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## Hydrology and Water Quality

### Introduction

This chapter presents a discussion of existing hydrology and water quality conditions in the Proposed Project area, potential hydrologic and water quality impacts, and proposed mitigation where applicable. It is based on a review of previous technical investigations and environmental studies performed in and immediately adjacent to the Proposed Project area (Balance Hydrologics 2001, EcoSynthesis 2000 and 2003, PBCSD 2000, Questa Engineering 2003a and 2003b, Wetlands Research Associates 2001, and WWD 2001). A preliminary drainage report has been prepared on behalf of the applicant (WWD 2001), and was reviewed by Jones & Stokes. The environmental setting used as the basis for evaluating the impacts of the Proposed Project is at the end of this chapter. The regulatory setting is in Appendix C.

1 **Summary of Project Impacts**

IMPACT TOPIC	GC	EC	SBI	SBE	SBR	PBL	SUB	CY	RD	HWY
<b>A. Alteration of Drainage Patterns.</b>										
1. Alteration of surface drainage patterns, including potential change to wetland hydrologic functions.	⊙	⊙	—	⊙	⊙	—	—	—	—	—
<b>B. Storm Runoff and Drainage Infrastructure.</b>										
1. Increased stormwater runoff may exceed proposed infrastructure and downstream infrastructure capacity.	⊙	⊙	—	⊙	⊙	—	⊙	⊙	—	—
<b>C. Water Quality</b>										
1. Stormwater Runoff Water Quality.	○	○	○	○	○	○	○	○	○	○
2. Potential water quality impacts due to pesticide and herbicide use for turf.	○	○	—	—	○	—	—	—	—	—
3. Potential water quality impacts due to animal waste at the New Equestrian Center.	—	⊙	—	—	—	—	—	—	—	—
4. Potential water quality impacts due to use of reclaimed water and fertilizers.	○	○	—	—	○	—	—	—	—	—
5. Carmel Bay ASBS water quality impacts.	○	—	—	—	—	○	○	—	—	—
6. Stormwater runoff quality impacts due to construction.	⊙ Applies to project as a whole									
<p>● = Significant Unavoidable Impact                      ⊙ = Significant Impact that can be Mitigated to Less-than-Significant                      ○ = Less than Significant Impact                      — = No Impact or Not Applicable to the development site</p> <p>GC – Golf Course; EC – Equestrian Center; SBI – Inn at Spanish Bay; SBE – Spanish Bay Employee Housing; SBR – Spanish Bay Driving Range; PBL – The Lodge at Pebble Beach; SUB – Residential Subdivisions; CY – Corporation Yard Employee Housing; RD – Roadway Improvements; HWY – Highway 1/Highway 68/17-Mile Drive Improvement</p>										

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3 **Relevant Project Characteristics**

4 **Overall Development Plan**

5 The Proposed Project consists of the development of urban stormwater drainage  
 6 infrastructure to accommodate runoff that will be generated from the  
 7 development of the Proposed Golf Course and appurtenances, and impervious  
 8 surfaces in the form of buildings, roads, and parking areas. Existing subsurface  
 9 stormwater lines and new extensions to existing facilities will be installed to  
 10 serve the proposed developments. Retention basins will be constructed for the  
 11 stormwater drainage system at a number of sites. The Proposed Golf Course,  
 12 New Equestrian Center, and Spanish Bay Driving Range will be irrigated with

1 water from the reclamation plant, which is currently mixed with potable water for  
2 an average of approximately 70% reclaimed water and 30% potable Cal-Am  
3 water.

4 Questa Engineering Corp. (Questa 2003a and 2003b) prepared the report, "Best  
5 Management Practices for Del Monte Forest Preservation and Development  
6 Plan-Golf Course, Equestrian Center, and Driving Range" for the applicant. This  
7 report presents a water quality assessment and environmental management plan  
8 for the development of the Proposed Golf Course, Relocated Equestrian Center,  
9 and Spanish Bay Driving Range. The Best Management Practices (BMP) plan  
10 provides a runoff management plan; management practices for turfgrass  
11 selection, irrigation systems, and management of salt accumulation; a fertilizers  
12 and nutrient management plan; an integrated pest management (IPM) plan; and  
13 procedures and guidelines for handling of pesticides.

14 Specific measures described in the BMP plan for runoff management include:

- 15 ■ installing interceptor drains for areas that would cause additional runoff to  
16 wetlands (e.g., irrigation water for the Proposed Golf Course);
- 17 ■ installing surface detention basins at the Proposed Golf Course area and New  
18 Equestrian Center to limit adverse changes in runoff to wetlands (a  
19 subsurface retention facility is proposed for the Spanish Bay driving range);
- 20 ■ designing stormwater drainage systems including detention and/or retention  
21 facilities and bioswales to prevent peak runoff rates from exceeding pre-  
22 project conditions.

23 Additional management practices include:

- 24 ■ Covered trash areas and loading docks
- 25 ■ Roof drains
- 26 ■ Raised inlets
- 27 ■ Runoff control and dispersion
- 28 ■ Oil and grease/sediment traps
- 29 ■ Equipment washdown/recycle system
- 30 ■ Litter control and street sweeping

31 The BMP Plan is summarized further in Appendix H, "Summary of Applicant  
32 Resource Management Plans.

## 33 **Golf Course and Driving Range Management**

34 The applicant will operate the Proposed Golf Course and Spanish Bay Driving  
35 Range according to defined management protocols and procedures for water,  
36 fertilizer, pesticide, and associated integrated pest management activities as

1 specified in the Proposed Project's "Best Management Practices Plan." (Questa  
2 Engineering 2003). This plan outlines measures for runoff and water quality  
3 management. Best management practices (BMPs) will be used at the proposed  
4 facilities to limit peak runoff, sediment discharges, and transport of other  
5 pollutants to protect onsite and offsite wetlands and sensitive areas. At the golf  
6 course site, runoff will generally be directed through vegetated drainage swales.  
7 Parking lots will be equipped with oil and grease traps, and runoff from the  
8 Spanish Bay Driving Range parking lot will be collected and detained. Irrigation  
9 and fertilizer application and pest management measures also are included in the  
10 BMP Plan.

## 11 New Equestrian Facility Management

12 The applicant will operate an equestrian facility with barns, stables, exercise  
13 areas, and paddocks to be constructed at the existing Sawmill site. Equestrian  
14 uses and facility operations and maintenance activities will generate solid and  
15 liquid manure wastes, feed and bedding wastes, wash water, and other  
16 miscellaneous solid and liquid wastes.

17 The BMP plan contains the following measures for animal waste control at the  
18 New Equestrian Center:

- 19 ■ Clean manure from uncovered land (i.e., arenas, grass staging areas, etc.) on  
20 a daily basis.
- 21 ■ Store collected manure and used shavings in covered, concrete containment  
22 structures.
- 23 ■ Divert roof downspouts and other runoff around manure storage areas and  
24 animal activity areas.
- 25 ■ Incorporate vegetated buffer/filter strips around the site perimeter.
- 26 ■ Provide downstream detention storage/treatment basin.

## 27 Drainage Improvements

28 The preliminary drainage report (WWD 2001) identifies the existing drainage  
29 patterns at the development sites and the drainage improvements proposed to be  
30 installed.

31 **Proposed Golf Course.** The following is a summary of proposed drainage  
32 improvements by subwatershed in an addendum to the preliminary drainage  
33 report (Balance Hydrologics, 2001.)

