

CALIFORNIA COASTAL COMMISSION

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Commission Action:

**STAFF REPORT: PERMIT AMENDMENT**

APPLICATION NO.: A-5-RPV-93-005-A14
APPLICANT: Ocean Trails LP
AGENT: Kenneth A. Zuckerman, CEO

PROJECT LOCATION: One Ocean Trails Drive: Vacant 261.4 acres seaward of Palos Verdes Drive South and Palos Verdes Drive East, between the City of Los Angeles Boundary and the Portuguese Bend Club at Halfway Point, Habitat restoration includes Shoreline Park, and 98 acres of 100 acre City property located on Palos Verdes Drive East north of Palos Verdes Drive South, City of Rancho Palos Verdes, Los Angeles County.

UNDERLYING PROJECT: Resubdivision of 261.4 acre site into two tracts (VTTM Tract Nos. 50667 & 50666), and construction of 75 lots for single family residences, four lower cost apartment units, utilities and site improvements, 18 hole golf course with clubhouse and public open space, parks and trails. Revised by applicant for *de Novo* action to include: A) Coastal Access and Public Amenities Plan dated Feb. 5, 1993 providing additional beach access trails, B) Habitat Enhancement Plan dated February 18, 1993 providing (1) restriction of 20 acres in Shoreline County Park adjacent to the project to the west to habitat preserve and restoration of ten of those acres; (2) purchase of easement over a 100 acre City parcel adjacent to the project on the north and located outside the coastal zone and restoration of 20 of those acres to coastal sage scrub and (3) supervision of public access to habitat areas. Subsequently amended thirteen, as indicated in Appendix B. This project is also identified as "Ocean Trails."

SUMMARY OF AMENDMENT 14:

The applicant seeks permission to install 150-200 subterranean shear pins (21 foot long, three foot-diameter concrete and steel caissons) in the translational slide block of landslide C to stabilize it for safety. The shear pins would be installed in the slide failure plane, which is 90 feet below the ground surface. Stabilizing the main block will allow the applicant to proceed with approved efforts to divert storm water from the slide plane ("winterization"). The applicant further requests amendments to conditions 1, 8, and 28, to allow grading and removal of vegetation for purposes of erosion control and installation of the shear pins (also known as underground caissons) from a larger area than was permitted in the conditions imposed on amendment 13. Amendment 13, allowed activities

outside the area of geologic exploration, but relying on available maps, limited clearance to the area that had been mapped as already cleared for emergency geologic exploration.

SUMMARY OF STAFF RECOMMENDATION:

Staff is recommending **denial** without prejudice to this amendment request. The staff does not dispute the applicant's contention that winterization is necessary to prevent the slide from moving during the winter rains. Neither does the staff dispute the applicant's contention that it would be unsafe to introduce crews and heavy equipment into the graben, without stabilizing the slide block. The staff does agree that water introduced into the graben will most likely reactivate the slide. However, the scope and expense of the shear pin installation make it impossible to regard the project as only, or principally, a temporary measure. While the slide is most likely to move unless the block is stabilized, the shear pins (also known as underground caissons) are necessarily a permanent installation. As such, the proposed project must be analyzed to show that this method of stabilization is consistent with public safety, and public access, and habitat restoration—not only in the short term, when no access is permitted, and the habitat is removed -- but in the long term, after the City accepts the bluff corridor and the slide block as a public park. As of the time of the completion of this report, the technical reviewers at the City of Rancho Palos Verdes did not have adequate evidence that the shear pins would stabilize the dedicated bluff top corridor park more than temporarily.

The applicant has made it clear that the installation of shear pins is a step in its preferred plan for permanent repair and stabilization. The applicant has no other plans for stabilization of the bluff top corridor should this plan fail. The staff recommends that installation of the shear pins, because of the number of the caissons the expense would preclude at least one of the two other logical alternatives to deal with the slide: grading out the landslide. The other alternative is letting the slide move.

Staff has been told that the applicant's long term plan to stabilize the golf course will stand alone, even if the shear pins fail and the slide continues to move. The Commission will consider this long-term plan in the future. At that time, it can consider alternative or additional methods of protecting public access and habitat. The Commission can also consider whether the plan for the slide block and the bluff corridor will protect public safety, access, and habitat areas indefinitely.

The staff recommends the Commission deny this amendment request because the applicant has not demonstrated that the stabilization achieved with the installation of the shear pins is consistent with long term preservation of the bluff top areas for habitat and public recreation, as required in the applicant's permit. The staff also recommends denial because the project should logically be considered along with all alternatives and the entirety of the applicant's permanent plan. Although the project is a practical immediate measure to reduce the likelihood of slide movement this winter, the project clearly also commits the applicant to a specific long-term plan that is not yet before the Commission.

STAFF NOTE:

In this case, the applicant's urgent needs are in conflict with the need of the City and the Commission to examine the entire situation before making a decision with long-term implications. The applicant is faced with the potential of additional movement of a major slide. The applicant and his technical advisors are telling the staff and the Commission that without the project, the landslide will most certainly move when it rains. The applicant has presented method of stabilizing the block for the winter other than this method, which involves inserting caissons through the slide plane, which is ninety feet below the surface of the block. The City has been reluctant to approve the work, except as a temporary measure. This reluctance is based on a concern that the repair needed urgently for a short-term purpose might not be stable in the long term. Because of the expense of the repair, it would be difficult to remove and re-install. If the area were not stable after the repair, it would not be safe for the public. On the other hand, the project would be an obstacle if either the City or the Commission decided to reject the applicant's preferred long-term slide stabilization proposal. The long-term slide stabilization proposal is to (1) install an underground buttress between the golf course and the transnational block, in the graben created by the slide, and (2) install these shear pins in the block. If the shear pins (also known as underground caissons) were already installed, and were not consistent with the approved plan, the Commission and the City might have to require removal of an expensive improvement. The difficulty arises because this urgently needed winter repair will be very expensive to install and is at the same time proposed as a permanent stabilization method for the slide block.

PROCEDURAL NOTE: The Commission's regulations provide for referral of permit amendment requests to the Commission if:

1. The Executive Director determines that the proposed amendment is a material change,
2. Objection is made to the Executive Director's determination of immateriality,
3. or, the proposed amendment affects conditions required for the purpose of protecting a coastal resource or coastal access.

In this proposed amendment to a conditionally approved permit, the proposed revision is a material change that affects conditions required for the purposes of protecting natural resources and coastal access. Therefore the Executive Director has determined that the change must be reported to the Commission and noticed to the public.

Section 13166 of the California Code of Regulations requires that an application for amendment shall be rejected if, in the opinion of the Executive Director, the proposed amendment would lessen the intended effect of a partially approved or conditioned permit,

unless the applicant presents newly discovered material information, which he or she could not with reasonable diligence have discovered and produced before the permit was granted. On June 2, 1999, a landslide destroyed about sixteen acres of improvements and natural areas, including a portion of golf course hole 18. As discussed more specifically below, this landslide is an unforeseen event and new information that allows the Executive Director to accept for processing the request to amend the conditional approval.

The project contains environmentally sensitive habitat, Coastal Sage Scrub, that is habitat for the threatened coastal California gnatcatcher. The Resource Agencies required a Habitat Conservation Plan (HCP) to be agreed to by the developer, the City, the Department of Fish and Game and the United States Fish and Wildlife Service before grading could begin. Conditions 1 and 8 of the coastal development permit require protection of habitat areas identified in the HCP. For the September amendment, the applicant provided the Commission with a plan for exploratory borings and slide investigation. The applicant was asked to provide a plan of all areas that would be disturbed by the winterization efforts; however, the applicant supplied a map of areas that had been already disturbed. The map of the areas disturbed by initial geologic testing was used to define the total extent of disturbance for the winterization efforts approved in September 1999. Some of the cracks and fissures are outside the previously identified area of disturbance and the erosion control and drainage control plans, prepared after the Commission's action, include a desilting basin that will also be outside the area of disturbance identified in the maps approved at the September hearing. The applicant was required to provide an erosion control plan. When the consultant prepared the plan, he discovered that the lowest point on the slide, which was the logical place for the de-silting basin, was located, outside the bounds of the mapped disturbed area. Since the approval of amendment 13, the applicant has now provided an impact study of the areas disturbed by the landslide and the proposed repair work. Based on this impact study and its mitigation measures, the applicant has come to agreement with the Resources Agencies to restore habitat on site and offsite (See Exhibit 20). This agreement with Fish and Game and Fish and Wildlife is new information that would allow the Commission to adjust the grading limits. The mitigation plan is not part of this application and will be considered along with the golf course repair.

Shear Pins. In September, the Commission rejected the applicant's proposal to install shear pins (also known as underground caissons). The slide created a depression or ditch, termed a graben, that is approximately 100 feet wide, 30 to 45 feet deep, with near vertical sides (Exhibit 2) as a block moved 100 feet away from the 18th hole of the golf course. In September 1999, the Commission approved trimming back the slide scarps of the graben to create a stable angle of the sides of the graben (Amendment 13.) Also in September, the applicant proposed to place up to 200 shear pins (also known as underground caissons) into the main slide mass, seaward of the graben, to increase the stability of this mass from a factor of safety of approximately 1.0 to a factor of safety of 1.24. These shear pins were denied by the Commission in September 1999. The City was not prepared to approve the proposal for shear pins. While the City consultant

acknowledged that installation of underground caissons is an acceptable method to stabilize a block failure, City officials had informed staff that this proposal should be considered along with all alternative proposals to stabilize the golf course. Staff concurred with the City that it was premature to approve the caissons until the total slide repair and all its alternatives have been fully analyzed.

The applicant now asserts that the winterization work to the graben, approved by the Commission in September 1999, cannot be done without installation of shear pins (21 foot long, three foot-diameter caissons) first. The applicant believes that the work on the graben is necessary to eliminate the immediate danger of collapse of the unstable scarps that the slide has created. Once work on the graben has occurred, the bottom can be re-graded to avoid ponding of water, which could percolate down to re activate the slide. The applicant now states that this winterization cannot occur without first installing shear pins in the translational block. The City concurs that the block could move, but still requires additional calculations on the effectiveness of the shear pins as a long-term method of stabilizing the block. However, the City Council has requested the Commission to consider the shear pins pending technical review by the City consultants.

Therefore, the Executive Director has accepted the amendment for processing.

STANDARD OF REVIEW:

The applicant proposes to amend a permit approved by the Commission on appeal. The project is also located between the sea and the first public road. Therefore, the standard of review is the certified Local Coastal Program and the access and recreation policies of Chapter 3 of the Coastal Act.

LOCAL APPROVALS RECEIVED:

- (1) City of Rancho Palos Verdes, Council Resolution October 5, 1999 Conceptual approval of Ocean Trails project shear pin component, Component B of winterization plan; subject to review of design details.
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SPECIAL CONDITIONS AS APPROVED IN SEPTEMBER 1999: See APPENDIX A

PREVIOUS PERMIT AMENDMENTS: See APPENDIX B.

SUBSTANTIVE FILE DOCUMENTS: See APPENDIX C

STAFF RECOMMENDATION

The staff recommends that the Commission adopt the following resolution:

I. DENIAL

The Commission hereby denies an amendment to the permit for the proposed development on the grounds that the proposed development with the proposed amendment, is not consistent with the certified Local Coastal Program of the City of Rancho Palos Verdes, is located between the sea and first public road nearest the shoreline and is not in conformance with the public access and public recreation policies of Chapter 3 of the Coastal Act, and will have significant adverse impacts on the environment within the meaning of the California Environmental Quality Act.

II. FINDINGS AND DECLARATIONS

The Commission finds and declares as follows:

A. PROJECT HISTORY AND DESCRIPTION OF AMENDMENT

On April 15, 1993, the Commission conditionally approved, on appeal, the proposal by the applicant and a former partner for an eighteen hole golf course, 83 single family lots, club house, habitat restoration plan, and park and trail complex on a 261 acre property in Rancho Palos Verdes in Los Angeles County (A-5-RPV-93-005). In 1997 construction commenced. On June 2, 1999, Slide C, a previously mapped landslide area, reactivated and affected 16 acres on the sea bluff, near the middle of the golf course. In simple terms, a large block of material slid seaward. The slide was primarily a translational slide, where a massive slide block (approximately 5 acres) moved on a layer of bentonite, located approximately 90 feet below ground level. Between the slide block and the head scarp, there is a depression or ditch, termed a graben, that is approximately 100 feet wide, 30 to 45 feet deep, with near vertical sides. The slide toe is at the western or ocean edge of the slide. There was some rotation along the western 1/3 of the slide that caused slide material to extend approximately 100 feet into the pre-slide beach and intertidal area and uplifted the near-shore area by about 18 feet. (Exhibit 15, pp. 12, 13, and 14)

At its September 1999 meeting, the Commission approved crack filling and erosion control to winterize the slide. At the time, the applicant also requested approval of a plan to insert ± 150 shear pins into the slide to reduce the chances of block movement during the winter rains. Shear pins are three-foot wide concrete caissons, reinforced with steel. These caissons would be installed at the slide plane, 90 feet below ground, extending ten feet above and below the slide plane. The caissons would be buried. The applicant testified that the installation of the shear pins was necessary for public safety, and then, that it was also necessary before any workers would be allowed onto the slide for crack filling or grading for winter stability. However, neither the City Council of Rancho Palos Verdes nor the City's consulting geologists had yet approved the shear pins. Moreover Commissioners expressed concern that (1) approval of this number of shear pins (caissons) would preclude other repair alternatives, and (2) the proposal was not accompanied by proposals to address other damage caused by the slide to access

facilities, habitat and surfing. The Commission approved the crack filling and grading but did not approve the installation of the shear pins.

There has been little or no movement of the landslide since June 2, 1999; however, numerous inclinometers and survey markers have been installed and are being monitored in case there is further movement. The cause of the slide is under investigation. It is clear that water in the bentonite sublayer was a factor. The entire slide mass has numerous cracks and fissures, many of which extend to the bentonite layer. Permanent site stabilization measures have not yet been fully analyzed and designed. Although the area is not now moving, it is only marginally stable, (estimated at 1.0 factor of safety) and winter rains could cause the entire mass to reactivate. The applicant again asserts that the work proposed in this amendment is necessary for winterization of the slide -- to reduce the probability that the entire slide could reactivate before any long-term measures can be fully designed, analyzed, permitted, and installed.

This amendment application is accompanied by (1) a letter from the City Manager of Rancho Palos Verdes forwarding the City Council's request that the Commission to consider the shear pins; (2) letters from the applicant's geologist indicating that the block could move at the advent of the winter rains, and urging approval of the shear pins; (3) three additional review letters from the City's consultant, Cotton Shires; 4) a preliminary impact analysis and habitat mitigation plan that has received initial approval by the Resources Agencies staff, 5) a matrix of alternatives with a brief statement concerning each prepared by a planning consultant, and 6) a draft plan for surf repair. (Exhibits 10, 13, 15, 16, 19, 20, 21)

When the Commission approved the original permit in 1993, the approval included requirements to reserve open land as habitat and to revegetate other areas in order to provide habitat for the California Coastal Gnatcatcher (*Poliopitila californica californica*), a threatened bird species that nests on the site. These requirements represented changes in the project description made by the applicant to address issues raised by the public and by the staff review. Extensive areas both on and off site were required to be dedicated in fee, and revegetated with coastal sage scrub (CSS). Coastal sage scrub is the increasingly threatened habitat type on which the California Coastal Gnatcatcher, the cactus wren (*Campylorhynchus bunneicapillus cousei*) and other increasingly rare and threatened species depend.

The applicants proposed increases in the park and trail system at the public hearing on April 15, 1993. The offers of dedication the applicants made at the hearing included additional acreage over and above the written application, in response to issues raised in the staff recommendation, and by the public, regarding conformance with the LCP, potential conflicts between habitat restoration and recreation, and the project's impacts on the public's existing access to the property. The final proposal, as approved, included 75.5 acres of dedicated lands in addition to approximately 24,000 linear feet of trails. The trails are located both within the dedicated parks and preserves, and on the golf course and other private land. Within the dedicated park and preserve areas, trails are

designated but not dedicated separately. Other trails located on private lands have been offered for dedication as easements. (Exhibit 5)

In the case of the underlying Ocean Trails permit, (A-5-RPV-93-005, as amended), there are other interested parties. After the project was approved, a coalition of several groups: the Sierra Club, the California Native Plant Society, the Coastal Conservation Coalition, Save Our Coastline 2000, and Andrew Sargent, sued the City, the developer and the Commission. The result of the lawsuit was a 1995 settlement in which the developer agreed to improve and offer to dedicate certain access facilities (bluff edge and bluff to beach trails and habitat restoration areas). The City agreed to accept easements over trails and fee ownership of habitat areas and parks and the Commission agreed that its permit would incorporate these requirements. Andrew Sargent, representing Save our Coastline 2000, has indicated to staff that his group will "sit on the side lines" during the determination of the method of repair. However, the group will insist that the project provide all the access amenities and habitat areas agreed to by the parties in the settlement. He has indicated that he expects that after whatever restoration is chosen the same public access and habitat restoration areas will be provided by the applicant, required by the Commission and accepted by the City. Under the terms of the settlement, the City is required to accept the dedicated areas, including Halfway Point Park, (now known as Ocean Trails Park), the Bluff Top Corridor Park, and all dedicated trails.

In December 1997, the ownership of the entire property was transferred to Ocean Trails LP. Representatives of one of the previous owners, Zuckerman Building Companies, now manage and have an ownership interest in the partnership. After the reorganization of ownership the applicant compiled with all conditions that were required before issuance of the permit, and in early 1998, construction commenced.

Until the recent landslide, the applicant was nearing completion of the golf course, the habitat restoration, and the first stage trails noted in the conditions. On June 2, 1999, a major landslide moved approximately 16 acres. The slide severely damaged two completed beach access trails, a bike path and a jogging trail that followed the cliff edge, as well as a lateral trail within the golf course that followed the slide scarp. In addition, part of hole 18, and several cart paths were rendered unsafe or destroyed. Restored habitat areas located on the slide were damaged or inaccessible and some bluff-face habitat slid, burying vegetation. (See Exhibit 20 for applicant's assessment of slide damage to habitat, and damage anticipated from repairs.) The slide moved a piece of the bluff face outward and down, leaving a depression at least 100 feet wide behind it (a graben) and isolating a portion of the bluff top. The east side of Halfway Point was cracked and portions of the bluff face were cracked. About two acres of intertidal areas were uplifted and buried. Large spires and loose rocks hung over the beaches. The City immediately ordered the beach closed at the toe of all three ancient slides that had been identified in earlier geology reports. The beach is still closed, with the concurrence of the Commission. The Commission has now conditioned the re-opening of the applicant's clubhouse and the opening of the golf course for play to two stages of restoration and repair of these trails and accessways

This is the third of four amendments that the applicant proposes to address the 16-acre landslide on the sea bluff near the middle of the golf course. In July, the Commission approved the first amendment for a temporary golf school. In September 1999 the Commission approved an amendment to allow opening of the club house, opening of a temporary access trail across the golf course, geologic exploration and several winterization measures, part A of the applicant's winterization plan as well as measures required by the City, A-5-RPV-93-005A13 (Ocean Trails). These included drainage protection; filling cracks and fissures, geologic exploration and regrading the graben area to assure that water will not pond the graben. Although the applicant requested approval of the installation of shear pins (also known as underground caissons) in September, the Commission did not approve that part of the project, raising concerns that such a approval was inappropriate in advance of the Commission's consideration of alternatives, and also raising concerns that plans for repair of the beach and surf area and revised habitat agreements with the Resources Agencies were not also before it.

The final golf course repair has not yet been approved locally; however, the applicant now proposes to install the shear pins (also known as underground caissons) to prevent further damage during the winter rains. The applicant also notes that the area that was disturbed for geological exploration and so noted in September did not include all areas that needed to be disturbed in order to repair cracks and install a desilting basin. The applicant has now prepared a comprehensive analysis of all areas that will need to be disturbed for approved, proposed and anticipated repairs, and has received staff approval from the Resources Agencies for that report and mitigation plan (Exhibit 20). The applicant asserts the need for the shear pins is urgent, and requests approval pending detailed design review by the City. Staff notes that the City technical review team at the time of preparation of this report had many unanswered questions concerning the effectiveness of the shear pin design.

The applicant seeks permission to install 150-200 subterranean shear pins (21 foot long, three foot-diameter caissons) in the translational slide block for landslide stabilization. (Exhibit 13) The applicant asserts that if the main slide block can be stabilized, it would reserve a greater area for reconstruction of trail and habitat areas. The applicant's consultant contends that the shear pins (also known as underground caissons) will reduce further slide movement to "a slow creep" and reduce the chance of further catastrophic movements. While the City consultant acknowledges that installation of underground shear pins is an acceptable method to stabilize a block failure, the City's technical experts feel that the proposal may represent only a temporary measure. There have been questions raised about the life of the repair and the safety of the block, for public access after repair (Exhibit 16). The City Council has recently requested that the Commission review the shear pins, noting that the applicant felt that any delay could result in reactivation of the slide. The shear pin project is very expensive. It requires surface disturbance over a large area, although it does not require major landform alteration. The applicant has submitted a mitigation plan for impacts to habitat along with the proposal and has provided a surf repair plan for information purposes. At the time of the writing of

this report, the shear pins (also known as underground caissons) had not been approved by the City geologist. At the September meeting, the Commission voiced concern about foreclosing alternatives by approval of the shear pins before the Commission receives and has the opportunity to review the alternatives, and before surf repair could be considered. The surf repair plan is very preliminary and has not been accepted for filing. Staff is recommending denial of this request for shear pins because the shear pins should be considered as part of the larger project, and because, at the time of this writing, the City geologist had not complete full technical review. Finally, given that once the shear pins (caissons) are installed, they would become, by default, the method for permanent repair. Therefore, the Commission must be convinced that the shear pins would provide a safe platform for recreational access and habitat restoration over a period of time that would be comparable to the life of the entire project. The staff cannot recommend to the Commission, at the time of the release of this report, be a safe platform for the life of the project.

A portion of the slide is located in an area in which grading is restricted by condition 1. Thus, approval of the shear pins and the desilting basin requires an amendment to condition 1.

All experts involved, however, recommend that the applicant undertake "winterization" of the slide to prevent further movement. They state that work should be done in the near future to prevent further catastrophic movement of the slide. The applicant's consultant states:

... the integrity of the landslide mass will continue to deteriorate with time... increasing areal extents and depth of cracks and fissures ... if not quickly repaired, large scale movement is inevitable when subject to further disturbances ... {such as} rainwater intrusion into cracks, minor seismic loading or the disturbance due to repair construction activities in the graben area." (Converse, August 19, 1999)

Work approved in September 1999 has not commenced because (1) final plans are not approved and (2) the applicant is concerned that grading inside the graben can not be safely carried out until the translational block is stabilized with up to 200, 21 foot long three foot diameter caissons installed at the slide plane. The slide plane is 90 feet below ground level. These caissons are identified by the applicant as shear pins. The City's geologic consultant has not yet been satisfied with the applicant's shear pin design. However, on October 5, 1999, the City Council after consultation with their consultants, forwarded a request to the Commission, stating:

Our geotechnical consultant, Cotton Shires and Associates, has performed a preliminary review of the shear pin approach and has advised us that installation of shear pins (also known as underground caissons) is a workable solution to mechanically stabilize the slide on a temporary basis without doing major grading. On this advice, the City Council of the City of Rancho Palos Verdes, at their meeting of October 5, 1999, conceptually approved the shear pin component

(component B), subject to review of design details, including diameter and spacing of pins, depth of penetration and specific locations of the pins.

We hope this information is adequate for the inclusion of the Ocean Trails winterization plan on the Commission's November agenda. (Les Evans, October 6, 1999)

Installation of the shear pins will require grading of about 75-100, 4' by 16' pads on the block surface. Most of these pads will not involve a cut of more than 2 feet. However, because of the damage to what remains of the habitat, the applicant is planning to remove and stockpile topsoil prior to the beginning of the work. The applicant is concerned that without approval before December the slide will move. The applicant also is confident of being able to prepare detailed designs that will satisfy the City consultant before that time. The conceptual shear pin design is compatible with the applicant's final proposed plan to stabilize the landslide mass and to redesign the golf course to incorporate a retaining wall in the former location of hole 18.

The applicant prefers this method of repair (shear pins in the block and a retaining wall at the golf course) because it reduces ultimate cost and grading. It is confident that the habitat and public trails will be able to be restored in the slide block once the pins are installed. The City consultant has not yet agreed that the shear pins can stabilize the block enough to prevent a future catastrophic failure. It sees the shear pin as temporary measure at best, and not a project that could be expected to last indefinitely. The applicant's technical consultants are more optimistic about the stability of the block: characterizing the shear pins as a measure that will enable the applicant to fulfill the all prior commitments to revegetate the bluff top and install trails. The applicant has contracted with a separate company to design a repair of the slide face and beach. This repair is dependent on the stability of the block, which the applicant has stated will be achieved by the insertion of the shear pins.

The issues with respect to this amendment request are the following:

- 1) Whether approving this repair now would preclude other alternatives that are more consistent with the permit, the certified LCP, and the access and recreation policies of the Coastal Act.
- 2) Whether delaying this repair would result in sufficient additional movement of the block to eliminate all feasible stabilization alternatives.
- 3) Effectiveness of the proposed repair.
- 4) Compatibility of the repair with the geology of the site.
- 5) Consistency of the repair with the underlying permit obligations.
- 6) Consistency of the repair with the natural hazard and visual qualities policies of the certified LCP.

B. ALTERNATIVE METHODS OF SLIDE REPAIR.

As part of this application, the applicant has supplied a matrix that lists five potential alternatives, (see Exhibit 19.) In the opinion of the City, only three of these are realistic alternatives.

1. Allowing the slide to continue to move. This has the following implications:
 - a) Grading: Minor grading only.
 - b) Cost: Cost to applicant in loss of originally planned type of premium golf course. The consultant estimates that cost at 1-3 million dollars but does not show the basis of the estimation.
 - c) Golf Course: Allowing the slide to move would result in impacts to golf course. Most probably caissons or pilings adjacent to course would still be needed.
 - d) Access Trails: would have to move north onto course
 - e) Habitat: If carried out this would need to be re-established on the course and or off site. Meanwhile slide area would be closed to entry for maintenance, and as a result weeds would multiply and form seed reservoirs. The habitat areas could be replaced once the slide stabilized. The applicant contends that "leaving the slide to move" would result in the invasion of the area by the invasive plants that it has just removed: tumbleweeds, thistle, mustard, and fennel.
 - f) Beach access: The beach would continue be closed between Halfway Point Park and la Rotonda.
 - g) Surf: The block could push more material into the intertidal area. The bottom configuration would reestablish in a different shape, resulting in changed surfing conditions. Surf would continue to change. A new break may eventually form or the existing surfing could be altered for many years. The preliminary surf repair plan would remove material from the toe of the slide and requires that the mail slide mass be stabilized before this work is started. If the slide mass is not stabilized, the surf repair plan, as presently conceived, could not be implemented.

2. Regrade entire slide from previous toe of bluff removing all slide material.
 - a) Grading--the applicants estimates that this would require excavation of 3,000,000 cubic yards of bedrock and landslide debris. The preliminary analysis indicates that it would not be safe to stockpile this much material safety on the golf course, assuming the course would be used as a stockpile area. The reasoning or documentation behind this conclusion is not offered.
 - b) Golf course: Stabilization of the entire landslide mass could result in a change in the size of the course depends on the geometry of the slide. The slide slope is close to 2:1 now, so the total area for the course may be similar to the present situation. If the toe were pulled back, there could be an impact, but the consultant did not supply measurements or details.
 - c) Replacement of access: would provide stable platforms and for trail areas.

- d) Replacement of beach access: A new access road to the beach could be designed and built; providing the safest beach access
- e) Replacement of habitat. Slope compaction would prove an obstacle to revegetation. There could be some loss in area going from a steeper irregular cliff to an engineered slope. This area would be absorbed by the golf course and or the revegetation area.
- f) Beach access. If the toe were moved back to the previously bluff line or landward, beach access/shoreline access would exist.
- g) Surf repair. The preliminary surf repair plan proposes to excavate slide material from the base of the slide to reduce the amount of reflected wave energy. This effort could be undertaken along with, or following other slide repairs. There is no guarantee that the quality of the surfing would be the same as it was before because there is not any information about the contours of the bottom before the slide or detailed profiles of the beach.
- h) Cost—applicant's consultant suggests that the cost would be \$50-80 million. The basis of this estimate was not supplied.
- i) Impacts of repair—applicant's planning consultant suggests that stockpiling of material on the golf course could trigger more slides. The rock might have to be processed prior to use as fill material. No reasons are given for this concern.

3 Applicant's Proposal

- a) Grading: Approximately 1,000,000 cubic yards of landslide material. (Estimate derived from technical reports.) The planning consultant estimates 800,000 c.y. .
- b) Time complete by January 2001
- c) Golf Course: Stabilization would restore entire course to its present size configuration except for land necessary for trails
- d) Access trails. The applicant's consultant assumes that all trails would be reestablished. The location for some trails depends on an assumption that the shear pins would stabilize the block. The consultant concedes that the factor of safety on the block would be 1.1, but the factor of safety for Halfway Point Park and the golf course would increase to approximately 1.5. Since the stable areas would be inland of the translational block, major trails may be required to be relocated inland.
- e) Habitat: All required habitat would be replaced by fall 2000, established by 2003. Some habitat may be reestablished offsite.
- f) Beach Access. A new access road to the beach would be created. The beach would continue to be unsafe due to scree slopes and rotational slides above beach. If surf repair is undertaken and proves feasible, beach area would revert to previous condition rocky beach
- g) Surf repair. The preliminary surf repair plan proposes to excavate slide material from the base of the slide to reduce the amount of reflected wave energy. This effort could be undertaken along with, or following the proposed stabilization of the main slide mass. There is no guarantee that the quality of

the surfing would be the same as it was before because there is not any information about the contours of the bottom before the slide or detailed profiles of the beach.

- h) Cost: Applicant estimates cost would be 10 to 15 million dollars

The applicant also provided some alternatives that did not result in a stable slope, which can be reviewed in Exhibit 21.

The applicant has prepared some design work on its proposed alternative, but there are no comparable plans for the other slope repair alternatives. For that reason, information on cost, grading, and the location of the intersection the top of the slope at the golf course should be treated as educated guesses. Similarly, none of the alternatives was analyzed for impacts to the marine environment, nor were there estimates of the total quantity or rate of landslide debris going into the ocean.

C. CONSISTENCY WITH THE NATURAL HAZARDS AND CORRIDORS ELEMENTS OF THE CERTIFIED LCP.

The certified LCP identifies areas of varying degrees of risk and levels of geologic and habitat protection. The Corridors Element of the LCP is a series of overlays reflecting biological and geologic sensitivity, visual sensitivity, and attractiveness for public access. It anticipates that land adjacent to the bluff edges would be reserved for public access, trails, and habitat preservation and that development would be located further inland. Rancho Palos Verdes certified LCP "Corridors" and "Natural Hazards" elements identify the bluff edge and bluff faces as the most sensitive areas and subject to the most protection.

1) Natural Hazards.

Landslide C was identified in the process of adopting the City's LCP and in approving this permit. The bluff faces and the area of the present slide were designated CRM 1 extreme slope, CRM 3 geologic hazard, CRM 4 marginally stable, and CRM 7-flood inundation hazard in the certified LCP. The City LCP states in part:

" The purpose of this district (CRM1) is to regulate use development and alteration of land in extreme slope areas so that essential natural characteristics such as land form, vegetation and wildlife communities scenic qualities and open space can be substantially maintained. The district further considers the risk to public safety from earth slides and slips, erosion and attendant siltation. Regrading, requiring cut slopes and embankments is a potential instigator of landslide and the probability of these occurrences can be high within this district..."

The LCP is based on a policy of avoidance. Activities in the most sensitive areas are highly restricted, in order to avoid hazards, habitat damage and other problems related to building near cliffs and bluffs. Grading is to be avoided.

Landslide C is designated "CRM 3, Geologic hazard in the LCP.

The designation is described in the following way:

Category 3 areas having the most severe topographic and geologic problems have been included in CRM 3A. Most of these areas are characterized by steep broken topography, and include the steeper sections of the sea cliff, most of the active Portuguese Bend landslide within the coastal region and several steep walled canyons... Areas in CRM3A currently are suitable only for open space. Attempts to develop these areas would be very unrealistic in terms of liability and practicality...in CRM 3B areas the only significant difference is that the 3B areas are suitable for development of hiking trails.

The policy states in part:

Allow no new permanent structures within coastal resource management districts of extreme hazard. The same structural limitation applies to area of high hazard but human passage may be more readily allowed.

Allow non-residential structures not requiring significant excavation or grading or recreational facilities within moderate hazard areas)

Based on the presence of three identified landslides (characterized as "active" in the Commission's 1993 report) and of other areas in which the factor of safety was less than 1.5, the applicant proposed and the City and Commission approved a mixed-use development that located structures on the more stable areas of the site, and the golf course, habitat and access trails on the less stable areas of the site. Those less stable areas included three ancient slides as well as areas where the bedding planes dipped out of the hillside. The presence of adverse bedding planes resulted in a calculation of a factor of safety of less than 1.5 for extensive areas of the site. Because of this geology, the applicant proposed no buildings in a major portion of the property. Instead, the applicant proposed a golf course on that portion of the property. The applicant proposed to limit golf course irrigation water and to install a clay layer to protect underlying sediments from irrigation water. The Commission approved the applicant's plans, as did the City. The Commission imposed an "assumption of risk" condition, in which applicant assumed responsibility for the decision to develop on an unstable site. The applicant accepted the condition and recorded the associated deed restriction.

The slide that occurred on June 2, 1999 was located on an ancient slide, identified as "Slide C" in the project's documentation. Sixteen acres were affected. In simple terms, a large block of material slid seaward on a layer of bentonite. Bentonite is a highly plastic clay, derived from volcanic ash, that swells and becomes a slick, soapy material when it is wet. The ½ to 3" thick layer of bentonite about 90 feet below the ground surface was the slip surface for the June 2nd landslide. The project geologists and the City geologist concur that if a significant amount of water reaches the bentonite, the slide block will

resume its movement. About the same time, other fissures were noted at the seaward tip of Halfway Point Park and adjacent to a trail near the eastern end of the project. Those fissures have not resulted in catastrophic failures.

In the amendment approved in September, the Commission approved the following actions to protect the slide from additional water during the coming winter.

The proposed actions included:

- 1) Preventing access to certain trails, beach areas, and cliff tops because of dangers to the public.
- 2) Crack filling.
- 3) Grading inside the graben to create positive drainage, and grading a berm on the golf course to prevent sheet flow into the graben.
- 4) Erosion control measures, where safe and feasible, to control silt flow off the project. In approving this, the Commission found that such a plan must also be reviewed by Fish and Game and by Commission staff for habitat impacts. Pockets of undisturbed habitat on the bluff face are still used by wildlife. These areas should not be further disturbed.
- 5) Permanently authorize emergency approval of access for drilling and for any approved grading.
- 6) Trimming back oversteepened graben walls, especially where they are hazardous to workers. The graben is another area that could conduct rainwater into the bentonite layer or hold significant amounts of water in the various depressions.

The applicant now states that much of this work cannot occur without installation of the shear pins inserted through the bentonite layer to prevent the block from sliding on it. The proposed shear pins are reinforced concrete columns, about three feet in width. They would be reinforced with steel rods. They would be inserted in 20 rows of shear pins spaced at 20-foot centers. Rows would be located approximately 30 feet apart. The proposal is the following:

Placing shear pins (caissons), in the "big block" area of the slide. This five-acre area moved as a flat-topped block. It has been fairly stable since June 2nd, but could move again when it rains. The applicant's consultant proposes drilling approximately 150-200 holes about 11 feet deeper than the bentonite layer, inserting into each of these holes a 3 foot diameter shear pin that will extend through the bentonite layer, cutting the shear pins off about 11 feet above the slide plane (the bentonite layer) and back filling each hole.

This, in the view of the applicant will create stability -- and will allow all work to be completed before the rainy season. This would also, in the future, allow the applicant to revegetate the slide block and place trails on it. It is not clear however; that the block could ever support paved trails. The bluff top corridor is a dedicated habitat area that is located in the slide.

The City geologist concurs that the installation of shear pins (also known as underground caissons) is an acceptable method to slow a slide. In a letter sent to the applicant's consultant on August 30, 1999 the City geological consultant, Cotton Shires, requested additional information concerning the following topics:

- 1) analytical modeling of the landslide, including analysis of failure within weak layers above or below the shear pins
- 2) consideration of geologic or topographic constraints,
- 3) Adequate soil binding between shear pins and the proposed spacing. The reviewer understands that distance between the shear pins assumed a uniform soil. Because the soil under this block contain voids, fractured blocks and silty material a model that assumes a uniform plastic soil is not appropriate.
- 4) Adequate shear pin resistance to shear forces and bending movements imposed by the sliding mass'
- 5) Sufficient embedment below the sliding surface to prevent pull-out failure of the shear pins,
- 6) Capacity of the earth materials adjacent to the shear pins to resist the lateral forces imposed on them;
- 7) Occurrence of sufficient lateral deformation allow development of strength in the reinforcing steel and
- 8) Appropriate recommendations for construction procedures. (source Cotton, Sept 30, 1999)

In a more detailed section of the same letter, the City consultant stated the following:

"We understand the intent of the shear pins is to provide an increase in the factor of safety of the translational block to approximately 1.1 (a 10% increase in stability) and that the shear pin support will be relied upon for the period of construction of a proposed geosynthetic-reinforced earth graben buttress. The graben buttress is designed as a stand-alone repair and will not rely on the shear pins for support. (Cotton, September 30, 1999)

The applicant's consultant has in its view responded, but until October 18, 1999, when the two teams met and conferred, the City's consultant did not agree (see Exhibits). The City consultant is concerned that the design assumes a uniform "plastic" material but in fact there are breaks, hard shards, voids, clay lenses and loose soil that might not bridge the gap between the pins. The applicant's consultant believes that by putting the pins close together and strengthening the pins that he has considered those factors.

Conservative engineering properties resulted in an over-estimation of the amount of required resistance force to achieve the target factor of safety of 1.1 by more than 20%.

"There does not exist any laterally continuous weak layers. (Response to bentonite lenses)

"Embedments [proposed] are longer than needed in our analysis (response to a concern that the pins might be pulled out by the force of the slide) (Lu 10/13/99

The City geologist restated that these questions have not been answered. However, the City team has now agreed to begin technical review of the plan. They further believe that there will be no need for additional field work, and that their remaining concerns can be addressed with the site information that is currently available. (Personal communication from Stanley Helenschmidt of Cotton Shires & Associates to Lesley Ewing of the Commission staff, October 14, 1999.) Because final technical review has not taken place, staff does not recommend approval of the shear pins yet.

The applicant has stated that the factor of safety presently is approximately 1.0, and unless some work is done, the block can be expected to move this winter. The City is willing to consider the installation of shear pins, noting, however, that the applicant describes the shear pins (also known as underground caissons) as a "temporary measure to allow installation of the golf course repair." (Cotton, above).

It is unclear whether the City can approve the shear pins only as a temporary measure, for winterization at this time, and they therefore characterize the shear pins as temporary to distinguish them from the final repair, or whether they are concerned that the pins will pull out in a few years. It is difficult to allow a major, permanent repair, as an emergency action before the entire project has been considered. This latter difficulty is shared by the Commission.

