 3.7-2
PROPOSED DETENTION BASINS

Detention Basin Watershed ID	Location	Size (cf)
D	Lot #2	9,500
E	Lot #7	1,900
F	Lot #8	10,000
F	Lot #10 (upper)	10,000
F	Lot #10 (lower)	10,000
F	Lot #12	19,000
G	APN: 416-621-004	22,000
I	APN: 416-621-002	2,200
J	Lot #17 and APN: 416-621-001	1,000
K	APN: 416-621-001	9,000
	Total	**94,600**

Notes: cf = cubic feet, APN = Assessor's Parcel Number
Source: Whitson Engineers 2007

The preliminary detention basin design would provide an available storage capacity of 94,600 cubic feet of storm water detention upon buildout. The available storage capacity is approximately 30 percent more than the estimated required storage capacity for the proposed project, including the adjacent properties. This will allow the drainage system to discharge runoff at a rate less than the 10-year pre-development runoff rate and allow time for maximum recharge of the groundwater basin. The final design of all proposed detention basins must ensure that the detention basins discharge runoff at the 10-year pre-development runoff rate while storing the excess from the 100-year post development runoff rate in accordance with Section 16.16.040.B.5 of the *Monterey County Code* and Monterey County Water Resource Agency (MCWRA).

Implementation of mitigation measure **MM 3.5-6** would require that the project applicant prepare an erosion control plan, and a Stormwater Pollution Prevention Plan to reduce the potential for erosion to occur on the project site. Implementation of the mitigation measure **MM 3.5-6** shall reduce erosion associated with implementation of the proposed project. In addition, the following mitigation measure would ensure that the proposed

project would not result in a **potentially significant impact** by clearly identifying the detention basins and final drainage plan requirements.

Mitigation Measure

MM 3.7-2 Prior to recording the Final Subdivision Map, Monterey County Public Works Department and Monterey County Water Resources Agency shall require that the project applicant contract with a registered Civil Engineer to prepare a final drainage plan. The drainage control plan shall include detention ponds to limit storm water runoff generated by the development of impervious surfaces. The detention ponds shall be designed to detain the difference between the 100-year post-development runoff rate and the 10-year pre-development runoff rate in accordance with Section 16.16.040.B.5 of the *Monterey County Code* and Monterey County Water Resource Agency (MCWRA). All of the detention basins shall be fenced for public safety.

In addition, the drainage plan shall incorporate mitigation measures as recommended in the *Geological and Geotechnical Feasibility Study* prepared by D&M Consulting Engineers including, but not limited to: installing lined ditches above and below any engineered slopes, and above existing erosion gullies; use of vegetative matting and hydroseeding on slopes; installation of erosion-control landscaping; reduction of ponding water; grading of land that prevents surface water flow over the tops of slopes; construction of berms at the top of slopes; installation of concrete v-ditches; and control of irrigation on slopes. The final drainage plan shall be submitted for review and approval by the Public Works Department and Monterey County Water Resources Agency prior to the recording the Final Subdivision Map.

Implementation of mitigation measure **MM 3.7-2** would require preparation of a final drainage plan to detain the difference between the 100-year post-development runoff rate and the 10-year pre-development runoff rate. Therefore, the impact associated with long-term surface water runoff will be reduced to a **less than significant** level.

Long-Term Surface Water Quality

Impact 3.7-3 The proposed project would result in an increase in long-term surface runoff that may contain urban contaminates that would have an adverse impact on surface water quality. This is considered a **potentially significant impact.**

Implementation of the proposed project would increase the amount of impervious surface. Surface runoff from impervious surfaces may contain urban contaminates. Typical residential runoff contaminants would include: petroleum products and sediments from

vehicles on the project site; hazardous materials dumped in the storm water drainage system; and pesticides and fertilizers used on landscaping. During storm events, these pollutants would be flushed by storm water runoff into the storm water drainage system and ultimately to El Toro Creek and the Salinas River and eventually to Monterey Bay where they would contribute to cumulative non-point contaminant loads and result in incremental deterioration of water quality. Excess nutrients from fertilizers can affect water quality by promoting excessive and/or rapid growth of aquatic vegetation reducing water clarity, and causing oxygen depletion. Pesticides also may enter into storm water after application on landscaping areas of the project. Pesticides affect water quality because they are toxic to aquatic organisms and can bioaccumulate in larger species such as birds and fish. This is considered a **potentially significant impact** to long-term surface water quality.

Implementation of mitigation measure **MM 3.5-6** and **MM 3.7-2** would require that the project applicant contract with a registered engineer to prepare an erosion control plan and a Storm water Pollution Prevention Plan (SWPPP); and a final drainage plan. The SWPPP shall document best management practices (filters, traps, bio-filtration swales, etc.) to ensure that urban runoff contaminants and sediment are minimized during site preparation, construction, and post construction periods. The final drainage plan shall include mitigation measures that shall reduce the volume and runoff rate of storm water flow. The following mitigation measure would incorporate water quality control measure in the drainage design reducing this impact to a **less than significant** level.

Mitigation Measure

MM 3.7-3 In order to prevent the potential contamination of downstream waters from urban pollutants, Monterey County Planning Department, Public Works Department and Water Resources Agency shall require that the storm drainage system design, required under mitigation measure **MM 3.7-2**, includes, but is not limited to the following components: grease/oil separators; sediment separation; vegetative filtering to open drainage conveyances and retention basins; and on-site percolation of as much run-off as feasible, including diversion of roof gutters to French drains or dispersion trenches, dispersion of road and driveway runoff to vegetative margins, or other similar methods. Said provisions shall be incorporated into the storm drain system plans submitted to the county for plan check.

Implementation of the above mitigation measures would reduce impacts to surface water quality to a **less than significant** level.

Flooding

The project is located approximately 350 above sea level and approximately 15 miles east of the coastline. The project is not located downslope from any lakes, water storage facilities or creeks. Development of the proposed project will not place housing or

structures within a 100-year floodplain, beneath a dam or behind a levee. Inundation due to seiche or tsunamis is considered very low. Therefore, the proposed project will result in **no impact** in regards to flooding or inundation.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Long-Term Surface Water Runoff and Water Quality

Impact 3.7-4 Implementation of the proposed project, combined with reasonably foreseeable development, would result in a cumulative increase in impervious surfaces and related increases in runoff. However, the proposed project provides for detainment of excess storm water and cumulative development would be required to do the same resulting in no cumulative effect. Therefore, would be considered a **less than significant cumulative impact**.

Although the buildout of the proposed project combined with reasonably foreseeable development will increase the impervious surface within the vicinity of the project site, most development will be required to detain excess storm water flow onsite. The proposed project provides for detainment of excess storm water generated by the proposed project in addition to storm water generated by potential development on adjacent properties within the same watersheds. Therefore, the proposed project will not contribute to cumulative runoff. New development will be required to limit peak storm runoff to pre-project or pre-soil disturbance levels through construction of detention ponds or other approved measures. Therefore, each project would detain surface water runoff and the impact would be **less than significant**.

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