- 34 ■ **North Drainage:** This is the area in and around the Spyglass Quarry.  
35 Drainage piping will be installed in this area to facilitate flows to natural and  
36 man-made swales in conjunction with filter areas. Several detention basins

- 1 are also proposed to receive golf course drainage. This area drains to  
2 Spyglass Hill.
- 3 ■ Subwatershed 1: This area contains the north-central portion of the Proposed  
4 Golf Course and includes the golf cottages. Surface runoff will be captured in  
5 a storm drain system that will discharge to a wetland detention area and then  
6 to a wetland buffer prior to discharge to a wetland area. Peak flows from the  
7 impervious areas at the new golf cottages will be detained in an underground  
8 detention facility before release to the storm drain system. A detention basin  
9 (required volume of 0.17 acre-feet volume) near the 14<sup>th</sup> hole tees will be  
10 installed.
- 11 ■ Subwatershed 2: This area includes the northeast and central portion of the  
12 Proposed Golf Course. Surface runoff will be captured in a network of V-  
13 ditches and underground storm drains that transport water to a detention  
14 basin before discharging to the wetland buffer before being discharged to the  
15 off-site storm drain system at Cypress Point. Peak flows will be detained in  
16 detention pond (required volume of 0.46 acre-feet volume) near the 3<sup>rd</sup> hole  
17 tees.
- 18 ■ Subwatershed 3: This area includes the southeast portion of the Proposed  
19 Golf Course and the location of the proposed clubhouse, the maintenance  
20 facility, and the associated parking lot. Surface runoff, including the upslope  
21 off-site residential area, will be captured in V-ditches and storm drainage  
22 before being discharged to a water quality pond or swale prior to being  
23 discharged to a wetland buffer, then to wetlands that eventually drain to  
24 Cypress Point. Runoff from the clubhouse, maintenance facility, and  
25 associated parking lot will be detained in an underground storage structure,  
26 which will discharge to the upslope end of a wetland area via a drain  
27 designed to dissipate energy.
- 28 ■ Subwatershed 4: This area includes the south central part of the Proposed  
29 Golf Course. Surface runoff will be routed to the storm drain system at  
30 Cypress Point. With development of the golf course, drainage of the portions  
31 of the equestrian center and Collins Field that drain to Carmel Bay will be  
32 diverted to this watershed. A detention pond near the 12<sup>th</sup> fairway (required  
33 volume of 0.85 acre-feet) will be installed to detain these flows prior to  
34 discharge to Cypress Point.
- 35 ■ Subwatershed 5: This area includes the southwestern part of the Proposed  
36 Golf Course. Natural swales and low points or sinks from the grading design  
37 will be utilized to treat runoff prior to discharge to downstream wetlands. No  
38 detention structures are proposed in this watershed.
- 39 ■ South Drainage: This area is located along Ondulado Road. Flow from most  
40 of this area will be diverted to Subwatershed 4, as noted above. Runoff from  
41 a proposed parking lot along Ondulado Road and the upslope contributing  
42 areas will continue to drain to the storm drain system at Ondulado Road.  
43 Peak flows from the parking lot area will be filtered and detained in a  
44 detention structure near the parking lot prior to discharge to the existing  
45 drainage channel.

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**New Equestrian Center.** Roof drainage will be collected in its own system and channeled to the eastern wetland area. Site drainage will be collected by separate storm drainage and routed to a detention basin on-site. Overflow from the detention basin will be discharged to an exiting drainage ditch (Questa 2003a and 2003b). In addition, the applicant has proposed biofilters/swales upgradient of the large wetland in the lower Sawmill site to reduce flow energy and filter stormwater prior to entering the wetland.

**Spanish Bay Resort.** Runoff from existing development discharges into an existing detention basin, which is identified in the preliminary drainage report as having adequate capacity to handle the increased storage requirements associated with new development (WWD, 2001).

**Spanish Bay Driving Range.** Currently, all runoff discharges northwest to an existing storm drain 300 feet southwest of the 17-Mile Drive/Congress Road intersection. Runoff from the northern parking lot will be routed to a new retention-infiltration trench, which will front on 17-Mile Drive; runoff will be released to the existing storm drain. The southern parking lot will be routed to a new detention basin which will drain through a storm drain to a biosfilter/swale in a retained forest area along the western portion of the site.

**Spanish Bay Employee Housing and Preservation Area B.** Currently all runoff discharges to a drainage ditch along 17-Mile Drive. Additional runoff will be routed to a new retention-infiltration trench (WWD, 2001).

**The Lodge at Pebble Beach.** Runoff from The Lodge parking, the Fairway One complex, and the Colton Building will be channeled via storm drain improvements to the existing storm drain system (WWD, 2001).

**Residential Subdivisions.** The preliminary drainage report presents the following regarding present and future drainage infrastructure(WWD, 2001):

- **Area F-2.** The northern part of this area discharges to a culvert crossing Congress Avenue into a tributary of Seal Rock Creek. The southern portion discharges to culverts east of Lopez Road that also drain to a tributary of Seal Rock Creek. Runoff from Lots 1-5 and 10 will be collected via storm-drain systems and routed to retention-infiltration trenches connected to an overflow device, to allow overflows discharge to the drainage system at the Poppy Hills Golf Course. Runoff from Lots 6 through 8 will be channeled via a storm drainage system and graded swales to a retention basin, where it will then be discharged to the Poppy Hills Golf Course storm drainage system.
- **Area F-3.** The northern portion of this site drains to a tributary of Sawmill Gulch and the southern portion drains to a tributary of Seal Rock Creek. Additional runoff from the development will be collected via a storm drainage system and routed to a detention basin along Lopez Road and then released to the drainage ditch that runs along the north side of Lopez Road.
- **Area I-2.** The western portion drains into a drainage swale along Viscaino Road that eventually discharges into a tributary to Seal Rock Creek. The eastern portion drains into a drainage swale along Viscaino Road, then into a

1 culvert which discharges into Pebble Beach Creek. All additional runoff will  
2 be routed to retention-infiltration trenches along Ronda Road and Viscaino  
3 Road with an overflow device for discharge into the existing swale.

- 4 ■ **Area K.** Currently the site drains into a culvert that crosses under Stevenson  
5 Drive into a tributary of Seal Rock Creek. All additional runoff will be  
6 routed to a retention-infiltration trench along Stevenson Drive with an  
7 overflow device to allow for discharge into the existing swale along  
8 Stevenson Drive

- 9 ■ **Area PQR.** The western 4 Lots drain via sheet flow to a drainage swale  
10 along Spruance Road, then into a culvert which discharges to a tributary of  
11 Stillwater East Creek. The eastern 3 Lots drain via channel flows to Spruance  
12 Road, then to a culvert, which also discharges to a tributary of Stillwater East  
13 Creek. All additional runoff from the 4 western Lots will be routed via storm  
14 drain system to a retention-infiltration trench with an overflow device for  
15 discharge into the existing swales along Spruance Road. All additional runoff  
16 from the eastern Lots will be routed to a retention-infiltration trench, then  
17 allowed to sheet flow to a retention basin fronting Spruance Road.

18 **Corporation Yard Employee Housing.** The preliminary drainage report did  
19 not include this proposed development. The site plans show that the employee  
20 housing will drain to the existing detention basin.

## 21 **Impacts and Mitigation Measures**

### 22 **Criteria for Determining Significance**

23 In accordance with CEQA, State CEQA Guidelines, Monterey County plans and  
24 policies, and agency and professional standards, a project impact would be  
25 considered significant under the following conditions:

#### 26 **A. Alteration of Drainage Patterns**

- 27 ■ Substantially alter the existing drainage pattern of the site or area, or result in  
28 offsite drainage or flood problems.

#### 29 **B. Stormwater Runoff and Drainage Infrastructure**

- 30 ■ Substantially increase the rate or amount of surface runoff which would  
31 exceed capacity of existing or planned storm drain facilities, cause  
32 downstream or offsite drainage problems, or increase the risk or severity of  
33 flooding in downstream areas.

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**C. Water Quality**

- Violate any water quality standards or otherwise substantially degrade surface water quality or contribute substantial non-point sources of pollution to the Carmel Bay Area of Special Biological Significance.

**No Impacts Per Initial Study**

- Substantially deplete groundwater supplies or substantially interfere with groundwater recharge. The Proposed Project also does not include any use of groundwater, and therefore impacts to groundwater hydrology and water quality are not discussed further.
- Result in construction of habitable structures within a 100-year floodplain, which would expose people or structures to a significant risk of loss, injury, or death due to flooding.

Flood hazards are not a significant issue for the Proposed Project area because there is only one small area of designated floodplain (in Preservation Area L), and no development will occur within the setback area required by the County. Therefore, no additional environmental impact assessment of flood hazard issues is necessary. Stormwater runoff and drainage infrastructure impacts are reviewed below in Section B.

The Initial Study is included in Appendix A.

**Impacts and Mitigation Measures**

**A. Alteration of Drainage Patterns**

**Impact HWQ-A1. The Proposed Project could result in changes in on-site drainage patterns that could change existing wetland hydrologic functions of wetlands at the Proposed Golf Course, the New Equestrian Center, the Spanish Bay Driving Range, and the Spanish Bay Employee Housing. This is a potentially significant impact that can be mitigated to a less-than-significant level.**

In considering wetland hydrology, “drainage patterns” can refer to two types of impacts. The first includes alterations to the spatial arrangement (location, composition, networking) of wetlands and their contributing tributaries. The second involves changes in flow to these systems as measured by volumes, peak rates, durations, and timing/seasonality. Construction, operation, and maintenance of the Proposed Project can potentially change surface runoff and groundwater conditions and thereby impact the hydrologic functioning of existing wetlands.