While the pressure to install pins, now results from the current hazardous situation; the shear pins are treated as permanent measures by the City and the applicant. According to the City public works director, the City is still analyzing whether the pins will stabilize the slide block sufficiently to support public access. (Personal conversation, Dean Allison, with Pam Emerson) However, the applicant's habitat expert is proceeding to negotiate and plan revegetation of the block as if the slide block would stay in place. The applicant's coastal engineer is proposing to grade out the toe of the slide in order to restore a surf area, basing the plans on the existence of a re-stabilized of a stable block.

However, the Commission finds that the characterization of the repair as temporary makes it impossible to approve their installation. The access features are protected by the terms of the permit, which would require the applicant to replace the access trails on the golf course if they collapsed a second time. However, approving shear pins that might collapse after the golf course was rebuilt would build an unacceptable level of conflict into the Commission's approval.

Surf repair.

At its hearing in September, the Commission requested more information concerning the applicant's proposal to "repair the surf break. " While the applicant is not ready to submit a plan, it has investigated the situation and the options. When the slide occurred, the block pushed the cliff face seaward. Apparently, its toe rotated out and up—extending

over a hundred feet into the former water area. This uplift impacted tide pools and a surf break. While it has not received local approval because the City has not had a chance to review it, the applicant is also proposing a surf repair. The surf repair would remove an arc of soil beginning 60 up the face of the new bluff and extending 60 feet seaward of the base of the bluff. (Exhibit 21) Access for these repairs could not occur until after the slide block work was complete. The work would remove any vegetation that might remain on the face of the bluff; most of which is mostly loose rock in any event. The design of this component of the project is dependent on the stability of the slide block. Because the design is not complete, and because it is dependent on the stabilization of the upper slide, this surf repair plan is not before the Commission at this time and is only presented to inform the Commission of the applicant's eventual plans.

Shortly after the landslide occurred, the applicant Commissioned Skelly Engineering to design a repair of the surfing area, immediately off shore from the slide. Approximately two acres of material that was formerly on the cliff face or the sea bottom is now exposed at the toe of the slide. In some places, the new mean high tide is over a hundred feet seaward of the former water line. Rocks forming the tidepools were stacked on top of each other. Surfers complained to the applicant that "B.A.'s," the "break" at this location, has disappeared.

There is no bathymetric data concerning the present or the former bottom configuration, and therefore no model of the forces that created the surf break. The preliminary surf repair plan, as proposed, would restore a 375-foot long section of shoreline to its pre-slide configuration. The slide material has covered the low-tide terrace and it is Mr. Skelly's belief, from interviews with local surfers, that "incoming waves reflect off the (landslide) bulge and travel into the next incoming wave." (Skelly, July 1999) It is hoped that by removing material from the low-tide terrace that surf will be restored to its pre-slide condition. In order to effect this shoreline restoration, the preliminary surf repair plan recommends cutting back the bluff face at a 2:1 slope, up to about the 60 feet contour, up to the top of the existing scree slope and removing the toe, where the toe has extended onto state tidelands. Appropriately 40,000 cubic yards of material would be moved to do this and all remaining bluff vegetation would be removed. Construction equipment would access this area from the slide block. Whether or not the surf repair could eventually be approved, it could not be carried out until the slide block is stabilized enough to support heavy equipment.

Geologic review of the surf repair plan. The provided plan is very preliminary. The proposed slope cut stops at the 60' contour; however, (1) the final cut may have to go further up the slope face to meet the natural slope; (2) no benching or terracing has been provided for the cut slope; (3) the preliminary design was proposed with only limited, general geotechnical information about the bluff face; (4) there has been no analysis of wave dynamics to determine whether this repair will be effective. This repair has not been reviewed by the City geologists. Because of this involvement with the toe of the slide, its review would require an analysis of the stability of the entire slide, and the relationship of

the slide to the toe area proposed for grading. The City geologic reviewer has expressed concerns regarding this proposal:

The report submitted discusses repair in the surf zone, which has not been presented in previous correspondence. It should be noted that any repair to the beach area will require submittal of a detailed technical report, including supporting geologic and Geotechnical data, including geologic maps, cross sections and boring data, stability calculations and laboratory data. The report shall address the impacts, both Geotechnical and environmental) of the proposed repair plan on the beach area, surf zone, bluff and stability of landslide C, a detailed regrading plan and construction recommendations will also be required based on the geotechnical analysis. If the beach repair is to be included in the winterization plan the consultant shall provide justification as to why the work should be performed as part of the winterization efforts. Please note that if beach modification is to be considered as part of the winterization efforts, significant delays may result due to the required geotechnical analysis, and review process. We are surprised and concerned that such a repair is being considered as part of winterization at this late date. (Cotton, 9/30/99)

Ownership. If the mean high tide moves as a result of an "evulsive action" –a rapid failure, the ordinary mean high tide of the Pacific Ocean, and hence the boundary between private ownership and state ownership does not change. This slide occurred rapidly and catastrophically. People present at the time were forced to run to avoid being caught or injured by the slide and the widening cracks. Such events do not change the boundary between public and private land. Therefore, any work seaward of the previous boundary would be on State tidelands and must be approved by a lease or other agreement by the State Lands Commission.

Conflict with other plans. The applicant has provided the staff with an erosion control plan; to comply with the conditions imposed in amendment 13. This plan extends down to elevation 50' discharging at elevation \pm MSL. The proposed surf repair is recommending a cut slope, possible within this same area. As noted previously, the surf repair plan is very preliminary and need to be coordinated with the other reconstruction plans.

No stability analysis. The surf repair plan states that it is dependent on a bluff stability analyses done by others that has not yet been completed. Without such an analysis, the project cannot be evaluated. It assumes that the face of the bluff and the toe are not supporting the rest of the slide, but offers no evidence in support of this idea.

Lack of surf modeling. The proposal includes no modeling concerning what changes the work would accomplish with the surf. The entire plan is landward of the present water line. The focus of the surf repair plan is to reduce the reflected wave energy by relocating the toe of the bluff to its pre-slide landward position. It includes a very general indication of what the bottom configuration will be after the toe is excavated out. As noted above there is no information concerning historic configuration of the seafloor in this location. There

was no indication that the effectiveness of the surf repair plan had been tested by any examination of wave dynamics or changes in energy reflection. Therefore, there is little evidence that once the work is done the break will be restored to its former "expert" status.

This surf repair plan was provided at this time at the request of the Commission. In the view of the applicant and the City, the "surf repair" would be finalized, reviewed, and carried out after the work on the slide is finished. If the preferred alternative for stabilization of the slide mass is to leave it alone, it would not be possible to undertake any surf repair, as it is presently being considered. If the preferred alternative were to be the overall slope removal and replacement, this plan could accommodate the preliminary surf repair in the design of the new slope. The applicant's preferred plan for the main slide mass would allow the surf repair to proceed independently, once the main mass was stabilized. However, the relationship between the sediments supporting the slide block and the toe of the slide would need to be more fully explored before the City or the Commission could agree that the units were not interrelated and approve work on the toe of the slide.

2) Environmentally sensitive habitat.

The Corridors Element of the certified LCP also protects sensitive habitat, identifying the bluff tops and bluff face as areas that should be investigated, and if habitat is found, protected. The LCP identified areas in which more study would be needed to identify the kind of habitat and the necessary degree of protection. This area was not one of those areas, instead it was identified as supporting agriculture.

To understand the issues, it is important to review what happened during the project's approval. After the initial EIR was circulated, the Threatened California coastal gnatcatcher was identified on the property. The applicant, Fish and Game, and Fish and Wildlife agreed to a Habitat Enhancement Plan (HEP) that after approval of the project was adopted as a Habitat Conservation Plan (HCP). The plan allowed the take of some Gnatcatcher habitat as long as it was replaced on more than a one-to-one basis. The applicant achieved this on and off site. The bluff top corridor was identified as one of the areas that must be revegetated. The project was divided into phases to allow some habitat to establish before grading on the second half began. Some areas, namely the Gnatcatcher nesting area at Halfway Point, were to be left undisturbed.

Under the guidance of the Resources Agencies, the applicant prepared a "HEP" (Habitat Evaluation Plan,). After the coastal permit was issued, the applicant executed a written agreement to carry out an HCP (Habitat Conservation Plan) to which the City was a party.

In the HCP, the City and applicant proposed to preserve and restore habitat on the edges of the bluff top and on the bluff faces—the least stable areas. Both the HCP and the coastal permit require the applicant to preserve the bluff top corridor and revegetate it in

coastal sage scrub. The permit allowed the relocation and consolidation of habitat that was located in pockets through-out the site on the bluff tops onto certain City owned land that is located off site. Much of the bluff top had been barren and weedy—patches of habitat were located on slopes and in drainages. Once revegetated, the dedicated, one hundred-foot wide bluff top corridor supported Gnatcatchers and other native plant and animal species.

The Commission adopted the protection of this ongoing program by reference in special condition 8, which enforced the applicant's revegetation effort program and also in condition 1, which required the dedication of the most sensitive areas, the bluff tops and bluff faces, in fee, to the City.

By the time the Resources Agencies released the applicant to begin Phase II grading, (tract 50666) the applicant had established:

1. Four acres of restored habitat in the 7 acre West Bluff preserve,
2. 28 acres of restored and enhanced habitat in on-site preserve areas (like the bluff top) that was established but not mature,
3. 22 acres of established but not mature habitat within the golf course,
4. 20 acres of established but not mature habitat off-site on adjacent City property within the coastal zone. (Switchback {10 acres} and Shoreline Park {10 acres}.)

A large portion of the slide is located in these corridors. All of the applicant's proposed actions would need an amendment to conditions 1 and 8, which require that no heavy equipment be used in the bluff top corridor, providing only minor exceptions for drains and public utilities. Now that it has slid, the habitat is damaged and fragmented on the slide. Even areas that were not buried were stressed because fissures cut off ground water. According the applicant's biological consultant, unless it is stabilized it will continue to decline. The slide caused extensive damage to this habitat: cut it off from water, and cut up and or buried other areas. The applicant proposes to go in, salvage the soil, do the grading, and in a future phase, replace the trail and the habitat. The proposed work will cause additional damage. The applicant has provided a comprehensive plan that indicates what additional damage can be expected from repairs. This map is based on review of plans that have been prepared since the September s hearing. The applicant has also prepared an impact study and agreement for submittal to the resources agencies.

The Resources Agencies have indicated that they have the following other questions: 1) the quantity of habitat destroyed by the landslide and its repair, 2) the quality of the habitat that may be replaced, 3) interim loss, and 4) the quality and maturity of the habitat that is in place when the golf course re-opens. In order to mitigate temporary take and interim take the resources agencies are requiring a 2:1 replacement: 11.26 acres on the site and over 14.2 acres off site.

The Resources Agencies staff have agreed to a program, which during the coming months will be incorporated in the HCP. This is close to 1.1 replacement of habitat on site (all but one half acre removed by the slide and associated repairs can be replaced on site). The applicant also has agreed to replace other habitat off site in a City-owned property identified as the "switchback area," which the applicant has obtained the right to plant as part of its earlier permit (see Condition 2). The applicant also proposes to replace 1.1 acres of habitat in the golf course adjacent to the restored habitat. This will result in a contiguous area of habitat.

The plan now is agreed to and establishes acreage's. In the coming months the applicant will prepare a detailed revegetation plan consistent with that agreements. The plan will be submitted as part of the applicants proposal for golf course repair. The agreement is embodied an impact study which is attached as exhibit 20.

In sum, the applicant proposes to protect habitat in the following three ways on the bluff faces and outside the slide block: (1) stabilize the bluff top corridor, (2) replace all but one half acre of destroyed habitat in the bluff corridor when it is stabilized, and (3) install over 14.2 acres off site in the City owned "switchback lot" for a total replacement of lost habitat on a 2:1 basis.

Resources Agency staff has notified staff by telephone that the plan is acceptable. (MaryBeth Woulfe,). The applicant has not yet provided an amendment to its agreement with the City concerning the switchback area, confirming that it can install and maintain additional habitat in the switchback areas. This is necessary to approve the off site revegetation. The Commission requires a fully executed agreement with the City and the resources agencies before the Executive Director can accept an amendment that would authorize the final golf course repair.

The proposed work will have impacts on sensitive habitat. However, increased slide movement would also have even more impacts on habitat areas. As proposed, to salvage the soil and plants form the habitat areas, to take necessary measures to avoid additional slide movement, and to carry out the restoration plan, the winterization project will be consistent with the corridors element of the certified LCP with respect to habitat. However, if the translational block is unstable, this work will not stay in place. Therefore, because the applicant has not demonstrated that proposed shear pins (also known as underground caissons) will protect the block from future catastrophic failure, the plan is not adequate and is not consistent with the corridors element of the LCP.

B. CONSISTENCY WITH PUBLIC ACCESS AND RECREATION POLICIES OF THE COASTAL ACT AND THE CERTIFIED LOCAL COASTAL PROGRAM

This project was approved with a requirement that the applicant provide access to the beach and along the bluff top. The trails are listed and described in condition one of this permit. See Appendix A. In the previous amendment, the Commission agreed with the

applicant that public access to the beach seaward of the slide and to the trails directly impacted by the slide must be curtailed until repairs are completed. The applicant asserts that stabilizing the block is the first step in a process that will lead to the restoration of stability and the reopening of the trails.

Currently, the beach is closed from the western end of the project to the beach access trail seaward of La Rotonda Knoll. The City has insisted that the beaches be closed because there is a sewer line that crosses two other slides on the western end of the project, where the line serves a locked gate community Portuguese Bend.

The applicant states that the County sanitation district has discussed moving this line, but is unlikely to do so in the near future. Moreover the beach seaward of Ocean Tail Park and seaward of the slide is threatened by loose rock, and unstable rock spires that are ten to twenty feet high.

The applicant asserts that with the slide block stabilized with shear pins (also known as underground caissons), it will be able to complete surf restoration and open the beach. However, the City geologist, who has reviewed the applicant's plans to stabilize the block in detail, is unwilling to agree that the work on the block will be anything but temporary. Moreover, even if the block were stabilized, a great many calculations would have to be done before the City and the applicant's consultants determined that the "surf repair" could be done successfully without further destabilizing in the slide.

After certification of an LCP, the Commission must find that a project, on appeal, is consistent with the certified local coastal program. If the project is located between the first public road and the sea, when the Commission considers the project *de Novo*, it must also examine the project for consistency with the public recreation policies of the Coastal Act. Section 30210 provides for maximum access; Section 30211 provides that existing access must be protected; Section 30212 establishes that public access must be provided when use is intensified; Section 30214 provides that the Commission shall regulate public access in a manner that takes into account the need to regulate time, place and manner of public access. Section 30221 requires that oceanfront land suitable for public recreation be reserved for that purpose.

The Corridors element of the City of Rancho Palos Verdes LCP also provides for a recreational access corridor on properties located between the first public road and the sea. The Commission approved the project with 75.5 acres of land dedicated for habitat and public access purposes and found that the project as proposed and approved protected existing access on the site and provided for public access and recreation. In approving this project, the Commission accepted the applicant's offer of 24,000 feet of public trails and bikeways, including a continuous bike path, and a separate pedestrian path looping around the developed areas of the project and providing access to the bluff and along the bluff edge. The Commission also required five accessways to the beach that would traverse the bluff face and consolidate the existing pioneered paths that lead down the bluff.

Because the bluff edges and the beaches were also the most suitable areas of the site for public access, those were chosen as the areas for those purposes. In approving this project in 1993, the Commission found that the public preferred to walk along the bluff edge and look at the ocean views. Therefore, the Commission found that the bluff edges, consistent with the LCP were the most appropriate locations for public access. However, as noted above, the Commission acknowledged the instability of the bluff edge and required the applicant to replace trails that became impassable because of future bluff collapse. In amendment 13 to this permit, the applicant agreed to provide a temporary trail that is not located on the bluff edge for reason of safety. An alternative to the earthwork suggested by the applicant would be to require the applicant to permanently provide a one hundred foot wide corridor on the edge of the stable portion of the bluff. The applicant states that this increase would not be compatible with the golf course that it proposes. However, if no other method is found possible, as the slide is investigated, the condition does allow the Commission to protect the access and habitat requirements that were originally imposed.

Currently, an extensive portion of the bluff edge trail is separated into discrete sections, separated by cracks and areas of collapse. Some trails appear safe but are very close to the edge of the slide. All trails in the center of the project are fenced pending investigation of the stability of the relatively intact trails and repair and relocation of the bluff edge trail. Special condition 3 requires, in part:

In the event that coastal erosion, landslide or bluff collapse makes a designated trail impassable, requiring the relocation of a trail, the obligation to maintain access shall remain and the applicants or their successors in interest shall apply to the Commission for an amendment to designate an alternate trail corridor. Access along the beach and recreational use of the shoreline shall not be restricted.

In spite of the damage, with the encouragement of the City, the applicant has kept the trails located between Shoreline Park and the canyon south of La Rotonda open during the emergency. (Exhibit 4) The applicant is proposing to maintain access to all other trails, as it is determined that they can be used safely.

Coastal Act Section 30210 requires maximum public access. However, Section 30214 allows the Commission to implement public access in a manner that takes into account the topographic and geologic sites characteristics. The applicant proposes to restore access to the beach as soon as it can be determined that the beach is safe.

The City geologic consultant is concerned about access to the beach is because the present slide moved very rapidly. While there is debate concerning the genesis of the slide, it is agreed by geologists consulting on the case that effluent from the county sewer line lubricated the slide and that the June 2nd landslide was a rapid, "catastrophic event." (It is very fortunate that no one was hurt by this event. Workers on the slide had to run to avoid falling into widening cracks.) There is a sewer line adjacent to Slide A, which is

located on the west end of the project. There is concern that some combination of slide movement and sewer line rupture could cause a catastrophic event at Slide A. If that slide were to move, it too could cascade onto the beach, burying anyone unfortunate enough to be on the beach below it. Therefore, the City has declared the beach closed until the County moves the sewer line or takes other measures to control leakage. The project's geologists have recommended that the sewer line be lined or else be relocated to an open space lot above the side scarp.

In approving amendment 13 to this project, the Commission allowed temporary closure of these trails, requiring that an alternative trail be open as soon as the clubhouse open and also requiring that the beaches and other trails be repaired and open before opening the golf course for play. The Commission also required that if the trails are not re-established within one year of the landslide, the applicant must identify, improve, and or dedicate an alternate beach access trails within the dedicated bluff and beach corridors, and also dedicate and improve an alternative trail on its property that provides lateral access parallel to the bluff and that can connect with the undamaged portions of the foot and bicycle trails that now parallel the bluff. As the Commission noted in the original approval the applicant was allowed to substitute trail access over a portion of the bluff top corridor for a bluff top road because the site was not judged stable enough to construct a road. However, as noted in its original approval, and in condition 1, a trail may be replaced inland if it fails due to bluff collapse. In this instance, while the applicant has made progress in designing repairs the repairs to the area where the access facilities are located have not been found to be anything but temporary repairs. The safety of the block for trails has not been separately analyzed. While "permanent" is not at a realistic term to use on a seacliff, the trails on the dedicated access area should be at least as safe as the trails on the hard consolidated bluffs to the south of the slide. Moreover, the system of repair must be free of the possibility of catastrophic failure. While that applicant contends that the plan will be safe, he has not yet convinced the City that this is the case. The City is required by the terms of the settlement to accept fee ownership of these bluff areas, and their caution is understandable.

Regrettably, the Commission cannot approve the plan with the present information concerning the design, and the plan must be denied. If this were truly a temporary repair, it could be considered in the same way as any other construction related improvement. However, it may also be provided as the access component of the ultimate design. Unless the Commission can be assured that access can be provided without using this block, it must insist that the block be stable enough to provide public access safety. While the project amendment is not designed to allow public access following the installation of the pins, because it is only a component of the final design, it must be determined to be safe for public access in conjunction with the other component being considered under the ultimate design. As proposed the amendment to the approved project is not consistent with the access policies of the Coastal Act or with the Corridors Element of the certified LCP.

E. CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 13096 of the Commission's regulations requires Commission approval of Coastal Development Permit applications to be supported by a finding showing the application, as conditioned by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect, which the activity may have on the environment.

The project is located on the last undeveloped shoreline parcel of any significant size in Los Angeles County. Endangered species have been identified on the site, geologic hazards have also been identified, and existing trails have been surveyed. Numerous studies have been undertaken concerning these issues, and the original permit, previous amendments, and the proposed amendment have been conditioned to assure that the project will not have a significant adverse impact on coastal access or resources, and is consistent with the certified LCP policies relative to public access, recreation, habitat, and natural hazards.

The Commission has considered the alternative of approval with a condition requiring an adequate redesign that can be found to create gross stability for a reasonable period such a twenty or thirty years. If such a solution is discovered it may have effects on habitat and public access which have not been examined in this staff report. Moreover, such an alternative may differ significantly from any alternative that the Commission has examined in this report. As such, the Commission is unable to delegate such an approval to it staff.

The Commission cannot approve a project that would have significant impacts on the environmentally sensitive habitat that may be re-established on it by repeated slope failure. The Commission has also considered permitted no such project and allowing the bluff failure to proceed until reaches a new equilibrium. Again, the Commission has no information to determine when the bluff would stabilize. The proposed development with the proposed amendment is not consistent with the access policies of the Coastal Act and the policies of the certified LCP. There are may be other feasible mitigation measures or alternatives, which would lessen any significant adverse impact the activity, would have on the environment which the Commission has not examined. Therefore, the Commission finds that the proposed project is not consistent with CEQA and the policies of the certified LCP and the access policies of the Coastal Act.



CALIFORNIA COASTAL COMMISSION

South Coast Area Office
200 Oceangate, Suite 1000
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**APPENDIX A****STANDARD CONDITIONS AND REVISED SPECIAL CONDITIONS**

Currently approved A-5-RPV-93-005 as amended-through A13. The revisions recommended to be made as part of the Commission's approval of A-5-RPV-93-005 A 13 are incorporated into the text.

THE FOLLOWING NOTE IS ADOPTED AS PART OF THE COMMISSION'S RESOLUTION:

NOTE: A-5-RPV-93-005A6, A-5-RPV-93-005A12 and A-5-RPV-93-005A-13: With the exception of those special conditions specifically modified as indicated by cross-out and italic bold type in Appendix A, all previously approved standard and special conditions found in Appendix A still apply to this development. The revisions proposed in this amendment request and recommended by the staff have been incorporated into Appendix A. Exhibits referred to in this document in plain type refer to (1) exhibits in A-5-RPV-93-005-A,-or (2) the exhibits attached to the fourth amendment. Maps referred to in the second, third and fifth amendments are located in the Commission files. Changes in the names of parks and trails adopted by the City of Rancho Palos Verdes are inserted into the trail designations. The previous designations are provided for purposes of continuity.

Pursuant to the Commission's approval of the first amendment to Coastal Development Permit A-5-RPV-93-005 on January 12, 1995, and subsequent amendments through A-5-RPV-93-005-A11, and this present amendment A-5-RPV-93-005 A 13, the following special conditions shall apply to Coastal Development Permit A-5-RPV-93-005 .

This set of revised special conditions incorporates the lot numbers which result from implementing A-5-RPV-93-005-A as revised by the applicant and conditionally approved by the Commission. A-5-RPV-93-005-A3 reduced the total number of market rate residential lots to 75. The addition of more lots would require an amendment to this permit.

This set of revised special conditions also incorporates changes to the special conditions which resulted from other amendments to the permit. The standard and special conditions follow on pages 2-41 below.

Attachments
A5.RPV.93.005A

STANDARD CONDITIONS:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application (APRIL 15, 1993). Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Compliance.** All development must occur in strict compliance with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.
4. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
5. **Inspections.** The Commission staff shall be allowed to inspect the site and the project during its development, subject to 24-hour advance notice.
6. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
7. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

SPECIAL CONDITIONS:

In order to conform with the certified City of Rancho Palos Verdes LCP and the Public Access and Recreation Policies of the California Coastal Act, applicant shall comply with the following conditions:

1. OFFER TO DEDICATE IN FEE OPEN SPACE CORRIDORS FOR PARKS, PUBLIC ACCESS AND HABITAT ENHANCEMENT

Prior to the issuance of the coastal development permit, the applicants as landowners shall execute and record document(s), in a form and content acceptable to the Executive Director, irrevocably offering to dedicate to public agency(ies) or private association(s) approved by the Executive Director, the corridors noted on (roman numeral Revised Findings) Exhibit I, further explained in (Roman numeral Revised Findings) Exhibits II, III, IV, V and Exhibits 1, 5A, 48 and 49,(of the original approval) for parks, public access, passive recreational use, habitat enhancement, trail, public parking and street purposes. The land shall be dedicated subject to the provisions outlined in the conditions below with respect to trail access, beach use, habitat restoration and habitat preservation. The dedicated areas shall include the following:

A. PARKS. Land to be dedicated for purposes of public access, public recreation and parks as shown on Exhibit I:

- (1) The entirety of the following lots within Vesting Tentative Tract Map 50666:
Lot A, Sunset Point Park (Palos Verdes Drive-West Vista Park,) 1.5 acres
Lot H; Ocean Trails Park (Halfway Point Park), including all areas inland of the bluff edge trail described in 3.A(11) below, not less than: ~~5.1~~ 5.21 acres
- (2) LOT D VTTM 50666, Portuguese Bend Overlook and Fuel Modification Area, as shown in Exhibit 49, not less than: 1.0 acre
- (3) Bluff Top Activity Corridor, Lot K Vesting Tentative Tract Map 50666 as shown in the Attached Exhibit I, (Roman numeral one) generally described as southerly of lot 38 and being no less than 100 feet wide immediately adjacent to the bluff edge (bluff face is Lot G) extending from the easterly tract boundary with VTTM 50667 to the intersection with Lot F (Halfway Point Preserve Area), no less than 8.9 Acres
- (4) Catalina View Park, (Palos Verdes Drive-- East Vista Park), lot D within Vesting Tentative Tract Map 50667: 1.2 acres
- (5) (Bluff Top Activity Corridor Lot K, within Vesting Tentative Tract Map 50667 as shown in the attached Exhibit I (roman numeral, one) generally described as southerly of lot 38,

being no less than 100 feet wide immediately adjacent the edge of bluff (bluff face is Lot I),
no less than:

4.5 acres

All Lands dedicated for park purposes shall be open to the general public for recreation use. Ocean Trails Park (Halfway Point Park) and Vista Catalina Park and Sunset Point Park (the Palos Verdes Drive Vista Parks), (described in 1.A(1), and 1.A(4)) shall be developed for active use; the lands described in 1.A(2), (3), and (5), (known as the Portuguese Bend View Park, the Bluff Top Activity Corridor West VTTM 50666, and the Bluff Top Activity Corridor East VTTM 50667) shall be developed with trails, benches, shade structures, interpretive signs and bikeways.

The lands described in 1.A (2), (3), and (5) (known as Portuguese Bend Overlook, Bluff Top Activity Corridor West (VTTM 50666) and Bluff Top Activity Corridor East (VTTM 50667)) shall not be graded except: within the dedicated bicycle/pedestrian path, to the extent necessary to install and maintain utilities within drainage, utility and sewer, easements shown on Exhibit 5 (Map G) and hydrogen, and groundwater testing well easements shown on Exhibit 6 (Map K) of this Amendment 6, and within two areas, one area of not more than 0.3 acres adjacent to the 18th tee and a second area of 0.13 acres adjacent to the 18th hole. In addition, approximately 2.6 acres of land disturbed by the active landslide C may be graded for exploration, landslide repair, and drainage control purposes only as specifically authorized in special condition 28 of amendment 13 of this permit. The total combined disturbed area adjacent to the 18th tee and the 18th hole shall not exceed 0.43 acres and shall be located as shown on Exhibit A depicting setbacks for VTTM 50666 prepared by RBF and dated July 25, 1995. The disturbed area shall be further reduced as modified by the map dated June 20, 1996 submitted by the applicant with amendment A4 and shown on Exhibit 9 attached to amendment A4.

The Blufftop Activity Corridors shall be revegetated, as required by the Department of Fish and Game and United States Fish and Wildlife Service as specified in the executed Habitat Conservation Plan (HCP). The offer to dedicate shall also provide that no development, other than development approved in this permit shall occur in the trail areas shown in Exhibits A and/or the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97 except as authorized by a future coastal development permit, and as otherwise authorized by law. Drainage, landslide, and slope repairs only as specifically authorized in special condition 28 of amendment 13 to this permit. No coastal development permit exemptions as defined in Section 30610 of the Coastal Act shall apply to the trails described below except that repair and maintenance of existing sewer lines, drainage structures, utilities, monitoring wells, and hydraugers shall be exempt pursuant to section

30610(d) and the regulations of the California Administrative Code Title 14 Section 13252.

B. PASSIVE PARK/HABITAT PRESERVES. Lands to be dedicated for purposes of habitat enhancement and passive recreation as shown on Exhibits I and III (roman numeral of the revised findings of the original permit):

- (1) The entirety of the following lots within Vesting Tentative Tract Map 50666 excluding any trails identified in condition 3 of this permit:
- | | |
|--|------------|
| Lot E, West Bluff Preserve, no less than 7 acres, generally as indicated on Exhibits 2, 3 and 4 except that no portion of lot E shall be closer than 100 feet from any subdivided lot. | 7.0 acres |
| Lot F Halfway Point Preserve | 3.3 acres |
| Lot G the Bluff Face and Beach | 24.4 acres |
- (2) Lot I Golf course Bluff Edge Habitat Setback within VTTM Tract 50666, described as a strip of land no less than 50 feet in width immediately adjacent to the edge of the bluff, southwesterly of the golf course, including the west side of Halfway Point, no less than: 1.2 acres
- (3) The entirety of the following lots within Vesting Tentative Tract Map 50667, excluding any trails identified in Condition 3 of this permit:
- | | |
|---|------------|
| Lot G East Bluff Preserve no less than | 7.7 acres |
| Lot I Bluff Face and Beach no less than | 10.1 acres |

Public access to the lots dedicated for habitat preservation purposes above is limited to a) tours, inspections, and educational field trips managed by the Department of Fish and Game, or the Fish and Wildlife Service, or b) the trails shown in Exhibits A and the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97. All lots shall be revegetated with Coastal Sage Scrub and Coastal Bluff Scrub plants as listed in the finally executed Habitat Conservation Plan, in the manner required by the Department of Fish and Game and the United States Fish and Wildlife Service.

No grading, vegetation removal or other development may occur on lots dedicated for habitat preservation purposes except for the following: 1) trails, 2) fences approved in a coastal development permit, 3) hand removal of invasive plants, 4) installation of public utilities generally as shown on Exhibit 5 Map G, 5) the drilling of testing wells and hydraugers generally as shown on Exhibit 6, Map K, and 6) the sewer connections and drainage devices approved in this permit shall occur in

these areas, 7) drainage, geologic exploration, landslide and slope repairs only as specifically authorized and described in special condition 28 of amendment 13 to this permit. The beach portion, the southern lot line to 20 feet above mean sea level, of Lot G, VTTM 50666 and Lot I, VTTM 50667 shall be open for public recreational use.

C. MULTI-USE COMMON OPEN SPACE. Lands offered to be dedicated for habitat, managed fire break, flood control purposes except for trail areas offered to be dedicated in condition 3 below:

(1) The entirety of the following lots within Vesting Tentative Tract Map 50666:

Lot B, Forrestal Draw and Portuguese Bend Club connector
Lot C managed fire break

(2) The entirety of the following lots within Vesting Tentative Tract Map 50667:

Lots A, B, C, for open space, drainage and slope hazards
Lot H east end for managed fire break

Public access in the Multi-use Common Open Space areas is limited to the trails shown in Exhibits A and II (of the original approval). Planting and fuel modification shall occur only as indicated in a final approved planting and fuel modification plan required by special condition 10. Areas unavoidably disturbed for drainage devices shall be revegetated such that plants are two feet high in two years from the date of completion of rough grading.

D. STREETS, ROADS AND PUBLIC PARKING AREAS. Lands offered to be dedicated for public access purposes.

All streets, roads and public parking areas identified in the Tentative Tract maps 50666 and 50667, including the two public parking lots at the end of *Ocean Trails Drive (Street A, VTTM 50666)*, as a new lot in tract 50666 and Lot E VTTM 50667, and noted on Exhibits 1, 9 and 46 and B of the original approval. The dedication shall be for public street and public street parking purposes. No gates, gate houses or other entry control may be constructed on the public streets. The two public parking lots at the end of Ocean Trails Drive (Street A VTTM 50666) and Lot E VTTM 50667 may be entry gated as long as exit is possible after the lot is closed. Such lots shall remain open from dawn to dusk as described in condition 19 below.

The following applies to items A, B, C and D above. All documents shall provide that the offer of dedication shall not be used or construed to allow anyone, prior to

acceptance of the offer, to interfere with any rights of public access acquired through use which may exist on the property.

Streets and trails within the dedicated areas shall be generally as noted on the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97 (previously noted as Exhibits A, B, 1, II, and 48, 49 and 5A), and shall provide continuous pedestrian access along the bluff top, and where indicated, from the dedicated parks and trails to the sea. In the event that coastal erosion, landslide or bluff collapse makes a designated trail impassable, requiring the relocation of a trail, the obligation to maintain access shall remain and the applicant shall apply to the Commission for an amendment to designate an alternate trail corridor. Access along the beach and recreational use of the shoreline shall not be restricted except for the temporary restriction of portions of lot K and lot I, tract 50666 impacted by slide C, including trails A (11), A (12,) A (13), A(6), A(7), and A18.. If, on June 2, 2000, any portion of the above identified areas is still considered hazardous, the applicant shall submit a complete permit amendment application to the Commission which includes both a thorough analysis of these hazardous conditions and review of options to minimize these hazards. The application shall identify an area that provides public access equivalent in time place and manner to the abandoned area. The applicant or its successor interest shall submit these substitute trails or support areas for the review and approval of the Commission. Within 30 days of the Commission's approval of the replacement trails and or support areas, the applicant shall dedicate and improve such substitute trail(s) or support areas as otherwise required by this condition.

All documents shall be recorded free of prior liens and any other encumbrances which may affect said interest. However, these documents may be recorded subject to any existing or future sewer and utility easement; provided that such easements 1) are underground and 2) do not in the reasonable judgment of the Executive Director materially and adversely effect the purpose of this condition one as set forth above and 3) are generally as indicated on Exhibit 5, Map G or are in compliance with condition 11.

The dedication shall include the right of the developer and the accepting agency, subject to the limitations of relevant portions of this condition one set forth above, 1) to enter the property, 2) to construct and maintain revegetation areas, 3) to construct temporary construction fences and construction access, 4) to construct, install and maintain benches, water fountains, trails, fences, a bridge, turnarounds, signage, staging areas, low barriers, stairs, view overlooks, safety fencing along the seaward side of bluff top trails 3.A.1, 3.A.15 and 3.B.7 and non locking swing gates at the entrance of steep natural trails identified as 3.A.6, 3.A.18, 3.B.8, and 2.B(5), and other public improvements including without limitation those improvements described in this condition one, in the project description, in conditions three and four below, in the Conceptual Public Amenities and Coastal Access Program of 1996, Revised, August 28, 1997 and in the Public Amenities

Plan Trails and Signage Map of September 26, 1996 revised 1/20/97 and (5) to perform erosion control. Additionally, the developer shall have the right to construct and use drainage devices, dewatering wells and monitoring wells as recommended by the City geologist provided that the construction and location of such wells in the reasonable judgment of the Executive Director do not materially and adversely effect the purpose of this condition one as set forth above.

The area subject to the dedication shall be described in the offer in a manner that is legally adequate under California law for a conveyance of an interest in real property and that is of a level of precision that is acceptable to the Executive Director. Notwithstanding the foregoing, the depiction of the easement area shown on the attached Exhibits 28 (E fee offers), and 30 (E-trails) as adopted in amendment six, shall be deemed to satisfy this requirement for the purpose of permit issuance. If utilized, the applicant shall replace or supplement the depiction with a legal description that is both legally proper and (in the reasonable judgment of the Executive Director) sufficiently precise, before the earlier to occur of either 1) the end of a period of five days from recordation of each final subdivision map for the project for the area encompassed by each such map, or 2) commencement of construction of improvements on the project other than permitted golf course facilities (clubhouse, maintenance building, restrooms, etc.), roads, parks and overlooks, trails, grading, erosion control and installation and/or relocation of underground utilities. The offer shall run with the land in favor of the People of the State of California, binding all successors and assigns, and shall be irrevocable for a period of 21 years, such period running from the date of recording. The recording document shall include legal descriptions of both the applicant(s) entire parcel(s) and dedicated lands.

2. OFFERS TO DEDICATE EASEMENTS PROTECTING OFF-SITE HABITAT ENHANCEMENT CORRIDORS PROPOSED BY THE APPLICANTS

A. OFFER OF EASEMENT OVER RANCHO PALOS VERDES CITY PROPERTY

Prior to issuance of the Coastal Development Permit, the applicants shall provide evidence in a form and content acceptable to the Executive Director, that the City of Rancho Palos Verdes has executed irrevocable offers to dedicate to a public agency or private association acceptable to the Executive Director, an easement for habitat restoration, habitat maintenance, open space, view preservation and habitat protection over the entirety of the property known as the "Switchback", otherwise described as Lots 25 and 26 of Tract 32574, consisting of 46.15 and 48.35 acres, respectively.

The area subject to the easement shall be generally as indicated in Exhibits III, 3, 7 and 10 of the Commission's original approval but excluding any area located within 100 feet of any existing or proposed residential development or within 10 feet of any road.

The easement shall:

- (1) Permit the applicant, its agents, and/or the accepting agency to enter the property, create and maintain habitat, revegetate portions of the area, and fence the revegetated area in order to protect coastal sage scrub habitat.
- (2) Restrict all development, vegetation clearance, fuel modification and grading within the Environmentally Sensitive Habitat open space easement except for six-foot chain link or "three bare wire" fences specifically proposed in the applicant's habitat enhancement plan.
- (3) Permit the Coastal Commission staff to enter and inspect for purposes of determining compliance with this permit.

The area subject to the dedication shall be described in the offer in a manner that is legally adequate under California law for a conveyance of an interest in real property and that is of a level of precision that is acceptable to the Executive Director. Notwithstanding the foregoing, the depiction of the easement area shown on the attached Exhibits to amendment 6, complying to the satisfaction of the Executive Director with Exhibits III, 3, 7, and 10 of the Commission's adopted resolution, shall be deemed to satisfy this requirement for the purpose of permit issuance. If utilized, the applicant shall replace or supplement the depiction with a legal description that is both legally proper and (in the judgment of the Executive Director) sufficiently precise, before the earlier to occur of either 1) the end of a period of five days from recordation of the final subdivision map for the project, or 2) commencement of construction of improvements on the project other than permitted golf course facilities (clubhouse, maintenance building, restrooms, etc.), roads, parks and overlooks, trails, grading, erosion control and installation and/or relocation of underground utilities. The offer shall be recorded free of prior liens and encumbrances which the Executive Director determines may affect the interest being conveyed. The offer shall run with the land in favor of the People of the State of California, and/or the Secretary of the Interior, binding all successors and assigns, and shall be irrevocable for a period of 21 years, such period running from the date of recording.

B. OFFER OF EASEMENT OVER LOS ANGELES COUNTY SHORELINE PARK PROPERTY

Prior to issuance of the Coastal Development Permit, the applicants shall provide evidence that co-applicant County of Los Angeles, as landowner of Shoreline Park, has executed and recorded a document, in a form and content acceptable to the Executive Director, which irrevocably offers to dedicate to a public agency or private association acceptable to the Executive Director, an easement for habitat restoration, habitat protection, open space and view preservation over no fewer than 20 (twenty) acres of its land within Shoreline Park.