1 More specifically, project related changes in land cover, topography, vegetation,  
2 irrigation, drainage, and other infrastructure could adversely affect wetland  
3 functioning at these sites by changing the volume, timing, and duration of  
4 hydrologic inputs or outputs. For example, golf course grading or construction of  
5 roads, trails, or buildings could change runoff volumes, flow directions, or sub-  
6 surface infiltration to or from the wetlands. Subsurface infrastructure installations  
7 may also adversely impact wetland functions if the trenches create a conduit that  
8 diverts groundwater away from the wetlands.

9 Hydrologic and drainage conditions in the project area are described in reports by  
10 Balance Hydrologics (2001 and 2003) and Questa Engineering (2003). As  
11 discussed in the Balance Hydrologics report, the hydrologic inputs and outputs  
12 that created and now sustain site wetlands represent a complex balance of  
13 physical and human conditions.

14 Due to proposed topographic changes, the project will change the size of certain  
15 watersheds containing wetlands. Subwatersheds with substantial changes in size  
16 (> 20%) include the Upper Sawmill site (-35%) and the Proposed Golf Course  
17 subwatersheds 1 (+74%), 2 (+23%), and 4 (+107%) (Balance Hydrologics 2003).  
18 Net increases in flow could result in increased hydroperiod for existing wetlands,  
19 which could result in changes in vegetation, wetland area, and function.  
20 Increased peak flows could result in erosion or gulying in wetlands. Net  
21 decreases in flow could result in changes in soil hydrology and vegetation and  
22 the reduction of wetland areas over time.

23 Peak flow analyses using the rationale method was conducted by Balance  
24 Hydrologics for the watersheds containing wetlands at the Proposed Golf Course,  
25 the New Equestrian Center, the Spanish Bay Driving Range, and the Spanish Bay  
26 Employee Housing. In particular, peak flow rates are predicted to substantially  
27 (> 20%) increase in Proposed Golf Course subwatersheds 1 (+50%), and 4  
28 (+100%) and in the lower Sawmill subwatershed (+60%) (Balance Hydrologics  
29 2003). These increases in peak flows could result in increased erosion and  
30 change in wetland morphology.

31 Water balances were developed to estimate hydrologic inputs and outputs to and  
32 from the Proposed Golf Course wetlands under existing conditions. Although  
33 changes in watershed size and peak flows have been estimated, complete water  
34 balance estimates for project area wetlands under Proposed Project conditions  
35 have not been prepared to date. In addition to changes in watershed size, and  
36 peak flows, all development sites will receive greater irrigation inputs than at  
37 present, which could further alter wetland hydrologic cycles. Therefore a direct  
38 comparison of pre- to post-project conditions for water balance conditions is not  
39 currently possible.

40 Based on these studies (and other supporting studies and collected information)  
41 the Project Applicant proposed a Best Management Plan (BMP) (Questa 2003a  
42 and 2003b) that included several strategies and measures to reduce the likelihood  
43 of significant hydrologic impacts to site wetlands. Several additional mitigation  
44 measures were also suggested in the Watershed Hydrology Report (Balance  
45 Hydrologics 2003). These mitigation strategies include the following:

- 1 ■ Avoidance of wetlands during construction, causing no fill of wetlands;
- 2 ■ Installation of interceptor drains for areas causing additional runoff to
- 3 wetlands, such as irrigation water for the Proposed Golf Course;
- 4 ■ Installation of surface and/or subsurface detention basins at the Proposed
- 5 Golf Course and New Equestrian Center to limit adverse changes in runoff to
- 6 wetlands; two subsurface retention facilities are proposed for the Spanish
- 7 Bay Driving Range;
- 8 ■ Design of stormwater drainage systems to include detention and/or retention
- 9 facilities to limit peak runoff rates so that they do not exceed pre-project
- 10 conditions;
- 11 ■ Maintenance of the hydrologic continuity of each wetland to its watershed;
- 12 ■ Avoidance of change in timing or quantity of stormwater inflow to the
- 13 wetland;
- 14 ■ Prevention of sub-surface trench water capture through baffle design.
- 15 ■ Use of ditch plugs near wetlands to support/maintain shallow groundwater
- 16 flow to wetlands; and
- 17 ■ Creation of buffers around wetlands to protect existing hydrologic
- 18 connection with immediately adjacent groundwater infiltration and seepage
- 19 patterns.

20 As described above under "Project Characteristics," detention and retention  
21 structures have been included in project designs at the Proposed Golf Course,  
22 New Equestrian Center, and the Spanish Bay Driving Range, which can slow the  
23 flow of stormwater runoff, reducing the risk of erosion and gulying in the  
24 downstream wetlands. Bioswales have also been incorporated into the design at  
25 the Proposed Golf Course, New Equestrian Center, and the Spanish Bay Driving  
26 Range. Forested buffers have been incorporated into the Proposed Golf Course of  
27 varying widths from site wetlands. As discussed in Chapter 3.3, "Biological  
28 Resources," the applicant intends to avoided grading in all project wetlands;  
29 however current grading plans at the Proposed Golf Course show encroachment  
30 in wetlands whose boundaries were delineated (EcoSynthesis 2003) after the  
31 current plans were developed. Per mitigation in Chapter 3.3, no grading or direct  
32 encroachment in wetlands will be allowed, except in the course of restoration  
33 activities (such as removal of road or trail fill, or exotic species removal).

34 While the preliminary designs have included a number of design features that  
35 will reduce Proposed Project impacts related to hydrologic modification, the  
36 current studies have not specifically identified or compared pre-project and post-  
37 project water balances that take into account all proposed changes (including  
38 additional irrigation) in the watersheds that support site wetlands. Utilization of  
39 the strategies found in the BMP plan (Questa 2003a and 2003b) , the Wetland  
40 Management Plan (WRA 2001), and the Watershed Hydrology Report (Balance  
41 Hydrologics 20003) to reduce hydrologic impacts to project wetlands is sound.  
42 However, the site-specific effectiveness of such approaches cannot be entirely  
43 known without a post-project water balance accounting for wetlands found at the  
44 Proposed Golf Course, the New Equestrian Center, Spanish Bay Driving Range,

1 and Spanish Bay Employee Housing. In addition, the applicant’s supporting  
 2 reports provide a mix of specific design features (such as detention basins), and  
 3 general prescriptions that do not allow a definitive conclusion regarding whether  
 4 the project will alter hydrologic function of existing wetlands. Thus, this impact  
 5 is considered *potentially significant* until the site-specific means to control  
 6 hydrologic changes can be validated using an estimated post-construction water  
 7 balance for individual wetlands. This impact can be mitigated to a *less-than-*  
 8 *significant* level with implementation of both the mitigation in Chapter 3.3  
 9 concerning wetlands and the following mitigation measures.

10 **Mitigation Measure HWQ-A1-1. Preparation of post-construction**  
 11 **monitoring water balance and site-specific BMPs, and infrastructure**  
 12 **necessary to maintain existing hydrology for all wetlands found at**  
 13 **the Proposed Golf Course, the New Equestrian Center, the Spanish**  
 14 **Bay Driving Range, and the Spanish Bay Employee Housing.** The  
 15 applicant shall prepare an estimated post-construction water balance for  
 16 all wetlands affected by the Proposed Project that incorporates all  
 17 Proposed Project alterations (grading, slope, vegetation cover,  
 18 impervious surfaces, drainage infrastructure, etc.). Site-specific  
 19 prescriptions for each wetland will be identified in final plans as  
 20 necessary to maintain existing wetland hydrologic function, and the  
 21 water balance will demonstrate the effectiveness of these prescriptions.  
 22 Both the water balance and the final site-specific BMPs shall be  
 23 submitted to the Planning and Building Inspection Department. The  
 24 Director of Planning shall review and approve the water balance and site-  
 25 specific BMPs prior to the issuance of any project grading or building  
 26 permits on a project-by-project basis.