The area subject to the easement shall be generally as indicated in Exhibits III, 3, 6 and 10, but excluding areas located within 100 feet of any existing or proposed residential development or within 10 feet of any road, or within 10 feet of the existing Twenty-fifth street La Rotonda Connector Trail or the Twenty-fifth street/bluff connector as shown in Exhibits II, III, IV, 45 and 46.

The easement shall:

- (1) Permit the applicant, its agents, and any accepting agency to enter the property, create and maintain habitat, and revegetate portions of the area, and fence the revegetated area in order to protect coastal sage scrub habitat, consistent with the conditions of this permit.
- (2) Permit the applicant to construct, fence and improve trail connectors between La Rotonda Drive and the project trails and between 25th Street/Palos Verdes Drive West, the bluff edge and the project trails, as need to replace any trails interrupted by the revegetation. Specifically the connector between 25th street and the Shoreline Park fire road shall be improved by the applicant consistent with Los Angeles County Department of Parks and Recreation standards.
- (3) Permit the Coastal Commission staff to enter and inspect for purposes of determining compliance with this permit.
- (4) Restrict all development, fuel modification, vegetation clearance and grading within the Environmentally Sensitive Habitat open space easement except for trails protected in this permit, and the six-foot chain link or "three bare wire" fences specifically proposed in the applicant's habitat enhancement plan.
- (5) Protect the Beach access trail noted as beach access trail number one in Exhibits III, V, 45, and as visible in Exhibit 51 of the Commission's original approval.
- (6) Protect the existing public access from 25th street through center of property to bluff edge, by construction of a new trail through the fire break

between the revegetation area and the eastern boundary, connecting to the Shoreline Park fire road and thence to the bluff edge. (See Exhibits 51 and III of the Commission's original approval)

(7) Protect and enhance the existing trail along the easterly boundary of the applicant's property tract 50667 and the westerly park boundary including portions that are located on County property. Said trail connects with bluff edge trail and the sewer line trail.

(8) Protect safe access to and along bluff on Los Angeles County property from conjunction of Trails 3.B.6, 3.B.7, and 3.B.9, the Bluff Top Activity Corridor Trails and the Property line/25th street connector on Tract 50667, except that portions of this trail may be closed during the Gnatcatcher nesting season if the United States Fish and Wildlife Service orders such a seasonal closure in writing in order to protect habitat. Signs indicating alternate routes and the reasons for the closure shall be posted at the entrances to the alternate routes.

The area subject to the dedication shall be described in the offer in a manner that is legally adequate under California law for a conveyance of an interest in real property and that is of a level of precision that is acceptable to the Executive Director. Notwithstanding the foregoing, the depiction of the easement area shown on the attached Exhibit to amendment 6, complying to the satisfaction of the Executive Director with Exhibits, II, III, IV, 45 and 46 of the Commission's adopted resolution, shall be deemed to satisfy this requirement for the purpose of permit issuance. If utilized, the applicant shall replace or supplement the depiction with a legal description that is both legally proper and (in the judgment of the Executive Director) sufficiently precise, before the earlier to occur of either 1) the end of a period of five days from recordation of the final subdivision map for the project, or 2) commencement of construction of improvements on the project other than permitted golf course facilities (clubhouse, maintenance building, restrooms, etc.), roads, parks and overlooks, trails, grading, erosion control and installation and/or relocation of underground utilities. The offer shall be recorded free of prior liens and encumbrances which may affect the interest being conveyed. The offer shall run with the land in favor of the People of the State of California, and/or the Secretary of the Interior, binding all successors and assigns, and shall be irrevocable for a period of 21 years, such period running from the date of recording.

3. OFFER TO DEDICATE TRAIL EASEMENTS

Prior to the issuance of the coastal development permit, the landowner shall execute and record a document, in a form and content acceptable to the Executive Director, irrevocably offering to dedicate to a public agency or private association approved by the Executive Director an easement for public pedestrian and, where

noted, bicycle access and passive recreational use of the corridors described below but excluding from the offer any portion of a trail within any park area that has already been offered to be dedicated in condition 1A. The easement areas offered to be dedicated shall include all portions of the following trails noted on Exhibits A, II and 5b of the Commission's original approval) and not already within a park area offered to be dedicated in Condition 1A and found on Exhibit I. Parallel trails may be described in one easement. However, in combined adjacent trail dedications, the tread widths of the trails shall not be diminished, the trail separation shall be no less than three (3) feet in width and no less than two feet of landscaped buffer shall be located in the easement, between the trail and any other use. Trail segments combined with golf cart paths are identified in Exhibit 10. In these segments, the proposed dedication shall include the entire width of the proposed golf cart path, and signs, benches, pull-outs and pavement treatment shall give clear indication that the public trail is located on the path.

Prior to recording the easement, the precise location of all trails shall be verified in the field by all interested parties, including parties to court settlements and the United States Fish and Wildlife Service in order to verify that the trail is routed to avoid significant grading, to avoid cliff edge locations where cracks or undermining have occurred, or and to avoid routes where clearance of identifiable habitat, including but not limited to stands of *Opuntia littoralis*, *Dudleya virens* or *Artemisia californica* is necessary in order to survey or construct the trail. Significant relocation of the trail outside the corridor described in the trail description below, deletion or seasonal closure of a trail will require an amendment as noted in condition 8 below.

A. The following access corridors located within Vesting Tentative Tract Map 50666:

(1) Palos Verdes Drive On-Street Bicycle Lane. Class II, high-speed bicycle lane on both sides of widened Palos Verdes Drive South, along all portions of Palos Verdes Drive South located within the boundaries of the tract.

(2) Ocean Vista Bikeway (Palos Verdes Drive Off-Road Bicycle Trail.) Class I, eight foot-wide off-road bicycle path in twelve foot wide corridor along south side of Palos Verdes Drive South, along all portions of Palos Verdes Drive South located within the boundaries of VTTM 50666.

(3) Ocean Vista Trail (Palos Verdes Drive South Off-Road Jogging Trail). Class I, four foot wide soft-footed pedestrian trail in an eight foot corridor along South side of Palos Verdes Drive South, along all portions of Palos Verdes Drive South located within the boundaries of VTTM 50666.

(4) West Portal Bikeway (West End Bicycle Route). Class II, bicycle lane extending along the west side of Street C from Palos Verdes Drive South to the northern boundary of lot 40, connecting at that point to a Class I, eight foot wide off road bicycle path in twelve foot wide corridor, extending, as mapped, around periphery of residential development, inland of habitat preserve, to Ocean Trails Park (Halfway Point Park), extending across the north side of Ocean Trails Park (Halfway Point Park) to connect with the Bluff Top Corridor Bicycle and Jogging Trail described in 3.A(12). This trail shall cross Forrestal Canyon via a bridge constructed by the applicant and dedicated for that purpose. Portions of this trail located in Ocean Trails Park (Halfway Point Park), as shown on Exhibit 10 may be combined with the golf cart path.

(5) West Portal Trail (West end Jogging Trail). Improved public sidewalk extending along west side of Street C from Palos Verdes Drive South to the northern boundary of lot 40, connecting at that point by stairs to a Class I, four foot wide soft footed pedestrian trail in a six foot wide corridor, extending, as mapped, around periphery of residential development to Portuguese Bend Overlook. At the dedicated overlook, the trail connects with handicapped trail number 3.A (16) which is routed inland of the habitat preserve, connecting to Ocean Trails Park (Halfway Point Park.)

(6) Sunset Trail (Torrance Trail), Beach Access Trail Five (5), State Park standard, four foot wide stabilized, soft-footed pedestrian trail and steps to Beach, Gun Emplacement/Torrance Trail, from the west side of the neck of Halfway Point trending through Lot G, west by north west down the bluff, and then via switch backs to the beach, in a location and manner approved by the Department of Fish and Game (Exhibit 48 and 50) (Trail 2 Exhibit A).

(7) Sunrise Trail (San Pedro Trail Beach Access trail) three (3) Four foot wide, State Park standard, stabilized soft-footed, beach access trail (E-N') known as the San Pedro trail, from Halfway Point, around the northern edge of the Gnatcatcher preserve through lot G to the Beach. The San Pedro trail shall include railings at potentially dangerous locations, passing areas, and rest stops to facilitate use by physically challenged individuals. (Trail 4 Exhibit A)

(8) El Portal Bicycle Trail (Street A, Palos Verdes Drive to Halfway Point Bicycle Trail). Class I, eight foot wide off road bicycle path in twelve foot wide corridor along eastern side of relocated Paseo del Mar, (known as Ocean Trails Drive) Street A, "J" road) from intersection of Paseo del Mar and Palos Verdes Drive South to Ocean Trails Park (Halfway Point Park).

(9) El Portal Sidewalk (Street A, Palos Verdes Drive to Halfway Point) paved sidewalk. Class I, four foot wide pedestrian trail in eight foot wide corridor along eastern side of relocated Paseo del Mar, (known as Ocean Trails Drive

Street A, "J" road) from intersection of Paseo del Mar and Palos Verdes Drive South to Ocean Trails Park (Halfway Point Park.)

(10) Canyon Rim Trail (Forrestal Canyon overlook). Fifteen foot wide all weather fire trail with foot and bicycle access extending from the end of Street E, parallel to the west side of Forrestal Draw connecting with Streets C and D via three foot side pedestrian paths and terminating at Trail 3.A(4).

(11) Catalina View Trail (Bluff-Top Corridor Bluff edge pedestrian trail), a two foot wide soft-footed pedestrian trail generally following the present unimproved eighteen inch trail along the bluff edge in Tract 50666, extending from the upper terminus of the Torrance trail, thence around the periphery of Halfway Point, outside of Ocean Trails Park (Halfway Point Park,) connecting to the upper terminus of the San Pedro trail along the top edge of the bluff. Adjacent to the park, the trail shall be generally located inland of and parallel to the 147 foot contour line as shown in Exhibit 7. From the easterly boundary of the publicly dedicated Ocean Trails Park (Halfway Point Park,) the trail shall be routed generally along the edge of the bluff to the tract boundary on the east, connecting with the bluff edge trail in tract 50667 described in 3B(7) below. In no case will the trail be routed where grading is required, or where cracks or undermining have occurred. On Halfway Point, no portion of the trail shall be located below the 145 foot contour line as shown on the maps dated June 24, 1994.

(12) Catalina View Bikeway (Bluff Top Activity Corridor Bicycle and jogging Trail). Class I, eight foot wide pedestrian/bicycle trail in a twelve foot corridor within the 100 foot minimum bluff top corridor, This trail begins at the end of trail 3.A.12 above in the Northeasterly corner of Ocean Trails Park (Halfway Point Park,) and extends north to the western end of La Rotonda Drive.

(13) Flying Golfball Trail (Sewer easement trail) Class I, eight foot pedestrian/golf cart/sewer maintenance truck trail in a twelve foot corridor located generally as shown in Exhibit A, generally along the route of landslide scarp C from Halfway Point/J road ocean-ward to the Bluff edge trail generally in the center of lot 38. (See attached Exhibit B). The upper portion of the loop trail (north of golf course hole number 18) located on the top of the slide scarp may be used by golf carts and maintenance vehicles. The lower portions of the trail located south of the golf hole and not used by golf carts may be improved with a four foot wide soft footed tread. Said trail shall be signed and shall be open and available for use by the general public during day-light hours.

(14) West Bluff Trail (West Bluff Beach Access (trail 4 (four)) Being a two foot wide soft-footed pedestrian trail extending from the West End jogging and handicapped access trail described in item 3.A(5), above, and 3.A(15) the bluff edge nature trail in the West Bluff Preserve. Said trail shall connect the West

End jogging trail to the bluff edge, generally in the area located directly east of the West Bluff Passive Park and Preserve area, Lot E, within the western edge of the golf course. The bluff top portions of said trail may be combined with the golf cart trail in a similar location as long as signage and hardscape treatment, amenities and other design features clearly indicate the public's right to access the bluff edge via this trail and the dedication grants the public the right to use the entire width of the applicable portion of the golf cart path. (Trail 1, Exhibit A.)

(15) West Bluff Trail (West Bluff Passive Park Nature Trail) Being a two foot wide, fenced, soft-footed pedestrian trail as shown in Exhibit B and II extending from the Portuguese Bend Overlook (described in 1.A.2 above) to the upper edge of slide scarp A. From there, the trail splits into two branches. The first branch, which shall not be improved and shall only be opened if the United States Fish and Wildlife service determines that the effort to conserve habitat on the site has not succeeded, leads down the scarp face to the bluff top and then along the bluff top to Mariposa Lily Point. The second branch, which shall be opened in the first stage of restoration, follows the upper edge of the scarp of landslide A, proceeding along the scarp, connecting with the Beach access trail described in condition 3.A(14) above. Said trail is to be designed in conjunction with the Department of Fish and Game, with low barriers parallel to the trail, staging areas, information signage, and other methods to protect vegetation.

(16) Park Loop Trail (Halfway Point Handicapped Loop Trail). Being a nine (9) foot wide pedestrian and handicapped accessible trail with a minimum tread width of (5) feet an easy level of difficulty. The trail shall begin at the terminus of Street "A" (J road or Paseo del Mar extension). From the terminus of Street "A", the trail shall follow the easterly side of the parking lot, entering Ocean Trails Park (Halfway Point Park) on the northeasterly corner. From there, the trail shall be constructed within the park, along the park boundary at approximately the 151 foot contour line and then around the entire park periphery connecting with the two walkways leading to the Clubhouse Building. The trail shall proceed on the walkways south of the Clubhouse building and south of the westerly parking lot, then north of golf course lot 38 and across lot B, crossing Forrestal Draw via a bridge installed by the applicant. From the bridge, the trail shall extend along the northern edge of golf course lot 38 then along the northern edge of lot E, the West Bluff Preserve, within lot C. The trail shall connect to trails 3.A.4 and 3.A.5 at the Portuguese Bend overlook improved overlook area and handicapped turn around including no fewer than three benches and three trees and handicapped turn around and with the pedestrian trails required in conditions 3.A(5), 3.A.(10), 3.A(9), 3.A.(15) and 3.A(17).

(17) Clubhouse connector trails, being the foot trails stairs, decks and sidewalks shown on Exhibit 8 of permit amendment A-5-RPV-93-005A, and Exhibit 3 of amendment A11 connecting Ocean Trails Park (Halfway Point Park) with two public parking lots located at the terminus of Street "A" including all paths or walks necessary for access to the public facilities proposed within the clubhouse.

(18) Dudleya Trail (Mid bluff Beach Access Trail.) A trail as shown on amendment 9 Exhibit 3, extending from the bluff edge pedestrian trail near the center of the project to beach level at the seaward terminus of the San Pedro Trail. The trail is to be designed in conjunction with the Department of Fish and Game, and shall include information signage, and other methods to protect vegetation as required by the DFG.

(19) Landslide bypass trail. A trail as described in amendment 13, Exhibit 4, that connects the three Ocean Trails Public parking lots, via Ocean Trails Drive, along the golf course path located between the 9th and 12th golf holes, and from there, to bluff top corridor trails A (11) and A (12). The entire width of the trail shall be available for foot and bicycle access.

If, on June 2, 2000, trails A 11, A 12 and A 13 are restricted from public use in any manner, in addition to the requirements of special condition 1, the applicant shall record an offer to dedicate trail A (19) as otherwise required in this condition. Said recording shall occur no later than June 1, 2000, unless additional time is granted by the Executive Director for good cause. The applicant shall also dedicate any other trails necessary to provide access that is equivalent in time place and manner to the access along the bluff provided by trails A (11), A (12) and A (13) as further specified below. In no event shall the applicant interfere with public use of trail A (19) until the Executive Director certifies that the entirety of Bluff Top Trails A11 and A12 have been repaired and are available to the public, and the project has provided no fewer than five beach access trails.

B. The following access Corridors located within Vesting Tentative Tract Map 50667:

(1) Palos Verdes Drive South on-Street Bicycle Lane Class II, high speed bicycle lane on both sides of widened Palos Verdes Drive South, along all portions of Palos Verdes Drive South located within the boundaries of the tract. (L6-92 117).

(2) La Rotonda Bikeway. (La Rotonda Drive On-Street Bicycle Lane). Class II, high speed bicycle lane on both sides of La Rotonda Drive connecting with trail 3.A(12) above through the parking lot and connecting with Palos Verdes Drive South.

(3) Ocean Vista Bikeway (Palos Verdes Drive South Off-Road Bicycle Trail). Class I, eight foot wide off road bicycle path in twelve foot wide corridor along south side of Palos Verdes Drive South, along all portions of Palos Verdes Drive South located within the boundaries of VTTM 50667.

(4) Ocean Vista Trail (Palos Verdes Drive South Off-Road Jogging Trail.) Class I, four foot wide pedestrian trail in eight foot corridor along south side of Palos Verdes Drive South, along all portions of Palos Verdes Drive South located within the boundaries of VTTM 50667.

(5) Prickly Pear Trail (Palos Verdes Drive south Overlook-La Rotonda parking lot connector). Four foot wide pedestrian stairway and switchback trail as shown in Exhibit 10, linking viewing overlooks located on Palos Verdes Drive South west of lot 35, VTTM 50667, through VTTM 50667 to La Rotonda trail head, road/trail interface. Any stairs necessary shall be constructed by the applicant according to applicable City and State Park standards. Portions of this trail may be combined with a golf cart path.

(6) Lakeview Trail/Bikeway (La Rotonda knoll edge trail to La Rotonda Point and bluff edge). La Rotonda Drive to La Rotonda Point, four foot wide soft footed pedestrian trail within a six foot wide corridor from Palos Verdes Drive South within Lots A, and H, then following lot H in switch backs through lots H and 39 to La Rotonda Overlook, connecting with bluff edge pedestrian trail 3.B (7), as shown on Exhibits B and 5.

(7) Catalina View Trail , then Sagebrush Walk Trail connecting to South Shores trail within Shoreline Park (Bluff top Corridor Bluff edge pedestrian trail), two foot wide, soft-footed pedestrian trail within a four foot right of way located on the bluff edge from the western tract boundary to the Shoreline Park property line, extending slightly inland at lot G, and veering downslope back to the bluff edge Said trail shall connect with the trails described in 3.B(6), 3.B(8) and 3B(9). In no case will the trail be routed where with a cut or fill greater than one foot of grading is required, or where cracks or undermining have occurred. Portions of this trail east of the connector to trail 3.B (9) below may be subject to seasonal closures at the request of the United States Fish and Wildlife service. In that case, signage, indicating the reasons for closure and alternate beach access routes, shall be posted at each end of the closed trail by the applicant or its successor in interest.

(8) Switchback Trail (La Rotonda Point beach access), two foot wide soft-footed trail extending from the bluff edge trail west of La Rotonda Point and descending to the beach across lot I as shown in February 5, 1993 Access Amenities Plan, and Exhibits II and III. (Beach access trail 4 on Exhibit A)

(9) El Portal Trail (Bluff edge/Knoll shoulder/Twenty fifth street cut-off trail), Existing trail connecting bluff top corridor as shown in Exhibits II, III and 42 generally along Shoreline Park/ VTTM 50667 property line following existing trail along shoulder of knoll to the existing fire road located in Shoreline Park that connects Twenty-fifth Street to the bluff edge (Beach Access Corridor 1, Exhibit IV). Dedication applies to those portions of existing trail that are located within tract 50667.

The document shall provide that the offer of dedication shall not be used or construed to allow anyone, prior to acceptance of the offer, to interfere with any rights of public access acquired through use which may exist on the property. Trails within the easements shall be generally as noted on the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97, and shall provide continuous pedestrian access along the bluff top, and where indicated, from the dedicated parks and trails to the sea.

The offer to dedicate shall also provide that no development, other than: 1) the construction of trails approved in this permit, 2) fences approved in a coastal development permit, 3) vegetation removal except hand removal of invasive plants, 4) installation of public utilities generally as shown on amendment 6 Exhibit 5, Map G, 5) the drilling of testing wells and hydraugers generally as shown on Exhibit 6, Map K and as recommended by the City geologist, 6) slide remediation and drainage control only as specifically authorized in special Condition 28 of amendment 13 to this permit, as long as such construction, in the reasonable judgment of the Executive Director, does not materially and adversely affect the purposes of this condition three as set forth above, and 6) safety fencing along the seaward side of bluff top trails 3.A.1, 3.A.15 and 3.B.7 and non locking swing gates at the entrance of steep natural trails identified as 3.A.6, 3.A.18, 3.B.8, and 2.B(5). 7) Installation of the sewer connections and drainage devices approved in this permit and other development approved in this permit, shall occur in the trail areas required in this permit and/or shown on the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97 except as authorized by a future coastal development permit, and as otherwise authorized by law. No coastal development permit exemptions as defined in Section 30610 of the Coastal Act shall apply to the trails described in this Condition 3 except for repair and maintenance of utility connections as authorized in section 30610(d) of the Coastal Act as further described in Section 13253 of the California Code of Regulations.

In the event that coastal erosion, landslide or bluff collapse makes a designated trail impassable, requiring the relocation of a trail, the obligation to maintain access shall remain and the applicants or their successors in interest shall apply to the Commission for an amendment to designate an alternate trail corridor. Access along the beach and recreational use of the shoreline shall not be restricted, except

for the temporary restriction of trail areas A(6), A(7), A(12) A(11) and A (18) within slide C. If, on June 2, 2000, any portion of the above-identified trails is still considered hazardous, the applicant shall submit a complete permit application to the Commission which includes a thorough analysis of these hazardous conditions and review of options to minimize these hazards. The application shall identify replacement trail(s) or support areas that provide public access equivalent in time, place, and manner of access to the abandoned area. The applicant or its successor interest shall submit these substitute trails for the review and approval of the Commission. Within 30 days of the Commission's approval of the replacement trails and or support areas, the applicant shall dedicate and improve such substitute trail(s) or support areas as required by this condition.

The document shall be recorded free of prior liens which the Executive Director determines may affect the interest being conveyed, and free of any other encumbrances which may affect said interest. The recording document shall include legal descriptions of both the applicant(s) entire parcel(s) and describe the easement areas identified above in metes and bounds. However, these documents may be recorded subject to any existing or future sewer and utility easement; provided that such easements 1) are underground and 2) do not materially and adversely affect the purpose of this condition three as set forth above and 3) are as generally described on Exhibit 5, Map G, and Exhibit 31 map F of amendment 6, if such easement has been granted prior to recordation of the documents.

The dedication shall include the right of the developer and the accepting agency, subject to the limitations of the relevant portions of this condition three set forth above 1) to enter the property, 2) to carry out revegetation activities and maintain the areas as described in the HCP and conditions 4 and 8 of this permit, 3) to construct and maintain required trail improvements including without limitation trails described in the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97, in the project description, in condition one and in condition 4 below, in the Conceptual Public Amenities and Coastal Access Program of 1996, Revised, August 28, August 28, 1997 and in the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97 and (5) to perform erosion control. Additionally, the developer shall have the right to construct and use drainage devices, dewatering wells, exploratory pits other remedial measure and monitoring wells as recommended by the City geologist provided that the construction and location of such wells in the reasonable judgment of the Executive Director do not materially and adversely effect the purpose of this condition one as set forth above.

The area subject to the dedication shall be described in the offer in a manner that is legally adequate under California law for a conveyance of an interest in real property and that is of a level of precision that is acceptable to the Executive Director. Notwithstanding the foregoing, the depiction of the easement area shown

on the attached Exhibit 30 of amendment 6, (Exhibit E Trail easement offers), shall be deemed to satisfy this requirement for the purpose of permit issuance. If utilized, the applicant shall replace or supplement the depiction with a legal description that is both legally proper and (in the reasonable judgment of the Executive Director) sufficiently precise, before the earlier to occur of either 1) the end of a period of five days from recordation of each final subdivision map for the project for the area encompassed by each such map, or 2) commencement of construction of improvements on the project other than permitted golf course facilities (clubhouse, maintenance building, restrooms, etc.), roads, parks and overlooks, trails, grading, erosion control and installation and/or relocation of underground utilities. The offer shall run with the land in favor of the People of the State of California, binding all successors and assigns, and shall be irrevocable for a period of 21 years, such period running from the date of recording.

4. ACCESS SUPPORT AND IMPROVEMENTS

Prior to issuance of the coastal development permit, the applicant shall agree in writing to construct the following public access improvements for park and trail purposes. Improvements shall be as described in this condition, the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97 and/or Exhibits 26 and 27 of amendment A6 except that the locations and the development standards of trails shall be as established by Condition 3 of this permit. Pursuant to this requirement, the applicant shall provide detailed plans of these improvements prior to commencement of construction of the golf clubhouse. The plans shall be accompanied by a schedule of completion for the review and approval of the Executive Director in consultation with any accepting agency. Before construction commences on any park or trail, the applicant shall report any proposed changes to the approved plans to the Executive Director. Any changes that the Executive Director determines to be substantial, including those which unreasonably interrupt or degrade views of the ocean, the bluffs or the beach from public areas or unduly restrict passive recreational use of dedicated areas shall require an amendment to this permit.

The first stage shall be completed to the satisfaction of the Executive Director in consultation with any accepting agency prior to closing off any existing trails. The second stage shall be completed to the satisfaction of the Executive Director in consultation with the accepting agency prior to the opening of the golf course for play, with the exception of a limited term non-profit golf school. The third stage shall be completed to the satisfaction of the Executive Director in consultation with the accepting agency prior to construction of more than five residential units within Tract 50666 and prior to the occupancy of any residential structures.

- A. First stage. The following shall be completed before any fencing contemplated in the executed Habitat Conservation Plan is installed (HCP Phase II): trail improvements, interpretive signs and trail fencing shall be

installed and open before any fencing for habitat restoration or other facets of the project interferes with public access which may exist on the property. During construction, the applicant shall not interfere with public use of the trails listed below except as specified in conditions 1 and 3. The following trails must be provided but may be confined within fenced corridors to prevent individuals from damaging restoration areas. The trail surfaces may be left temporarily as unimproved trails. All (the existing trails located in tract 50667, on street A, or on the golf course within tract 50666 shall be improved to the standards of the trail improvement plan over their entire length prior to the commencement of play on the golf course, (with the exception of a limited term, non-profit golf school.) Before the construction of any residential units in VTTM 50666 Trails A(4) and A(5) must be improved in their entirety to the standards of the trail improvement plan.

Trails found by the Commission to be existing trails ~~Said trails shall~~ include: The entirety of trails noted in Conditions 3 A (5), A (6), A(7), A(9), A(11), the portion of A(15) that follows the slide scarp also trails noted in Conditions 3 B(5), B(6), B(7), B(8), and B(9).

- B. Second Stage. CLUB HOUSE PHASE. Park improvements and second stage trail improvements completed as part of Phase III construction.

Drawings. The applicant shall submit construction drawings for the review and approval of the Executive Director of the following park and trail improvements prior to the commencement of construction of the golf club house. Installation shall commence immediately following rough grading operations for the golf course.

Completion All trail and park improvements listed below in subsections B(1) and B(2) shall be completed to the satisfaction of the Executive Director in consultation with the accepting agency prior to the opening of the golf club house to the public.

- 1) Park improvements required to be completed before opening of the golf clubhouse (second stage):
 - a) Ocean Trails Park (Halfway Point Park), Mini park located on Halfway Point, including seating the 45 car, parking lot east of the park, "J Road", picnic area, public parking along Paseo del Mar,
 - b) Ocean Trails Drive ("J" road, street A,) as far as Ocean Trails Park (Halfway Point Park), including public parking areas on J road.
 - c) No fewer than six view overlooks including 3 within the bluff top corridor as shown on the Public Access Amenity Plan of 1996

updated 1997 between Ocean Trails Park (Halfway Point Park) and the East Bluff Preserve. All overlooks shall include seating but shall not require the grading or construction of pads or the use of heavy equipment for construction.

- d) Habitat and Golf course safety fencing as approved according to conditions 6 and 7, below.
- e) Temporary bridge over Forrestal Draw, as approved by the resources agencies serving trail 3(A)5.
- f) Parking lot for 50 cars and comfort station on lot E VTTM 50667.
- g) In Portuguese Bend Overlook improvements, that is the overlook adjacent to West Bluff preserve in fuel management area adjacent to property line, benches, no fewer than three trees or other shade and a turnaround,
- h) Completion of East Vista Park complete with water fountain, benches, signage, and recreation facilities designed to accommodate a comparable number of visitors as are provided in parks of comparable size elsewhere in the City or operated by adjacent jurisdictions.
- i) Completion of Ocean Trails Drive ("J" road or Paseo del Mar) parking area, located to the west of the golf clubhouse

2) Trail improvements required to be completed before opening of the golf clubhouse (second stage):

Trails required in Conditions 3, A (8) (except approximate 200 feet of the trail adjacent to East Vista park, which shall be completed within 45 days of the occupancy of the clubhouse), A (17) A (18), and A (19) and also 3 B (2). All portions of trails 3 A(6); A(8) , A(9), A(11) and A(12 that lie outside the slide area as mapped in amendment A13.

3) Trail plans required for approval second stage.

The applicant shall provide to the Executive Director final trail designs approved by the City of Rancho Palos Verdes for the following stage 4 trails before June 30, 1999: 3 A (1), A (2), A (3), A (5); 3 B (1), B (3), and B (4). The Director must review and approve the plans before authorizing the opening the golf clubhouse to the public.

C.

Third Stage. All trail and park improvements listed below in subsections C(1) and C(2) shall be completed before opening the golf course for play. Revised trail plans and park plans shall be submitted as part of any plan for grading or golf course reconstruction. Said plans shall be consistent with conditions 1 and 3, and shall provide access to the beach and to and along the top of the bluff in tract 50666 and from trail A (7) to the eastern tract boundary of VTTM 50667.

All trail and park improvements listed below in subsections C(1) and C (2) shall be completed to the satisfaction of the Executive Director in consultation with the accepting agency prior to the opening of the golf course for play (with the exception of a limited term non-profit golf school.)

1) Park improvements required to be completed prior to opening of the golf course for play (third stage):

- a) Ocean Trails Park (Halfway Point Park), as shown on the materials submitted with amendment 1 (A-5-RPV-93-005A) of this permit, sheet 3 and 3a of the Public Amenities and Coastal Access program as revised, August 28, 1997 with additional public seating and tables in locations approved by the City of Rancho Palos Verdes, as shown on Exhibits 26 and 27 of amendment A6 including the 45 car parking lot east of the park, the shared golf and public parking lot west of the park, Ocean Trails Drive, picnic area, public parking along Ocean Trails Drive. The park shall adequately be set back from the bluff edge to (1) adequately provide for public safety and (2) to safely accommodate trail A (11) along the edge of Halfway Point.
- b) Habitat and Golf course safety fencing as approved according to conditions 6 and 7, below.
- c) Landslide and rockfall signage
- d) Any other replacement park areas required according to Conditions 1 and 3 above

2) Trail improvements required to be completed prior to the opening of the golf course for play (third stage):

The entire length of trails required in Conditions 3 A (6), A (7), A(8), A(9), A (11), A(12), A(13), A (16), A (17) and A (18) within Ocean Trails Park (Halfway Point Park) and 3 B (2), or if certain trails remain impassable, trail A19, a new A7 and any other replacement trails required according to condition 3 above

- D. Fourth Stage. Residential lots tract 50666. Before the applicant may begin grading of the residential lots of Tract 50666, the applicant shall submit for the review and approval of the Executive Director, working drawings for the following park and trail improvements.**

Installation of these improvements shall commence no later than the commencement of residential grading for Tract 50666, and shall be completed to the satisfaction of the Executive Director in consultation with the accepting agency prior to the construction of more than 5 model homes within Tract 50666. In no event, shall any of the residential lots within Tract 50666 be occupied prior to the acceptance of the trails by the accepting agency or prior to the satisfactory completion of the required improvements.

- 1) Park improvements required to be completed prior to construction of residential units except for more than five model homes in tract 50666 (fourth stage).
 - a) View Overlook at the head of Forrestal Canyon.
 - b) Completion of Sunset Point Park (West Vista Park or Palos Verdes Drive Park) complete with water fountain, benches, picnic tables, signage, and recreation facilities designed to accommodate a comparable number of visitors as are provided in parks of comparable size elsewhere in the City or operated by adjacent jurisdictions.
 - c) All remaining trails, amenities, and facilities outlined in the Public Access and Amenities Plan of February 5, 1993 as modified by the conditions of this permit, the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97, or otherwise required in the conditions above.
- (2) Trails improvements required to be completed prior to construction of residential units except for more than five model homes in tract 50666 (fourth stage). The applicant shall complete the improvement of the trails noted below consistent with the standards of the approved trail plan.
 - a) Trails identified in Conditions 3 A (1), A (2), A (3), A(4), A (5), A(10), A(14); the permanent bridge over Forrestal draw, trail A (17) west of the bridge and trails 3 B (1), B(3), B(4).

Trail improvements shall be carried out in accordance with a detailed trail improvement plan approved by the Executive Director, in substantial conformance with the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97 as modified by the conditions of this permit. If there are any discrepancies between the trail plan and the requirements of the adopted conditions, the requirements of the conditions shall control. Said plan shall include a) designated parking, b) interpretive signs, c) fencing of habitat and construction areas, d) erosion control and footpath control plantings (such as cactus adjacent to sensitive areas), e) steps, where necessary.

5. FENCES, SAFETY NETS AND BOUNDARIES.

Prior to issuance of the permit the applicant shall provide complete plans showing the location of all fences, nets, safety devices and boundary treatments for the review and approval of the Executive Director. Said plans shall have received prior review and approval by the City of Rancho Palos Verdes, the California Department of Fish and Game and the United States Fish and Wildlife Service. Such fences and nets shall be as generally indicated on Exhibit VI or in the applicant's letter of January 14, 1997. The location, design and height of all fences, nets, and hedges shall be shown, and, in the event of vegetative boundaries, the materials shall be specified. The plans shall also have received review and comment from the golf course operator and its insurance or safety consultant.

The following boundary treatments fences may be approved by the Executive Director in the following locations, providing that they do not block or diminish access and recreation as required in conditions 1-4 above:

A. Within recreation areas, adjacent to steep slopes, adjacent to golf course roughs:

(1) Coastal prickly pear (*Opuntia littoralis*) or coastal cholla (*Opuntia prolifera*) barriers.

(2) split rail fences 40 inches in height or less, with plastic coated chain link in the lower 18-20 inches.

(3) three wire barbless wire fences.

B. During construction, areas in which grading will occur shall be fenced with:

(1) six foot high chain link construction fences, with wildlife escape holes as may be required by the Department of Fish and Game.

C. Approved revegetation areas:

- (1) six foot high black or green covered plastic chain link fencing provided such fences do not include footings on the face or edge of the coastal bluff.
- (2) three-wire barbless wire fences.

All changes to the approved plans shall be reported to the Executive Director. Any changes the Executive Director determines to be substantial, including those listed below, shall require an amendment to this permit:

- (1) Wrought iron or wire cages surrounding trails.
- (2) Any netting or wire link fences with holes smaller than commercial chain link.
- (3) Any fence over six feet in height.
- (4) Any fence that would arch over the heads of pedestrians on an approved pedestrian path.

The Executive Director shall not accept an amendment request for which the design, materials and location of the proposed barrier is inconsistent with the public access, view and habitat requirements of this permit.

6. ACCESS AND HABITAT MANAGEMENT AND MAINTENANCE

Prior to issuance of the coastal development permit the applicants shall provide for the review and approval by the Coastal Commission an access and habitat management and maintenance program:

A. Funding Program. The program shall include a long term funding program which will provide for the actual cost of both:

- (1) park maintenance and periodic repair and replacement of landscaping, restrooms, trails, fences and benches and other facilities; and,
- (2) on-going habitat protection and restoration including a) on-site supervision of trail and habitat areas by resident Qualified Naturalist, operation of interpretive signs and displays, facility, funding of public outreach programs, including youth education and docent program, and b) maintenance of drainage systems, oil separators and other devices required to protect habitat in nearby ocean waters and tide pools.

B. **Maintenance.** The program shall include the legal authority and other provisions to maintain all habitat and public access areas to the standards required in this coastal development permit, and to maintain all drainage and water quality protection systems proposed by the applicant to protect the habitat of ocean waters and tide pools.

7. DEED RESTRICTIONS.

Prior to issuance of the coastal development permit, the applicant shall record a deed restriction, subject to the review and approval of the Executive Director that shall apply to lots 1-31 VTTM 50666, Lots 1-37 Vesting Tentative Tract Map 50667, and all parcels created by Parcel Map numbers 20970 and 23004. The deed restriction shall be recorded on each lot created in the above tract and parcel maps when such lots are recorded. The deed restriction shall provide:

A. The obligation to complete the habitat, trail and park improvements prior to final grading of individual lots.

B. The requirements for habitat and public access required in conditions of this coastal development permit.

C. Notice of the public's right to park on and pass through the streets of this subdivision.

D. Notice of the land owners' obligations with respect to maintaining the parks and trails and habitat areas and fire breaks required in this permit, including but not limited to the obligation to contribute to the maintenance of the area, and the right of the district/and or accepting agency to manage and maintain the area in accordance with the terms and conditions of this coastal development permit.

E. Notice of the land owners' obligations with respect to maintaining drainage systems, oil separators, Best Management Practices and other programs and devices required to protect habitat in ocean waters and tide pools.

F. A restriction on the use of invasive, non-native plants, as listed below in the landscaping condition 10. A list of such plants approved by the on-site habitat manager, shall be provided for the review and approval of the Executive Director prior to recording.

G. A further restriction indicating that no development, other than development approved in this permit shall occur in the park areas indicated in condition 1A and the trail areas shown in Exhibits II, 42 and 43 except as authorized by a future coastal development permit, and as otherwise

authorized by law. No coastal development permit exemptions as defined Section 30610 of the Coastal Act shall apply to the trails described above.

H. A restriction on lots 38 of VTTM 50666 and Lot 39 of VTTM 50667, describing a public access program for the improved golf cart paths. Said trails shall be signed and identified as public and shall be open and available for pedestrian use by the general public during non-golfing daylight hours.

I. Notice that all covenants and agreements between the applicants and or successors in interest their agents and with the City or private maintenance companies or other entities that affect the streets, parking lots, parks habitat areas and trails required in this permit are subject to the terms and conditions of this permit. Pursuant to this requirement any agreements or covenants that delegate maintenance or operation of these public facilities to a third party shall be consistent with all terms and conditions herein, and shall be provided to the Executive Director with evidence of such consistency prior to their execution.

The documents shall be recorded free of prior liens or other encumbrances. The restrictions shall run with the land in favor of the People of the State of California, binding all successors and assigns. The recorded document shall include legal descriptions of the applicant(s) entire parcel(s), the easement area(s), and the legal lots subject to these obligations.

8. CONFORMANCE WITH THE REQUIREMENTS OF THE RESOURCE AGENCIES WITH RESPECT TO THREATENED, RARE OR ENDANGERED SPECIES.

A. Documentation. Prior to issuance of the coastal development permit, the applicant shall provide fully executed agreements with the Department of Fish and Game and the United States Army Corps of Engineers and the United States Fish and Wildlife Service addressing each party's responsibilities with respect to preservation of habitat and streams.