27 **Mitigation Measure HWQ-A1-2. Postconstruction hydrologic**  
 28 **monitoring at project site wetlands; adaptive management; and**  
 29 **corrective actions as necessary to maintain existing hydrologic**  
 30 **function.** Post-project hydrology and water balance conditions at project  
 31 site wetlands shall be monitored by the Project Applicant and reported to  
 32 the Planning and Building Inspection Department. The objective of  
 33 monitoring is to assess if project construction/operation has resulted in  
 34 significant changes to wetland hydrology. Monitoring shall include  
 35 assessment of water balance conditions for comparison with the analysis  
 36 presented in Balance Hydrologics (2003) for existing conditions.  
 37 Monitoring shall continue for at least 7 years, or include observations  
 38 from a wet year (~where annual precipitation is +1 standard deviation  
 39 (SD) of mean annual precipitation (~19.6 ), and a dry year (-1 SD of  
 40 mean annual precipitation). Results from the monitoring program shall  
 41 be reported to County officials annually. Reporting of annual monitoring  
 42 conditions shall include recommendations for adaptive management  
 43 actions if steps are needed to support/sustain wetland hydrologic  
 44 functioning. The applicant shall be responsible for all corrective actions  
 45 necessary to maintain wetland hydrologic functioning.

## B. Stormwater Runoff and Drainage Infrastructure

**Impact HWQ-B1. The Proposed Project will result in increased stormwater runoff due to an increase in impervious surfaces and topographic alterations. This impact is partially offset by the on-site retention and other drainage structures proposed by the applicant. However, project design is preliminary and increased flows may exceed the capacity of proposed or existing stormwater infrastructure. This is a potentially significant impact that can be mitigated to a less-than-significant level.**

Construction of the proposed developments, including roadways and buildings, would create more impervious areas than currently exist within the Proposed Project area. The introduction of new impervious surfaces would reduce the ground surface available for infiltration of rainfall and runoff, and subsequently would generate additional runoff during storm events. In addition, at the Proposed Golf Course drainage will be changed due to topographic modifications, which will increase flows within some of the site subwatersheds. Increased runoff can contribute to flood potential of natural stream channels, accelerate processes of soil erosion and stream channel scour, and increase the transport of pollutants to waterways. Increased runoff can also overwhelm downstream stormwater infrastructure resulting in localized flooding.

The preliminary project drainage report indicates that impervious surface would increase by 28 acres within the 5,230-acre project area. Net increases in impervious surfaces are identified at all project locations, except The Lodge at Pebble Beach. The peak rate of stormwater runoff for a 1-in-100-year storm would increase in most of the development sites, and estimated changes in stormwater flows between pre-project 10-year runoff and post-project 100-year runoff would range from 0.5 cubic feet per second (cfs) to 14.3 cfs (WWD 2001). Changes between pre-project 10-year runoff and post-project 100-year runoff within certain subwatersheds studied by Balance Hydrologics would be higher than the site estimates presented by WWD and would range between 2.5 and 62.2 cfs (Balance Hydrologics 2003).

The preliminary drainage report identifies that each development area will support its own retention storage requirements, or that downstream facilities have been or will be designed to accommodate additional runoff to increases in peak flows. The report identified that the design criteria will accommodate the difference between the peak 100-year post-development volume and the peak 10-year pre-development volume, which matches County requirements.

As noted under "Project Characteristics," the preliminary drainage report and site plans describe the proposed new drainage facilities and improvements, including: a variety of new controlled discharge outfalls; connections with existing stormwater drainage features; and localized, and less formal, discharge structures that flow to open space areas and existing swales. The development plans also depict a number of areas where detention basins would be created to reduce peak drainage flow rates during storm events.

1 However, the preliminary drainage report and current plans have not assessed  
2 downstream offsite stormwater infrastructure, nor did they present any design  
3 details on downstream offsite facilities that may be needed to handle increased  
4 flows. Further, while the preliminary drainage report identifies the required  
5 detention storage and required design volumes on a site-by-site basis, the  
6 provided plans do not identify specific detention area volumes. These details are  
7 necessary to verify that proposed detention facilities are adequate to handle  
8 increases in stormwater flows. It is expected that these details will be identified  
9 in final plans.

10 This impact is considered potentially *significant* because the project may  
11 contribute stormwater flow that exceeds the capacity of downstream stormwater  
12 infrastructure, and also because current site plans do not provide sufficient site-  
13 specific detail to verify that drainage improvements will meet County  
14 requirements. This impact can be mitigated to a *less-than-significant* level with  
15 the following mitigation measures.

16 **Mitigation Measure HWQ-B1-1. Assess downstream stormwater**  
17 **infrastructure and identify and construct all drainage improvements**  
18 **necessary to adequately handle increased stormwater flows from the**  
19 **Proposed Project.** The applicant shall assess the capacity of all  
20 downstream stormwater infrastructure to handle the increased flows  
21 resultant from the Proposed Project. The applicant shall be responsible  
22 for upgrading all infrastructure wherein the capacity is identified as  
23 insufficient to adequately handle increased flows. This assessment and  
24 design plans for any necessary infrastructure improvements shall be  
25 submitted to the Planning and Building Inspection Department for  
26 review and approval prior to issuance of any project permits on a project-  
27 by-project basis.

28 **Mitigation Measure HWQ-B1-2. Submit final drainage report**  
29 **including evaluation of adequacy of all proposed on-site drainage**  
30 **improvements based on final plans.** The final drainage report shall be  
31 based on final project plans and shall provide engineering detail on all  
32 proposed drainage improvements demonstrating that such improvements  
33 meet all County requirements and design standards for stormwater  
34 infrastructure. This final drainage report shall be submitted to the  
35 Planning and Building Inspection Department for review and approval  
36 prior to issuance of any project permits on a project-by-project basis.

## 37 C. Water Quality

38 **Impact HWQ-C1. The Proposed Project may degrade surface water quality**  
39 **due to an increase in sediment and pollutant loading in stormwater**  
40 **drainage. The applicant's BMP plan and Watershed Hydrology Report**  
41 **include measures that are effective at reducing contamination and sediment**  
42 **loading in runoff. This is a less-than-significant impact.**

1 This impact discussion covers general impacts concerning stormwater runoff  
2 related to erosion, general site runoff (including paved areas and parking lots),  
3 and runoff from residential areas. Construction-period stormwater runoff is  
4 discussed under Impact HWQ-C6. Site-specific impacts are addressed  
5 individually as follows:

- 6 ■ pesticides, herbicides and fertilizers (Impact HWQ-C2);
- 7 ■ equestrian center animal waste (Impact HWQ-C3);
- 8 ■ reclaimed water use (Impact HWQ-C4);
- 9 ■ Carmel Bay Area of Special Biological Significance (Carmel Bay ASBS)  
10 (Impact HWQ-C5); and

11 As described above, the Proposed Project will increase rates and quantities of  
12 stormwater drainage. Increases in the total runoff volume can accelerate soil  
13 erosion and stream channel scour, and can increase the transport of contaminants  
14 to waterways. The development plans (PBC 2002) include a variety of drainage  
15 improvements, including detention basins to reduce the size of peak drainage  
16 flow rates during storm events, that were described under "Project  
17 Characteristics." These basins will also provide water quality benefits by  
18 allowing settling of sediment particles and reducing their transport.

19 The project will also involve the construction of roads, parking lots,  
20 infrastructure and maintenance areas associated with the proposed facilities.  
21 Runoff from these areas can be expected to contain non-point pollution sources  
22 comparable to that from urban areas. The type of pollutants contained in  
23 street/parking lot runoff include oil, grease, heavy metals, and other petroleum  
24 derivatives from engines; and the wearing of auto part and roadway surfaces.  
25 New parking lots are proposed at all development sites, except the residential  
26 areas and Highway 1/68 interchange. The applicant has proposed in the BMP  
27 plan to utilize oils and grease sediment traps, vegetated filtering strips and  
28 swales, and detention-retention systems to control these pollutant sources (Questa  
29 2003a and 2003b). The applicant has conducted stormwater runoff sampling in  
30 the Del Monte Forest since 1995. Sampling stations are identified in Table 3.4-1  
31 in the Existing Setting below. To date, no oil and grease has been detected in any  
32 sampling events.

33 The increase in the number of permanent residential units will also incrementally  
34 increase the potential for common household materials such as pesticides;  
35 fertilizers; automotive fluids (e.g., fuel, oil, grease, antifreeze, brake pad dust);  
36 cleaning agents; and pet wastes to enter storm runoff. In addition to detention  
37 structures at residential areas discussed above, the BMP Plan also includes  
38 incorporating litter control and street sweeping of all new paved areas into its  
39 existing street sweeping program, with particular emphasis on the time period  
40 immediately prior to the rainy season.