Pursuant to this condition the applicant shall provide true and accurate copies of: 1) all agreements between the applicants and the above noted public agencies and the landowners of the off-site mitigation areas, 2) a detailed schedule that has been approved by the United States Fish and Wildlife Service and the California Department of Fish and Game and that identifies when the revegetation plans required by the Habitat Conservation Plan (HCP) will be completed and implemented ("revegetation schedule"), 3) any and all proposed restrictions on public access, 4) all evidentiary material which the applicant or the agencies relied on to come to their conclusions, 5) a grading plan consistent with the Habitat Conservation Plan, and 6) an agreement in writing to complete and implement all revegetation plans

consistent with the approved revegetation schedule and the phasing program listed in subsection D below;

B. Inconsistencies and changes. Any change, refinement or inconsistency between the final contracts and executed agreements and the Habitat Enhancement Plan as approved by the Commission will require an amendment to this permit. The Executive Director shall not accept any amendment request including reduction of public access and recreation mandated by the resource agencies in the areas identified for public use in this permit without the provision of equivalent additional access and recreation elsewhere on the property.

C. Execution. The applicant shall provide the Executive Director with required revegetation plans at the time identified in the approved revegetation schedule. Each revegetation plan submitted for the review and approval of the Executive Director must have been approved by the U. S. Fish and Wildlife Service and the California Department of Fish and Game. All revegetation plans must be submitted to the Executive Director before the golf course opens for play. All habitat areas shall conform to the standards contained in the executed HCP and the detailed revegetation plans.

D. Schedule

(1) Phase I. For a period of no less than one year prior to the commencement of grading the applicants shall collect seeds and cuttings from the project area to support the revegetation program.

(2) Phase II. At the commencement of revegetation, the applicant shall provide alternate trail access as noted in stage one of condition 4, above, fence the areas to be revegetated, prepare the site, and install the initial plants. The applicant shall create coastal sage scrub habitat, using as far as possible, plants native to the area.

(3) Phase III. Schedule (HCP Phase I grading) When the Executive Director verifies that revegetation has begun and the Department of Fish and Game and or the United States Fish and Wildlife Service releases the applicant for the golf course grading, consistent with the approved final Habitat Conservation Plan, (HCP) the applicant may begin grading the golf course (lots 38 and 39), Ocean Trails Park (Halfway Point Park)and the Ocean Trails Drive ("J road" or Paseo del Mar). The applicant may grade and stockpile on the clubhouse and clubhouse parking areas, and the westernmost tier of lots of tract 50666. No finish grading of residential lots may occur. Applicant may also begin constructing the second stage of trail and access improvements, and the lots on VTTM 50667.

At the completion of grading of the golf course, the applicant shall complete installation of the park improvements noted above as stage 2 in condition 4.

(4) Phase IV. (Golf Club House) Finish grading for the golf club house parcel and 150 car westerly parking lot shall commence only after the United States Fish and Wildlife Service and the Department of Fish and Game have certified to the Executive Director that restoration of habitat in the onsite restoration areas has commenced according to the standards of the HCP.

Construction of the golf club house shall not commence until the Executive Director has approved plans and construction drawings for all parks and trails and these plans and construction drawings, with the exception of Palos Verdes Drive--West Vista Park and Palos Verdes Drive East Vista Park (Lot A Tract 50666 and Lot D, Tract 50667), have also received final review and approval from the City of Rancho Palos Verdes. Prior to beginning construction of the clubhouse, the applicant shall also complete the bluff top pedestrian trail (identified as trails 3A11 and 3B7) and coastal access trail (La Rotonda Bluff to Beach trail) 3B(8), and begin construction on Trail 3A(6), the Torrance Trail.

.....

(5) Phase V. Complete restoration of Phase II and IV grading (the golf course and club house impacts) shall occur, and all agreements required in section 7 below shall be executed and all habitat required as a result of subsection 7 of this condition shall have established before the golf course may be opened for play. Complete restoration of Phase II and IV residential lot) impacts shall occur before individual lots receive final grading approval. Grading of the residential lots roads and trail areas in Vesting Tentative Tract map 50666 shall commence as specified in condition 4 and only after the United States Fish and Wildlife Service and the Department of Fish and Game have certified to the Executive Director that:

- (a) the restored habitat in the onsite restoration areas noted above with the exception of landslide area restoration required in subsection 7 below, is of sufficient maturity to supply food and cover and nest areas for Gnatcatchers and cactus wrens and other coastal sage scrub dependent species and
- (b) that the vegetation on all off site restoration areas required by the Resource Agencies is established according to all final executed agreements, the approved revegetation timing schedule and the final Habitat Conservation Plan (HCP) and that the Gnatcatcher and the Cactus wren and other species dependent on coastal sage

scrub could ,in the future be permanently provided with food cover and nesting areas on the restored areas.

Prior to commencement of construction of any residential units in tract 50666 except for five (5) model homes, the applicant, irrespective of the status of any approval for golf course repair, shall provided evidence that it has (1) identified areas for restoration all habitat damaged by the landslide; (2) if required by the Resources Agencies, secured all necessary agreements and/or easements over any off-site property required for purposes of restoration and (3) commenced planting on-site mitigation areas in acreage required by sub-Section 7 of this condition.

(6). Additional Willow Mitigation Area required by Resources Agencies.

Prior to issuance of amendment 11 amendment of this coastal development permit., the applicant shall submit revised plans identifying such replacement area and agree to install said mitigation, in the following quantities and timetable

:

- a) Tract 50667 and golf course. The applicant shall install no less than 435 square feet of additional willow area as required by the ACOE and the Department of Fish and Game, prior to the opening of the golf course for play.
- b) Tract 50666. The applicant shall provide to the Executive Director all communications from the ACOE, the US Fish and Wildlife Service and/or the Department of Fish and Game concerning the required mitigation and such mitigation shall be installed prior to the construction of more than five residential units in tract 50666

(7) Mitigation for Landslide, and Landslide Exploration and Repair. As part of any application for landslide repair the applicant shall provide a written agreement with the Resources Agencies that shall establish:

- a) The location and types of habitat restoration or enhancement required by the Resources Agencies as a result of the slide and any repair or exploration activities. Irrespective of any requirements of the Resources Agencies, all restored and previously intact habitat removed shall be reestablished on site at no less than a 1:1 ratio.
- b) an analysis of the depth of saturation caused by drip irrigation. Said information shall be provided for all property owners of off site

areas.

- c) the location and amounts of any off-site habitat restoration required by the Resources Agencies. Such off site restoration plan shall be accompanied by an irrevocable agreement with the property owners indicating an intent to allow use of the property involved for long term habitat restoration purposes.
- d) An estimate of the length of time that will be necessary for the coverage and maturity of habitat required by the Resources Agencies to establish.
- e) An agreement that failing approval of golf course repair, the applicant will proceed to re-establish on-site mitigation areas in the quality and acreage required by this permit by October 1, 2000.

9. GRADING PLANS AND STANDARDS.

Prior to issuance of the coastal development permit, the applicant shall provide for the review and approval of the Executive Director, final engineered grading plans for the golf course and tract 50667 and preliminary grading plans for the clubhouse and tract 50666. Prior to beginning preliminary grading for tract 50666, the applicant shall provide for the review and approval of the Executive Director, final engineered grading plans including working drawings for Tract 50666. The applicant shall also agree, in writing, to abide by said plans. The plans shall have received preliminary review by the project geologist and the City engineer and the City geologist. Grading plans shall conform to the phasing requirements of the executed HCP habitat plan noted above; stockpiling shall occur only as provided in the HCP stockpiling provision and condition 8 above. Grading plans shall substantially conform to the preliminary plans approved by the City of Rancho Palos Verdes for Vesting Tentative Tract Map No 50666 and 50667 as shown in the EIR. Any changes in the plans required on the basis of new geologic information, including major recompaction or reconstructive grading, shall be reported to the Executive Director of the Commission before the changes are carried out. If the changes represent a substantive change in the plans or grading quantities as approved by the Commission, an amendment to this coastal development permit will be required.

The final grading plans agreed to by the applicant shall include:

- A. Grading limits. No Grading, stockpiling or earth moving with heavy equipment shall occur within the dedicated open space areas (corridors) noted in Condition 1 above, with the exception of Ocean Trails Park (Halfway Point Park,) within the bicycle trails, within drainage, utility and sewer, easements

shown on Exhibit 5 (Map G) and hydrauger, and groundwater testing well easements shown on Exhibit 6 (Map K) of this Amendment 6, the 0.30 acre fill slope area adjacent to the 18th tee and the 0.13 acre fill slope area adjacent to the 18th hole. The 0.30 acre and the 0.13 acre fill slope areas which encroach within Lot K shall be located as shown on Exhibit A depicting setbacks for VTTM 50666 dated July 25, 1995, as modified in the map submitted in amendment 4 and dated June 20, 1996. Bluff edge pedestrian trails shall be constructed with hand-tools where environmental damage could occur. The areas in which no grading is to occur are generally described as the habitat easement and revegetation areas.

B. Disposal of excess material. Any excess material resulting from grading or site preparation to be deposited within the coastal zone shall be disposed of in accordance with an approved coastal development permit. No excess material shall be dumped over the bluff or placed on the beach, or on any protected habitat or restoration areas.

C. Equipment storage. No grading equipment shall be stored within any habitat area, open space easement area, within 30 feet of the coastal bluff. No grading equipment shall be stored within the Tract 50666 residentially designated areas (Phase IV), except in the easternmost tier of lots as shown in the final HCP during the work on the golf course (Phase III).

D. Timing. Grading shall occur consistent with the timing restrictions contained in special Condition 8D. No grading may occur during the nesting season of the California Gnatcatcher, or otherwise as restricted in the Final executed Habitat Conservation Plan (HCP). In the event of conflict between this timing condition 9D and the executed HCP, the HCP shall prevail.

10. TEMPORARY EROSION CONTROL, HABITAT PROTECTION AND FINAL LANDSCAPING PLANS.

Prior to issuance of the Coastal Development Permit, the applicant shall submit for review and approval by the Executive Director and agree in writing to abide by habitat protection, revegetation, landscaping and erosion control plans for parks, trail corridors, common open space and graded and disturbed areas, parks and the golf course. All landscape plans, including habitat restoration, temporary stabilization, park rehabilitation, golf course roughs, fuel modification and drainage course revegetation shall employ native plants that are Palos Verdes Peninsula Bluff Scrub plants, and Palos Verdes Peninsula Coastal Sage Scrub plants, obtained, to the maximum practicable extent, from seed and vegetative sources on the Palos Verdes Peninsula. Turf areas shall be permitted, but invasive grasses or annual grasses incompatible with revegetation shall not be employed for temporary stabilization or in areas, which in the opinion of the enhancement monitor, could form a seed bank that would affect the restored areas.

At the commencement of grading on each tract and on the golf course, the applicant shall provide to both the City and the Executive Director, for their joint review and approval, plan notes and general standards for erosion control. On or before September 15 of each year of construction, the applicant shall provide to both the City and the Executive Director for their joint review and approval, interim erosion control plans that will eliminate all siltation onto the beach tide pools and habitat areas adjacent to the site.

Prior to submittal of landscape plans, and temporary erosion control plans, the applicant shall obtain the review and comments of the California Native Plant Society, the Department of Fish and Game and the United States Fish and Wildlife Service. The Executive Director shall approve plans that are consistent with the objectives of the Habitat Enhancement Plan and with the executed Habitat Conservation Plan.

The final plans agreed to by the applicant shall incorporate the following criteria:

- A. All graded areas on the subject site shall be planted and maintained to protect habitat and to prevent erosion into intertidal areas, the coastal bluffs and revegetation areas. To enhance habitat, on commonly owned lots and on golf course roughs, landscaping shall consist of Coastal Sage Scrub and Coastal Bluff Scrub plants native to the Rancho Palos Verdes community that have been listed in the EIR and by the Native Plant Society in their comments on the EIR. Invasive, non-indigenous plant species which tend to supplant native species shall not be used either on the bluff, on the roadway lots, on the golf course, on commonly owned, or on the individual lots. Available lists of invasive plants are found in communications from the Native Plant Society to the City of Rancho Palos Verdes and in the California Native Plant Society, Santa Monica Mountains Chapter, document entitled *Recommended Native Plant Species for Landscaping Wildland Corridors in the Santa Monica Mountains*, dated January 20, 1992. Additional invasive plants may be identified by the Executive Director on the basis of comments from the Department of Fish and Game, the Fish and Wildlife Service or the California Native Plant Society. None of the plants included on the official list of "Prohibited Invasive Ornamental Plants" or "Weedy Plants to be Eradicated" shall be introduced into any portion the project site. These lists, approved by the Resource Agencies, shall remain available for public consultation at the California Coastal Commission, the City of Rancho Palos Verdes, or from on-site naturalist for the Ocean Trails Project. Additions to or deletions from these lists may be made by the Executive Director of the California Coastal Commission after consultation with the project's restoration ecologist and the Resources Agencies.
- B. All cut and fill slopes shall be stabilized with planting at the completion of rough tract grading, and on the completion of final grading, and/or, if the Executive Director determines that grading has stopped and that the interruption of grading will extend into the rainy season. Planting should be of primarily native plant species indigenous to the Palos Verdes Peninsula. Non-

native plants used for stabilization shall not be invasive or persistent species. Such planting shall be adequate to provide 90 percent coverage within 90 days and shall be repeated, if necessary, to provide such coverage. This requirement shall apply to all disturbed soils including all unsurfaced roads and pads;

C. Should grading take place during the rainy season (November 1 - March 31), sediment basins (including debris basins, desilting basins, or silt traps) shall be required on the project site prior to or concurrent with the initial grading operations and maintained through the development process to minimize sediment from runoff waters during construction. All sediment should be retained on-site unless removed to an appropriate approved dumping location.

D. The landscaping and erosion control plan shall identify the location of the temporary construction fence noted in the Habitat Conservation Plan. In addition to the fencing required in the executed Habitat Conservation Plan, construction fencing shall be placed no less than 20 feet inland of the edge of Bluff Top Activity Corridors and dedicated Habitat Restoration Areas (Passive Parks) before the commencement of grading operations, except in those two locations where grading has been approved within the Bluff Top Activity Corridor or where the toe of the approved grading is located less than twenty (20) feet landward of the Bluff Top Activity Corridor or the Bluff top Revegetation Corridor, the construction fence shall be placed at the seaward toe of the approved cut or fill slope. This does not authorize development within the Bluff Top Activity Corridor or in the Bluff top Revegetation Corridor, except the two incursions specifically permitted by the Commission in its second amendment to this permit. No drainage shall be directed over the bluff, no overspill, stockpiling, equipment storage, material storage or grading shall be conducted seaward of this fence. The fence shall include small animal escape holes if required by the Department of Fish and Game.

E. At the end of rough grading, all rough graded lots, and all disturbed areas not included in park development, the golf course, roadways, park development or revegetation plans shall be revegetated with plants indigenous to the area. The plans shall specify seed and plant sources, using, as far as possible, locally collected seed.

F. Prior to issuance of the grading permit, the applicant shall provide evidence that a bond has been posted with the City of Rancho Palos Verdes sufficient to enable the City and/or the Department of Fish and Game to provide for revegetation and stabilization of the site in the event of bankruptcy or indefinite cessation of development activities.

G. All fuel modification plans shall have been reviewed and approved by the Los Angeles County Fire Department. Invasive plants, as noted above, shall not be employed in fuel modification areas. The majority of plants employed shall be California native plants endemic to the Palos Verdes Peninsula.

H. Plantings in preserves and areas designated for habitat restoration shall conform to the approved revegetation plan for each area and the Executed HCP.

All proposed changes to approved plans shall be reported to the Executive Director. Any changes the Executive Director determines to be substantial shall require an amendment to the permit.

11. FINAL DRAINAGE PLANS.

Prior to issuance of the permit the applicant shall provide, for the review and approval of the Executive Director, preliminary engineered drainage plans for drainage facilities and a written agreement to abide by such plans for tract 50667 and the golf course and conceptual plans for tract 50666. Prior to beginning preliminary grading for Tract 50666, the applicant shall provide for the review and approval of the Executive Director, final engineered drainage plans for tract 50666. Said final drawings shall have received review and comment by: 1) the project geologist, 2) the City Engineer, 3) the City Geologist, 4) the United States Fish and Wildlife Service, 5) the Department of Fish and Game, 6) The United States Army Corps of Engineers, 7) the Regional Water Quality Control Board, 8) County Flood Control. Drainage plans for each drainage shall be designed consistent with one of the two alternative methods discussed in detail below: (a) tunneled pipes or (b) on site canyons.

The Executive Director, upon receipt of detailed drainage plans and comments of all the above agencies and individuals if such agencies choose to comment, shall require all potential disturbance of bluff face vegetation to be identified, minimized and all displaced plants to be replaced according to the standards of the Habitat Conservation Plan. No rare plants or sensitive species may be disturbed by installation of the drainage devices. To verify this, the applicants shall supply a field check prior to installation and at the end of installation, and at the end of any replanting of bluff face species. Any necessary restoration shall be completed as soon as possible after the disturbance but in no event shall restoration completion occur more than one year after installation of the drainage devices. Complete restoration of Phase III grading (the golf course) impacts shall occur before the golf course may be opened for play, and complete restoration of Phase III and IV (residential lot) impacts shall occur before individual lots receive final grading approval.

The following standards apply to all drainage plans, which shall employ:

- a) treatment and filtration of runoff from the maintenance yard and from the 150 car parking lot;
- b) Best Management Practices as required by the City of Rancho Palos Verdes and the Regional Water Quality Control Board;
- c) use of ponds to control, treat and recirculate golf course runoff;
- d) no discharge from golf course or project improvements to tide pools;
- e) the applicant shall be responsible for removing all debris.
- f) The outfall and its tributary area complies with the Los Angeles County Public Works Urban Storm Water Mitigation plan standards, including but not limited to the following:
 - The golf course shall be equipped with flow reducers or shutoff valves triggered by a pressure drop so that broken pipes do not increase flow to the storm drains.
 - The applicant shall provide, for the review and approval of the Executive Director, plans for a self-contained cart washing facility that is equipped with a pre-treatment facility and if significant discharge is proposed, is connected to the sanitary sewer.
 - All storm drain inlet structures must be equipped with trash racks, which shall be maintained by the golf course operator unless the racks are eligible for maintenance by the County of Los Angeles;
 - The applicant shall either: (a) provide a written estimate from the project engineers verifying that less than 21% of the project area is developed with impervious surfaces; or (b) shall equip the storm drain inlets on project streets with oil water separators, which shall be maintained by the golf course operator.
 - Storm drains must be stenciled with water quality warnings indicating that the drain flows to the ocean.

Alternative (a): The following standards shall apply to the tunneled pipes which shall be constructed in substantial compliance with plans submitted August 2, 1991:

- a) no drain line down Forrestal ravine
- b) use of drains outside of ravines for all project drainage including normal storm and low flow run-off from the golf course, golf course ponds, and project streets and parking lots;
- c) diversion and control of major event (greater than 2 year storm) off site drainage;
- d) the terminus and/or surface installation of drainage pipes on the bluff face and toes shall avoid stands of *Opuntia littoralis*,

- e) no heavy equipment shall be placed within 30 feet of the edge of the bluff in installing the devices;

Alternative (b). In lieu of the tunneled pipes, the applicant may opt to route drainage through the canyons as described in the conceptual drawings dated 3/2/98, or as shown in the plans for La Rotonda Canyon, dated 3/99, stamped March 1, 1999. Prior to authorization of use of any on-site canyon for project drainage, the applicant shall provide final working drawings, approved by the City Engineer of the City of Rancho Palos Verdes. If the City Engineer and the above agencies approve working drawings of the canyon alternative for any canyon, as shown on the preliminary plans dated 3/2/98 submitted along with amendment 8 of this permit, or 500 square feet or as shown in the plans for La Rotonda Canyon, dated 3/99, stamped March 1, 1999. The Executive Director may authorize discharge of all storm water and treated golf course runoff through the approved canyons, provided that:

- a) the rerouted pipes, after final approval from the City Engineer, require no significant additional channelization than presently proposed, with no more than more than 15% difference in the quantity of hardscape and or rip rap from the preliminary plans dated 3/2/98 or in the case of La Rotonda Canyon more than 575 square feet,
- b) that the United States Army Corps of Engineers, the Regional Water Quality Control Board and the Department Fish and Game have concurred with the project as proposed,
- c) the applicant agrees to replace any identified willow habitat at no less than a 2:1 ratio, as proposed in the Glen Lukos Corps application dated April 16, 1998 and as required by the Department of Fish and Game;

Upon receipt of final approval by any of the above agencies, or if at any time, field conditions require a change in design, the applicant shall provide copies of the final approved plans and/or change orders for the required changes to the Executive Director. Development shall occur consistent with the approved plans. No changes to the approved final plans shall occur without a Coastal Commission approved amendment to the coastal development permit unless the Executive Director determines no amendment is required.

12. REVISED PLANS

Prior to issuance of the coastal development permit, the applicant shall submit, for the review and approval of the Executive Director, revised final plans, approved by the City of Rancho Palos Verdes, which indicate the final layout of all residential and open space lots, streets, and other improvements, including grading, access areas, golf course and revegetation areas, and which conform with the final approved plans for public access,

recreation, Habitat protection/enhancement, grading and drainage specified in conditions 1-5, and 9-11, above. All development must be consistent with these plans.

13. DELETED

14. COMPLIANCE WITH CONDITIONS OF THE VESTING TENTATIVE TRACT MAPS.

In the event of conflict between the conditions imposed by the City of Rancho Palos Verdes and the Commission, the terms and conditions of the Commission shall prevail. Pursuant to this, the applicant shall prepare a written comparison of the City's and the Commission's conditions. However, except as explicitly modified by the terms of this coastal development permit, all development shall comply with the conditions of Vesting Tentative Tract Map No. 50666 and Vesting Tentative Tract Map No. 50667, Tentative Parcel Map Numbers 20970 and 23004 as re-approved in December 7, 1992 and as revised on September 6, 1994. Revisions to Conditional Use Permits numbers 162 (residential planned development and public open space) and 163 (golf course and clubhouse), Revisions to Coastal Permit number 103, and Revisions to Grading Permit number 1541 and mitigation measures and addenda to EIR 36 as approved by the City of Rancho Palos Verdes on December 7, 1992 and as revised on September 6, 1994 shall be reviewed by the Executive Director of the Commission for consistency with this action.

For purposes of this condition, the minimum lot size and minimum house size as noted in the Development Standards supplied to the City of Rancho Palos Verdes shall not be considered conditions of the coastal development permit or necessary to this Commission's approval of the project. Changes in such standards to allow a greater clustering of lots to conform to the other terms and conditions of this permit shall be reported to the Commission as an amendment to this permit.

15. COVENANTS, CONDITIONS, AND RESTRICTIONS, CONDITIONAL USE PERMIT, PARCEL MAP CONDITIONS AND FINAL TRACT MAPS.

Prior to issuance of the coastal development permit and prior to recordation of any CC&R's, parcel maps or Vesting Tentative Tract Maps associated with the approved project, said CC and R's and Vesting Tentative Tract and parcel maps shall be submitted to the Executive Director for review and approval. The Executive Director's review shall be for the purpose of insuring compliance with the standard and special conditions of this Coastal Development Permit. The deed restrictions noted in Condition 7 above shall be reiterated in the CC and R's. Any CC and R's, parcel map conditions or notes, conditional use permit conditions or tract map provisions which the Executive Director determines are not consistent with any of the conditions of this permit shall be modified to be consistent before recordation.

16. PROOF OF LEGAL ABILITY TO COMPLY WITH CONDITIONS

Prior to issuance of the coastal development permit, the applicants shall provide 1) proof of undivided legal interest in all the properties subject to this permit, or 2) proof of the applicant's ability to comply with all the terms and conditions of this coastal development permit. No land subject to this coastal development permit may be developed until and unless all terms and conditions relating to the project as a whole have been met and agreed to in writing by all parties with ownership interest.

17. PUBLIC RIGHTS.

By acceptance of this permit, the applicant acknowledges, on behalf of him/herself and his/her successors in interest, that issuance of the permit shall not constitute a waiver of any public rights which may exist on the property. The applicant shall also acknowledge that issuance of the permit and construction of the permitted development shall not be used or construed to interfere with any public prescriptive or public trust rights that may exist on the property.

18. ASSUMPTION OF RISK.

Prior to the issuance of the coastal development permit, the applicant shall execute and record a deed restriction, in a form and content acceptable to the Executive Director, which shall provide that: (a) the applicant understands that the site may be subject to extraordinary hazard from landslide, and earth movement and bluff failure, and (b) the applicant hereby waives any future claims of liability against the Commission or its successors in interest for damage from such hazards. The document shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens.

19. PUBLIC AVAILABILITY OF GOLF COURSE.

Prior to issuance of the permit, the landowners shall execute and record deed restriction, in a form and content acceptable to the Executive Director, that provides that the approved visitor serving Golf Course facilities including the clubhouse, will conform to the following requirements:

- A. PUBLIC FACILITY. The clubhouse and golf course will remain as commercial visitor serving facilities open to the general public and that any proposed change in the level of public use will require an amendment to this permit
- B. CLUBS PROHIBITED. No club or other arrangement that will restrict use of the golf course by the general public shall be permitted.
- C. CART PATHS. As noted above, the improved Golf cart paths shall be available for orderly public pedestrian use during non-golfing daylight hours.

(Staff note: the golf cart paths shared with pedestrian or bicycle trails are subject to the hours of use that apply to public trails and are open to the public from dawn to dusk.)

D. RESTROOMS. In lieu of construction of a separate public restroom facility, the applicant and its successors in interest shall agree to construct, maintain and to operate the comfort station in lot E tract 50667, the clubhouse restrooms, and lower level patio of the clubhouse as public facilities in conjunction with Ocean Trails Park (Halfway Point Park) and the public trail system.

E. OPERATIONS. The applicant and its successors in interest including but not limited to the golf course operator shall agree and covenant with the City of Rancho Palos Verdes to operate the parking lots at the end of Ocean Trails Drive (Street A), the restrooms in the vicinity of the west end of La Rotonda Drive, easily accessible from Lot E tract 50667 and the restrooms and patio area within the clubhouse as public facilities. The applicant, its agents, its lessees, and its successors in interest shall open these facilities to the public from dawn to dusk. No fee or validation shall be required for use of these facilities.

F. PUBLIC USE. The rest rooms and the lower level patio area shall be public spaces available to all members of the public without discrimination or requirement of purchase, imposition of dress codes or other rules not related to the safe operation of the facilities and shall not be locked during daylight hours.

G. SIGNS. The parking lots, restrooms and lower patio area shall be identified as open to the public by appropriate visible signs subject to the review and approval of the Executive Director. The signs shall be erected in areas accessible to the public, including Ocean Trails Drive (Street A), La Rotonda Drive, the parking lots themselves and Ocean Trails Park (Halfway Point Park.)

H. OPERATION OF THE OVERFLOW PARKING LOT. The applicant its successors in interest and or managers or lessees shall agree by covenant with the City of Rancho Palos Verdes to operate the overflow parking lot located adjacent to the maintenance yard on golf course Lot 38 VTTM 50667 from 8:00 a.m. to 5:00 p.m. on all summer and holiday weekends during all banquets and special events and whenever there are more than 125 cars in the westerly club house parking lot.

The applicant shall assure that all covenants and agreements with the City of Rancho Palos Verdes that address the operation of these public facilities, including the parking lots, the golf course, the clubhouse, banquet room, restrooms and other public facilities, are consistent with this permit. Pursuant to this requirement any agreements or covenants that delegate maintenance or operation of these public facilities to a third party

shall be consistent with all terms and conditions herein, and shall be provided to the Executive Director with evidence of such consistency prior to their execution.

The deed restriction shall be recorded free of prior liens which the Executive Director determines may affect the interest being conveyed, and free of any other encumbrances which may affect said interest. The deed restriction shall run with the land in favor of the People of the State of California, binding all successors and assigns, for the life of the facility approved in this permit. The recording document shall include legal descriptions of the golf course, the parking lots, the restroom and patio areas, Lot E tract 50667 and the approved golf course area. The area subject to the dedication shall be described in the offer in a manner that is legally adequate under California law to restrict land and that is of a level of precision that is acceptable to the Executive Director. Notwithstanding the foregoing, the depiction of the golf course shown on the attached Exhibits 26 and C of Amendment 6, shall be deemed to satisfy this requirement for the purpose of permit issuance. If utilized, the applicant shall replace or supplement the depiction with a legal description that is both legally proper and (in the judgment of the Executive Director) sufficiently precise, before the earlier to occur of either 1) the end of a period of five days from recordation of each final subdivision map for the project, or 2) commencement of construction on the project other than permitted golf course facilities (clubhouse, maintenance building, restrooms, etc.), roads, parks and overlooks, trails, grading, erosion control and installation and/or relocation of underground utilities.

20. STATE LANDS COMMISSION REVIEW.

Prior to the issuance of the coastal development permit, the applicant shall obtain a written determination from the State Lands Commission that:

- A. No State lands are involved in the development; or
- B. State lands are involved in the development, and all permits required by the State Lands Commission have been obtained; or
- C. State lands may be involved in the development, but pending a final determination of state lands involvement, an agreement has been made by the applicant with the State Lands Commission for the project to proceed without prejudice to the determination.
- D. Prior to issuance of permit amendment 13, the applicant shall provide an update to the determination required above with respect to the newly established shoreline and the areas inland of it. Any work occurring on state property must receive prior approval by the State Lands Commission

NOTE: SPECIAL CONDITIONS NOS. 21-25 IMPOSED BY COMMISSION ON FIRST AMENDMENT OF A-5-RPV-93-005.

21. LIGHTING AND SOUND.

Prior to issuance of the amended permit, the applicants shall submit revised plans to protect the bluff face and restoration areas from light and noise generated by the project. The plan shall, at a minimum, include a wall or landscaped berm at the west and southerly end of the club house parking lot, so that automobile and security lights do not shine onto the golf course or ravine areas. The applicant shall also submit a project lighting and sound plan for the Clubhouse and banquet facility.

A. Lighting. The lighting plan shall be subject to the review and approval of the Executive Director and shall include an analysis of the effects of the project's light, including security lights and the headlights of cars, on the bluff face and the West Bluff Preserve. Security lights shall be shielded so that light is directed to the roads and parking lots only, the golf course shall not be lighted, and the berm or wall required above shall be high enough to block all direct light from automobile headlights that might otherwise shine onto preserve areas.

B. Noise. In order to reduce traffic and facility noise, the applicants shall construct a berm or wall on the west side of the clubhouse parking lot. The berm or wall shall be high enough to block car-door and engine noises that might carry into the preserve from the clubhouse parking lot. The facility shall be sound-proofed, and night entertainment shall be limited so that noise levels in the West Bluff Preserve are not increased beyond that expected in residential areas.

22. RELATIONSHIP OF DEVELOPMENT APPROVED IN THIS AMENDMENT TO APPLICANTS' PHASING PROGRAM. DELETED.

23. SIGNAGE, FINAL PUBLIC AMENITY PLAN.

Prior to issuance of the amended permit the applicant shall prepare trail maps, and a public amenity plan incorporating all features required by the Commission's conditions. The plan shall include the overlooks, signs, railings, bridges, adequately sized public restrooms and other amenities proposed by the applicant and required by the Commission in this action. In the event of conflict or inconsistency between this and any other action, the Commission's conditions shall prevail. In addition to the signs described in the Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97, the applicant shall include directional and identification signs including signs identifying

restrooms, comfort stations and overlooks as public, identifying the public rights on the trails and parking lots, and providing information regarding habitat restoration efforts. Signs not explicitly permitted in this document shall require an amendment to this permit. As described in writing and verbally by the applicant, the 45 car parking lot shall include a sign that states "public recreation parking only, no golf parking". Signs at the 150 car "golf parking" lot, should state that golfer, restaurant, special event and public parking are all permitted. Pursuant to this requirement, detailed drawings showing the design, text and placement of individual signs, consistent with the preliminary Public Amenities Plan Trails and Signage Map of September 26, 1996 revised 1/20/97, shall be provided for the review and approval of the Executive Director on or before February 1, 1998.

24. SUBORDINATION OF ALL COVENANTS THAT AFFECT PUBLIC PARK OR PARKING AREAS.

All public parks and parking areas required by this permit shall be operated as indicated in the Commission's conditions of approval for Coastal Development Permit A-5-RPV-93-005 as amended in A-5-RPV-93-005A, A-5-RPV-93-005A2, A-5-RPV-93-005A3, A-5-RPV-93-005A4, A-5-RPV-93-005A5, and A-5-RPV-93-005A6. Pursuant to this requirement, any agreements or covenants that delegate maintenance or operation of these public facilities to a third party shall be consistent with all terms and conditions herein, and shall be provided to the Executive Director with evidence of such consistency prior to their execution.

25. RENUMBERING AND VESTING TENTATIVE TRACT MAP DESIGNATIONS.'

Prior to submittal of materials prepared to conform to special conditions 12, 14 and 15 of A-5-RPV-93-005, and condition 25 of this action, the Applicant shall prepare a comparison of the proposed final lot numbers, with the lot numbers shown in the Commission's actions. Numerical or letter designations of all lots necessary to conform to the Commission's conditions shall be provided for the review and approval of the Executive Director. Additional lots created in order to conform the Commission's conditions shall be shown on the revised tentative tract maps subject to the review and approval of the Executive Director. An immaterial permit amendment to reflect any needed renumbering may be processed as long as the acreage and geographic location of all fee dedications described in the Commission's conditions are unchanged, and the routes, sizes and locations of all trails are preserved.

26. REVISED SIGNAGE PLAN.

Prior to issuance of the permit amendment, the applicant shall provide a revised signage plan, subject to the review and approval of the Executive Director, that includes signs on Palos Verdes Drive clearly indicating that there is a trailhead and public parking within tract 50666. The sign may also indicate that the major public parking lot and parks are located at the clubhouse at Ocean Trails Drive.

27. TEMPORARY GOLF SCHOOL.

The applicant may operate a temporary golf school, open to the public, for a limited time period, not to exceed six months from the date of issuance of this permit amendment. The Executive Director may extend the time limit for good cause for up to four months, if the request is accompanied by a reasonable plan to restore public access and protect habitat.

28. SLOPE WINTERIZATION OF SLIDE C AUTHORIZED IN PERMIT AMENDMENT A13.

- A. Only the development noted in Section B below is authorized. Installation of pilings is not authorized in this amendment. The applicant may carry out slope repair, remedial grading and surface drainage controls for winter stabilization of slide C as described in the Converse letters of August 24 and 25 1999 and the Cotton letter of August 26 1999, except that:
- 1) Prior to issuance of permit amendment 13, the applicant shall submit final plans and calculations shall have been for review and approval by the Executive Director. These plans shall be in substantial conformance to the conceptual plans provided to the Commission in the Converse letters of Aug 24 and 25 of 1999 and the Cotton letter of Aug. 26 1999. Said final plans and calculations shall have been approved by the City of Rancho Palos Verdes Dept. of Public Works
 - 2) Prior to issuance of permit amendment 13, the applicant shall provide, for the review and approval of the Executive Director, detailed plans showing all grading and disturbance areas consistent with the conceptual plans provided to the Commission and the conditions of this permit. All such area shall be located in the disturbed area noted in Exhibit 17, the golf course or within 25 feet of the "limits of excavation" shown on Exhibit 7. No further disturbance except for the placement of approved surface drain conduits and a drain diversion berm in already disturbed area (shown in exhibit 17) shall occur in the Bluff face preserve (lot G VTTM 50666) or the gnatcatcher nesting area (lot F VTTM 50666). Grading or any other disturbance of the Bluff Top corridor habitat restoration area (lot K VTTM 50666 is limited to: (a) grading down the graben walls and access equipment within an area no more than 25 feet from the edge of the mapped "limits of repair excavation" in Exhibit 7 (b) filling cracks as shown in exhibit 8, (c) removing topsoil as shown in Exhibit 8b of this amendment 13, surface drainage controls and sandbagging. This permit amendment does not exempt the applicant from the review and approval of the Department of

Fish and Game and the US Fish and Wildlife Service and the terms and conditions of the executed HCP.

- 3) After approval of the areas that may be disturbed, the applicant shall install highly visible temporary fencing around all habitat areas within and adjacent to the job-site that are to be protected, and call for inspection from the Department of Fish and Game. A note identifying protected areas shall be placed on all grading plans.
- 4) All equipment access routes, and stockpile areas shall be located on the golf course, Halfway Point Park and the disturbed area of the slide block as shown in exhibit 17. All silt and runoff from the stockpiles and the disturbed graded areas of the site shall be controlled and confined within the site. Pursuant to this requirement, prior to issuance of permit amendment 13, the applicant shall provide erosion control plans for the review and approval of the Executive Director. Said plans shall be approved in advance by the City of Rancho Palos Verdes and conform to all conditions of this permit.
- 5) Prior to issuance of permit amendment 13, the applicant shall provide, for the review and approval of the Executive Director, plans identifying feasible measures to protect intertidal areas and scree slopes. The applicant shall utilize all feasible measures to reduce further siltation from the slide into the ocean. The plan shall be provided to the Commission in advance of submittal to the State Lands Commission and the Department of Fish and Game.
- 6) Prior to issuance of permit amendment 13, the applicant shall provide, for the review and approval of the Executive Director, the City Department of Public Works and the Department of Fish and Game, detailed specifications for the backfill of cracks and fissures, including materials. Fissures shall be flagged and sandbagged as required by the City Engineer to avoid percolation and/or hazards to employees and the public. The plans shall include monitoring and re-filing if necessary.
- 7) Prior to issuance of amendment 13, the applicant shall provide plans for the review and approval of the executive director showing Erosion and drainage control as required. Said plans shall have been approved by the Project Engineer and City of Rancho Palos Verdes. The plans shall include: (a) the construction of a berm on the north side of the graben to route drainage away from the graben, (b) grading within the graben to create positive drainage and prevent ponding, (c) temporary surface conduits to direct drainage to ocean

(d) sandbags around repaired cracks and fissures, (e) sandbags and silt fences as needed elsewhere on the site and in Halfway Point Park, (f) low berms and diversion structures in already disturbed areas as needed to keep water off the face of the slide (g) other safety and erosion control devices as long as such devices are located in the disturbed area noted as exhibit 17. Any grading for such erosion control shall be limited to the golf course, the areas within 25 feet of limits of repair in Exhibit 7, or already disturbed areas (Exhibit 17).

B. The following work is authorized.

- 1) Drilling and grading for geologic exploration within the already disturbed Bluff Top Corridor Area on slide C as shown in exhibit 17, within the golf course, and within 25 feet of the "limit of excavation" as shown on exhibit 7, provided that no drilling or grading removes established plants identified as critical habitat or as rare and endangered by the Department of Fish and Game. Installation of safety fencing and access control.
- 2) Fill fissures cracks and gullies on bluff top at Halfway Point, as necessary to avert potential block failure on face of cliff including the large block, identified as "Fissured Rock Mass" on Exhibit 6, on the seaward bluff adjacent to Halfway Point.
- 3) Fill approximately 76 mapped cracks and fissures on main slide block as shown on Exhibit 8 with rocks, material from the graben and a top capping of sand and bentonite, to form an impervious surface layer.
- 4) Salvage topsoil from slide block and stockpile for future habitat restoration; install erosion control at edges of work to prevent siltation into the ocean; and install temporary fences at edge of habitat in remaining lot K, F and G habitat areas at edge of work areas to prevent accident disturbance of the habitat.
- 5) Trim back oversteepened, unstable graben slopes up to a slope of 1.5:1 as shown on the "limits of repair" shown in Exhibit 7 and as conditioned above.
- 6) Install safety fencing
- 7) The following erosion control work: (a) the construction of a berm on the north side of the graben to route drainage away from the graben, (b) grading within the graben to create positive drainage and

prevent ponding, (c) temporary surface conduits to direct drainage to ocean (d) sandbags around repaired cracks and fissures, (e) sandbags and silt fences as needed elsewhere on the site and in Halfway Point Park, (f) low berms and diversion structures in already disturbed areas as needed to keep water off the face of the slide (g) other safety and erosion control devices as long as such devices are located in the disturbed area noted as exhibit 17. Any grading for such erosion control shall be limited to the golf course, the areas within 25 feet of limits of repair in Exhibit 7 or already disturbed areas (Exhibit 17).