41 Among other relevant water quality recommendations, the Watershed Hydrology  
42 Report also recommends that where roof runoff is diverted directly to wetlands  
43 and buffers, selection of benign roofing materials is warranted. Roofing

1 materials containing copper, chromium arsenate, asbestos, and zinc are not  
2 recommended. Concrete, wood, paints, and coatings (such as fire-retardants)  
3 are recommended for evaluation for toxicity (Balance Hydrologics 2003).  
4 Development sites that drain to wetlands and buffers include the Proposed Golf  
5 Course, the New Equestrian Center, the Spanish Bay Driving Range, and the  
6 Spanish Bay Employee Housing.

7 With the implementation of the mitigations noted above (HWQ B1-1, and HWQ  
8 B1-2) regarding stormwater drainage infrastructure, as well as all of the measures  
9 contained in the BMP plan (Questa, 2003a) and the Watershed Hydrology Report  
10 (Balance Hydrologics 2003), this impact is considered *less-than-significant*. The  
11 measures in the BMP plan and the Watershed Hydrology Report are considered  
12 part of the Proposed Project and thus all measures contained therein concerning  
13 water quality are considered mandatory by the County.

14 **Impact HWQ-C2. The Proposed Project may degrade water quality due to**  
15 **pesticide and herbicide use at the Proposed Golf Course, New Equestrian**  
16 **Center, and Spanish Bay Driving Range. These impacts can be effectively**  
17 **reduced by implementation of the measures found in the applicant's BMP**  
18 **plan. This is a less-than-significant impact.**

19 Turf management activities will include the use of pesticides and herbicides that  
20 could be transported off-site through surface drainage and shallow groundwater  
21 seepage. Another potential transport mechanism is wash water from equipment  
22 cleaning areas at the Proposed Golf Course maintenance facility, but the  
23 applicant has proposed a fully contained system. Nutrients in fertilizers are  
24 addressed separated under impact HWQ-C3 below.

25 Contaminants of concern from turf management activities could be carried into  
26 local drainages by irrigation water in summer, or stormwater runoff in winter.  
27 Contaminants of concern include synthetic organic compounds in pesticides and  
28 herbicides.

29 The BMP plan consists of several key components that will be implemented at  
30 the Proposed Golf Course, the New Equestrian Center, and the Spanish Bay  
31 Driving Range to control quantity and quality of drainage and runoff to wetlands  
32 and local drainages. As described above, runoff would be controlled through the  
33 use of the stormwater drainage collection system to limit adverse changes in  
34 hydrologic conditions at the wetlands. Runoff from the Proposed Golf Course  
35 would be conveyed to catch basins, bioswales, and the detention and/or retention  
36 basins to intercept and otherwise reduce off-site transport of contaminants.

37 The BMP plan also includes an integrated pest management (IPM) program that  
38 describes irrigation and pesticide application management procedures for the  
39 Proposed Golf Course. The IPM program would use the best available  
40 monitoring technology to manage course operations and use the smallest amount  
41 of pesticides possible. The BMP plan identifies a selected list of potential  
42 pesticides, herbicides, and fungicides and the typical application areas where they  
43 would be used. After design of the Proposed Golf Course and the Spanish Bay  
44 Driving Range is completed, but before it begins operation, the applicant will

1 develop a risk management plan for the pesticide use operations pursuant to  
2 California Department of Food and Agricultural regulations.

3 The plan describes responsibilities of the Proposed Golf Course management for  
4 planning, implementing, and supervising all grounds maintenance activities. Staff  
5 organizational structure, professional qualifications, and associated licensing  
6 requirements of principal course employees will be identified, including those  
7 requiring a Qualified Applicator Certificate (QAC) as certified by the California  
8 Department of Food and Agriculture, and Pest Control Operator (PCO) licensing.  
9 The management plan will generally address operations and maintenance  
10 procedures for water quality BMPs associated with the impervious surfaces (e.g.,  
11 buildings, parking lots, roads) at the course. Water quality monitoring and  
12 reporting procedures will be addressed for implementation during the winter  
13 rainfall season to verify that discharges to Carmel Bay do not contain  
14 contaminants at levels harmful to aquatic life. The BMP plan also includes an  
15 equipment washdown and recycling system that will be used to clean mowers  
16 and other equipment that could be contaminated with golf course chemicals, oils,  
17 and grease.

18 As noted below under "Environmental Setting," the monitoring of stormwater  
19 runoff downstream of the applicant's golf courses in the Del Monte Forest has  
20 identified few exceedances of water quality parameters in sampling conducted  
21 over the last seven years. In general, pesticides were detected infrequently in  
22 monitoring conducted, although trichlopyr was detected in more than half the  
23 samples downgradient of one part of the Pebble Beach Golf Links.

24 With the implementation of 1) the applicant's proposed drainage improvements  
25 including detention and retention facilities, buffers, and biofilters/swales, 2)  
26 mitigation noted above concerning wetlands, 3) mitigation above concerning  
27 stormwater drainage infrastructure, 4) mitigation measures noted in Chapter 3.3  
28 "Biological Resources" concerning wetlands, and 5) all of the measures  
29 contained in the BMP plan (Questa, 2003), this impact is considered *less-than-*  
30 *significant*. The measures in the BMP plan are considered part of the Proposed  
31 Project and therefore all measures contained therein concerning pesticide and  
32 herbicide use are considered mandatory by the County.

33 **Impact HWQ-C3. Horse waste at the New Equestrian Center could degrade**  
34 **water quality in downstream wetlands and drainages. Impacts at the Center**  
35 **can be effectively reduced by implementation of the measures found in the**  
36 **applicant's BMP plan. Increased trail use may result in increased nutrient**  
37 **loading in HHNA drainages and wetlands. This is a significant impact that**  
38 **can be mitigated to a less-than-significant level.**

39 Concentrated use of the New Equestrian Center may generate substantial  
40 quantities of animal wastewater and manure solids. Ground surfaces in equine  
41 exercise areas can also become trampled and muddy during the rainfall season,  
42 and contribute to off-site transport of sediment and other contaminants. These  
43 wastes contain elevated levels of nutrients, inorganic salts, oxygen-demanding  
44 substances, and pathogenic organisms. Off-site transport of wastes in stormwater



1 runoff may adversely impact the quality of receiving waters of the local Sawmill  
2 Gulch watershed and Pacific Ocean.

3 Development plans (PBC 2001) specify that the facility will have separate roof  
4 runoff and storm drainage systems installed and the storm drains will outfall to a  
5 grass buffer area upstream of a wetland. Exposure of facilities to stormwater  
6 during the winter rainfall season would constitute the primary transport  
7 mechanisms for contaminants of concern.

8 The BMP plan includes the following elements for waste management at the site.

- 9 ■ Solid manure and liquid waste will be managed daily through stockpiling and  
10 disposal procedures and policies. Manure and bedding wastes will be  
11 removed daily from outside areas exposed to rainfall and runoff. Manure will  
12 be stored under cover at a dedicated bunker area and transported at least  
13 twice weekly to a landfill or other approved disposal facility.
- 14 ■ Roof runoff will be discharged to the drainage system to avoid transporting  
15 contaminants near barns, stalls, paddocks, rings, and exercise areas.
- 16 ■ A detention basin will be installed near the wetland to reduce the potential  
17 for direct discharge of contaminants to the wetland, and to maximize the  
18 effectiveness and functioning of the grass filter strip area adjacent to the  
19 wetland.
- 20 ■ Water used as washwater and for animal watering will be managed to  
21 minimize fly and mosquito breeding habitat.

22 With the implementation of 1) the applicant's proposed drainage improvements  
23 including detention and retention facilities, buffers, and biofilters/swales, 2)  
24 mitigation noted above concerning wetlands, 3) mitigation above concerning  
25 stormwater drainage infrastructure, 4) mitigation measures noted in Chapter 3.3  
26 "Biological Resources" concerning wetlands and, 5) all of the measures  
27 contained in the BMP plan (Questa, 2003a), the impact at the Center itself is  
28 considered *less-than-significant*. The measures in the BMP plan are considered  
29 part of the Proposed Project and thus all measures contained therein concerning  
30 animal waste management are considered mandatory by the County.