29 ASSUMPTION OF RISK FOR WINTERIZATION OF SLIDE.

- A. By acceptance of this amended permit A-5-RPV-93-005A13, the applicant acknowledges and agrees (i) that the site may be subject to hazards from waves, storm waves, and flooding; landslide, bluff retreat, erosion, and earth movement; (ii) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.
- B. PRIOR TO ISSUANCE OF this amended permit A-5-RPV-93-005A13, the applicant shall execute and record a deed restriction, in a form and content acceptable to the Executive Director incorporating all of the above terms of this condition. The deed restriction shall include a legal description of all parcels subject to A-5-RPV-93-005A13. The deed restriction shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens that the Executive Director determines may affect the enforceability of the restriction. This deed restriction shall not be removed or changed without a Commission amendment to this coastal development permit.

APPENDIX B
A-5-RPV-93-005-A13
LIST OF PREVIOUS AMENDMENTS TO THE PROJECT

DESCRIPTION OF PROJECT ORIGINALLY APPROVED ON APRIL 15, 1993 (A-5-RPV-93-005): Resubdivision of 261.4 acre site and construction of an 83 lot residential subdivision including utilities and site improvements, 18 hole golf course with clubhouse and public open space, 6.4 acres of improved parks, and trails. Revised by applicant for de Novo action to include: A) Coastal Access and Public Amenities Plan dated February 5, 1993 providing additional beach trails; B) Habitat Enhancement Plan dated February 18, 1993 providing: 1) restriction of 20 acres of land in Shoreline Park adjacent to the project to the west to use as habitat preserve and restoration of ten of those acres; 2) purchase of conservation easement over 100 acre City owned parcel adjacent to the project on the north and located outside the Coastal Zone, and restoration of 20 of those acres to coastal sage scrub; and 3) supervision of public access to habitat areas.

DESCRIPTION OF FIRST AMENDMENT APPROVED JANUARY 12, 1995 (A-5-RPV-93-005-A1): Re-configure 4.9 acre Halfway Point Park to 5.1 acres; (2) relocate 27,000 sq. ft. clubhouse, 150 car parking lot and 45 car public parking lot and putting green from center of project site to area adjacent to Halfway Point Park; (3) add trail access on periphery of park; (4) reduce public parking at west end of La Rotonda Drive from 75 spaces to 50 spaces and add comfort station at La Rotonda Drive; (5) remove Mariposa Point trail and relocate sewer easement trail in West Bluff Preserve; (6) add 3,000 sq. ft. maintenance facility and 75 car overflow parking lot and water retention basin; (7) reduce number of market rate lots from 83 to 75; (8) add four low income units; (9) move vertical access "J road" northward; (10) relocate J road trails adjacent to golf course; (11) move bluff-to-La Rotonda bike trail connector east to tract 50667; (12) remove handicapped trail facility from San Pedro bluff-to-beach trail and construct handicapped access loop within bluff top park areas.

DESCRIPTION OF SECOND AMENDMENT APPROVED SEPTEMBER 1995 (A-5-RPV-93-005-A2): Second amendment will provide 3.7 additional acres as an easement for habitat conservation and public access purposes only, will provide an additional 0.2 acres for passive park habitat preserve purposes, and will permit 0.43 acres of grading within the Blufftop Activity Corridor. More specifically, the amendment includes the following:

- 1) Revise condition 1 to permit placement of fill and restoration of one 0.13 acre area adjacent to the 18th hole and one 0.3 acre area adjacent to the 18th tee within the Blufftop Activity Corridor (lot K) on tract 50666. Said fill slopes will be set back a minimum of 100 feet from the bluff edge line and shall be compacted less than 90% and then restored to coastal sage scrub habitat including Lemonade berry and Coast

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Goldenfields. The fill slope areas are shown on Exhibit A depicting setbacks for VTTM 50666 dated July 25, 1995, by RBF and Associates.

Pursuant to this change, the last paragraph of condition 1A would be revised to add the underlined language in the indicated location:

- 1.A. ...The lands described in 1.A(2), (3), and (5) (known as Portuguese Bend Overlook, Bluff Top Activity Corridor West (VTTM 50666) and Bluff Top Activity Corridor East (VTTM 50667)) shall not be graded except within the dedicated bicycle/pedestrian path and within two areas, one area of 0.3 acres adjacent to the 18th tee and a second area of 0.13 acres adjacent to the 18th hole. The total combined disturbed area adjacent to the 18th tee and the 18th hole shall not exceed 0.43 acres and shall be located as shown on Exhibit A depicting setbacks for VTTM 50666 prepared by RBF and dated July 25, 1995. The Blufftop Activity Corridors shall be revegetated, as required by the Department of Fish and Game and United States Fish and Wildlife Service as specified in the habitat restoration plan....

Pursuant to this change, condition 9A shall be amended to insert the underlined language in the location identified below:

- 9.A. **Grading limits.** No Grading, stockpiling or earth moving with heavy equipment shall occur within the dedicated open space areas (corridors) noted in condition 1 above, with the exception of Halfway Point Park, the bicycle trails and the 0.30 acre fill slope area adjacent to the 18th tee and the 0.13 acre fill slope area adjacent to the 18th hole. The 0.30 acre and the 0.13 acre fill slope areas which encroach within lot K shall be located as shown on Exhibit A depicting setbacks for VTTM 50666 dated July 25, 1995. Bluff edge pedestrian trails shall be constructed with hand-tools where environmental damage could occur.
- 2) **Change project description to incorporate three non-golf setback areas** as shown on the RBF maps last revised July 25, 1995 and as further described below. The additional setback easement areas shall be offered for dedication to the City of Rancho Palos Verdes solely for habitat conservation purposes except for those portions identified as trails in this permit at the same time all other dedications of Tract 50666 and 50667 are offered. The offers to dedicate shall (1) describe the additional setback areas in metes and bounds and (2) be recorded free and clear of prior liens and encumbrances which the Executive Director determines may affect said interest; (3) run with the land in favor of the People of the State of California, binding all successors and assigns and (4) be irrevocable for a period of 21 years from the date of recording.

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a) No less than 0.3 acres in lot 38 golf course as shown on the map of tract 50666 last revised by RBF on July 17, 1995. The 18th fairway and associated playable rough as depicted on Exhibit A depicting setbacks for VTTM 50666 dated July 25, 1995, and VTTM 50666 mentioned above shall be set back a minimum of 150 feet from the bluff edge except at its southwesterly end where it shall be set back a minimum of 125 feet from the bluff edge. The 18th green and associated playable rough shall be set back a minimum of 125 feet from the bluff edge. All tee boxes for the 18th hole shall be set back a minimum of 200 feet from the bluff edge, except that one tee box may be placed closer than 200 feet but not closer than 100 feet from the bluff edge. The subject 0.3 acre area located between the "Bluff Top Activity Corridor" on tract 50666 and the inner line of this above-described setback shall be shown as an easement for habitat conservation and public access purposes on the Final Map. The subject setback area may be graded during the construction of the golf course but will be restored to coastal sage scrub at the conclusion of grading.

b) No less than 1.9 acres in lot 38 golf course as shown on the map of tract 50666 last revised by RBF on July 17, 1995. The 17th fairway and green and associated playable rough, as depicted on the Exhibit A depicting setbacks for VTTM 50666 dated July 25, 1995, and VTTM 50666 mentioned above shall be set back a minimum of 200 feet from the bluff edge. All tee boxes for the 17th hole shall be set back a minimum of 200 feet from the bluff edge, except that one tee box may be placed closer than 200 feet but not closer than 100 feet from the bluff edge. The subject 1.9 acre area located between the "Bluff Top Activity Corridor" on tract 50666 (lot K) and the inner line of this above-described setback shall be shown as an easement for habitat conservation and public access purposes on the Final Map. The subject setback area may be graded during the construction of the golf course but will be restored to coastal sage scrub at the conclusion of grading.

c) No less than 1.5 acres in lot 39 golf course in tract 50667 as shown on the map of tract 50667 last revised by RBF on July 17, 1995. The 13th fairway and associated playable rough, as depicted on the Exhibit A depicting setbacks for VTTM 50667 dated July 25, 1995, and VTTM 50667 mentioned above shall be set back a minimum of 150 feet from the bluff edge. The 13th green and associated playable rough shall be set back a minimum of 175 feet from the bluff edge. All tee boxes for the 13th hole shall be set back a minimum of 200 feet from the bluff edge except that one tee box may be placed closer than 200 feet but not closer than 100 feet from the bluff edge. The subject 1.5 acre area located between the "Bluff Top Activity Corridor", lot K, on tract 50667 and the inner line of this above-described setback shall be shown as an easement for habitat conservation and

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public access purposes on the Final Map. The subject setback area may be graded during the construction of the golf course but will be restored to coastal sage scrub at the conclusion of grading.

- 3) The applicant also proposed to amend the project description to:

Increase the passive park habitat preserve shown as lot I tract 50666 by no less than 0.2 acres to assure that the outer boundary of all active play areas (meaning here and throughout this permit, tee boxes, fairways, playable rough and greens) of the golf course westerly of Halfway Point Park shall be set back a minimum of 50 feet from the bluff edge (meaning here and throughout this permit the bluff edge as shown on Tentative Tract maps no 50666 and 50667 as conditionally approved by the Commission.) As a result of the elimination/relocation of the most seaward tee previously planned adjacent to Halfway Point Park as depicted on the map submitted with the application, all tees will be located landward of the access to the Torrance trail at Halfway Point Park.

This tee is also identified as being moved in the Commission's findings and in the amendment application for A-5-RPV-93-005A. The 0.2 acre strip of land at the southwestern rim of Halfway Point Park that was previously located between the park and the bluff edge shall now be incorporated into the above mentioned habitat restoration area, except for those portions identified as trails elsewhere in this permit. This land will be indicated on the final vesting tentative tract map for tract 50666 prior to issuance of the coastal development permit, and recorded as part of the tract approval.

DESCRIPTION OF THIRD AMENDMENT APPROVED FEBRUARY 1996 (A-5-RPV-93-005-A3): Third amendment incorporates two additional parcels totaling approximately 8.5 acres to be used for golf course purposes only.

DESCRIPTION OF FOURTH AMENDMENT REQUEST (A-5-RPV-93-005-A4): Amendment request to revise previously approved project to: 1) relocate two lots of Tract No. 50667 to end of Street C; 2) revise boundaries of open space Lots A, B, C, H and G; 3) convert split level building pads of Tract No. 50667 to level pads; 4) revise golf course layout; 5) revise public access trail system to allow golf carts to use some trails, reroute a previously approved trail through the golf course, and in protected habitat areas allow seasonal closure of one trail and relocation of another trail as recommended by USFWS; 6) combine parallel trail easements into one easement for recording purposes; 7) construct a paved fire access road west of the Ocean Terrace condominiums; 8) revise the phasing requirements for the submittal of final grading and drainage plans; 9) change the location of permitted grading in the bluff top activity

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corridor for the 18th tee; and 10) incorporate the proposed changes into revised grading and site plans.

DESCRIPTION OF FIFTH AMENDMENT REQUEST. (A-5-RPV-93-005-A5) The Executive Director of the California Coastal Commission has reviewed a proposed amendment to the above referenced permit, which would result in the following change(s). Except as explicitly changed below, the project description, terms and conditions of the permit will not change from the Commission's prior action as described conditioned and required in the attached Exhibit 1 and in the Commission's files:

1. Change condition 3, Trails, so that street identification of Trail 3(A)(10,) Forrestal Canyon Trail, would read: **extending from street D E connecting to streets B C and C D** to reflect change in numbering on map for VTTM tract 50666.
2. Change Temporary Erosion control condition 10 (D) to allow for a reduction in distance between Bluff Top Activity Corridor and temporary construction fence when grading has been approved to extend closer than 20 feet from edge of corridor or within corridor:

D. The landscaping and erosion control plan shall identify the location of the temporary construction fence noted in the habitat enhancement plan. In addition to the fencing required in the Habitat Enhancement Plan, construction fencing shall be placed no less than 20 feet inland of the edge of Bluff Top Activity Corridors and dedicated Habitat Restoration Areas (Passive Parks) before the commencement of grading operations, except that in those two locations where grading has been approved within the Bluff Top Activity Corridor or where the toe of the approved grading is located less than twenty (20) feet landward of the Bluff Top Activity Corridor, the construction fence shall be placed at the seaward toe of the approved cut or fill slope. This does not authorize development within the Bluff Top Activity Corridor except the two incursions specifically permitted by the Commission in its second amendment to this permit. No drainage shall be directed over the bluff, no overspill, stockpiling, equipment storage, material storage or grading shall be conducted seaward of this fence. The fence shall include small animal escape holes if required by the Department of Fish and Game.

3. Change golf course condition 19, Deed Restriction 19 E to reflect the location of the La Rotonda restroom on the golf course lot instead of lot E, the parking lot, in the revised VTTM 50667

E. **OPERATIONS.** The applicant and its successors in interest including but not limited to the golf course operator shall agree and covenant with the City of Rancho Palos Verdes to operate the parking lots at the end of Street A, the restrooms in the vicinity of the west end of La Rotonda Drive, easily accessible from ~~on~~ lot E tract 50667 and the restrooms and patio area within the clubhouse as public facilities. The applicant, its agents, its lessees, and its successors in interest shall open these facilities

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to the public from dawn to dusk. No fee or validation shall be required for use of these facilities.

4. Change condition 22, regarding relationship of golf facilities to phasing program to reflect the location of the La Rotonda restroom on the golf course lot instead of lot E, the parking lot, in the revised VTTM 50667

C. **VTTM 50667 Parking Lot and Comfort Station.** Construction of the comfort station and the first 25 spaces of the parking lot *in the vicinity of the west end of La Rotonda Drive, easily accessible from* on lot E tract 50667 ~~at the end of La Rotonda Drive~~ shall begin immediately following rough grading for the golf course as noted in condition 4.B(1), as a second stage park. The remaining 25 spaces may be considered a Phase IV improvement. These second 25 spaces shall be completed before grading the residential lots on Tract 50666. These items shall be added to special condition 4.B.

5. Change Condition 7 **Deed Restrictions** language in the following way, to make clear that homeowners are responsible for fair and reasonable share of maintenance expenses whoever incurs them, but not required to personally conduct maintenance:

D. Notice of the land owners' obligations with respect to maintaining the parks and trails and habitat areas and fire breaks required in this permit, including but not limited to the obligation to contribute *each owner's fair and reasonable share of the costs of* the maintenance of the area, *the obligation to participate in special district(s) or associations organized to collect funds and carry out maintenance of the areas* and the right of the district/and or accepting agency to manage and maintain the area in accordance with the terms and conditions of this coastal development permit. *Nothing in this restriction imposes the obligation on a homeowner to personally work on the streets, parks or habitat areas.*

E. Notice of the land owners' obligations with respect to maintaining drainage systems, oil separators, Best Management Practices and other programs and devices required to protect habitat in ocean waters and tide pools, *including but not limited to the obligation to contribute each owner's fair and reasonable share of the costs of the maintenance of the drainage systems oil separators or other devices , the obligation to participate in special district(s) or associations organized to collect funds and carry out maintenance of the drainage systems oil separators or other devices and the right of the district/and or accepting agency to manage and maintain the drainage systems oil separators or other devices in accordance with the terms and conditions of this coastal development permit. Nothing in this restriction imposes the obligation on a homeowner to personally clean the streets or drainage devices.*

I. Notice that all covenants and agreements between the applicants and or successors in interest their agents and with the City or private maintenance companies or other entities that affect the streets, parking lots, parks habitat areas and trails required in this permit are subject to the terms and conditions of this permit. *Nothing in this restriction imposes the obligation on a homeowner to personally work on the streets*

APPENDIX B

A-5-RPV-93-005-A14 PREVIOUS PERMIT AMENDMENTS PAGE 7 OF 10

parks, habitat areas, or drainage systems. Pursuant to this requirement any agreements or covenants that delegate maintenance or operation of these public facilities to a third party shall be consistent with all terms and conditions herein, and shall be provided to the Executive Director with evidence of such consistency prior to their execution.

SUMMARY OF SIXTH AMENDMENT REQUEST (A-5-RPV-93-005A6) The applicant proposes to resolve an issue concerning the lot lying between the westerly portion of the golf course and the bluff face, identified as Lot I Tract 50666, regarding the setback of development, including grading, from the physical edge of the bluff, as identified in the field. The applicant also requests technical and substantive changes to the water quality conditions (condition 11), changes in the phasing of the project to move the boundary between the first and second phase of the project, substitution of a more recent Public Access, Trails and Amenity Plan for the 1993 plan referred to in the conditions and changes to the language of the open space and trail dedications to allow for necessary construction of trail and habitat improvements and well as for ground water monitoring, bluff face hydraugers, and installation and maintenance of drainage and utility connections. A detailed description of this request is found on page 4 of the revised findings for **A-5-RPV-93-005A6**).

SUMMARY OF SEVENTH AMENDMENT REQUEST. The applicant requested changes in condition eight addressing revegetation plans to require submittal of approved detailed revegetation plans to the Commission according to a schedule approved by Fish and Game and the United States Fish and Wildlife Service and to add the two stage process of recording to condition 19, referring to the golf course. Secondly, the golf course deed restriction, that imposed a number of requirements on the golf course, including that the golf course and the clubhouse be public, and access to public restrooms and some golf course trails, described the golf course as an "easement area" instead of "golf course". The applicant suggests substituting "to restrict land" for "a conveyance of interest in real property" and "the golf course", a wider term, for "easement area."

SUMMARY OF EIGHTH AMENDMENT REQUEST. The applicant proposed to change the project description and special conditions of the permit to provide an alternative method to satisfy the requirement that on-site run off be controlled and diverted to the ocean through pipes tunneled through the bluffs (condition 11). Storm water would be routed through the same canyons that now carry it if the construction drawings approved by the City engineer do not require more than 15% more hardscape than the preliminary plans submitted, and if these final plans and the necessary mitigation have been reviewed and approved by the Resources Agencies and the Corps. The applicant

APPENDIX B

A-5-RPV-93-005-A14 PREVIOUS PERMIT AMENDMENTS PAGE 8 OF 10

also proposes a revision to conditions 4 and 8 to allow the construction of the golf clubhouse during an earlier phase of the project, at the same time as the golf course.

SUMMARY OF NINTH AMENDMENT REQUEST. The applicant proposes to amend condition 3 (Trails) in order to relocate one of the project's five bluff top to beach trails from the west end of the project to the center of the project. The proposed amendment would eliminate the bluff-to-beach portion of Trail 3.A.14 (West Bluff Beach Access Trail), and create a new beach access trail, Trail 3.A.18, connecting the bluff top pedestrian trail to the beach near the center of the project. The new trail would arrive at the beach near the beach-level end of a second bluff to beach trail, the San Pedro trail. The proposed amendment would also amend conditions 1 and 3 to allow the accepting agency to install non-locking swing gates at the entrances of the steeper natural trails. The purpose of the gates would be to visually distinguish these trails from the improved trails on the bluff top and give the public warning of the difficulty and natural state of the bluff face trails. Finally, condition 4, relating to completion schedules, would be amended to include the new trail in the second stage of trail improvements. Approved with conditions.

SUMMARY OF TENTH AMENDMENT REQUEST.

The applicant proposes to: (A) Revise the timing requirements of conditions 1, 2, 3 and 19 in order to allow the applicant to begin construction of the golf course, its clubhouse and maintenance building, roads, parks, overlooks and trails this fall, before recording precise legal descriptions of the trails and open space lots that have already been dedicated by depiction. (B) Revise the timing requirements of condition 4(c) (Access, Trail and Park Improvements), so that (1) finish grading of the West End Tract 50666 and also (2) construction, but not occupancy, of no more than five model homes in that tract, may occur before completion and acceptance of the trails in Tract 50666. (C) Amend Condition 8, Habitat, to cross reference park installation deadlines with those imposed by the Commission in Condition 4. (D) Amend Condition 3 (Trails), in order to allow the West End Pedestrian Trail and the West End Bikeway to enter off Project Street C instead of Palos Verdes Drive South. (E) Move the Forrestal Canyon Overlook from the street at Paseo del Mar (originally called "J Road," now known as Ocean Trails Drive) to the head of Forrestal Canyon and Project Street C or D. (F) Revise language of Condition 10 to identify the location of the Invasive Plant List and assure that future tract managers and homeowners understand that they are bound by its limitations. The invasive plant list is a feature of the project's revegetation program. Approved with conditions.

APPENDIX B

A-5-RPV-93-005-A14 PREVIOUS PERMIT AMENDMENTS PAGE 9 OF 10

SUMMARY OF ELEVENTH AMENDMENT REQUEST:

Revise Ocean Trails (Halfway Point) Park boundary. Change Condition 4 to allow golf course to open before full completion of trails adjacent to Palos Verdes Drive south: 3 A(1), A(2), A(3), B(1), B(3) and B(4), and before completion of part of West End Jogging Trail, Trail 3A(5) that is routed on tract streets of Tract 50666. Change location of tract 50667 storm water outfall to La Rotonda Canyon and plant willows to offset vegetation impacts as required by Fish and Game.

SUMMARY OF TWELFTH AMENDMENT REQUEST

Allow the operation of a non-profit golf school on a portion of the golf course (hole 1-7, 9, 13-15) for a period not to exceed six months. The proposed golf school also includes the placement of a 40' by 24' temporary trailer for instruction purposes on the eastern public parking lot, and reservation of 45 public parking spaces on the western parking lot for beach goers. The applicant will designate a temporary fenced trail link to "Sunset Trail " beach access trail. To accomplish the proposed project, the applicant requests that the Commission modify special condition 4 to allow this limited temporary use. Condition 4 as now written would not permit the golf school because it currently requires that most trails and parks must be completed and opened to the public prior to opening the golf course for play.

SUMMARY OF THIRTEENTH AMENDMENT REQUEST

Applicant requested (1) to allow the clubhouse to open to the public before slide-damaged access improvements are replaced (requires an amendment to conditions 4 and 8); (2) provide alternative temporary access along the bluff top and temporary mini park; (3) allow golf storage and golfing support use of clubhouse basement resulting in 36,000 sq. ft finished floor area; (4) permanently authorize drilling and grading for geologic exploration previously approved by emergency permit, (5) continue temporary fencing around Halfway Point Park, parts of the beach, and trails A(6), A(11), A(12) and A(13) to prevent public access into hazardous areas, as previously authorized by emergency permit, (6) allow minor changes in timing of completion of one trail during construction, (7) authorize minor changes in grading and maintenance program authorized by recent City tract amendments; (8) fill cracks on cliff edge immediately seaward of Halfway Point Park, or dislodge an unstable block deemed a hazard to the public, (9) fill cracks within main landslide block in Bluff Top Corridor Park to prevent water percolation into the slide, (10) install 150-175 subterranean shear pins (caissons) in slide block located in bluff top corridor for landslide remediation and reconstruction of trail and habitat areas; (11) install temporary erosion control measures; (12) salvage

APPENDIX B

A-5-RPV-93-005-A14 PREVIOUS PERMIT AMENDMENTS PAGE 10 OF 10

topsoil and plant material from slide area, (13) cut back near-vertical slopes on graben walls for worker safety and (14) regrade bottom of graben and golf holes 13 and 18 for drainage control. Elements 1–7 are requested to respond to the effects that the landslide has had to existing trails and the general operation of the original project. Elements 8 – 14 are requested as steps to “winterize” the landslide mass and reduce the probability of further movement during the rainy season.

H:\rancho palos verdes\ocean trails\amendment 14\A14PREVAM.doc

Appendix C

Substantive File Documents

1. City of Rancho Palos Verdes, October 6, 1999, letter from Les Evans, City Manager, transmitting conceptual approval of shear pin design.
2. City of Rancho Palos Verdes, October 6, 1999, letter from Les Evans, City Manager, to Kenneth A. Zuckerman, concerning termination of city review process.
3. City of Rancho Palos Verdes, September 29, 1999, letter from Carolynn Petru, Assistant City Manager concerning status of city approval of shear pin design.
4. Cotton, Shires & Associates, Inc., City of Rancho Palos Verdes' consulting engineering geologists, Memorandum, **August 26, 1999**, to Dean Allison (City of Rancho Palos Verdes Public Works Director,) "Geologic Review Comments Regarding Repair Efforts Prior to the Rainy Season."
5. Cotton, Shires & Associates, Inc., Memorandum of **September 30, 1999**, to Dean Allison, Preliminary Geotechnical Review Comments Regarding Shear Pin Installation Winterization Plan Part B.
6. Cotton, Shires & Associates, Inc., Memorandum, **October 8, 1999**, to Les Evans, City Manager, "Winterization Effort Prior to the Rainy Season."
7. Cotton, Shires & Associates, Inc., Memorandum, **October 11, 1999** to Dean Allison, "Geotechnical Review Comments Regarding Converse Consultants; Response to Report Dated October 6, 1999: Winterization Plan Part B
8. Perry Ehlig, City of Rancho Palos Verdes' City Geologist, Memorandum of September 20, 1999, to Bill Lu, Converse, "Comments on Winterization Plan Parts A and B, Ocean Trails Golf Course.
9. Converse Consultants, Applicant's Geotechnical Consultant Memorandum August 9, 1999, "Update on Ocean Trails Landslide "C" Restoration and Adjacent Coastal Access Trails".
10. Converse Consultants; Letter, August 23, 1999, Prior recommendations for filling tension cracks, to Kenneth Zuckerman
11. Converse Consultants, August 25, 1999, Draft Report Preliminary Repair Design, for Landslide C.
12. Converse Consultants; Report, September 7, 1999, Clay Cap Investigation, Ocean Trails Golf Course
13. Converse Consultants, Report September 15, 1999, "Winterization Plan – Part A Sealing and Filling of Existing Cracks and Fissures" and "Winterization Plan – part B Installation of Large-Diameter Shear Pins."
14. Converse Consultants, Draft, "Post-1999 Large Diameter Borehole Logs, Landslide "C," no date."

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SUBSTANTIVE FILE DOCUMENTS
Page 2

15. Converse Consultants, Report September 20, 1999, "Monitoring Data, Landslide "C," Ocean Trails Golf Course, Subsurface Data (#2) and Laboratory Test Data (#4)".
16. Converse Consultants; Memorandum September 20, 1999, to Perry Ehlig, Response to Comments on Winterization Plan parts A and B.
17. Converse Consultants; Bill Lu, Memorandum September 27, 1999 Response to Perry Ehlig memo of Sept. 20, 1999
18. Converse Consultants, Bill Lu, Memorandum, September 29, 1999, Selected Case Histories of Using Large Diameter Piles to Stabilize Landslides.
19. Converse Consultants, Memorandum, October 6, 1999, Response to Perry Ehlig's September 24, 1999 memo
20. Converse Consultants, Memorandum October 6, 1999, Response to Preliminary Technical Review Comments Regarding Shear Pin Installation; Winterization Plan Part B, by Cotton Shires and Associates, dated September 30, 1999.
21. Converse Consultants, Memorandum, October 13, 1999, Geotechnical Considerations, Shear Pin design.
22. D. Bartlett Associates; landslide repair alternatives matrix.
23. Skelly Engineering, Report July 1999, "Impact of Recent Palos Verdes Landslide on Coastal Processes and Surfing Resources
24. Skelly Engineering, Letter October 7, 1999, "Preliminary plans for Restoration of Coastal Access and Surfing Resources, with Grading Plans."
25. ESCO, September 23, 1999, Blueprint: Winterization plan, Ocean Trails.
26. Dudek Associates, Michael Sweesy, October 13, 1999, report, "Revised Landslide Impact analysis for Landslide C, Ocean Trails"
27. A-5-RPV-93-005, as amended through A12 the California Native Plant Society
28. Native Plant Society, Sierra Club v. Coastal Commission, Los Angeles Superior Court No. BC 083026
29. Ocean Trails Residential and Golf Community, Coastal Sage Scrub and Sensitive Species Habitat Conservation Plan, Palos Verdes Land Holdings Company, Zuckerman Building Company, July, 1996
30. Ocean Trails Habitat Conservation Plan Implementing agreement, July, 1996
31. Gail C Kobetich, United States Fish and Wildlife Service, letter dated August 26, 1997 Ocean Trails West Bluff Preserve, authorizing Phase I Grading.
32. Dudek, Assoc: "Invasive Ornamental Plants" and "Weedy Plants to be Eradicated" 1997 A-5-RPV-93-005 compliance file

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SUBSTANTIVE FILE DOCUMENTS
Page 3

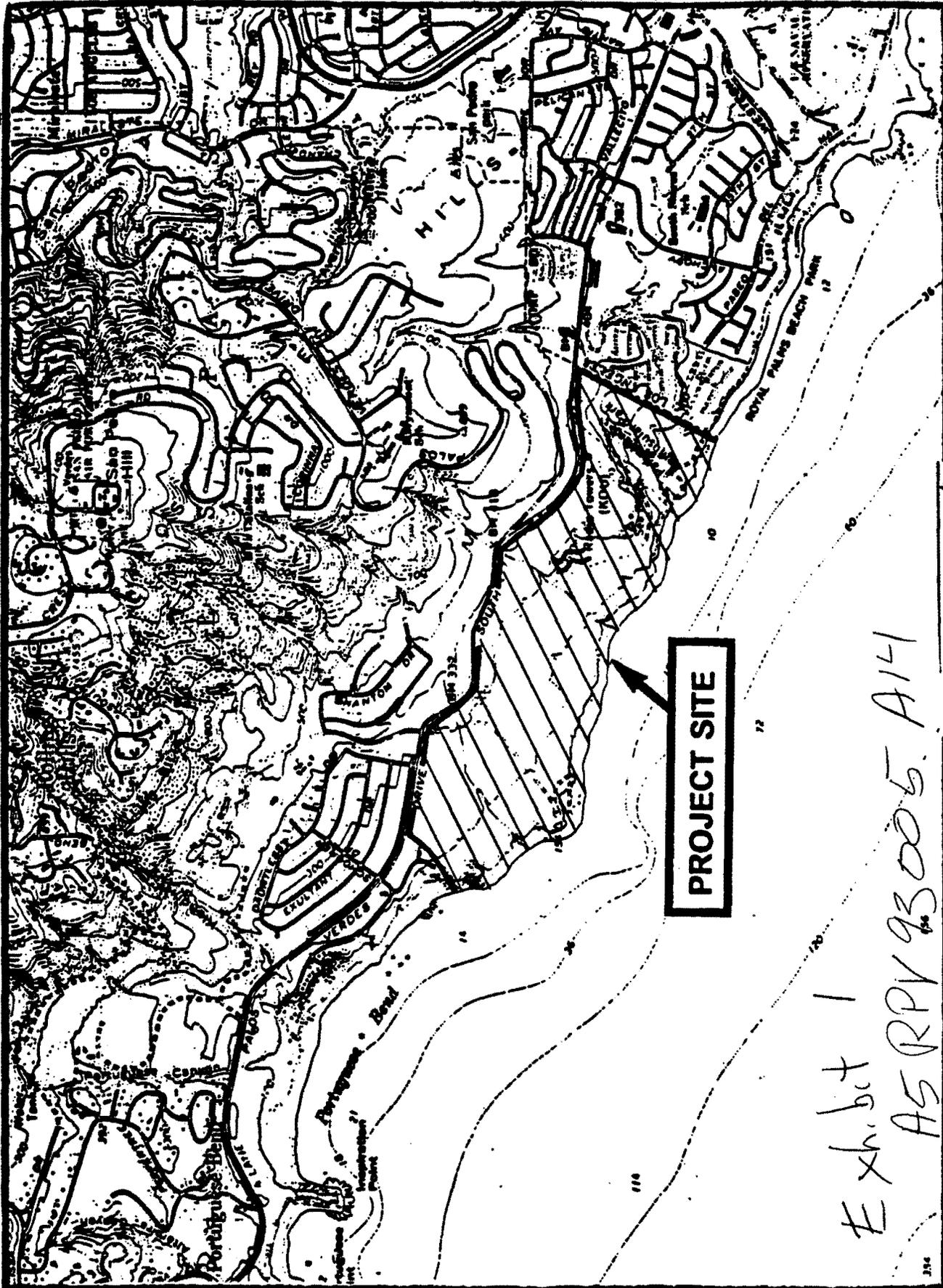
33. Dudek Associates, Biological Analysis of Modified Ocean Trails Drainage Plan, 11 March, 1998
34. City of Rancho Palos Verdes Coastal Specific Plan, certified LCP, 1983
35. Public Amenity and Trail Map, September 26, 1996 , revised, 1/20/97
36. Regional Water Quality Control Board, Los Angeles Region, *Proposed Amendment to Rancho Palos Verdes project (Ocean Trails Development, 97-00156-AOA) Unnamed Drainages to the Pacific Ocean, City of Rancho Palos Verdes, Los Angeles County (File No. 97-012) April 15, 1999.*
37. Cotton Shires and Associates, Geotechnical Review of Storm Drain study plans dated 2/5/98 by Engineering Services Corporation, Ocean Trails Development, Rancho Palos Verdes, Tract 50666 and 50667, February 13, 1998
38. Glenn Lukos Associate, (RWQCB) 401 Water quality amendment to condition certification file number 92-012 for impacts to United States Army Corps of Engineers Jurisdiction at two unnamed drainages located in Los Angeles County California
39. United States Fish and Wildlife Service, letter April 16, 1998, Ocean Trails project, Rancho Palos Verdes, California 1-6-98-HC-197)
40. California Department of Fish and Game, letter of June 1, 1998, amendment to 1603 agent allowing applicant to redirect water to Forrestal Draw and La Rotonda Canyon. Limitation on dissipaters and rip rap.
41. County of Los Angeles, Department of Public Works, March 25, 1999, *Standard Stormwater Mitigation Plans (SUSMPs)*, second draft.
42. City of Rancho Palos Verdes, Grading Improvement Agreement of January 8, 1998, and first amendment as of May 1, 1998; attached bonding agreements.
43. Ocean Trails project, progress report on habitat restoration and public access trailways and parks, April 20, 1998
44. Project proposed and final EIR
45. United States Army Corps of Engineers, Rancho Palos Verdes and Rolling Hills California (Los Angeles County) Reconnaissance study, Final Revised report, May, 1992
46. Converse Associate: Geotechnical Reports and responses to comments, South Shores parcels 1 and 1A, Area 7, various, dated August 2, 1991, November 13, 1991, and June 14, 1989
47. Leighton Associates: Geotechnical reports regarding easterly portion of property "Hon property" and "Hotel Development", Golf Course, Areas 7 and 8 and responses to comments, 1/22/91 and various dates.

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SUBSTANTIVE FILE DOCUMENTS
Page 4

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SOCIATES
Exhibit 3



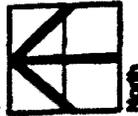
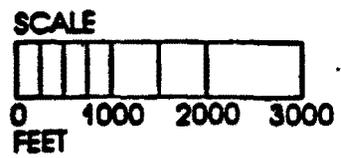
A-5-RPV-93-005 A14
Exhibit 3 Regional Map
Showing Site

Exhibit 1
A5 RPV 93005 A14

RANCHO PALOS VERDES

Vicinity Map

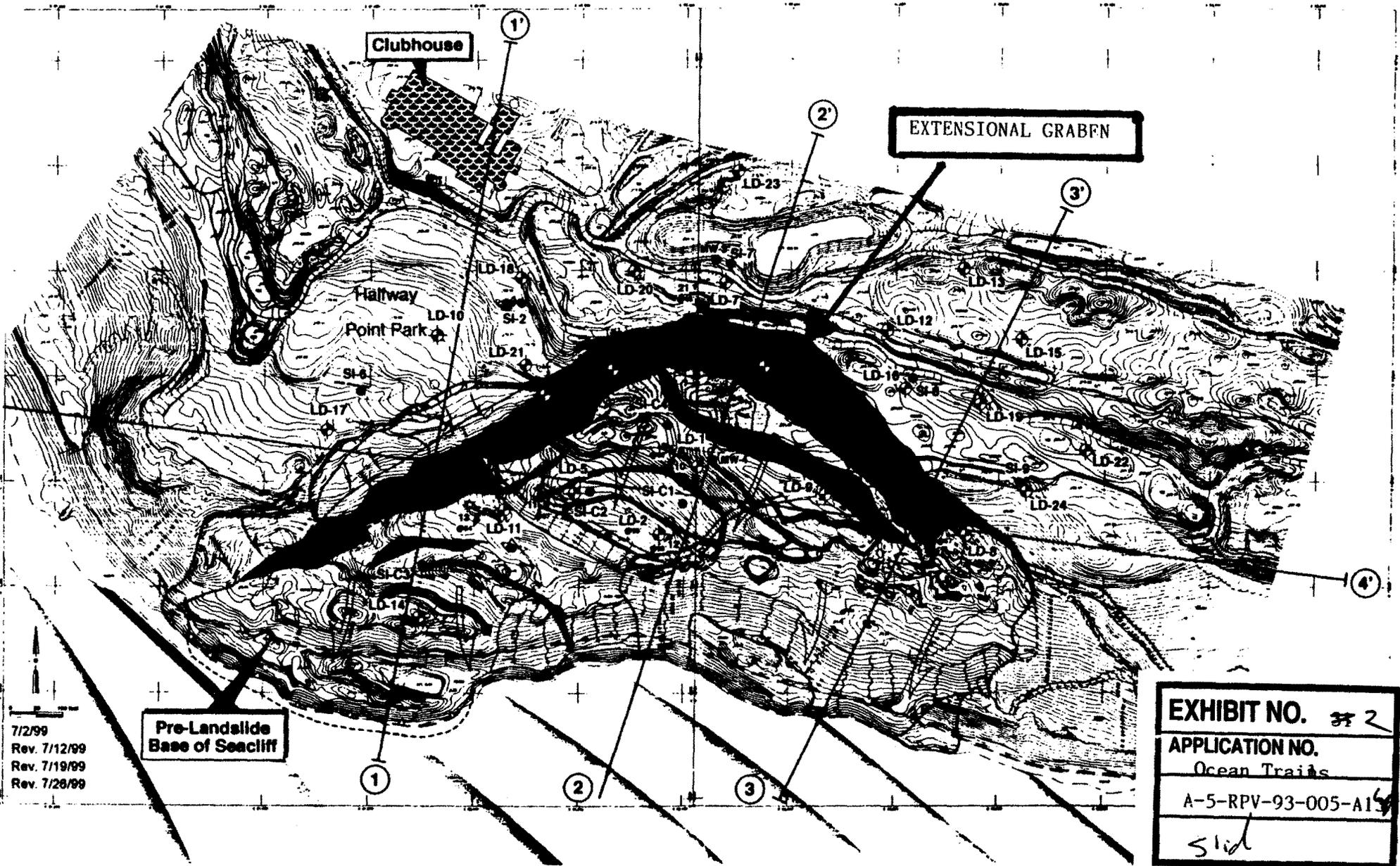
*Adapted from U.S.G.S. Quadrangle San Pedro,



RAFT

PRELIMINARY LANDSLIDE MAP SLIDE C - OCEAN TRAILS

DRAFT



7/2/99
Rev. 7/12/99
Rev. 7/19/99
Rev. 7/28/99

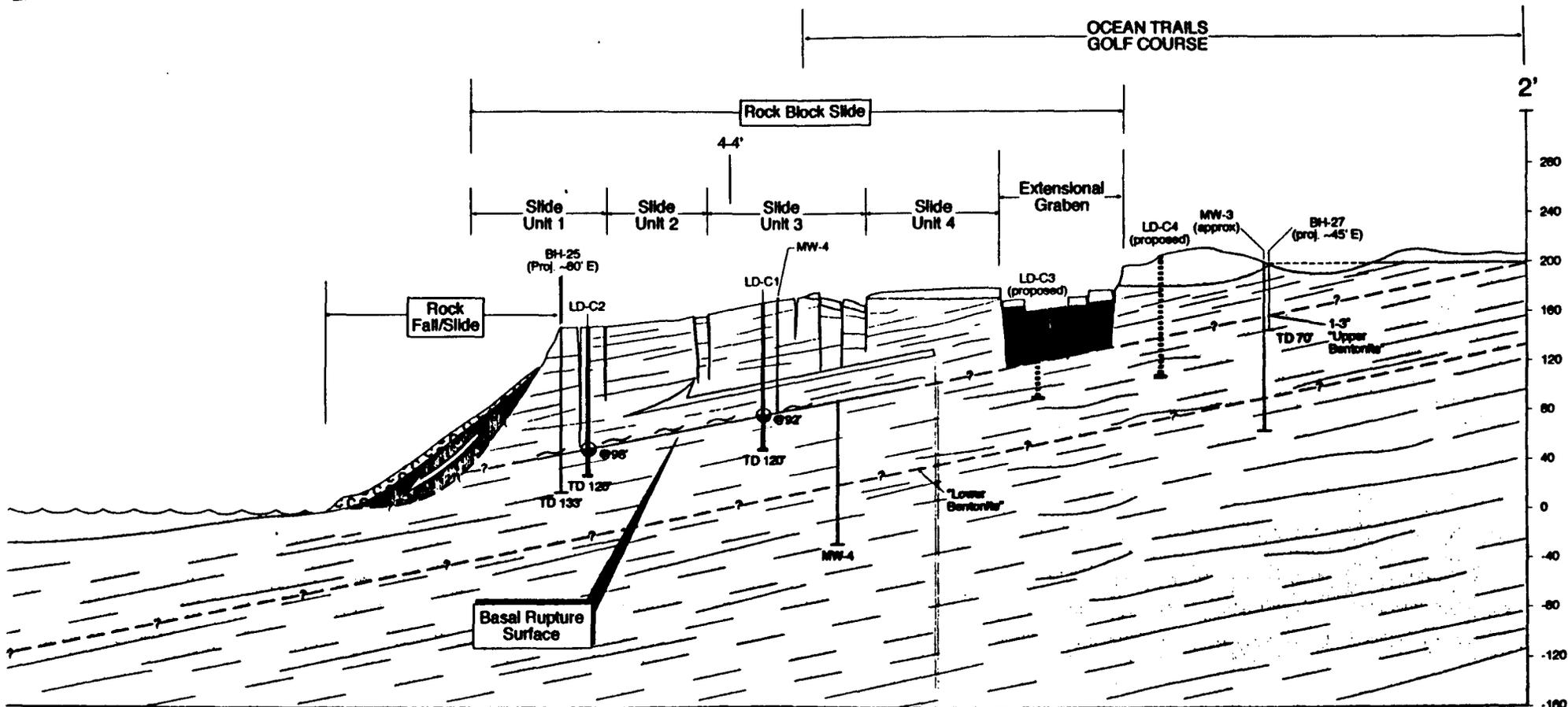
Pre-Landslide
Base of Seacliff

EXHIBIT NO. 2
APPLICATION NO. Ocean Trails
A-5-RPV-93-005-A15
<i>slid</i>

PRELIMINARY GEOLOGIC CROSS SECTION 2-2' SLIDE C / OCEAN TRAILS

DRAFT

DRAFT



A 5 RPV 93 005 A 1 1/2
cross section of slide
Exhibit 2

7/2/99
Revised 7/8/99

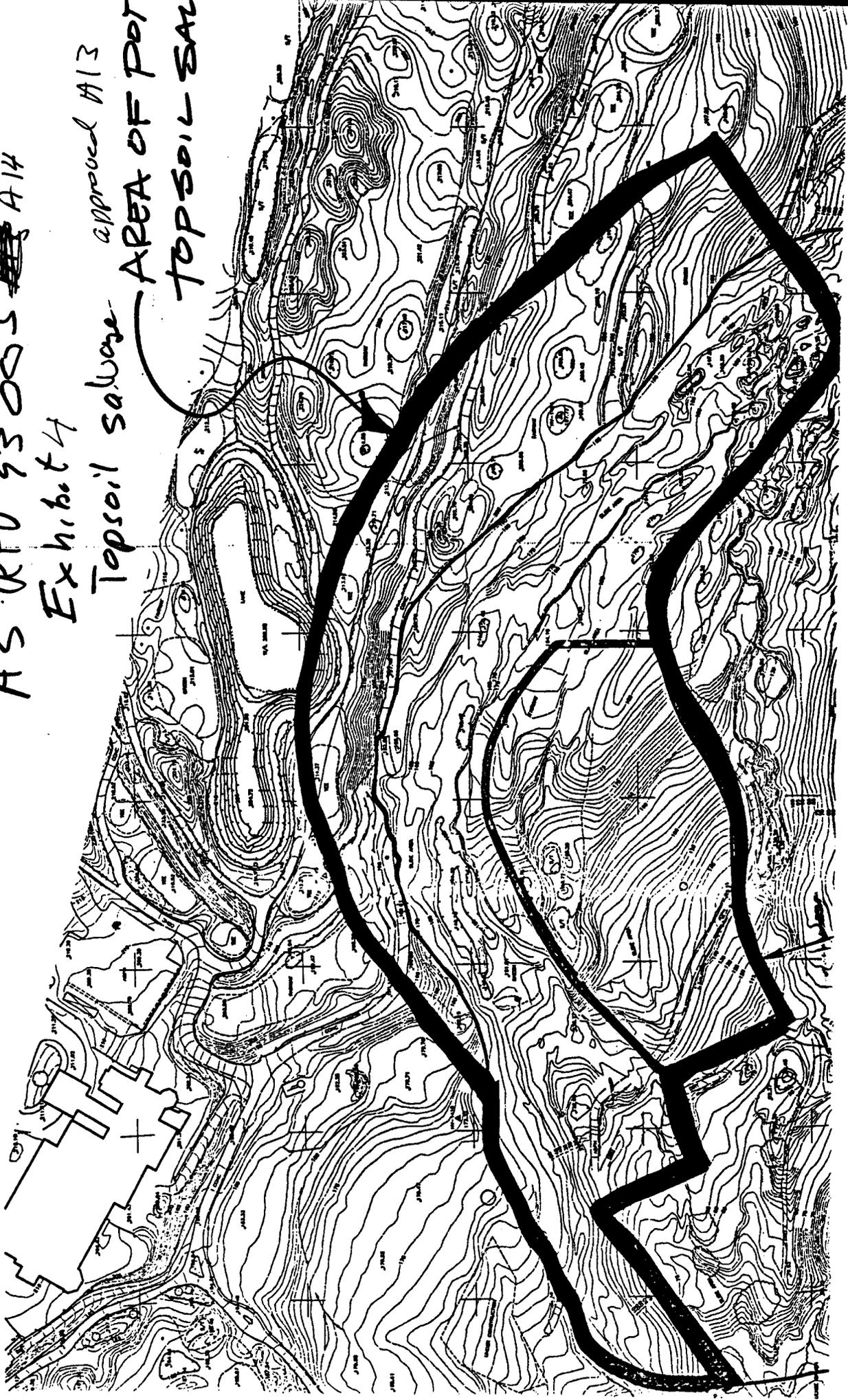
NO VEGETATION WILL BE REMOVED
APPROVAL OF THE PROJECT
AS RPV 93005-~~13~~ A14

Exhibit 4

Topsoil salvage

approved A13

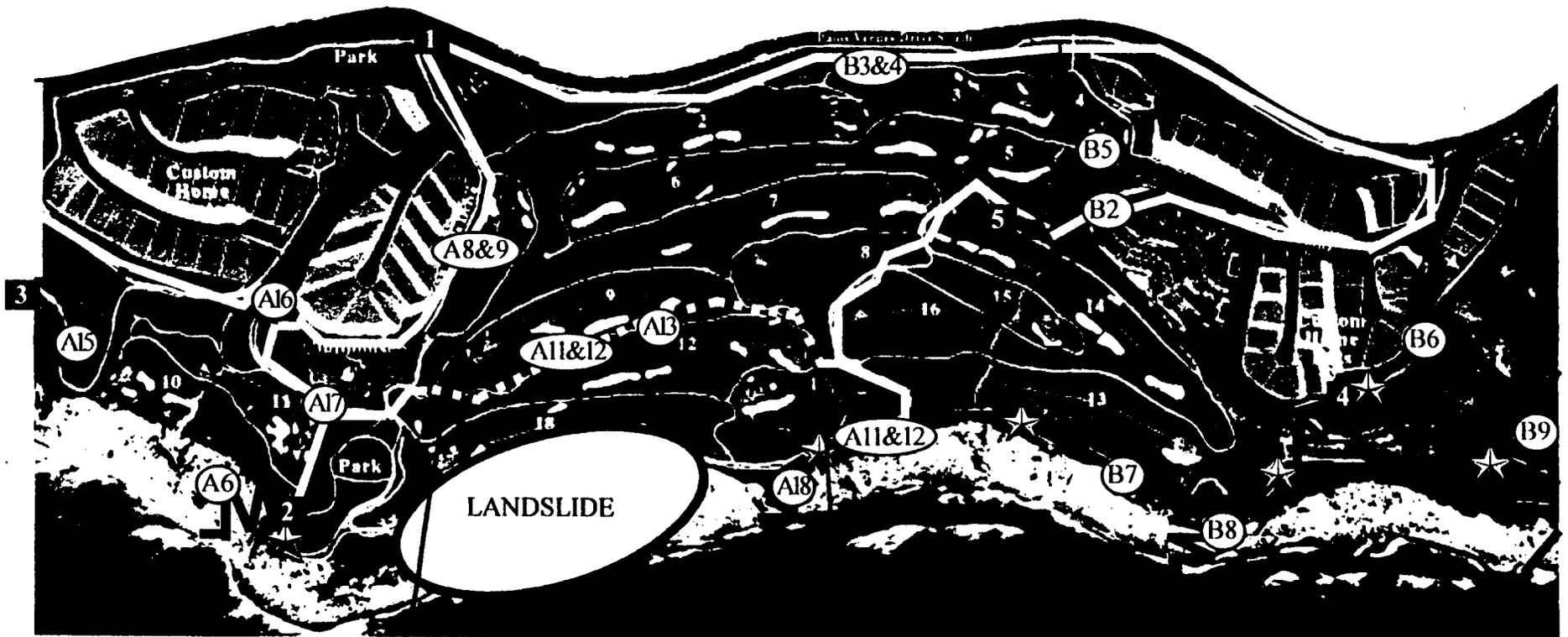
AREA OF POTENTIAL
TOPSOIL SALVAGE





OCEAN TRAILS

PUBLIC ACCESS 9/1/99



- ★ VIEW OVERLOOKS
- BIKEWAY/TRAILS
- PEDESTRIAN TRAILS

- 1 VISTA CATALINA PARK
- 2 OCEAN TRAILS MINIPARK
- 3 PORTUGUESE BEND OVERLOOK

- 4 BUNKER OVERLOOK
- 5 LA ROTONDA PARKING LOT PICNIC AREA
- (A2) CCC TRAIL BY CONDITION NUMBER

A 5 RPV 93005 A14 Exhibit + 5
 proposed trails (A19 temporarily substitute for 17)



October 6, 1999

RECEIVED
OCT 6 1999

CALIFORNIA
COASTAL COMMISSION

Ms. Pam Emerson
Los Angeles Area Supervisor
California Coastal Commission
200 Oceangate, 10th Floor
Long Beach, CA 90802-4302

Dear Ms. Emerson,

Please find a proposed project description for material amendment 14 to the Ocean Trails Coastal Permit A-5-RPV-93-005-**A14**

Allow the installation of up to 200 shear pins in the landslide to stabilize the main block for safety so that the winterization work can proceed.

The desired sequence of work within the landslide is as follows:

- I. Winterization
 - A. Soil and plant salvage, crack filling
 - B. Installation of Shear Pins
 - C. Laying back graben slopes and improving drainage

- II. Repair
 - A. Grading of graben and building of engineered buttress
 - B. Surf Repair
 - C. Installation of improvements and revegetation

We apologize for bringing the components of this project to you slightly out of sequence. Our presentation at the September Coastal Commission meeting covered the entire proposal so that you could review the components in context. At that meeting you approved parts A and C of the winterization plan. However, at that time the City's reviewing geologists still had questions about the shear pin proposal.

A5 RPV 93005A,
Exhibit 7
Applicant request #1
P1

Now the RPV City Council has approved the shear pin concept as an emergency item at their meeting on October 5, 1999. Detailed plans for the shear pins will undergo additional review by the City geologists, the Peer Review panel and the City Council to fine-tune the components of the proposal.

The potential effect of the winter rains on the landslide is a real threat, one we take very seriously. Our geologists are on record that no work should be done in the graben before at least a portion of the shear pins are in place to provide increased stability. The potential consequence of no shear pins is the disastrous occurrence of large landslide movements in the winter rainy season. Again we emphasize that the shear pins will only increase the landslide stability and will not exacerbate its instability.

We have been diligently working with every other reviewing agency to provide them with the information they need to review this project adequately, and at this point we see no significant unresolved issues with any of them.

Enclosed you will also find a copy of the most recent report from our Coastal Engineer on the proposed surf repair. Since the September meeting where we received encouragement to proceed with this effort we have made a great deal of progress. The Project geotechnical experts have met with the Coastal Engineer and representatives of the local surfing community to determine the scope of work necessary. Based on preliminary discussions from the City's geologist, additional geotechnical investigations are underway so that his concerns can be addressed. We also held a meeting attended by approximately 20 local surfers where we showed the Power Point presentation you saw and had a presentation by our Coastal Engineer. Several additional issues were raised by the group which will be addressed in the complete surf repair report.

The proposal for surf repair will be complete and ready to present to the Commission when we present the buttress, park repair, and reinstallation of improvements, since they are dependent on each other with respect to many aspects of the engineering. We will bring this package to the Commission after we have approval from the City. It should be noted, however, that if we cannot proceed with the winterization, our geologists believe that there is a significant possibility of renewed movement on the slide, which would further damage the surf location, perhaps beyond repair.

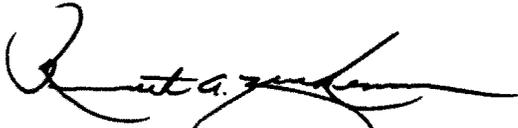
Enclosed with this letter is an Alternatives Analysis prepared by Dave Bartlett, a consultant who has a great deal of experience working with the Commission. At the meeting the desirability of this type of analysis was discussed so we are providing it to you.

A 5 RPV 93085A14
Exh. b. t 7
p2

We have nothing but compliments for your staff. They have been thorough, thoughtful, and tough but fair. We look forward to continuing to work productively with them and the Commission.

We appreciate your help with these revisions. If you have any questions, feel free to call Barbara Dye at my office (265-5525).

Sincerely,



Kenneth A. Zuskerman, CEO

cc Greg Pfof, City of Rancho Palos Verdes
Mike Sweesy, Dudek & Associates
Mark Schluter, Converse Consultants
Mary Beth Woulfe, U.S. Fish & Wildlife Service
Bill Tippetts, Ca. Department of Fish & Game

A5RPV 93005
A14
Exhibit 7
P3



October 6, 1999

Ms. Pam Emerson
Los Angeles Area Supervisor
California Coastal Commission
200 Oceangate, 10th Floor
Long Beach, CA 90802-4302

Dear Ms. Emerson,

Please find language a possible addition to our request for material amendment 14 to the Ocean Trails Coastal Permit A-5-RPV-93-005:

Allow the installation of a siltation basin at the west end of the landslide graben after cracks in that area are filled, as shown on the enclosed portion of the Erosion Control Plan.

The area in which this siltation basin would be placed has a number of large fissures that must be filled. Placing the basin in this area would therefore not do any additional environmental damage. This is a critical element for the drainage improvements since it is at the low point of the graben, and a siltation basin is essential erosion control measure to prevent sediment runoff into the ocean.

We appreciate your help with these revisions. If you have any questions, feel free to call Barbara Dye at my office (265-5525).

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth A. Zuckerman". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Kenneth A. Zuckerman, CEO

cc Greg Pfost, City of Rancho Palos Verdes
Mike Sweesy, Dudek & Associates
Mark Schluter, Converse Consultants
Mary Beth Woulfe, U.S. Fish & Wildlife Service
Bill Tippets, Ca. Department of Fish & Game

Exhibit 8
A 5 RPV-93005
A14
app. request



October 1, 1999

Mr. Les Evans
City Manager
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, California 90275-5391

Dear Mr. Evans,

We would like to express our serious concerns regarding the status of City review of the proposals to winterize the landslide on our Project. The Project geologists, Converse Consultants, have expressed to us and to the City in the strongest terms the importance of completing a significant portion of the winterization work before the winter rains.

The City's reviewing geologists, Cotton Shires & Associates, in their 8/26/99 letter to Dean Allison, said "Since rainfall is likely to exacerbate potential hazards, it is important that the following actions be taken prior to the rainy season [establishment of positive drainage, restriction of access, laying back the slopes, infilling of fissures, mitigation of potential blockfall or debris slides hazards, and delineation of areas to be impacted].

As the City well knows, this project must obtain numerous approvals before any work can commence. Normal procedure is for a project to obtain conceptual approval for the methods proposed for work of this type based on a thorough and complete analysis of the work proposed. Detailed plans follow, and are modified or approved based on their own merits by experts retained by the City or other reviewing body. No work begins until the appropriate plans have been approved.

Project staff and Converse geologists have been working diligently to provide data on the repair for conceptual approval by the City's reviewing geologists. Material submitted by Converse is enumerated in the enclosed table.

One Ocean Trails Drive - Rancho Palos Verdes, California 90275
Phone: (310) 266-6626 Fax: (310) 266-6622 Web site: www.oceantrails.com E-mail: golf@oceantrails.com

A5 RPV 93005
A14
Exhibit 9 p1

The Project paid for hundreds of thousands of dollars of investigatory work by your reviewing geologists at Cotton Shires & Associates, so that they would be in a position to expedite the review process. However, we are now facing a situation where we may not be allowed to begin the winterization effort until well into the rainy season.

First, the City has refused to share with us the name of the consultant who has been hired to begin the CEQA review process. It has now been eleven days since the two responses to the RFP were received by the City. We have lost at least a week, plus whatever additional time will elapse before we are allowed to meet with this consultant. The time-line for that review remains unknown, although we have multiple consultants working to address issues that may be raised by the process.

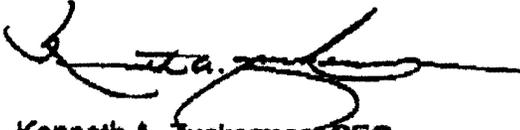
Second, and even more important, the City has failed to respond to the Converse proposal regarding the installation of shear pins within the slide block. As you are aware, the deadline for submitting a request to be on the agenda of the California Coastal Commission for the November meeting is October 4. The Commission requires that any proposal have at least conceptual approval by the local jurisdiction before it can be brought before the Commission. Converse Consultants have repeatedly stated in writing that for safety reasons at least some of the shear pins must be installed before any drainage improvements or other work can be started in the graben area. Verbal consultations with Cotton Shires indicate that they consider that the shear pins may not be necessary, but that they would do no harm. We would like to emphasize that the shear pins are a conservative approach to the repair strategy, and critical to the winterization effort.

We understand that a response from Cotton Shires to the shear pins proposal was sent to the City on 9/29/99. While Converse staff had cleared time to respond immediately to any concerns raised by that letter, we have yet to see a copy. According to the letter from Carolyn Petru to the Coastal Commission, the City is now refusing to consider the shear pins before at best the October 19 Council meeting. This means that we cannot possibly make the Coastal deadline, and postpones Coastal consideration of the shear pins until the December meeting. This of course means that at best the pins could be installed in late December, and drainage improvements could begin possibly in mid-January, potentially well into the rainy season.

In conclusion, we believe that the winterization effort is critical to protecting public safety and preventing further movement on the landslide. We unequivocally believe that it must be started soon. We respectfully request that the City cooperate with us in this effort to deal responsibly with the landslide and its potential reactivation in the winter rains.

A 5 RPU 93005
Exhibit 9
p2

Sincerely,



Kenneth A. Zuckerman, CEO
Ocean Trails, L.P.

Cc Pam Emerson, CCC
Mary Beth Woulfe, USFWS
Bill Tippets, CADFG

A5 RPV-93-005A14
Exhibit 9 p3



RANCHO PALOS VERDES

OFFICE OF THE CITY MANAGER

South Coast Region

OCT 7 1999

CALIFORNIA
COASTAL COMMISSION

October 6, 1999 (also faxed 10/6/99)

Pam Emerson
Supervisor, Regulation & Planning
California Coastal Commission
200 Oceangate, Tenth Floor
Long Beach, CA 90802-4302

Re: Ocean Trails Winterization Plans

Dear Ms. Emerson:

As a supplement to our letters of August 26, 1999 and September 29, 1999 we are now able to comment on the shear pin component of the proposed winterization plan.

Our geotechnical consultant, Cotton Shires & Associates, has performed a preliminary review of the shear pin approach and has advised us that installation of shear pins is a workable solution to mechanically stabilize the slide on a temporary basis without doing major grading. On this advice, the City Council of the City of Rancho Palos Verdes, at their meeting of October 5, 1999, conceptually approved the shear pin component (Component B), subject to review of design details, including diameter and spacing of pins, depth of penetration, and specific locations of the pins.

We hope this information is adequate for the inclusion of the Ocean Trails winterization Plan on the Commission's November agenda.

Sincerely,

Les Evans
City Manager

A 5 RPV 93-605 B14
Exhibit 10

cc: City Council
Ken Zuckerman



RANCHO PALOS VERDES

RECEIVED
OCT 1 1999

CALIFORNIA
COASTAL COMMISSION

September 29, 1999

Pam Emerson
California Coastal Commission
Los Angeles County Region
200 Oceangate, 10th Floor, Suite 1000
Long Beach, California 90802-4302

Subject: Ocean Trails Winterization Plan

Dear Ms. Emerson:

This is in response to a verbal request you made to me on September 24, 1999 regarding the Ocean Trails project. You requested a letter by October 1, 1999 stating the City's position regarding the winterization and final repair of the June 2, 1999 landslide.

It is the City's understanding that the winterization program proposed by Ocean Trails includes three major components:

- A. Filling open cracks and stockpiling topsoil.
- B. Installing shear pins at the base of the landslide mass.
- C. Cutting back the graben slope and installing temporary drainage and erosion control measures.

On August 26, 1999, Dean Allison, Director of Public Works, sent you a letter stating that the City had approved in concept components A and C described above (also see attached letter). Mr. Allison also indicated that the City would need to review the details of these activities before final implementation of the plan. However, the City has not approved the shear pins (component B) as part of the winterization program. The City's geotechnical consultant is currently reviewing the shear pins plan. It is unclear whether the shear pins are more appropriately considered as part of the long-term repair of the landslide or part of the winterization project. We are waiting for a final determination on this point and the acceptability of the shear pins from our geotechnical consultant and peer review panel, which we expect in early October. When we receive that response we will advise you immediately.

ASRPV 93005 A14
Exh. b. t 11

Pam Emerson: Ocean Trails Winterization Plan
September 29, 1999

The final repair, which the City understands will include a graben buttress fill, surf zone repair and replacement of all improvements, will also require review by the City's geotechnical consultant and peer review panel. Since the completed plans for this phase of the project have not yet been submitted to the City, it seems very unlikely that the geotechnical review can be completed prior to the next Coastal Commission in November. In addition, the final repair will require environmental review pursuant to the California Environmental Quality Act that may require several months to complete. The City is currently in the process of hiring a consultant to complete the environmental review of this portion of the project. The City will not make any determinations regarding the appropriateness or feasibility of the final repair plan until the geotechnical and environmental studies have been completed.

If you have any questions, please feel free to call me at (310) 377-0360.

Sincerely,

Carolynn Petru

Carolynn Petru
Assistant City Manger

cc: City Council
Les Evans, City Manger
Joel Rojas, Director of Planning, Building and Code Enforcement
Dean Allison, Director of Public Works
Carol Lynch, City Attorney
Kenneth Zuckerman, Ocean Trails

A5 RPR 93 065-1A14
Exhibit 11
P2



Converse Consultants

Over 50 Years of Dedication in Geotechnical Engineering and Environmental Sciences

MEMORANDUM

Date: October 13, 1999

To: Ms. Leslie Ewing, California Coastal Commission
From: Bill Lu, Chief Engineer, Converse Consultants *BL*
cc: Ms. Pam Emerson, California Coastal Commission
Ms. Barbara Dye, Ocean Trails, L. P.

RECEIVED
OCT 13 1999

CALIFORNIA
COASTAL COMMISSION

Subject: **GEOTECHNICAL CONSIDERATIONS - SHEAR PIN DESIGN**
Ocean Trails Golf Course, Rancho Palos Verdes, California

References:

Responses to Preliminary Geotechnical Review Comments Regarding Shear Pin Installation, Winterization Plan – Part B (report), by Converse Consultants, dated October 6, 1999;

Winterization Plan – Part B, Installation of Large-Diameter Shear Pins, Landslide C, Ocean Trails Golf Course, Rancho Palos Verdes, California (report), by Converse Consultants, dated September 15, 1999; and

Preliminary Geotechnical Review Comments Regarding Proposed Shear Pin Installation, Winterization Plan – Part B, by Cotton-Shires & Associates, Inc. (CSA), dated September 30, 1999.

Dear Ms. Ewing:

General

Based on our discussion with Ms. Pam Emerson on October 12, 1999, we understand that you may have the following concerns regarding our geotechnical design for the shear pins:

1. The eight factors that influence shear pin design, especially the No. 3 to No. 5 factors, listed on page 2 of the CSA review letter are not adequately considered in the shear pin design.
2. There potentially exist other weaker planes below the basal sliding plane (upper bentonite layer), as noted in Dr. Ehlig's September 20, 1999 memo or as indirectly indicated by the presence of fractured and/or sheared subsurface materials described in Table 1 in the referenced responses.

*A SRPV 93005
A14
Exhibit 12
P1*

This letter is to provide an additional description of shear pin design and, hopefully, alleviate the above concerns.

Factors that Influence Shear Pin Design

As detailed in the referenced September 15, 1999 shear pin design report (*Part B of Winterization Plan*) and the referenced responses, all influencing factors listed in CSA's review letter, except the factor under the heading of *Construction Procedures*, were thoroughly considered in our shear pin design. Construction procedures and specifications are being prepared to address all recommendation items regarding same in CSA's review letter. To avoid reiterating, references to our September 15, 1999 report and the referenced responses are often mentioned in the following descriptions on how those influencing factors listed in CSA's review letter were considered.

1. Analytical modeling of the landslide and geotechnical parameters affecting slope stability:

The shear pin has been conservatively designed, using conservative engineering parameters (conservative strength properties of upper bentonite and the materials above and below the upper bentonite) and proven stabilization methods (as demonstrated in Attachment B in the referenced response). The conservative engineering properties resulted in an over-estimation of the amount of required resistance force to achieve the target factor of safety of 1.1 by more than 50%, and an underestimation of the shear pin resistance capacity by more than 20%. In essence, the actual factor of safety after the shear pin installation is likely to be more than 1.2, as compared with the targeted 1.1 by using the conservative engineering parameters. It is noted that the target factor of safety is mostly about 1.1 for most of the successful case histories documented in Attachment B in the referenced responses.

2. Considering the geologic and topographic constraints:

Six detailed cross-sections were developed, based on a comprehensive field investigation program. These cross-sections were used in stability analyses, using conservative engineering properties to determine the required amount of resistance to be provided by the shear pins. The number of cross-sections utilized in the stability analysis indicates that Landslide C at the Ocean Trails Golf Course is one of the most intensively evaluated landslides, as compared with other large landslides in Southern California. Thus, the results likely involve the least uncertainty.

In addition, we have examined all data and found that there does not exist any laterally continuous weak layers, either above or below the upper bentonite layer, that would have an impact on the engineering solutions for stabilizing Landslide C. We have repeatedly stated this conclusion in the referenced responses, and in our September 27, 1999 memo (refer to Attachment C in the referenced responses) and October 6, 1999 memo to Dr. Ehlig (attached for your information).

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Exhibit 12 p 2

-A

3. Adequate soil bridging between shear pins at the proposed spacing:

We have carefully evaluated the subsurface conditions, based on available data from a very detailed post-1999 slide field investigation. We have concluded that the engineering properties and characteristics of the subsurface materials and the size and spacing of the shear pins are adequate and will allow "soil bridging" to occur. We have provided a comprehensive response to this issue in Section 3.4 of the referenced responses. We have further examined our response and found that our response is correct and remains valid.

4. Adequate shear pin resistance to shear force bending moment imposed by the slide:

We have designed the shear pin in accordance with well-known geotechnical engineering principles and practice to ensure the following:

- A. The ultimate resistance of the shear pins will be at least as much as the targeted resistance of 115,000 kips.
- B. The reinforcement will provide bending and shear resistance, more than the corresponding maximum calculated values.
- C. The shear pins have more than enough embedment below the basal sliding plane (upper bentonite layer) to hold the shear pin in place if the landslide mass moves against the shear pins.
- D. Provide more resistance than the potential hydrostatic force induced by infiltration of water into the graben area.

5. Sufficient embedment below the sliding surface to prevent pullout failure of the shear pins:

We have designed the shear pin embedment longer than the needed embedment calculated in our analysis to ensure sufficient embedment depth below the basal sliding surface. Our shear pin design provides more embedment depths below the upper bentonite layer than those actually needed to provide needed reaction to hold the shear pins in place when the portions of shear pins above the upper bentonite layer are resisting the driving forces of the landslide mass.

We have also provided a painstakingly detailed description of shear pin behavior in Section 3.6 in the referenced responses to indicate why pullout resistance is not a concern.

AS RPV-93-205 A14
Exhibit 12 R3

6. Capacity of earth materials to resist the lateral forces imposed on them:

We have evaluated the ultimate resistance of the shear pin based on the well-developed theory of plastic deformation, which simply indicates that the shear pins will reach their designed ultimate lateral resistance (capacity) when the earthen materials adjacent to the shear pins reach a limiting equilibrium state, satisfying the Mohr-Coulomb yield criteria. In other words, the calculated ultimate lateral resistance of shear pins has been based on the lateral resistance (capacity) of the earthen materials adjacent to the pins.

As indicated in our responses specified in Section 4.3.1 of the referenced September 15, 1999 report, the shear strength parameters of the earthen materials adjacent to the shear pins are conservative. This is consistent with our conservative design philosophy, resulting in obtaining less ultimate lateral resistance than the values calculated by using unreduced shear strength parameters used for the project since 1991.

7. Occurrence of sufficient lateral deformation to allow development of strength in the reinforcing steel:

The strength of the reinforcing steel is independent of the lateral deformation. The lateral resistance of the shear pins due to movement of adjacent earthen materials, however, depends on the lateral deformation. As described in Section 3.6 in the referenced responses, ultimate resistance of the shear pins will be reached when the lateral deformation of the shear pins result in a 2% tilt (i.e., the lateral displacement at the top of the shear pin reaches about 2.5 inches).

Even with a liberal allowance (double the lateral displacement) to account for some fractures within the earthen materials adjacent to the shear pins, a lateral displacement of about five inches at the top of the shear pin will result in reaching ultimate resistance of the shear pins. The effects of potential lateral deformation has been considered in the design, and it has been concluded that the shear pins will provide needed ultimate resistance and will limit the landslide movement, as long as the future additional landslide driving force (e.g., hydrostatic pressure due to accumulation of water in the graben or the adjacent landslide mass) is less than the design ultimate resistance of the shear pins.

8. Appropriate recommendations for construction procedures:

We are working on the construction procedures and specifications. All issues specified in CSA's letter, as well as other relevant issues, will be addressed. We expect to complete the construction procedures and specifications by October 31, 1999.

AS RPV 95055 A14
Exhibit 12 p 4

Concerns for Weaker Zones or Layers Above or Below the Upper Bentonite Layer

1. Based on direct "downhole" observations by at least six different geologists within six borings drilled through the main landslide mass, there is only a single, laterally extensive slide plane (i.e., the upper bentonite layer) on which Landslide "C" has moved. Although there are a number of "internal shear surfaces" within the landslide mass, along which both lateral and vertical movement has occurred, there is no indication that these internal shear features are laterally continuous, and therefore, do not pose a concern as it relates to the ability of the shear pin array to mitigate renewed landslide movement. Moreover, given Dr. Ehlig's concerns regarding other slide surfaces below the upper bentonite layer, our recent reevaluation of potential "weak" bentonite clay layers (similar to the upper bentonite layer, which forms the basal slip surface of the entire main sliding mass of Landslide "C") failed to identify any other similar layers/beds. In fact, Dr. Ehlig also performed a downhole inspection of one of the borings, and although both Converse and Dr. Ehlig identified a bentonitic mudstone/siltstone layer below the upper bentonite layer, no "similar weak layer(s)" was noted.
2. It is important to note that all in-site rock masses anywhere in the world contain varying amounts of structural discontinuities, in the form of fractures, joints, shears and beddings. These structure discontinuities are potentially weak planes within the rock mass and will affect the overall strength and deformation properties of the rock masses. Highly fractured, more joints and higher frequency of beddings means less strength and more deformable. But they cannot be considered as "weak zones or planes", similar to the upper bentonite layer in Landslide C, unless they are laterally continuous. We have thoroughly evaluated the data from the recent detailed field investigation and found no evidence of laterally continuous weaker planes above or below the upper bentonite layer that might have an impact on our remedial design for Landslide C.

We hope that the information provided in this memorandum is sufficient and clear. Please let us know if you have any questions or if you need further clarification.

Regards,
CONVERSE CONSULTANTS


Bill T. D. Lu, Ph.D., P. E., G. E.
Chief Engineer

Attachment:

AS RPU 93005 A14
Exhibit 12
P 5



Converse Consultants

Over 50 Years of Dedication in Geotechnical Engineering and Environmental Sciences

October 6, 1999

To: Dr. Perry Ehlig, City Geologist
Rancho Palos Verdes, California

From: Bill Lu, Ph.D., P. E., G. E., Chief Engineer, Converse Consultants
D. Scott Magorien, C. E. G., Chief Engineering Geologist, Converse Consultants

cc: Messrs. Dean Alison, Glenn Brown, Bill Cotton, Les Evens, Dr. Bing C. Yen,
Ken and Bob Zuckerman

Subj: Response to Referenced Memorandum

Ref: September 24, 1999 Memo from Dr. P. Ehlig to Bill Lu on the Subject of
"Boring Logs Sent to Me on August 22, 1999, Ocean Trails Golf Course"

This memorandum presents our responses to the comments presented in the referenced memorandum.

The data included in our logs represent a composite of all data from all consultants who have participated in the downhole logging process. In essence, the downhole logs represent a compilation of downhole observations from at least six geologists, and in a number of cases, from eight geologists working full-time on the project during the exploratory drilling program. These include two senior-level Certified Engineering Geologists with Converse Consultants who have over 40 years of combined field exploration/downhole logging experience for landslide/slope stability investigations in Southern California; and four to five geologists (including Bill Cotton and Bill Cole, both Certified Engineering Geologists) with Cotton, Shires & Associates, who are working as the City of Rancho Palos Verdes' reviewer for the landslide investigation.

The drilling, logging and sampling of the large diameter bucket auger borings was centered on evaluating the nature and lateral extent of not only the upper bentonite bed, but on other laterally continuous "weak" layers/beds which could pose significant constraints on the global and surficial stability within both the landslide and the bedrock area beneath the golf course, public park and clubhouse. The goal was to answer questions regarding geological and engineering parameters related to evaluating the factors controlling global stability of the landslide and adjacent areas.

It is noted that younger, less experienced geology staff were employed to clean off portions of the walls of most bucket auger borings prior to a more senior-level geologist performing the actual downhole logging. The work by the younger staff geologists has

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A 14
Exhibit-13P1

no impact on the quality of the logs, since they were prepared by experienced senior personnel who performed the downhole logging. The comment in the memo that some geologists were unfamiliar with the local geology is in part true, as it relates to the younger geologists who have recently graduated from colleges outside the area. As is common practice throughout the geotechnical profession, there is no better way to adequately train these young professionals than to provide them with the training ground whereupon they can gain the experience necessary for their professional growth within the industry.

Regarding the boring log for slope inclinometer boring SI-C1, it is important to keep in mind that this boring was advanced using the air rotary method so as to install a slope inclinometer quickly as possible to determine whether the landslide was still moving. The boring log was based on periodic examination of the cuttings. This boring was not intended to be used to establish the subsurface characteristics of the bedrock encountered during the drilling. The nearby large diameter bucket auger borings were drilled and downhole logged for purposes of defining bedrock structure and lithology.

We have prepared a geologic fence diagram for the sole purpose of evaluating the stratigraphic/structural position of weak, bentonitic clay beds which would have an effect in global stability of the landslide and adjacent areas to the north, east and west. Based on our compilation of the boring data, including that for the deepened portion of Boring LD-8, we find no evidence of laterally continuous, adversely oriented/dipping bentonitic clay beds that would have an impact on the engineering solution for stabilizing the main landslide mass and the adjacent bedrock areas. A copy of the fence/stratigraphic diagrams will be submitted for review in about one week from the date of this response letter.

The term "ash" in our report was used to differentiate between "tuffaceous bentonite" or "bentonitic tuff". It represents the blue-gray colored tuff layers, which do not have a noticeable bentonitic fraction. As presented in the 1980 2nd Edition of Glossary of Geology published by the American Geological Institute (ed. Bates and Jackson), *"The terms (ash) usually refers to the unconsolidated (volcanic) materials, but is sometimes also used for its consolidated counterpart, tuff."* From an engineering standpoint, these "ash" beds/layers possess much higher strengths than the bentonitic tuff/tuffaceous bentonite layers.

Regarding the 3-foot thick (bentonitic) tuff bed exposed on the scarp face, there are a number of these layers above the upper bentonite bed. However, they have proven to be laterally discontinuous, have been subjected to varying degrees of deformation associated with interformational folding and, based on visual observations in the large diameter borings, do not serve as discrete failure planes for large-scale landsliding. The reason that these layers are difficult to locate in a number of other borings is because of the general lack of lateral continuity.

Regarding the structure of the upper bentonitic beds, we contend that it is a "simple failure plane" to analyze. We have found only that the geologic structure/bedding plane

ASRPV93005A14
Exhibit 14 p 2

orientations above the upper bentonite bed are not necessarily simple, due to the various episodes of folding in these rocks. In contrast, bedding plane structures below the upper bentonite layers, at least to the depths explored, is much more uniform.