31 Trail use will increase primarily in the HHNA including SFB Morse Preserve. As  
32 noted above, water quality in wetlands near the existing equestrian center has  
33 apparently been affected by animal waste, both on the premises and along trails  
34 near the center. In particular, the BMP plan (Questa 2003a and 2003b) and the  
35 Wetland Management Plan (WRA 2001) both suggest that existing elevated  
36 nitrogen levels in some of the wetlands at the Proposed Golf Course may be  
37 influenced by animal waste along equestrian trails close to the wetlands. All four  
38 drainages in HHNA are crossed by existing trails and two would be crossed by  
39 the new trail along the Haul Road. Some trail segments also cross adjacent to  
40 existing wetlands in HHNA. Thus, increased equestrian use along HHNA trails  
41 could result in increased nutrient loading into HHNA drainages and wetlands.  
42 The BMP plan does not include any measures related to animal waste along trails

1 where equestrian use will increase as a result of relocation of the Equestrian  
2 Center.

3 Impacts related to potential erosion and sedimentation due to increased trail use  
4 in the HHNA are addressed in Chapter 3.4, "Biological Resources," under Impact  
5 BIO-A5.

6 This is a *significant* impact that can be reduced to a *less-than-significant* level by  
7 the following mitigation.

8 **Mitigation Measure HWQ-C3. Implement stream and wetland water**  
9 **quality monitoring, and identify and implement additional measures**  
10 **if monitoring shows a substantial increase in nutrients resulting**  
11 **from animal waste along trails in Huckleberry Hill Natural Area.**

12 The applicant shall monitor the water quality of HHNA drainages and  
13 wetlands in proximity to areas of increased equestrian trail use.  
14 Monitoring shall be conducted prior to opening of the New Equestrian  
15 Center to establish a baseline by which to evaluate project-related  
16 changes. Monitoring shall be conducted three times annually for  
17 nutrients related to animal waste (nitrogen and ammonia in particular), to  
18 include the fall, after the first major storm, and in the spring. Monitoring  
19 results shall be submitted to Monterey County. If results indicate that a  
20 substantial increase in nutrients is resulting from increased equestrian  
21 trail use, the applicant shall identify adaptive management strategies to  
22 protect water quality. These measures may include periodic cleanup of  
23 animal waste near drainages, rerouting trail drainage away from streams  
24 and wetlands, reconfiguring trails to avoid intensive use in problem  
25 areas, manure bags, and/or other measures. Monitoring shall be  
26 conducted every year for 5 years and then every 5 years for a minimum  
27 of 15 years and until analytic results demonstrate that adaptive  
28 management measures have effectively reduced nutrient loading to  
29 background levels.

30 **Impact HWQ-C4. Use of reclaimed wastewater and fertilizer at the**  
31 **Proposed Golf Course, Spanish Bay Driving Range, and New Equestrian**  
32 **Center could degrade water quality in downstream wetlands and drainages.**  
33 **These impacts can be effectively reduced by implementation of the measures**  
34 **found in the applicant's BMP plan. This is considered a less-than-significant**  
35 **impact.**

36 Reclaimed wastewater can contain elevated levels of pathogenic organism  
37 inorganic salts, oxygen-demanding substances, and nutrients (including  
38 nitrogen), compared to the potable water supply. Fertilizer used for turfgrass  
39 management can also contain nutrients (particularly nitrogen) that can also affect  
40 water quality.

41 **Human health concerns.** Reclaimed municipal wastewater produced by the  
42 Carmel Area Wastewater District/PBCSD Reclamation Plant will be used for  
43 turfgrass irrigation at the Proposed Golf Course, New Equestrian Center, and

1 Spanish Bay Driving Range. Operation of water recycling irrigation systems is  
2 governed by Title 22 requirements. Specific guidelines discussed in the BMP  
3 plan to comply with these requirements include: prevention of cross-connections  
4 with potable water systems; backflow preventors; pipe identification; hose bibs;  
5 prohibition of public drinking fountains near areas of use; pipe separation;  
6 warning tags; use area identification; control of runoff; prevention of windblown  
7 spray; testing; and observation reports (Questa 2003a). These methods are  
8 considered effective at preventing any human health concerns related to contact  
9 with reclaimed water.

10 **Salts.** Reclaimed water has been supplemented with potable water to reduce the  
11 negative impact on turf caused by the salt content of the reclaimed water  
12 delivered to the existing golf courses. However, planned upgrades to the  
13 reclaimed wastewater treatment process (see discussion of “Phase II  
14 Improvements” in Chapter 3.5, “Public Services and Utilities”) will use  
15 desalination to reduce total dissolved solids in the water to levels similar to the  
16 local potable water supply. When the desalination process has been implemented,  
17 the Proposed Golf Course should be able to use reclaimed water for all turf  
18 irrigation requirements without use of potable water.

19 A salt balance was calculated for one of the major subwatersheds containing  
20 wetlands (subwatershed 2) at the Proposed Golf Course site to evaluate potential  
21 water quality changes that may occur when the course is irrigated with CAWD  
22 reclaimed wastewater and fertilizer is applied (Questa 2003). Salt concentrations  
23 in the surface water of wetlands in the subwatershed were estimated for a high  
24 and low irrigation application rate based on known water quality monitoring data  
25 and estimated surface and groundwater runoff to the wetlands. Wetlands water  
26 quality conditions were also estimated for scenarios with existing reclaimed  
27 water quality and future conditions when the Reclamation Plant is upgraded to  
28 reduce salt content.

29 Existing concentrations of TDS in surface waters at the Proposed Golf Course  
30 wetlands range from approximately 1,000 to 7,000 mg/l (Balance Hydrologic  
31 2003a). With use of reclaimed water from the existing Reclamation Plant for golf  
32 course irrigation, TDS concentrations in site wetlands are not expected to  
33 appreciably change. The predicted TDS levels are within the range of values that  
34 currently exist at this wetland, demonstrating that irrigation of the Proposed Golf  
35 Course with reclaimed water will not appreciably change water quality  
36 conditions in the wetland (Balance Hydrologic 2003a).

37 **Nutrients.** As noted below under “Environmental Setting,” the monitoring of  
38 stormwater runoff downstream of the applicant’s golf courses in the Del Monte  
39 Forest has identified a few exceedances of water quality parameters in sampling  
40 conducted over the last seven years. Nutrients appear to increase in some  
41 sampling events below golf course locations, probably indicating the influence of  
42 fertilizer use.

43 Nitrogen is the primary fertilizing agent, and is of potential concern regarding  
44 water quality for downstream wetlands and drainages. A mass balance was  
45 computed for nitrate-nitrogen effects of reclaimed water use and fertilizer use at

1 the Proposed Golf Course for the subwatershed 2. The analysis depended on a  
 2 series of literature-based values for probable nitrogen runoff to the subsurface  
 3 drainage systems for turf areas, loss of nitrogen in runoff by plant uptake,  
 4 denitrification, physical filtering, and absorption. Estimated nitrate-nitrogen  
 5 background concentrations in subwatershed 2 wetlands are predicted to increase  
 6 from current levels (< 1 mg/L to 1.5 mg/L) to a range of 0.6 to 3.1 mg/L. Questa  
 7 noted that localized nitrogen concentrations as high as 14 mg/L have been found  
 8 in portions of the wetlands, which may indicate localized effects of equestrian  
 9 activity and a potential lack of ready assimilation of nitrogen inputs from  
 10 equestrian activity (Questa 2003a and 2003b).

11 Nitrogen loading estimates for existing horse trail activity within the studied  
 12 subwatershed were estimated as 1.3 to 2.6 lb/year, compared to estimates of total  
 13 nitrogen input from the Proposed Golf Course of 10 to 52 lb/year. While nitrate-  
 14 nitrogen concentrations could increase and total nitrogen input would increase,  
 15 Questa noted that golf course nitrogen inputs would be more evenly distributed  
 16 (than equestrian nitrogen inputs) and would be in a nitrate form that is amenable  
 17 to assimilation and removal by plant uptake and denitrification in wetlands. Golf  
 18 course drainage through vegetated buffers would allow for additional nitrogen  
 19 uptake and denitrification prior to entry into site wetlands and drainages. Questa  
 20 concluded that, with the implementation of proposed BMPs and turf grass  
 21 management, the resultant nitrogen concentrations in site wetlands would be  
 22 similar to those at present (Questa 2003a and 2003b).

23 The BMP plan includes an integrated pest management (IPM) program that  
 24 describes irrigation and fertilizer application management procedures for the  
 25 Proposed Golf Course. The IPM program would use the best available  
 26 monitoring technology to manage course operations and utilize slow-release  
 27 fertilizers to limit runoff of nutrients.