Regarding the log of Boring LD-22, indicating that there are extensive bentonitic tuff/ash layers and a sheared clay bed in the 24-foot interval beneath the upper bentonite bed, the existence of such layers and beds should not lead to an interpretation that all of these beds are weak. As stated earlier in this letter, the use of the term "ash" was meant to differentiate between bentonitic tuff/tuffaceous bentonite and relatively unaltered tuff (i.e., ash) layers. The log for LD-22, as well as the other "LD" logs are in final draft form and will be reviewed and modified where appropriate for consistency as it related to the usage of the terms "tuff" and "ash". We apologize for any misinterpretation, which may have caused confusion regarding the use of these terms. However, based on the observations made during the downhole logging of all the large diameter borings by the numerous geologists, and the more recent downhole observations in Boring LD-8, there do not appear to be any "similar weak areas" below the upper bentonite bed. The proposed interpretation presented in the memo that the slide base steps down onto a "similar weak layer" in the southeastern part of the slide is not a vital element with respect to the stabilization measures currently being considered. The "stepping down" of the slide base is limited to a small area within the intertidal zone in the southeastern-most corner of the toe of the slide. In our opinion, given the spatial position of this feature, and its limited extent, it has little or no significance to the over stability of Landslide C, and does not require additional evaluation on the form of exploratory drilling.

We hope that the responses provided in this memo are sufficient and clear. Please let us know if you have any further questions or require further clarification.

Sincerely,

CONVERSE CONSULTANTS



Bill T. D. Lu, Ph.D., P. E., G. E.
Chief Engineer



D. Scott Magorien, C. E. G.
Chief Engineering Geologist

A 5 RPV 93 605 A14
Exh. b. t 14

P3



Converse Consultants

Over 50 Years of Dedication In Geotechnical Engineering and Environmental Sciences

WINTERIZATION PLAN – PART B Installation of Large-Diameter Shear Pins

Landslide C, Ocean Trails Golf Course
Rancho Palos Verdes, California

RECEIVED

OCT 18 1999

CALIFORNIA
COASTAL COMMISSION

PREPARED FOR

Ocean Trails, L. P.
3850 Paseo Del Mar
Rancho Palos Verdes, California 90275

Converse Project No. 99-31-210-01

September 15, 1999

ASRPV 93 005A14
Exhibit 15 p1

1.0 INTRODUCTION

1.1 General

This report provides a detailed description of our plan to install large-diameter shear pins in the recently-activated Landslide C within the Ocean Trails Golf Course in Rancho Palos Verdes, California. The proposed repair for Landslide C consists of the following two major parts:

Part I: Winterization Plan

Part II: Graben Repair and Reconstruction of Improvements

This document is Part B of the Winterization Plan to minimize landslide movement potential during the upcoming rainy season and thereafter. The Winterization Plan consists of the following three parts, in order of completion sequence:

1. Part A: Sealing and filling the existing cracks and fissures in the landslide mass (Converse 1999a).
2. Part B: Installation of large diameter shear pins (this report).
3. Part C: Surface grading and drainage (ESCO, 1999).

Details of Parts A and C of the Winterization Plan are presented in separate reports (Converse 1999a, and ESCO, 1999). A preliminary design for the graben repair has been detailed in a recent Converse report (Converse, 1999b).

1.2 Purposes

The three-part Winterization Plan is aimed to achieve the following purposes:

1. Minimize the possibility of large landslide movement due to rainwater infiltration during the upcoming rainy season and thereafter (Parts A, B and C).
2. Improve the stability of an area that poses an immediate threat to public safety (Part B).
3. As a first step toward rebuilding the near bluff-edge bikeways, pedestrian trails, coastal access trails, and the public park (Parts A, B and C).
4. Allow revegetation of the impacted area with coastal sage scrub and coastal bluff scrub habitat (Parts A, B and C).
5. Minimize the potential of rainwater infiltration-induced bluff slope sliding (Parts A, B and C).
6. Minimize the risks of future development of new cracks and fissures (Part B).
7. Provide a needed safety assurance for the graben repair to proceed (Part B).
8. As the first steps toward rebuilding the 18th hole of the golf course (Parts A, B and C).

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Exhibit 15 p2

1.3 Current Conditions

On June 2, 1999, an ancient landslide located within the Ocean Trails Golf Course in Rancho Palos Verdes was activated. This ancient landslide had been previously identified and known as Landslide C. The movement involved approximately 16 acres of coastal bluff and terrace, including a portion of the 18th hole of the Golf Course, bluff-edge walkways, pedestrian trails, and coastal access trails. The reasons and/or sources that triggered the activation are being investigated by others.

The landslide consists of the graben area and the adjacent landslide mass. The graben area has been somewhat regraded for access of equipment used in the post-landslide field investigation.

Judging from the fact that little or no additional movement of the landslide has been detected since activation in June, the graben area and the adjacent landslide mass are at least marginally stable (factor of safety of about one). However, the integrity of the landslide mass has continuously deteriorated with time in terms of increasing areal extents and depths of cracks and fissures, as well as the amounts of sloughing and slumping. If not quickly repaired, large-scale movement is likely when subject to further disturbances. These disturbances may include rainwater intrusion into the graben area and the cracks in the landslide mass, minor seismic loading, or the disturbance due to repair construction activities in the graben area. It is imperative that emergency repair of the landslide mass (i.e., Winterization Plan) are be completed prior to the start of rainy season (early December) or before the start of the repair in the graben area, whichever comes first. It is worth repeating that stability improvement of the landslide area adjacent to the graben is a prerequisite prior to the construction of graben repair.

Two of the three major elements in the Winterization Plan are sealing/filing open cracks/fissures and the installation of about 150 three-foot diameter shear pins in the landslide mass. The tops and bottoms of these shear pins are about 10 feet above and 11 feet below the upper bentonite layer, respectively. Detailed rationale and design of these shear pins are provided in this report.

Sealing/filling the open cracks/fissures in the landslide mass will minimize rainwater infiltration in the landslide mass. However, the graben area will be like a retention basin during heavy rains. During heavy rains, a large amount of rainwater infiltration to the upper bentonite layer will likely occur in the graben area, where subsurface materials likely contain numerous cracks and are very porous and prone to water intrusion. The large-diameter shear pins will negate the potential for large movement-causing effects of water infiltration in the graben area. The shear pins can also provide additional resistance and safety assurance for repair construction in the adjacent graben area, and also in the event of seismic loading, if any.

1.4 Remarks

As presented in the preliminary repair design draft report (Converse 1999b), the proposed repair design for Landslide C essentially consists of various provisions to repair the graben area and the three-part Winterization Plan to improve the stability of the landslide mass adjacent to the graben area. The completion of the Winterization Plan, especially Parts A and B, is a prerequisite to provide needed safety assurance for the repair construction in the graben area.

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Exhibit #15
P 4

2.0 GEOLOGIC SETTING

2.1 Geologic Conditions

The geologic setting of the Ocean Trails development area, including the golf course, clubhouse, and adjacent proposed residential areas, has been presented in earlier Converse reports (1971, 1991 a, b) and will not be repeated in this report. However, for completeness, the following presents a discussion of the geologic conditions within the area known as "Landslide C" and the area proximal to the slide. We are currently preparing a detailed map showing the extent of the landslide and the various geologic units which occupy the adjacent areas. The map will be presented as a supplement to Part B of the Winterization Plan by September 24, 1999. The geologic data to be shown on the map consists of a compilation of geologic field mapping by geologists from both Converse and Cotton, Shires & Associates (City Geotechnical Engineer).

2.2 Geologic Units

Engineered Fill (map symbol af): Earthwork grading for the golf course involved the removal of unsuitable native soil materials such as slopewash and highly weathered nonmarine terrace deposits and a limited amount of bedrock materials assigned to the Altamira Shale member of the Monterey Formation. Following these removals, a 3-foot thick clay cap was placed throughout the area of the golf course, followed by a compacted soil layer of variable thickness. The purpose of the clay cap is to prevent landscape irrigation water from the golf course to infiltrate down into the underlying bedrock, as well as the head of Landslide C. In addition to the clay cap, the construction for the lake between golf holes 12 and 18 involved the placement of a dual liner and a separate subdrain system and monitoring well for use in evaluating potential water leakage from the lake.

Beach Sand and Gravel (map symbol Bsg): The modern beach is composed of a mixture of loose sand, gravel, cobbles, and small boulders of the more resistant types of bedrock. The toe area of Landslide C has modified the areal extent of some of these deposits, especially along the southwest margin of the slide, where these deposits have been raised above the shoreline as much as about 17 feet.

Terrace Deposits (map symbol Qt): Marine and non-marine terrace deposits occupy the area known as "Halfway Park" located south of the clubhouse and adjacent to the western edge of Landslide C. These deposits also occupy a roughly wedge-shaped area in the southeast corner of the map area. Where exposed these soil-like materials consist of loose to well-cemented clayey silt with gravel, underlain by a variable thickness of marine deposits composed of loose gravel/cobble conglomerate in a sandy matrix. The basal contact with the underlying Monterey Formation bedrock is represented by an ancient wave-cut abrasion platform, which slopes gently toward the Pacific Ocean.

Monterey Formation, Altamira Shale Member (map symbol Tma): The Altamira Shale member of the Monterey Formation has been further subdivided by Converse (1991) into four (4) submembers, based on internal lithology. In ascending order, they include the carbonaceous and phosphatic, lower siliceous, olistostrome, and upper siliceous submembers. In the vicinity of Landslide C (and including the landslide), the most widespread submember is represented by the lower siliceous submember. The underlying carbonaceous and phosphatic submember is exposed within the lowermost portion of the sea cliff and intertidal zone in the southeast corner of the map area.

Carbonaceous and Phosphatic submember (map symbol Tma₄): This submember consists of interbedded fine-grained sandstone, siltstone, mudstone and shale, numerous fossil horizons, phosphatic nodules which are commonly associated with the carbonaceous beds, and dolomitic beds which occur locally, yet are laterally discontinuous. The uppermost 140 feet (+/-) of this submember displays varying degrees of syndepositional deformation. The majority of the intertidal zone directly southeast of the toe of Landslide C displays widespread syndepositional folding and submarine slumping.

Lower Siliceous submember (map symbol Tma₃): The lower siliceous submember is the most widespread bedrock unit within the mapped area. Landslide C is composed entirely of rocks from this unit. The large-diameter, bucket auger drilling program performed for this most recent landslide investigation penetrated the uppermost two-thirds of this rock unit in all of the 26 exploratory borings. The majority of these borings were drilled 20 to 50 feet below what is referred to as the "upper bentonite" (clay) layer, represented as a laterally continuous bed which underlies the entire mapped area, and lies approximately 75 to 80 feet stratigraphically above the lower bentonite layer, as discussed above.

Based on direct downhole observations within the exploratory bucket auger borings, the lithologic character of the lower siliceous submember can be characterized as a sequence of thinly bedded to laminated siltstone and shale with subordinant amounts of interbedded chert, sandstone, volcanic ash/tuff, bentonitic tuff, and dolomitic siltstone/dolostone. Much of the siltstone and shale layers display varying degrees of siliceous cementation, due primarily to post-depositional hydrochemical alteration associated with nearby volcanism. As a result, these rocks display varying degrees of strength (i.e., weak to strong depending upon the extent of silicification/cementation), are typically moderately to highly fractured, and display varying shades of gray and brown. A number of the siliceous siltstone beds are as much as six-feet thick, and are typically hard and weakly to moderately fractured. It is these highly cemented beds that commonly produce a source of groundwater seepage along interconnected fractures/joints. Below the 'upper bentonite' layer, the siltstone and shale is generally unoxidized, contains appreciable amounts of volcanic ash, has considerably greater strength than similar rocks above the upper bentonite layer, and displays more open joints/fractures which appear to be the predominant source of groundwater seepage into the exploratory borings (especially beneath the basal rupture surface of Landslide C).

Interbedded layers of bentonitic tuff, tuffaceous siltstone, and volcanic ash comprise approximately 40% of the lower siliceous submember encountered in the exploratory borings.

Bentonitic tuff beds occur throughout the lower siliceous submember; however, only above the upper bentonite layer. These layers are commonly white to light gray with closely spaced fractures which are filled with a crumbly, yellowish orange-colored staining which imparts a "checkered" appearance, and have a texture which ranges from somewhat gritty, to waxy within the more clay-like portions. The beds vary in thickness from several inches to slightly over six feet and do not display evidence of widespread shearing. The only evidence of shearing is along the lower contacts with more competent bedrock units.

Tuffaceous siltstone and thick-bedded volcanic ash layers are most prevalent just above the upper bentonite layer, and also comprise a large portion of this submember for a considerable distance (depth) below the bentonite layer. Above the upper bentonite layer, the tuffaceous siltstone beds commonly vary in thickness from six inches to several feet and are interbedded with nontuffaceous siltstone and shale, as well as siliceous siltstone and dolostone. These rocks are generally uncemented yet moderately strong, are dark gray in color, moderately fractured, and display a relatively uniform thickness where observed. There is little to no evidence of shearing within these beds, except where penetrated by faults/shears within the surrounding bedrock. Very minor bedding plane shearing was observed along contacts with subjacent rock units. Spatially associated with the tuffaceous siltstone and adjacent thin-bedded to laminated siltstone and shale units are thin layers (1/16- to 1/4-inch thick) of blue-gray ash spaced about 1- to 12-inches apart over vertical distances of about five to ten feet within the rock units above the upper bentonite, and for even greater vertical distances below the bentonite layer.

Discontinuous layers of dolomitic siltstone and dolostone, up to approximately three feet thick occur throughout the lower siliceous submember above the upper bentonite layer. There are also interbedded dolostone layers beneath the bentonite layer, but are not as prevalent. Where noted, these rocks are generally light gray-brown to beige in color, very strong to hard, intensely to moderately fractured, and average about 1½ feet thick. In a number of the exploratory borings, slight amounts of groundwater seepage was observed flowing from fractures within these layers. The only evidence of shearing associated with these very competent units is manifested by bedding plane shearing along lithologic contacts with less competent siltstone and shale beds.

Cherty beds are noted to be spatially associated with the sequences of thin-bedded siltstone, and are generally no more than several inches thick, highly fractured and strong, yielding a conchoidal fracture pattern. The cherty beds comprise less than 5% of the total lithologic section observed during this study.

2.3 Bedrock Structure

In the area under discussion, the Altamira member (and its submembers) of the Monterey Formation is well stratified. Although most of the two submembers within the study area are thinly bedded, the thickness of individual beds range from less than one inch within the shales, to greater than five feet or more for the more thickly bedded siltstone and tuffaceous siltstone, and ash layers which lie below the upper bentonite layer.

The gross bedrock structure within the area investigated for this study is represented by a broad, southerly plunging synclinal trough. However, there are at least three generations of folding which have affected these rocks. The first episode of folding (F_0 folds) occurred syn-depositionally as a result of submarine sliding and slumping at various times during the Miocene. These folds are typically disharmonic, display varying amplitudes, are open to closed, and generally have no consistent direction of plunge. These folds are best displayed during low tides within the intertidal area in the southeast corner of the map area. The second generation of folding (F_1 folds) to effect these rocks is manifested by the large amplitude, generally east-west trending folds related to compressional tectonics associated with the modern San Andreas Fault system, which includes the nearby Palos Verdes and Newport-Inglewood faults, as well as the blind thrust faults which underlie much of the Los Angeles Basin. The F_1 folds within the project area are represented by relatively small scale (i.e., parasitic) folds spatially located on the southern limb of the large-amplitude Palos Verdes anticline.

The third generation of folds (F_2 folds) are represented by broad warping of the bedrock which presumably occurred during uplift of the Palos Verdes Hills/Peninsula. It is these broad, southerly plunging folds that are, in large part, responsible for the adverse (i.e., southerly dipping) bedding planes which, along with weak bentonite clay layers, gave rise to the development of the landslides along the Palos Verdes Peninsula, and more importantly, Landslide C.

The bedding plane orientation within the area immediately surrounding Landslide C, as well as beneath the slide (where not affected by F_0 folds and allied shearing), strike northwest-southeast within the eastern half of the study area, and gently rotate to a more northeast-southwest strike direction within the western half of the area. The bedding displays generally low to moderate dip angles (5 to 25 degrees) to the southwest and southeast, except where bedding has been affected by F_0 folding and dislocation of individual beds.

Jointing within the bedrock is displayed by high angle northwest and northeast trending joint sets. The majority of the joints observed within the exploratory borings were generally closed to slightly open within the oxidized portions of the nonsilicified and dolomitic bedrock, and often contained gypsum or various forms of oxide staining. Elsewhere, within the unoxidized and more cemented layers, joints were slightly open to open as much as $\frac{1}{2}$ to 1 inch. In most cases joint planes are generally curvilinear, and have rough surfaces, except within the highly siliceous beds, where joint surfaces are commonly smooth and razor sharp.

Faulting within the bedrock is generally manifested by localized shears, which were observed to offset bedding on the order of inches rather than feet. There were also a number of the borings where thick zones of deformation were noted, which included widespread shearing, folding, and dislocation of bedding. These zones presumably include sections of bedrock affected by F_0 folding and allied shearing and dislocation of bedding. It is also reasonable to assume that this earlier deformation was activated to some degree by later epi-

sodes of tectonism, which also included the development of additional shearing throughout the bedrock. No evidence of major faulting was noted during this investigation.

2.4 Geohydrology

Based on previous studies by Converse, as well as observations made during this investigation, groundwater movement beneath the study area and adjacent environs is controlled via fractures (i.e., joints) within the bedrock, and to some degree by the relatively impervious bentonite layers. The most significant of these layers is the upper (and possibly, lower) bentonite layers, owing to the laterally continuous nature of these beds. In 1996-97 Converse installed a number of groundwater monitoring wells throughout the Ocean Trails development area, which consisted of a "nested" two to three well array. The shallowest wells were situated above the upper bentonite layer, a midlevel well completed just above the lower bentonite layer, and another at deeper depths in order to penetrate the "regional" groundwater table.

The results from the installation of the monitoring wells indicated isolated zones of perched groundwater above both the upper and lower bentonite layers, and a deeper regional groundwater system that likely underlies much of Rancho Palos Verdes and the surrounding area. The observations made during the investigation of Landslide C identified groundwater from fracture flow, primarily as minor seepage along joints within siliceous/cemented and dolomitic layers. The majority of the observed seepage, albeit minor, occurred slightly above, and more often below, the upper bentonite layer beneath the landslide. In contrast, there was considerably less seepage from these same areas outside the landslide. This means that water from outside source(s) has intruded to and below the upper bentonite layer in the landslide area and eventually caused the landslide activation.

Attempts have been made to measure groundwater levels from the large diameter borings; however, groundwater inflow into the borings appears to be relatively minor (except in boring LD-14 which was completed below sea level). Selected large-diameter borings will be completed as monitoring wells, once approvals have been obtained by the various agencies.

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Exhibit 15 09

3.0 LANDSLIDE "C" INVESTIGATION

3.1 Geologic Investigation

The geologic investigation of Landslide C (Slide C) following its activation on June 2, 1999 involved the following activities:

1. Geologic mapping by both Converse and Cotton, Shires & Associates (CSA) of the landslide, including the numerous cracks and fissures which developed on the surface of the slide, and the immediate area surrounding the slide area, including the nearshore intertidal area, at a scale of 1 inch equals 40 feet. Other parties also performed some level of geologic mapping but their results are not included herein. The preliminary geologic map prepared by CSA may be used for this preliminary report, and a final Converse geologic map will be completed and submitted in a supplemental report by September 24, 1999.
2. Drilling, logging and sampling 26 large-diameter (i.e., 24 to 30 inch) bucket auger borings, 10 of these within the main slide mass and graben area, and the remainder inland of the slide. The boring logs are being prepared and will be submitted in a supplemental report by September 24, 1999.
3. A total of 12 geologic cross sections have been prepared and are included herein.
4. A review of pertinent, previous Converse geotechnical reports was also performed for this study.

3.2 Landslide Characteristics

Landslide C can be characterized as a single block slide, which involved primarily a translational-type of block movement, except along the toe area of the western 1/3 of the slide where rotational slides occur (see geologic cross sections L-L' and D-D'). According to first-hand reports by Converse geologists who witnessed the actual slide movement, the slide initiated along the eastern portion and progressed westward. At the inception of the slide, the Converse geologists reported they heard "splashing" as dislodged blocks fell into the newly formed graben area. As depicted on all but one geologic cross section (e.g., A-A'), the slide moved as a single mass, producing a 100-foot wide (+/-), 30- to 45-foot deep graben with near vertical walls on each side of the graben. Retrogressive bedrock slumps also occurred along the western margin of the new headscarp, due in large part to steeply dipping bedding planes in this particular area.

The character of the main slide block is represented by highly extended and disrupted terrain along the eastern end of the slide, producing isolated bedrock towers and pinnacles

which are surrounded by highly broken and jumbled bedrock. The central or "main block" of the slide occupies an area of about five acres and displays numerous east and west-trending tension cracks and fissures (i.e., pull-apart features), the largest of which extends over a lateral distance of several hundred feet, is open as much as 20 feet and is greater than 50 feet deep. It is presumed that many of these cracks/fissures extend down to the basal rupture surface/upper bentonite layer. A map showing the locations and extent of the majority of these features is attached to this report.

The western portion of the slide mass does not display the severity of surface deformation as the other areas due in large part to the nature of the movement and geometry of the slip surface in this area. In this area there are a number of narrow grouped fissures on the surface of the slide. A number of these fissures appear to be in areas of previous, prehistoric pull-apart, and in the ancient graben area.

The outer, seaward-facing portion of the landslide is characterized by a series of active rock slumps, as depicted in the geologic cross sections. These rock slumps consist of jumbled blocks of bedrock which form a more or less talus apron which has encroached approximately 50 feet toward the ocean, except along the western 1/3 of the toe area of the slide. In this area, the rotational component along the toe of the slide extended approximately 100 feet into the pre-slide beach and intertidal zone, resulting in the uplift of portions of the once near-shore intertidal area by as much as about 18 feet. Elsewhere along the toe of the slide, the active rock slumps have encroached, on average, about 40 feet toward the pre-slide beach area.

As discussed above, the landslide occupies a broad synclinal trough, which for the most part, plunges about 13 degrees toward the Pacific Ocean. The basal rupture surface on which the recent sliding occurred is the same surface as that of the prehistoric landslide, occurring along the upper bentonite layer. Within the area of the landslide, the upper bentonite layer varies from about 1/2 to 3 inches thick, is commonly white to light blue gray in color, waxy, internally sheared, and has a polished and weakly striated surface along the top of the layer. In some cases, the layer also has a polished lower surface. The slip surface is very smooth, and slightly curvilinear, as noted by the slight variations in strike and dip when taken at various points within the borings. In most cases, the upper bentonite layer marks a sharp transition between relatively unoxidized bedrock below and the oxidized and more weathered bedrock above the layer.

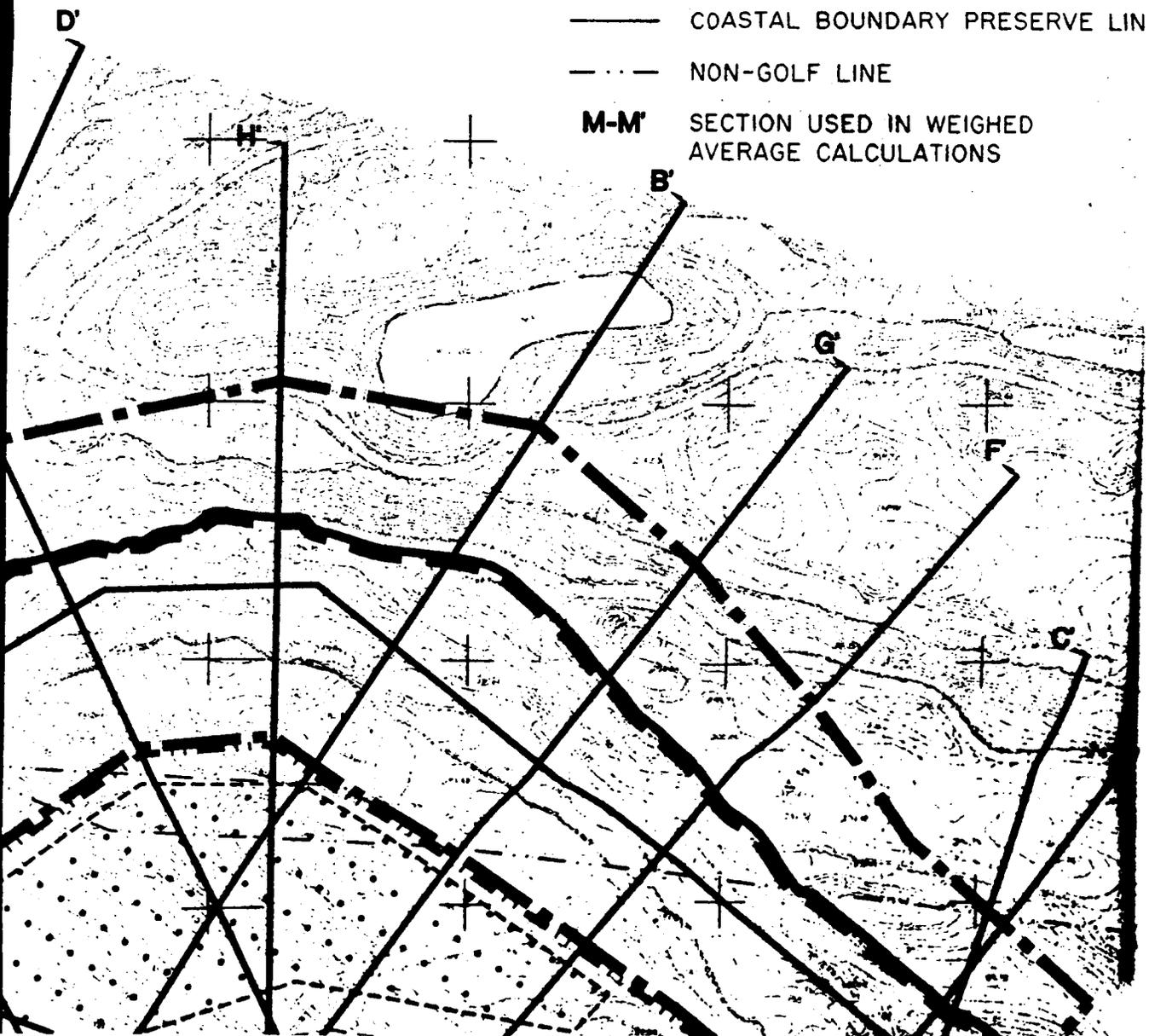
Throughout most of the borings drilled (and downhole logged) within the slide mass, the uppermost 20 to 40 feet of the slide consisted of highly disturbed and disjointed bedrock. Below these levels, the bedrock becomes much more competent and there is much less internal deformation. However, within several feet of the basal rupture surface, the bedrock becomes highly sheared and disrupted and has numerous open fractures.

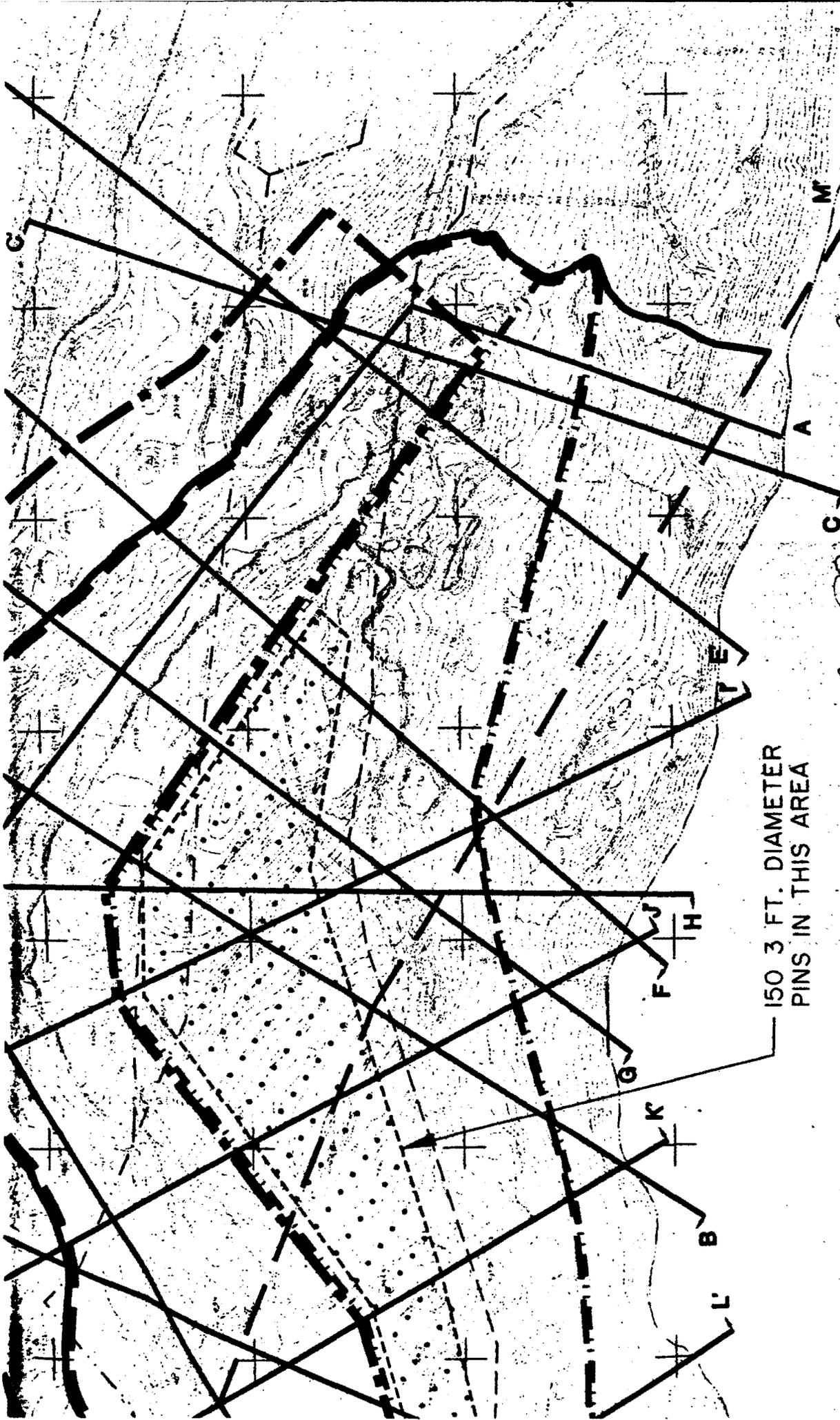
FIGURE 4.1
LANDSLIDE "C"
 LANDSLIDE C

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 Exhibit 15 p12

EXPLANATION

- APPROXIMATE LIMITS OF SLIDE
- - -** APPROXIMATE LIMITS OF PIN AREA
- · — ·** APPROXIMATE LIMITS OF REPAIR EX
- COASTAL BOUNDARY PRESERVE LIN
- · - · -** NON-GOLF LINE
- M-M'** SECTION USED IN WEIGHED AVERAGE CALCULATIONS





150 3 FT. DIAMETER
PINS IN THIS AREA

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Exhibit 15 P.13



September 30, 1999
EC0008C

Mr. Dean Allison
Director of Public Works
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

**SUBJECT: Preliminary Geotechnical Review Comments
Regarding Proposed Shear Pin Installation
Winterization Plan- Part B**

**RE: Landslide C, The Ocean Trails Golf Course,
Rancho Palos Verdes, California**

Dear Mr. Allison:

In accordance with your request, we have performed a preliminary geotechnical review of the proposed shear pin installation at Landslide C at the Ocean Trails Golf Course. We have performed our review utilizing:

- *Winterization Plan- Part B, Installation of Large-Diameter Shear Pins, Landslide C, Ocean Trails Golf Course, Rancho Palos Verdes, California (report), by Converse Consultants, dated September 15, 1999*
- *Draft Report, Preliminary Repair Design for Landslide C, Reactivated on June 2, 1999, Ocean Trails Golf Course, Rancho Palos Verdes, California (report), by Converse Consultants, dated August 25, 1999.*

In addition, we have reviewed several additional items from Converse Consultants (CC) including boring logs, geologic cross sections, and laboratory data, which have been sent separately from the August 25, 1999 report. Please note that the following presents our preliminary review comments for the proposed large-diameter shear pin installation. These review comments are being provided as preliminary comments with the understanding that CC will review our concerns and provide clarifying analysis and comments with their final design. Review of the consultant's geologic characterization of the landslide, detailed slope stability analyses and other geotechnical data is currently being performed by this office. Comments regarding that review will be provided under separate cover. Prior to approval of the final stabilization design of the reinforced earth, graben area buttress, the consultant will be required to submit a comprehensive report including, but not limited to, the items described in our peer review letter (see CSA letter dated August 24, 1999 and September 3, 1999).

The subject shear pin installation is one part of a three-part winterization plan proposed by CC. Part A consists of filling existing ground fissures in the landslide mass. Part B is the subject shear pin installation. Note that we have not received

Winterization Plan-Part C which is to include details of drainage, minor grading and stability of oversteepened slopes near the head of the landslide (see CSA letter dated August 26, 1999). Part C is considered an essential component of the winterization plan and will require City geotechnical review prior to approval of the winterization plan.

DISCUSSION

Proposed Construction- CC has proposed installation of large diameter shear pins to temporarily stabilize the upper translational block of Landslide C. They have concluded that the existing factor of safety is near unity and that reactivation may occur during heavy rains. In addition the consultants report states that "... significant improvement in stability to stop any future movements is impossible without removal of the weak, deeply buried basal sliding materials. Excavation and removal and subsequent backfilling of the entire, or a major portion of the landslide area would be prohibitively time-consuming and expensive, and will also be disruptive to any remaining habitat and the marine environment."

We understand the intent of the shear pins is to provide an increase in the factor of safety of the translational block to approximately 1.1 (a 10% increase in stability) and that the shear pin support will be relied upon for the period of the construction of a proposed geosynthetic-reinforced earth graben buttress. The graben buttress is designed as a stand-alone repair and will not rely on the shear pins for support.

Proposed Shear Pin Design- The proposed shear pin design includes 20 rows of shear pins spaced at 20-foot centers. Rows are located approximately 30 feet apart. The report states that a total of 150 shear pins are proposed. However, a total of 164 shear pins are shown on the plan, Figure 4.1. Shear pins are to be 36-inch drilled cast-in-place piers with reinforcement consisting of a 30-inch diameter, 2-inch to 2 1/4-inch thick, 50 ksi steel pipe. The shear pins will be approximately 21 feet in length and extend roughly 10 feet above the basal rupture surface (or Upper Bentonite layer) of the landslide.

Factors That Influence Shear Pin Design- Shear pins are commonly used as a stabilization technique for landslides, where other methods of stabilization such as regrading of the ground surface or installation of an earthen buttress are not practical due to access restrictions, economics, construction feasibility or other factors. The effectiveness of shear pin stabilization depends on several design factors including: 1) proper analytical modeling of the landslide and geotechnical parameters affecting slope stability (including analysis of potential failures within weak layers above or below shear pins), 2) consideration of geologic and topographic constraints, 3) adequate soil bridging between shear pins at the proposed spacing, 4) adequate shear pin resistance to shear forces and bending moments imposed by the sliding mass, 5) sufficient embedment below the sliding surface to prevent pullout failure of the shear pins, 6) capacity of earth materials adjacent to shear pins to resist the lateral forces imposed on them 7) occurrence of sufficient lateral deformation to allow development of strength in reinforcing steel and 8) appropriate recommendations for construction procedures. A discussion of each of these design factors as they relate to the proposed shear pin installation is presented below.

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Analytical Model of Landslide and Geotechnical Parameters Affecting Stability- The consultant has utilized geologic cross sections developed during recent subsurface investigation at Landslide C as the basis for their shear pin design. The shear pin design assumes that failure will occur at the level of the Upper Bentonite layer. Relatively high strength parameters have been assumed for the landslide materials above the Upper Bentonite, presumably due to their rock-like nature. However, within these fractured rock materials weaker bentonitic clay layers have been identified 10 feet or more above the level of the top of proposed shear pins. These layers could define a path of least resistance for failure above the shear pins and will require characterization and analysis by the consultant. Inclinator plots from SI-C1 indicate on-going movement along a failure surface at a depth of approximately 65 feet or 29 feet above the Upper Bentonite. Inclinator plots from SI-C2 indicate two zones of on-going movement at approximately 40 feet and 80 feet in depth or 55 feet and 15 feet above the Upper Bentonite, respectively. Plots of these two inclinometers are attached as Figures 1 and 2. Although the initial landslide failure on June 2, 1999 appeared to occur along the Upper Bentonite layers, other weak zones are apparently present that are moving or would have the potential to move despite the proposed shear pin installation. This concern has been expressed by Perry Ehlig in his report dated September 20, 1999. The CC report dated September 15, 1999 does not address the potential for failures above or below the proposed shear pins.

The September 15, 1999 CC report states "Sealing/filling the open cracks/fissures in the landslide mass will minimize rainwater infiltration into the landslide mass. However, the graben area will likely be like a retention basin during heavy rains. During heavy rains, a large amount of rainwater infiltration to the upper bentonite layer will likely occur in the graben area, where subsurface materials likely contain numerous cracks and are very porous and prone to water intrusion. The large-diameter shear pins will negate the potential for large movement-causing effects of water infiltration in the graben area." Since the shear pins are proposed as part of the winterization plan to reduce the potential for movement induced by rainwater infiltration, modeling of anticipated ground water conditions after heavy rainfall is important in the analysis of the effectiveness of the shear pin design. The analyses and discussion presented by CC do not indicate that water effects have been incorporated in their estimation of resisting forces to be provided by the shear pins. Our stability analyses of Landslide C indicate that buildup of water in a crack in the graben area can reduce the factor of safety of the landslide mass by up to 5 percent, if the crack were filled with water to a level halfway between the upper bentonite and the existing ground surface. If the crack is filled with water to the ground surface, the reduction in the factor of safety is approximately 14 percent.

Recommended Actions- Boring logs and recent inclinometer data should be reviewed by the consultant and utilized to transfer data to geologic cross sections to identify potential shallow failures above the shear pins and potential failures below shear pins. Stability analysis of potential failures above and below the shear pins should be performed utilizing appropriate lower strength parameters for weak bentonitic clay layers or other weaker strata, if present. If a potential exists for sliding along these weaker layers, the consultant should modify the shear pin design accordingly to mitigate potential movement.

The consultant should incorporate groundwater in their analysis and calculation of shear pin resistance. A discussion regarding anticipated groundwater levels after

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Exhibit 16 p 3

heavy rainfall should be presented in the consultant's report, as well as the calculated factor of safety with shear pins in place and groundwater effects. Supporting data including the method of analysis and complete calculations should be provided in the report.

Geologic and Topographic Constraints- The shear pin plan (Figure 4.1 of the September 15, 1999 CC report), indicates that the "footprint" of the shear pin array will not be confined to the active landslide translational block (Abs), but will extend downslope approximately 300 feet to the west into the area that has been mapped as Active Rock Slump (Ars). In addition, the proposed shear pin array will traverse steep topographic slopes in the western one-third of the footprint. The placement of shear pins in steep terrain will likely require extensive grading for drilling equipment.

Recommended Action- Converse Consultants should explain why the shear pins are extending beyond the translational block slide (Abs) and how the western one-third of the shear pin footprint can be completed without extensive grading. The extent and amount of grading that will be required to implement the proposed shear pin plan should be described and defined in the final plan.

Geologic and Topographic Constraints (continued)- Geologic cross sections included in the September 15, 1999 CC report, depicting the geologic structure of Landslide C, do not display all of the data gathered during the recent subsurface investigation. The location of the Upper Bentonite and Lower Bentonite are exhibited as dashed lines with question marks suggesting a very approximate depth, inclination and configuration of these important horizons. There is no difference between the "Draft" cross sections submitted with the draft report of August 25, 1999 and the report supporting the shear pin proposal. There is now sufficient subsurface data to better define the structure of Landslide C and the surrounding geologic environment.