28 With the implementation of 1) the applicant's proposed drainage improvements  
 29 including detention and retention facilities, buffers, and biofilters/swales, 2)  
 30 mitigation noted above concerning wetlands, 3) mitigation above concerning  
 31 stormwater drainage infrastructure, 4) mitigation measures noted in Chapter 3.3  
 32 "Biological Resources" concerning wetlands, and 5) all of the measures  
 33 contained in the BMP plan (Questa, 2003a), this impact is considered *less-than-*  
 34 *significant*. The measures in the BMP plan are considered part of the Proposed  
 35 Project and therefore all measures contained therein concerning irrigation,  
 36 reclaimed water use, and fertilizer application are considered mandatory by the  
 37 County.

38 **Impact HWQ-C5. The Proposed Project could result in increased pollutants**  
 39 **in stormwater runoff from new residential developments in Area I-2, Area**  
 40 **PQR and development at The Lodge, all of which ultimately drain to the**  
 41 **Carmel Bay ASBS. These impacts will be offset by the measures contained**  
 42 **in the Applicants BMP plan regarding stormwater runoff and by the plan to**  
 43 **divert most of the drainage from the area of the existing equestrian center**  
 44 **and Collins Field away from the Carmel Bay ASBS. This is a less-than-**  
 45 **significant impact.**

1 The Proposed Project includes 7 Lots in Area PQR and approximately half of the  
2 11 Lots in Area I-2, which are located in areas that ultimately drain to Carmel  
3 Bay ASBS. The proposed developments at The Lodge at Pebble Beach would  
4 drain into storm drain systems that also enter Carmel Bay ASBS. As discussed  
5 above, the applicant's BMP plan contains measures that are considered effective  
6 at addressing stormwater runoff from project development. Construction runoff is  
7 discussed below under Impact HWQ-C6.

8 The design for the Proposed Golf Course area would specifically reroute  
9 drainage from the southern part of the site that presently drains to the Carmel Bay  
10 ASBS. Runoff from this part of the Proposed Golf Course will instead be routed  
11 into the Fan Shell Beach watershed. This impact is considered *less-than-*  
12 *significant* because the BMP plan (Questa Engineering 2003) identifies  
13 stormwater management measures that are considered effective at reducing water  
14 quality effects.

15 **Impact HWQ-C6. Construction of the Proposed Project would include**  
16 **substantial amounts of grading, paving, and use of fuels and construction**  
17 **materials that may result in sedimentation or other contamination of**  
18 **stormwater runoff. This is considered a significant impact that can be**  
19 **mitigated to a less-than-significant level.**

20 Construction activities would involve initial clearing of vegetation and grading,  
21 construction of building foundations and structures, grading and paving of  
22 roadway/parking lot surfaces, and installation of landscape features. Construction  
23 activities can impair water quality temporarily because disturbed and eroded soil,  
24 petroleum products, and miscellaneous waste may be discharged into receiving  
25 waters. Soil and associated contaminants that enter stream channels can increase  
26 turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and  
27 introduce compounds that are toxic to aquatic organisms. If they are released into  
28 the environment, construction materials such as soil, concrete, fuel, oil, and paint  
29 are potentially harmful to fish and other aquatic life.

30 The extent of potential environmental effects depends on the erodibility of soil  
31 types encountered; the type of construction practices; the extent of disturbed  
32 area; the duration of construction activities; the timing of precipitation; the  
33 proximity to receiving water bodies; and the sensitivity of those water bodies to  
34 contaminants of concern. Chapter 3.2, "Geology, Seismicity, and Soils,"  
35 describes potential impacts associated with construction-related discharges of soil  
36 due to erosion and slope stability hazards. All Proposed Project features would  
37 involve construction activities and the associated potential for water quality  
38 impacts. The receiving waters include the drainage area to the Carmel Bay, Seal  
39 Rock watershed, Sawmill Gulch watershed, Fan Shell Beach watershed, Moss  
40 Beach watershed and smaller unnamed drainage basins immediately adjacent to  
41 the coastline.

42 The Proposed Project would involve construction activities occurring over  
43 several years. The majority of site development for some facilities could be  
44 constructed relatively quickly within single-summer dry seasons. However, other  
45 components such as the Proposed Golf Course and larger commercial

1 development components may occur during at least one winter rainfall season.  
2 Potential for inadvertent off-site runoff or for mobilization of construction-  
3 related materials or waste products by stormwater is greatest when construction  
4 activities are carried out in winter.

5 The potential for accidental spills of fuel and other toxic materials may occur  
6 during any construction period. The water quality effects of spills could be short-  
7 or long-term depending on the type of material, size of the spill, and seasonal  
8 timing. The need for construction site dewatering has not been identified.  
9 However, it is reasonable to assume that dewatering may be needed during the  
10 construction of deep excavations such as those necessary for underground  
11 parking facilities.

12 This is considered a potentially significant impact that would be mitigation to  
13 *less-than-significant* with implementation of the following mitigation measures.

14 **Mitigation Measure GSS-C1. Prepare and Implement an Erosion**  
15 **and Sediment Control Plan.** Mitigation described further in Chapter  
16 3.2, "Geology, Seismicity and Soils."

17 **Mitigation Measure GSS-C2. Wet season grading additional erosion**  
18 **control measures.** Mitigation described further in Chapter 3.2,  
19 "Geology, Seismicity and Soils."

20 **Mitigation Measure HWQ-C6. Obtain authorization through the**  
21 **Regional Water Quality Control Board (RWQCB) for a National**  
22 **Permit Discharge Elimination System (NPDES) permit for general**  
23 **construction activity.** The applicant will avoid and minimize potential  
24 temporary water quality impacts by including provisions in the final  
25 engineering plans and specifications of each project component (together  
26 with associated instructions to contractor[s]), assuring compliance with  
27 applicable RWQCB and Monterey County regulations. The applicant  
28 will require the general contractor(s) to file a notice of intent (NOI) to  
29 discharge stormwater, and an application for the NPDES stormwater  
30 permit for general construction activity, with the RWQCB before starting  
31 construction. All construction activities will be subject to this  
32 requirement. However, the number of NOIs and Storm Water Pollution  
33 Prevention Plans (SWPPPs) prepared will depend on the phasing of each  
34 project and the general contractor(s) involved. Applications for the  
35 various project components can be separate or combined, as deemed  
36 necessary by the applicant and their representatives.

37 The general contractor(s) will develop a SWPPP that includes an  
38 appropriate set of standard BMPs for the specific activities that will be  
39 conducted. Many of the erosion and sediment control BMPs that will be  
40 used during project construction are described in the BMP plan (Questa  
41 2003a and 2003b). At a minimum, BMPs will address soil stabilization,  
42 sediment control, wind erosion control, tracking control, nonstormwater  
43 control, and waste management and materials pollution control practices.  
44 Emergency spill control and response measures will be included to

1 reduce the potential for impacts through prevention and rapid cleanup  
 2 should a spill occur.

3 The SWPPP can be combined with the Erosion and Sediment Control  
 4 Plan required by Mitigation Measure GSS-C1, as long it addresses all  
 5 requirements of both the NPDES permit and County regulations.

6 All elements of the SWPPP will be reviewed by Monterey County  
 7 Planning staff to ensure that measures are included to conform to the  
 8 erosion control ordinance and provisions of the CIP. Under the direction  
 9 of Monterey County staff, the general contractor(s) and all  
 10 subcontractor(s) conducting the work would be responsible for  
 11 constructing or implementing, regularly inspecting, and maintaining the  
 12 BMPs in good working order.

13 Typical BMPs that will be considered for inclusion in the SWPPP  
 14 include;

- 15 ■ temporary sediment control: silt fence; sandbag, strawbale, and fiber  
 16 roll barrier; desilting basin;
- 17 ■ temporary soil stabilization: hydraulic or straw mulch; seeding; soil  
 18 binders; erosion control mats or blankets;
- 19 ■ preservation of existing vegetation;
- 20 ■ scheduling to avoid rainfall season;
- 21 ■ stockpile management: size restriction, runoff control, covers;
- 22 ■ sediment tracking control: street sweeping, cover hauling trailers;
- 23 ■ waste management: spill prevention, concrete waste management,  
 24 material delivery and storage, vehicle fueling and cleaning; and
- 25 ■ dewatering: clear water diversion, desilting basins, filter discharges,  
 26 discharge to grass fields, monitor discharges and restrict if necessary.

27 **Environmental Setting**

28 **Hydrology**

29 **Regional Hydrology**

30 The primary water features of the region include the Pacific Ocean and coastline  
 31 of the Monterey Peninsula, small inland drainage basins of the peninsula  
 32 (described below), the Carmel River, and the Carmel Bay Area of Special  
 33 Biological Significance, which lies immediately south of the Proposed Project  
 34 area. The regional climate is dominated by the North Pacific High Pressure  
 35 System that produces northerly winds along the entire West Coast of the United  
 36 States during most of the year and dominates the climate of the Monterey

1 Peninsula. Seasonal conditions are characterized by warm, dry summers and  
2 cool, wet winters. The average annual precipitation in the project area is about  
3 19 inches. Most precipitation is associated with rainstorms that generally occur  
4 from October through April.

## 5 **Site-Specific Hydrology**

### 6 **Surface Hydrology**

7 Elements of the Proposed Project would be constructed within portions of five  
8 named coastal drainage watersheds that discharge into the ocean (see Figure 3.4-  
9 1), as follows:

- 10 ■ The Moss Beach watershed drains the area around the Spanish Bay Resort,  
11 Spanish Bay Driving Range (Area C), Spanish Bay Employee Housing (Area  
12 C), and adjacent residential areas. This watershed contains an unnamed  
13 drainage on the northeast side of the Employee Housing site that drains along  
14 the northern boundary of The Links at Spanish Bay.
- 15 ■ The Sawmill Gulch watershed drains HHNA, the northern portion of the  
16 Poppy Hills Golf Course, residential areas, and part of the Monterey  
17 Peninsula Country Club Dunes Course. This watershed contains Sawmill  
18 Gulch, which originates from three primary unnamed tributaries on  
19 Huckleberry Hill. Two of the tributaries flow just north and south of the  
20 Sawmill site. The tributaries flow northwesterly and join further downstream.  
21 The main stem then flows northwest along the Monterey Peninsula Country  
22 Club Dunes Course to the ocean.
- 23 ■ The Seal Rock watershed contains Seal Rock Creek and drains the southern  
24 part of the Poppy Hills Golf Course, surrounding residential areas, the  
25 Spyglass Hill Golf Course, and open space areas near 17-Mile Drive before  
26 entering the ocean.
- 27 ■ The Fan Shell Beach watershed drains most of the Proposed Golf Course  
28 (Area MNOUV), adjacent residential development, and much of Cypress  
29 Point Club. The watershed contains an ephemeral drainage, Fan Shell Creek,  
30 located south of Portola and Sombria Lane, that lacks a well-defined channel  
31 until it reaches Cypress Point Club, which drains to the ocean at Fan Shell  
32 Beach.
- 33 ■ The Carmel Bay ASBS watershed drains Pescadero Canyon, residential  
34 areas, Pebble Beach Golf Links, Collins Field, and Peter Hay Golf Course.  
35 Pescadero Creek is fed by a number of tributaries in Area PQR (i.e., a portion  
36 of the Residential Subdivisions site), then flows down Pescadero Canyon to  
37 enter the ocean just west of the Carmel Gate. Several smaller drainages,  
38 including Del Ciervo Creek and Stillwater East Creek drain residential areas  
39 and part of the Pebble Beach Golf Links.

40 The location of the larger development areas for the Proposed Project relative to  
41 these watersheds include Fan Shell Beach (Proposed Golf Course), Sawmill



1 Gulch (New Equestrian Center), and the Moss Beach basin (The Inn at Spanish  
2 Bay, the Spanish Bay Driving Range, and Employee Housing). None of the  
3 proposed development parcels lie within designated 100-year floodplains for any  
4 drainage channels within these basins. Seal Rock Creek is the only drainage  
5 basin that has any designated floodplains. Soils are relatively shallow, consisting  
6 of sands or loams with high water infiltration rates. Consequently, erosion and  
7 sedimentation rates are considered low or moderate. All are considered  
8 intermittent and do not contain flowing water for portions of the year, although  
9 pools within Seal Rock Creek, and several other drainages, retain water  
10 throughout the year.

11 Wetland resources of the Del Monte Forest area have been extensively studied  
12 for the Proposed Project. Wetlands are located at many of the proposed  
13 development sites (see specific discussion in Section 3.3, "Biological Resources"  
14 and resource mapping in Appendix E). Some of the wetlands are natural and  
15 result from their topographic or soil characteristics coupled with the presence of  
16 adequate rainfall, infiltration, and/or shallow groundwater interaction. Others are  
17 artifacts of human intervention, either through diverted or blocked drainage such  
18 as roads and trails, or by interception of runoff from developed areas. Hydrologic  
19 analysis of one of the major wetlands at the Proposed Golf Course area indicates  
20 that the large majority of water supporting the wetland occurs in the form of  
21 surface drainage (WRA 2001). Direct precipitation and shallow groundwater also  
22 provide flow to the wetland. However, groundwater flow is estimated to be about  
23 0.1 ft daily in Del Monte Forest soils. Consequently, the area of soil contributing  
24 shallow seepage to any wetland during the dry season is relatively small.

25 The specific site hydrology for development sites with wetlands is described  
26 below. Existing site drainage infrastructure is discussed under "Project  
27 Characteristics" earlier in this chapter along with proposed drainage  
28 infrastructure.

29 **Proposed Golf Course.** Most of the site drains to the storm drain system at the  
30 Cypress Point Golf Course (Cypress Point). The north portion of the site drains to  
31 the Spyglass Hill Golf Course (Spyglass Hill) and the disturbed areas around the  
32 existing equestrian center and Collins Field on the south portion of the site drain  
33 to Carmel Bay. The golf course area has been divided into subwatersheds for the  
34 purposes of analysis by the applicant's hydrologic consultant (Balance  
35 Hydrologics, 2001 and 2003):

- 36 ■ North Drainage: This is the area in and around the Spyglass Quarry. This  
37 area drains through small gullies to the Spyglass Hill drainage system. This  
38 area does not contain any wetlands.
- 39 ■ Subwatershed 1: This 13-acre area contains the north-central portion of the  
40 Proposed Golf Course between Stevenson Drive and Cypress Point golf  
41 course, and drains to a seasonal wetland, and then to the Cypress Point  
42 drainage system.
- 43 ■ Subwatershed 2: This 34-acre area includes the northeast and central portion  
44 of the Proposed Golf Course and drains through a series of wetlands,

- 1 including the only freshwater marsh delineated on the site, and then to the  
2 Cypress Point drainage system.
- 3 ■ Subwatershed 3: This 91-acre area includes the southeast portion of the  
4 Proposed Golf Course, as well as off-site residential areas to the east and  
5 drains through a complex of wetlands, a small drainage (drainage "I")  
6 containing a series of step-pools, and then into the Cypress Point drainage  
7 system.
- 8 ■ Subwatershed 4: This 24-acre area includes the south central part of the  
9 Proposed Golf Course, including portions of the existing equestrian center  
10 and the Collins field, and drains through a ditch to the Cypress Point  
11 drainage system.
- 12 ■ Subwatershed 5: This 50-acre area includes the southwestern part of the  
13 Proposed Golf Course and some off-site residential housing areas, and drains  
14 through a series of wetlands to the Cypress Point drainage system.
- 15 ■ South Drainage: This area is located along Ondulado Road, contains a  
16 portion of the equestrian center, and drains to a drainage channel that  
17 eventually outlets at the Carmel Bay ASBS.

18 **New Equestrian Center.** The upper terrace drains from steep slopes into a  
19 relatively flat area with small seasonal wetlands in depressions, and then drains  
20 into an off-site tributary to Sawmill Gulch on the north side of the site. The  
21 lower terrace drains from steep slopes through a gully and into a lower flat area  
22 containing a wetland, and then into the same off-site tributary to Sawmill Gulch  
23 through a culvert under Congress Road (Balance Hydrologics, 2003).

24 **Spanish Bay Driving Range.** The northern two-thirds of the site drains toward  
25 storm drains along 17-mile drive. The southern one-third of the site drains into  
26 the wetlands in the southwestern corner of the site and then into roadside ditches  
27 along Majela Road (Balance Hydrologics, 2003).

28 **Spanish Bay Employee Housing and Preservation Area B.** The eastern half of  
29 the site drains northward toward 17-mile drive and into a culvert. The western  
30 half of the site drains northward with some drainage entering the small seasonal  
31 wetland and the remainder draining toward 17-mile drive (Balance Hydrologics,  
32 2003).

### 33 **Groundwater Hydrology**

34 The Proposed Project area is not located within a groundwater basin. The area is  
35 underlain by massive bedrock and groundwater is not a significant component of  
36 streamflow in the Proposed Project area. Groundwater is not used as a water  
37 source in the project area.