Recommended Action- The consultant should finalize all of the geologic cross sections using all of the available surface and subsurface data. There exists a very rich bank of surface and subsurface geologic information that is pertinent to the specific region of Landslide C. The data represents pre- and post-reactivation geologic features of Landslide C. The proposed shear pins require that the depth to the basal rupture surface be determined with considerable accuracy. Once the cross sections have been upgraded and finalized, the location of the shear pins should be exhibited on the appropriate cross sections. Geologic cross sections B-B', D-D', F-F', G-G', H-H', I-I', J-J' and K-K' all cross the footprint of the shear pin array. Once that this task has been completed, CC should reevaluate the location and length of the shear pins and, if necessary, modify their design.

Soil Bridging Between Shear Pins- The consultant has cited an article by Hassiotis et. al. (1997) and Ito and Matsui (1975) for design procedures for the proposed shear pins. The two subject articles describe shear pin design for plastically deforming ground (soft cohesive soil). The Hassiotis article states "Inherent in this approach is the assumption that soil is soft and able to plastically deform around the piles." The assumption of plastic deformation of soil around the pile is important for load transfer and bridging between piles. The earth materials of Landslide C predominately consist of brittle fractured rock, not soft cohesive soil, and will likely not be capable of adequate plastic deformation around the pile. The resulting effects of the rocky materials of Landslide C would be nonuniform loading along the length of the pile, lack of bridging

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Exhibit 16 p 4

between adjacent piles thereby causing overstress in some piles in the group, and lack of load transfer from one row of piles to the next.

Recommended Action- The consultant should analyze landslide/pile interaction with consideration of the rock-like landslide materials for evaluation of the effectiveness of the pile system. Based upon this analysis, modification to the proposed shear pin design may be warranted. The consultant should provide a detailed discussion regarding bridging, rock/pile interaction, load transfer between rows of piles and justification for the analytical procedures utilized.

Shear and Bending Resistance of Shear Pins- Calculations of shear and bending moments for the proposed shear pins have been performed based on the assumption of a plastically deforming soil as discussed above. A plastically deforming soil tends to move around the shear pin distributing forces along the length of the pile. However, distinct rock blocks within the landslide mass may impose non-uniform loadings on the shear pins. It is conceivable in some cases that the lateral forces may act as point loads or a series of point loads on the shear pins. Consideration of alternative loading conditions or justification of the assumptions used in the analysis is warranted.

Recommended Action- The consultant should perform analysis of alternative loading conditions in their analysis of shear and bending moments or provide justification for the loading model utilized.

Pullout Resistance- The proposed shear pins should be designed for a sufficient factor of safety against pullout. Our preliminary evaluation indicates the proposed embedment below the Upper Bentonite layer may not be sufficient to provide an adequate factor of safety against pullout.

Recommended Action- The pullout resistance should be calculated assuming a maximum tilt on the pile with a factor of safety applied to the tangential component of the load. We recommend a minimum factor of safety of 1.5 against pullout. Effects of pile deformation under design loading should also be considered in the pullout analysis and shear pin design. In selection of frictional values along the pile shaft below the Upper Bentonite, it should be noted that finer grained materials are likely to cause "smear" on the rock exposed on the boring sidewalls during drilling. This will effectively reduce the adhesion (or apparent frictional resistance) between the concrete and rock.

Lateral Capacity of Earth Materials- Calculations of the allowable lateral capacity of the earth materials adjacent to the shear pins have not been presented. The anticipated loadings for the shear pins are very large and could exceed the passive strength of the rock below the lower bentonite.

Recommended Action- The consultant should calculate the lateral (passive) resistance of the soil adjacent to the shear pins utilizing conservative strength parameters. It should be noted that high angle fractures are present within the rock which would negate the applicability of the high cohesion value (6500 psf) for rock beneath the Upper Bentonite referenced in the shear pin report. The consultant should indicate the design factor of safety against passive earth failure.

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Exhibit 16 p 5

Lateral Deformation of Shear Pins- The transfer of load from one row of shear pins to the next is dependent upon landslide movement after shear pin installation and deformation of individual shear pins in order for reinforcement to develop sufficient resistance. Analysis of the movement of the landslide mass after shear pin installation has not been presented or discussed in the subject reports. Understanding of the behavior of the shear pin group and behavior of individual shear pins under loading is essential to a proper design.

Recommended Action- The consultant should describe the anticipated transfer of load between shear pins and rows of shear pins. The discussion should include the lateral deflection required in order for steel reinforcement to reach design stresses. Deflections along the length of the pile should be calculated based upon the design loading(s). In addition, the consultant should indicate whether an additional factored loading has been applied for structural design of the shear pins or if the proposed design reflects shear pins at ultimate capacity to provide an improvement of 10 percent in the factor of safety of the translational landslide block.

Construction Procedures- Relatively little information has been provided in regard to recommended construction procedures. Additional recommendations are necessary to finalize shear pin design.

Recommended Actions- Upon completion of the tasks outlined above the consultant should prepare a revised report incorporating data, analyses and discussion, as recommended. A plan should be included with the report showing numbered shear pins along with a table indicating proposed top and bottom elevations of each shear pin. Detailed construction recommendations should be provided in the report. The following items should be incorporated into the construction recommendations.

- **Geologic Inspection**- Prior to placement of reinforcing steel, borings should be observed by the consultant's engineering geologist to assure proper location of the shear pin. Recommendations should be provided for treatment of borings that are overdrilled (i.e. too deep).
- **Boring Alignment**- A specification should be provided for the maximum allowable deviation from vertical for proposed shear pin borings.
- **Reinforcement**- Diameter, length, sidewall thickness and design strength of the proposed steel pipe should be specified.
- **Concrete Specifications and Placement**- Concrete (or grout) type, design strength, water/cement ratio and slump should be specified. Grouting may be necessary around the perimeter of the pipe to avoid bridging of concrete backfill. It is recommended that nonshrink concrete and grout be specified to assure adhesion between steel/concrete and soil/concrete interfaces. Cold joints should not be allowed for shear pins. Recommendations for placement of spacers adjacent to and under steel reinforcement or other methods of ensuring adequate concrete cover over steel should be provided.

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Exhibit 16 p 6

- **Backfilling of Shear Pin Borings**- It is assumed that future landslide movement seaward of the shear pin array may remove a portion of the earth materials above the top of shear pins at the seaward side of the array. This movement could expose the upper portion of backfilled shear pin borings in this area. It is therefore important that backfill materials above the shear pins consist of erosive materials, which will not present an eyesore when exposed. If cement-bentonite grout is utilized, a lean mixture should be specified.
- **Inclinometer Installation**- It is recommended that several of the shear pins be provided with inclinometer casings installed inside the steel pipe and extending to the ground surface to monitor deflections. Such installations would be simple and relatively inexpensive and would provide invaluable data regarding movement of the translational block and the corresponding shear pin deflections.
- **Construction Monitoring**- Shear pin construction should be monitored by the geotechnical consultant and be recorded on installation logs. These logs, depicting the as-built conditions, should be presented in the consultant's as-built geotechnical report.

LIMITATIONS

Our services consist of providing technical advice to the City regarding geotechnical issues during design and construction of the subject project. Our services are limited to review of documents provided by the City and the Project Geotechnical Consultant, and review of geologic conditions and geotechnical data during design and construction. Our opinions, conclusions and recommendations are made in accordance with generally accepted principles and practices of the geotechnical profession. No other warranty, express or implied, is made or intended by providing our services on this project.

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Responses to
Preliminary Geotechnical Review Comments
Regarding Shear Pin Installation,
Winterization Plan – Part B
by
Cotton, Shires & Associates, Inc.
Dated September 30, 1999

PREPARED FOR

Ocean Trails, L. P.
3850 Paseo Del Mar
Rancho Palos Verdes, California

Converse Project No. 99-31-210-01

October 6, 1999

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Exhibit 17 of 1

1.0 GENERAL

We appreciate receiving the review letter written by the City's Geotechnical Engineer, Cotton, Shires and Associates, (CSA), dated September 30, 1999. A copy of the review letter is included in Attachment A.

Prior to responding to the review letter, we wish to note the following:

1. The proposed shear pin installation will increase the landslide stability for the winter (Winterization) and will not exacerbate its instability. Without the proposed shear pin installation, reactivation of large landslide movements is likely during the upcoming winter rainy season.
2. The purposes of the shear pin installation have been detailed in the shear pin plan (Converse, 1999c). In addition to improving the stability of an area that poses immediate danger to the public, especially during winter, the shear pin installation is a prerequisite toward the graben repair and repair regrading of the surf area. Without the shear pin installation, graben repair and/or surf area repair cannot safely proceed.
3. Time is of the utmost concern for the shear pin installation. As described in the August 25, 1999 Converse report, the repair options, including the proposed shear pin installation, are conservatively designed, using conservative engineering parameters and assumptions and based on proven stabilization methods. The shear pin (pile) concept has been successfully used for a number of landslide stabilization projects worldwide (see Attachment B).

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Exhibit 17p2

3.0 RESPONSES

3.1 Response to the Comments under the Heading of *"Analytical Model of Landslide and Geotechnical Parameters Affecting Stability"*

1. The concern of the potential existence of weaker layers above or below the upper bentonite layer has been addressed in our September 27, 1999 responses to Dr. Perry Ehlig's memo dated September 20, 1999. Our responses and Dr. Ehlig's memo are included in Attachment C. In essence, we have examined all boring data from pre- and post-slide investigations and found absolutely no evidence of laterally continuous, adversely dipping, weak zones or beds above or below the upper bentonite layer, that would have an impact on the engineering solutions for stabilizing the main landslide mass and the graben area.
2. On September 30, 1999, Dr. Ehlig performed a downhole inspection of the bedrock below the upper bentonite layer/landslide rupture surface within boring LD-8, and found no evidence of similarly weak layers along which a failure could occur below the shear pins in the future (verbal communication on September 30, 1999).
3. Slope inclinometers SI-C1 and SI-C2 were drilled into a block of Landslide C, which is bounded by two significant fissures, which in all likelihood extend down to or near the basal sliding surface. It is noted that detached blocks that are close to a free face (e.g., bluff face) will continue to undergo adjustment until they either become pseudostable, or become undermined and fail, due to loss of lateral support. The observed lateral movements within the two inclinometers do not appear to be occurring along any identifiable, laterally continued, "discrete" layers within the slide mass. The data suggests internal readjustment of the detached block.
4. With respect to CSA's comments on water infiltration in the graben area, we offer the following responses:
 - A. Water infiltration in the graben area will not affect the lateral resistance capability of the shear pins, since the planned shear pins are at a distance of 100 to more than 500 feet from the graben area.
 - B. We don't know any details of the analyses performed by CSA. We agree qualitatively that water infiltration in the graben area will reduce the factor of safety of the landslide mass. This is precisely the reason for the urgency to install the shear pins to negate this potential effect and to implement erosion and drainage provisions (Part C of Winterization Plan) to reduce the potential of water infiltration in the graben area.

3.2 Response to the Comments under the Heading of "Geologic and Topographic Constraints":

1. The reason the shear pin array extends into the area identified as Abs (Active block slide) on the geologic map is because the nature of the landslide in this particular area of rock slumping is likely manifested by large, detached blocks which appear to retain coherency within the lower portions of the slide(s). We would like to draw your attention to geologic cross section K-K' for our interpretation of the slide area.
2. The shear pin array will *not* traverse so-called steep slopes. Should minor grading be needed for access to certain areas, this can be easily accomplished without adversely impacting the stability of the landslide or presenting a hazard to worker safety. A work plan will be prepared showing the limits of grading associated with installation of the shear pins.
3. As shown in Figure 4.1 of the shear pin plan, the shear pin array footprint can provide more shear pin locations than the actual number required. We can avoid locations that need extensive grading and still have sufficient locations to install the required number of shear pins.

3.3 Response to the Comments under the Heading of "Geologic and Topographic Constraints (continued)":

1. All geologic cross sections will be finalized/revise to illustrate the locations and extent of subsurface units. The use of question marks (e.g., ?) along a geologic contact is commonplace when extrapolating between data points. The line segments (e.g., basal sliding surface/upper bentonite layer) where the question marks appear represent our "best guess" as to the projection of the contacts between data points.
2. We are in the process of finalizing our geologic cross sections, and preparing a fence diagram for both the landslide area and the "backland area", where the temporary backcut will be made for construction of the reinforced earthen buttress. We anticipate that some minor adjustment of the shear pin array, if any, may occur; however, no significant changes are expected.

3.4 Response to Comments under the Heading of "Soil Bridging Between Shear Pins":

1. It is noted that the theory of plastic deformation simply assumes that the subsurface material around the pile reaches a plastic limiting equilibrium state,

satisfying the Mohr-Coulomb's yield criteria with shear strength parameters represented by a friction angle (Φ), and a cohesion (c). The statement of "*Inherent in this approach is the assumption that the soil is soft (sic!)*" is incorrect. Any soil or rock (soft to extremely hard) that satisfies the Mohr-Coulomb yield criteria around the pile will ultimately reach the plastic deformation state when the yield criteria are reached.

2. As described in Converse's reports (1999a, 1999b), the portion of subsurface materials within the planned zone of the shear pin installation (approximately between 10 feet above and about 11 feet below the upper bentonite layer). The portion of the shear pin above the upper bentonite layer provides the resistance to stabilize the landslide, while the portion of shear pin below the upper bentonite layer provides the resistance to hold the shear pin in place.
3. We have examined the logs of all borings within the shear pin array footprint area. These include Boring LD-1, LD-2, LD-5, LD-9 and LD-11C. Boring LD-9 was not downhole logged because of dangerous caving conditions. Table 1 summarized the subsurface materials within about 10 feet above and 10 feet below upper bentonite layers encountered in the four borings within the shear pin array footprint, which were downhole logged. The following observations can be made:
 - A. The subsurface materials within the ten feet above the upper bentonite are primarily well fractured to highly fractured, non-cemented, thinly bedded siltstone and shale with locally highly fractured dolomitic sandstone, in all borings except in Boring LD-5, where a 1.2-foot thick slightly to moderately fractured sandstone layer is located between about 7.5 and 8.7 feet above the upper bentonite layer. This sandstone is thin and will be crushed to smaller pieces upon shear pin loading.
 - B. Except for the thin, slightly to moderately fractured sandstone layer encountered in Boring LD-5, the subsurface materials within ten feet above the upper bentonite layer in the shear pin array footprint have no cementation, can be easily excavated by mechanical means, can be easily broken into smaller sized particles, and is highly susceptible to slaking upon repeated wetting and drying. From a geotechnical engineering viewpoint, these materials should be classified as similar to "soil" or "soil-like" materials, as defined in the geotechnical engineering literature summarized in Table 2.
 - C. Based on the record of Phase I and Phase II grading in the site area, the sizes of hard and cemented rocks are predominantly two feet or less, which is relative small, as compared with the spacing between piles (20 feet) and spacing between rows (30 feet) of shear pins.

- D. The "soil-like" subsurface materials and small rock size (as compared with shear pin spacing) indicate that the potential for "non-uniform loading along the length of the pile, lack of bridging between adjacent piles, thereby causing overstress in some piles of the group, and lack of load transfer from one row of piles to the next" is minimal and should have little or no impact on the shear pin analysis or design.
- E. The subsurface materials within about 11 feet below the upper bentonite layer consist primarily of interbedded siltstone, shale, siliceous siltstone and siliceous shale with occasional thin bentonic clay and gypsum filling along fractures and bedding. In this zone, siliceous materials, if present and if sufficiently thick (i.e., cannot be crushed into smaller pieces by shear pin loading), will only increase the shear resistance in the portion of the shear pin below the upper bentonite layer, resulting in requiring less shear pin penetration than that of the proposed shear pins. Thus, it is conservative by not considering the potential beneficial effects of siliceous materials in the zone below the upper bentonite layer in the shear pin design.

3.5 Response to the Comment under the Heading of "Shear and Bending Resistance of Shear Pins":

Our responses to this comment are the same as those stated above. It is our conclusion that the potential of distinct rock blocks imposing non-uniform loadings on the shear pins is minimal and should have little or no impact on the shear pin analyses and design.

3.6 Response to Comments under the Heading of "Pullout Resistance":

1. The following provide a brief description of some of the facts regarding shear pin behavior:
 - A. The basal sliding plane (upper bentonite layer) of Landslide C dips from about four degrees to 14 degrees, with an average of about 11 degrees.
 - B. If the landslide starts to move, the down-dip of the driving force to be imposed on and resisted by the shear pins will be similar to the down-dip of the basal sliding surface. Thus, there is a compressive force component acting on the shear pins.
 - C. The ultimate resistance of a shear pin will be reached when the shear pin tilts about 2% (i.e., tilt about $\tan^{-1} 0.02$, or 1.1 degree). At this time, the shear pin reaches its design capacity and there will still be a compressive force component on the shear pin.

- D. If the landslide driving force is larger than the shear resistance of the basal sliding plane and the ultimate design resistance of the shear pins, the shear pins will continue to deform and tilt. There will be a tension (pullout) component when the shear pins are tilted more than the dipping of the basal sliding plane and will eventually be pulled out.
2. The proposed shear pins are designed to increase the current landslide safety factor to at least 1.124 (increase resistance to 12.4% of the calculated driving force, i.e., $115,000 \text{ kips} + 930,000 \text{ kips} = 0.124$) to negate potential water infiltration effects in the graben area and provide needed safety assurance for graben and/or surf area repair. The pullout resistance concern stated in the review letter will become a concern only if the additional landslide driving force from rainwater infiltration or other sources exceeds the design capacity of the shear pins. We don't expect the ultimate resistance capacity of the shear pin to be exceeded by the hydrostatic force due to rainwater infiltration in the graben area, either during the winter season or during graben and/or surf area repairs. Thus, the actual tilt of the shear pin is expected to be much less than 1%, and the pullout conditions will not occur.

3.7 Response to the Comments under the Heading of "Lateral Capacity of Earth Materials"

1. The shear pin behavior is a three-dimensional case, while the "*lateral capacity of the earth material adjacent to the shear pins*" is a two-dimensional plane strain case. The resistance of the shear pin is always much larger than the two-dimensional lateral passive earth pressure. Comparing shear pin resistance with the passive earth pressure is like an "apple vs. orange" comparison.
2. As indicated in Converse's reports (1999a and 1999b), the shear strength parameters of friction angle of 45° and cohesion of 6000 psf for the material below the upper bentonite layer were used in the shear pin design. These strength parameters were conservative and less than the previously approved and used strength parameters (friction angle = 51° and cohesion = 6500 psf).

3.8 Response to Comments under the Heading of "Lateral Deformation of Shear Pins":

1. We have designed the spacing between rows to be 30 feet (i.e., about ten times the shear pin diameter) so that individual rows will be independent of each other (i.e., no load transfer and no group effect).

2. Consistent with our conservative design philosophy, the planned spacing between rows of 30 feet is much more than other successful cases of using large diameter piles to stabilize landslides (documented in Attachment B) to ensure no group effect (i.e., no reduction of lateral resistance of each row due to group effect).

3.9 Response to Comments under the Heading of "Construction Procedures":

We appreciate CSA's comments regarding construction procedures. We will provide detailed construction specifications covering all topics described by CSA.

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Table 1

**Summary of Subsurface Materials in
 Shear Pin Penetration Zone* within the Planned
 Shear Pin Array Footprint**

Boring No.	Depth of Upper Bentonite Layer, ft.	Subsurface Materials within 10' above Upper bentonite layer	Subsurface Materials within about 11' below Upper bentonite layer
LD-1	91.8 – 92.2	Siltstone and siliceous siltstone with interbedded ash/tuff and sandstone, thinly bedded to laminated, moderately strong to strong, moderately to highly fractured, very few to no open fractures.	Siltstone and interbedded siliceous siltstone, thinly bedded to laminated, moderately strong to strong, moderately fractured, no open fractures.
LD-2	97.3 – 97.8	Moderately to intensively fractured siltstone with breccia at about ten feet above and immediately above the upper bentonite layer.	Moderately strong, thinly bedded siltstone with gypsum filling along bedding.
LD-5	96.5	Highly fractured siltstone interbedded with tuffaceous siltstone, with existence of a 1.2-ft. thick bed of slightly to moderately fractured sandstone between about 7.5 and 8.7 feet above the upper bentonite layer.	Thinly interbedded siltstone and siliceous siltstone with gypsum filling along bedding.
LD-11C	83.3 – 84.0	Highly fractured and sheared siltstone and bentonitic tuff with a 3-ft. thick highly fractured dolomitic sandstone between about 6 to 9 feet above the upper bentonite layer	Unweathered, thinly bedded siltstone and shale with gypsum filling along bedding and a 1.2-ft. thick hard dolomitic sandstone between 5.8' and 7' below the upper bentonite layer.

*Shear Pin Penetration Zone is between 10' above and 11' below the upper bentonite layer.

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4.0 CONCLUSIONS

We have thoroughly responded to all comments presented in the review letter. As demonstrated in our responses, all comments expressed in the review letter, except those under the heading of "*Construction Procedures*", have already been considered or found have little or no impact on the proposed shear pin analyses and design.

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Table 2
Definition of Soil and "Soil-Like" Materials

In engineering literature, there exist a number of variations in defining soil and "soil-like" (as an opposite to "rock-like") materials. However, most of these definitions are within the definition envelopes provided in the listed references and summarized below:

- "Soil, in the engineering sense, comprises all materials found in the surface layer of the earth's crust that are loose enough to be moved by spade or shovel." – Section 3.1 in Reference 1.
- "In contrast (to geologists), engineers use the term "soil" widely and loosely to describe any superficial or surficial deposits which can be excavated without blasting." – Section 3.1 in Reference 2.
- "In the general sense, *soil* refers to the unaggregated or uncemented granular material....In many materials classified by engineers as *soils*, cementing between the grains may exist to some slight degree, and therefore, may contribute the mechanical characteristics of the granular mass. This cementation should not be such as to cause the granular material to assume a hard, rock-like form, however, if the substance is to be classified as soil in the present context." – Section 1-1 in Reference 3.
- "Rock-like shales normally preserve their strength and integrity even during repeated wetting and drying cycles, while soil-like shales slake under those conditions." Section 3.3.3 in Reference 1.

Reference for Table 2:

1. Fang, H-Y, ed., 1991: Foundation Engineering Handbook, 2nd edition, Van Nostrand Reinhold, New York.
2. McLean, A. C. and Gribble, 1988: Geology for Civil Engineers, 2nd Edition, edited by Gribble, Unwin Hyman, London, U. K.
3. Scott, R. F., 1963: Principles of Soil Mechanics, Addison-Wesley Publishing Co., Reading, Mass.

A 5 QPV 43025 A 14
Exhibit 17 p 11

5.0 LIMITATIONS

Our professional services in the form of observations, analyses, conclusions, and recommendations included in this report have been performed and presented in accordance with generally accepted geotechnical engineering and engineering geology principle and practices. We make no further warranty, either expressed or implied.

Thank you for the opportunity to be of service. If you should have any questions, or if we can be of additional service, please do not hesitate to contact us.

Respectfully submitted,

CONVERSE CONSULTANTS


Bill T. D. Lu, GE 2128
Chief Engineer




D. Scott Magorien, CEG
Chief Engineering Geologist

Encl: References

- Attachment A: Review Letter from Cotton, Shires & Assoc., Inc.
- Attachment B: Selected Case Histories of Using Large-Diameter Piles to Stabilize Landslides
- Attachment C: September 27, 1999 Memo by Bill Lu to Respond to September 20, 1999 Memo by P. Ehlig

Distribution: 2/Addressee

- 2/Cotton Shires & Associates
Attn: Mr. Bill Cotton and Mr. Stan Helenschmidt
- 2/City of Rancho Palos Verdes
Attn: Mr. Dean Allison and Mr. Les Evans
- 3/Peer Review Panel
Attn: Dr. Bing C. Yen, Mr. Glenn Brown and Dr. Perry Ehlig
- 2/California Coastal Commission
Attn: Ms. Leslie Ewing and Ms. Pam Emerson
- 1/Mr. Craig Meredith
- 1/Mr. Phil Woog
- 1/Stoney-Miller
Attn: Mr. Gary Stoney

*A 5 RPO 93005 014
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MEMORANDUM

Date: September 7, 1999

To: Mr. Ken Zuckerman
Ocean Trails, L.P.
3850 Paseo Del Mar
Rancho Palos Verdes, California

Subj: **CLAY CAP INVESTIGATION**
Ocean Trails Golf Course
3850 Paseo Del Mar
Rancho Palos Verdes, California
Converse Project No. 99-31-210-01

INTRODUCTION

This memorandum presents results of a supplemental geotechnical investigation performed on the clay cap infiltration barrier beneath Holes 10 and 18 of the Ocean Trails Golf Course. This investigation was performed following the June 2, 1999 failure of Landslide "C". The investigation was performed to 1) evaluate the performance of the compacted fill clay cap beneath the fairways and greens of Holes 10 and 18, 2) to determine the degree of saturation of the clay cap soils, and 3) to test the "as-built" permeability of the clay cap soils. This memorandum presents general information on the clay cap investigation, a more detailed formal report is forthcoming.

INFILTRATION CONTROL MEASURES

A number of control measures were built into the golf course to limit the potential for infiltration of surface waters (including irrigation and precipitation) into the underlying earth materials. These measures include the following:

Clay Cap

A compacted-fill clay cap was constructed beneath the greens, tees, fairways and roughs on each golf course hole. The 3-foot thick clay cap consisted of on-site clay soils which were selectively stockpiled, processed, mixed and moisture conditioned. The clay cap soils were tested and required to have a permeability of less than 1×10^{-6} cm/sec, a minimum plasticity index of 20, be moisture conditioned to about 3% over optimum moisture content to limit desiccation cracks, and be compacted to 90% of maximum relative density.

Fairway Contour Fills

Clayey on-site soils with low permeability were also placed above the 3-foot clay cap to contour and shape the golf course fairways. The thickness of these clayey soils used to contour the surface of the course varied from several inches to about 15 feet.

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Exhibit 18
P1

Subdrains and Area Drains

Greens and tees were constructed with a special subdrain system, which sits on top of the 3-foot thick clay cap soil layer. The subdrain includes a 4-inch fine gravel layer with an array of collector pipes in shallow trenches 6 to 8 inches deep. The gravel layer is overlain by 2 inches of sand, which is in turn overlain by a 12-inch root zone soil to support healthy grass growth. Water collected from the subdrain system is recycled to the lakes or disposed of in storm drains. The entire underdrain system and soil profile on the greens and tees sits on top of the 3-foot thick clay cap.

An extensive network of area drains was also constructed on each of the golf course holes to collect surface runoff. The area drains were located in topographic low spots created by contour grading above the clay cap. The area drains were placed in a 100-foot triangular grid pattern in the fairways and along the cart paths. The area drains reduce the opportunity for water to pond and infiltrate by producing positive surface drainage. Water collected in the area drains is recycled to the lakes or disposed of in storm drains.

Irrigation System

The golf course irrigation system is to be monitored and controlled by a computer system and checked daily by golf course personnel. The system will include a local weather station, central computer controller, and local control stations to closely control and monitor the amount of water applied to the grounds. The soil moisture levels within the root zone are periodically checked in the field by golf course personnel with small tube core samplers to check and prevent over watering. Local control stations are periodically checked and adjusted in the field by golf course personnel.

FIELD INVESTIGATION

Twenty-three hand auger test borings were excavated to sample and test the clay cap beneath the fairways and greens on Holes 10 and 18. The test borings were spaced throughout the study areas to obtain representative samples. The sampling was performed on June 8, 9 and 11, 1999. The test borings ranged in depth from three to six feet and penetrated through the contour fill into the clay cap. Representative soil samples of the clay cap were obtained using a 3-inch California Drive sampler lined with sample rings. The sampler was driven into the ground with repeated blows from a 40-pound drive weight. The recovered samples were carefully placed in watertight containers, sealed and returned to the laboratory for testing. Approximate locations of the test borings are shown on Drawing 1.

Test Borings HA-1 through HA-6 were excavated within the Landslide "C" graben area directly over the sewer pipeline alignment. The test borings were located within the central portion of the earth blocks broken by the landslide. Test Borings HA-4 and HA-5 were located in a former sand trap.

Test Borings HA-7 through HA-14 were excavated on the main landslide block displaced seaward by the landslide failure. The test borings were excavated on the former

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Exhibit 15 p 2

18th hole fairway through the overlying clayey contour soils and into the clay cap. Test Boring HA-7 was located in a former sand trap.

Test Borings H18-1 through H18-3 were excavated into the central portion of the 18th fairway which remained intact after the landslide. Each test hole was backfilled and tamped with clay cap soils.

Test Borings H10-1 through H10-5 were excavated on the west portion of the Hole 10 fairway, which is located on or near Landslide "A". This section of the golf course was being irrigated at the time of sampling. The test borings were positioned in topographic low spots near area drains where increased surface infiltration would likely occur and the clay cap would be encountered at shallow depth. Each test hole was backfilled and tamped with water-activated bentonite chips and clay cap soils.

LABORATORY TESTS

Laboratory tests were performed on the recovered samples to test the moisture content and dry density of the clay cap soils, to determine the specific gravity (used to calculate the degree of saturation), and to test the clay cap permeability.

Forty-eight moisture content and dry density tests were performed. Moisture contents ranged from 24.4% to 35.8%. Dry densities ranged from 79 pcf to 93 pcf. Results of the tests are presented on Tables 1 and 2.

Six falling-head permeability tests were performed on the recovered clay cap soil samples. The tests were performed in accordance with ASTM Test Method D5084. Results of the permeability test are presented on Table 2.

DISCUSSION

The degree of saturation in a soil is determined by dividing the volume of water in a soil sample by the volume of voids. Once a soil sample has absorbed all the water that can be taken up (filled all the void spaces to capacity), it reaches 100% saturation.

Review of the laboratory test results presented in Table 1 indicates that all the clay cap soils tested were below 100% saturation. In order for a fine grain clay soil to transmit water, it must be 100% saturated. Partial saturation in a clay soil matrix will not transmit water. If partial saturation exists, as is often the case above groundwater levels, the voids can be clogged with air and permeability may be only 40 to 50% of that for saturated conditions.

Permeability is defined as the capacity of a material to transmit water. Permeability values used by engineers for soil applications are given in units of velocity (centimeters per second) at a temperature of 20° C. Typical permeability values for various types of soils are presented on Table 3. Permeability can range from 10² cm/sec for clean gravels to 10⁻⁹ cm/sec for clays, which are practically impervious.

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Exhibit 18 p3

Factors which affect the permeability values in soils include gradation (grain size), density, porosity, void ratio, degree of saturation and stratification. Generally, the finer the soil particle size in a soil matrix, the lower the permeability.

Permeability is not determined by soil color. Low permeability clays can be different colors, from light brown and gray to dark browns and black colors.

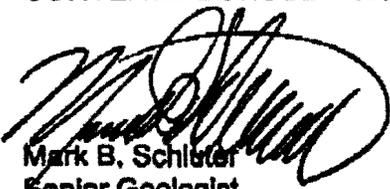
Review of the six permeability test results presented on Table 2 indicate that all the samples tested had very low permeability and are considered to be "practically impermeable". This test data also indicates that the clay cap soils tested were well below the maximum recommended permeability value for the clay cap soil material (less than 1×10^{-6} cm/sec).

CONCLUSIONS

Based on our field observations and the results of laboratory tests performed on the clay cap infiltration barrier, it is our opinion the clay cap barrier beneath Holes 10 and 18 of the Ocean Trails Golf Course performed well, and meet the approved design criteria for the clay cap. All of the clay cap soils tested were below 100% saturation. In order for a clay soil to transmit water, it must be 100% saturated. Permeability tests performed on the clay soils indicated very low permeability values and are considered to be "practically impermeable".

Respectfully submitted,

CONVERSE CONSULTANTS



Mark B. Schluter
Senior Geologist

Encl: Drawing 1 - Location of Hand Auger Test Pits (Landslide "C")
Table 1 - Laboratory Test Data
Table 2 - Falling Head Permeability Test Data
Table 3 - Permeability Values

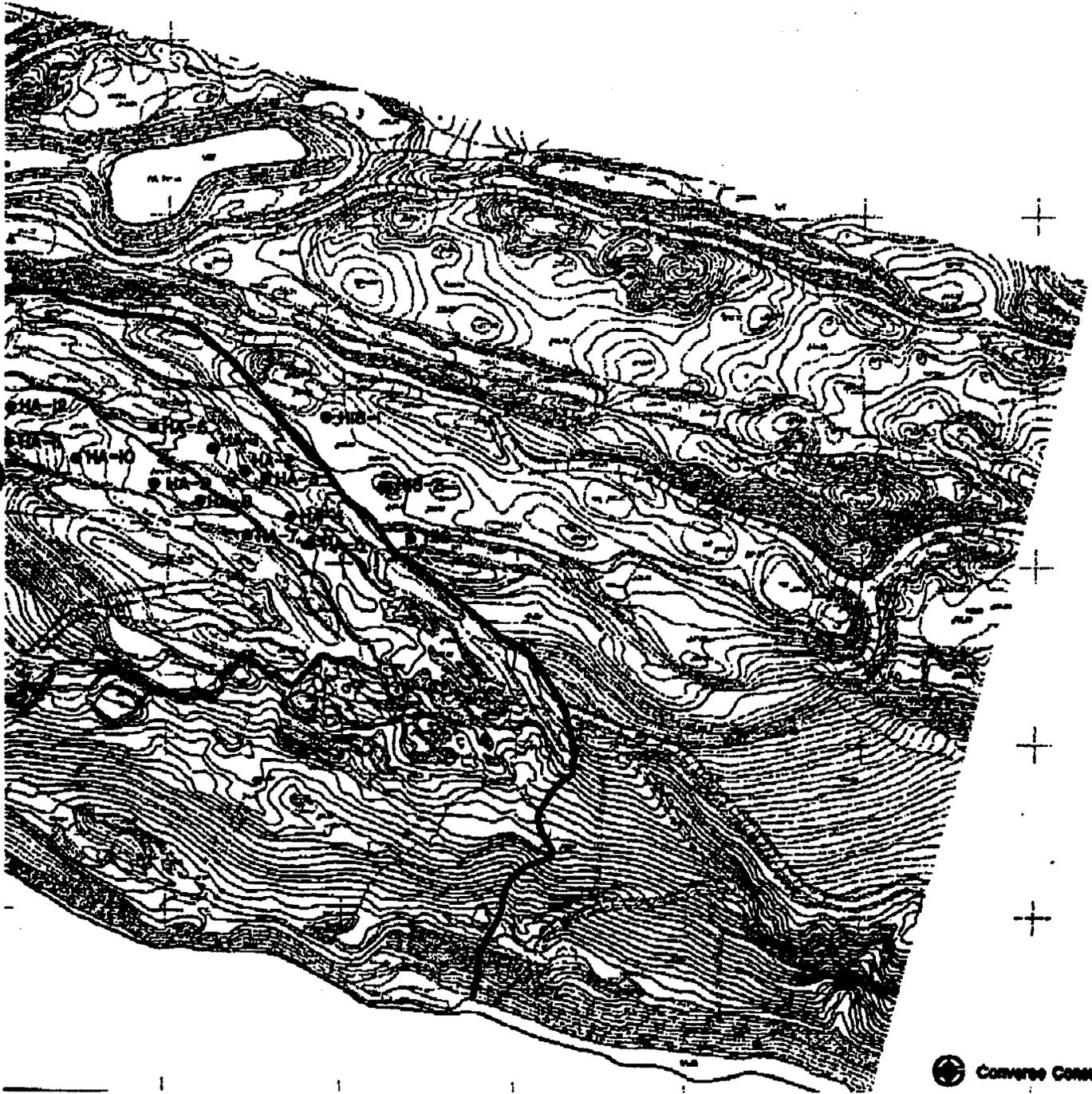
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A 14
Exhibit 1804

TRAILS SLIDE 'C'

EXPLANATION

180-3 ● APPROXIMATE LOCATION OF
HAND ALGER TEST BORING



Converse Consultants

AS RPV 93 005 A14
Exhibit 18 p5

**TABLE 1
CLAY CAP INVESTIGATION
OCEAN TRAILS GOLF COURSE
LABORATORY TEST DATA**

General Location	Boring Number & Sample Depth	Moisture Content (% Dry Weight)	Dry Density (PCF)	Percent Saturation
Landslide "C" pull-apart graben, above Sewer Alignment, Former Hole 18 Fairway	HA-1 @ 1-1/2' - 2'	31.0	81	81
	HA-1 @ 2' 9" - 3' 3"	26.8	85	75
	HA-1 @ 3' 11" - 4' 5"	28.8	88	89
	HA-2 @ 1' 4" - 1' 10"	27.3	89	87
	HA-2 @ 2' 4" - 2' 10"	29.0	89	92
	HA-2 @ 3' 1" - 3' 7"	28.0	91	87
	HA-3 @ 1' 6" - 2'	26.9	91	91
	HA-3 @ 2' 5" - 3'	28.6	85	82
	HA-4 @ 1.5' - 2'	24.4	81	84
	HA-4 @ 2.5' - 3'	28.4	82	76
	HA-4 @ 4' - 4.5'	29.9	79	75
	HA-5 @ 10" - 1' 4"	34.1	82	91
	HA-5 @ 2' - 2.5'	32.1	88	87
	HA-6 @ 2' - 2.5'	28.7	92	92
Landslide "C" Main Landslide block, former Hole 18 Fairway	HA-7 @ 10" - 1' 4"	34.7	80	89
	HA-7 @ 1' 9" - 2' 3"	29.7	88	93
	HA-8 @ 1' 5" - 2' 3"	31.8	79	79
	HA-8 @ 5' 5" - 5' 11"	28.2	90	91
	HA-9 @ 1' 10" - 2' 4"	29.7	87	90
	HA-9 @ 3' 2" - 3' 8"	27.7	91	82
	HA-9 @ 4' 5" - 5'	31.5	86	87
	HA-10 @ 1' 8" - 2' 2"	29.7	87	91
	HA-11 @ 2.5' - 3'	30.4	83	84
	HA-12 @ 1.5' - 2'	28.3	91	94
	HA-13 @ 1.5' - 2'	32.1	86	95
	HA-13 @ 2' 9" - 3' 3"	34.8	81	84
	HA-14 @ 2' 3" - 2' 9"	34.1	83	93
	HA-14 @ 4' - 4.5'	35.7	81	94
Golf Course, Hole 18 Fairway (low spots near area drains)	H18-1 @ 2' - 2.5'	31.1	(Disturbed)	-
	H18-1 @ 4' 7" - 5' 1"	35.8	80	93
	H18-2 @ 1' 10" - 2' 4"	30.6	84	85
	H18-2 @ 3' 11" - 4' 5"	31.2	85	90
	H18-3 @ 1' 11" - 1' 5"	33.7	86	96
	H18-3 @ 2' 6" - 2' 11"	30.6	86	82
Golf Course, Hole 10 Fairway (low spots near area drains)	H10-1 @ 1' 9" - 2' 3"	28.3	85	83
	H10-1 @ 4' 8" - 5' 2"	24.8	93	87
	H10-2 @ 2' - 2' 6"	29.8	88	93
	H10-3 @ 1' 8" - 2' 2"	30.0	89	97
	H10-3 @ 2' 11" - 3' 5"	30.6	87	87
	H10-4 @ 1.6' - 2'	26.9	88	84
Landslide "A"	H10-4 @ 2' 8" - 3' 2"	28.5	91	95
	H10-5 @ 1' 11" - 2' 5"	29.2	89	93
	H10-5 @ 3.5' - 4'	28.2	91	88

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TABLE 2
CLAY CAP INVESTIGATION
OCEAN TRAILS GOLF COURSE
 Falling Head Permeability (ASTM D5084) Test Data

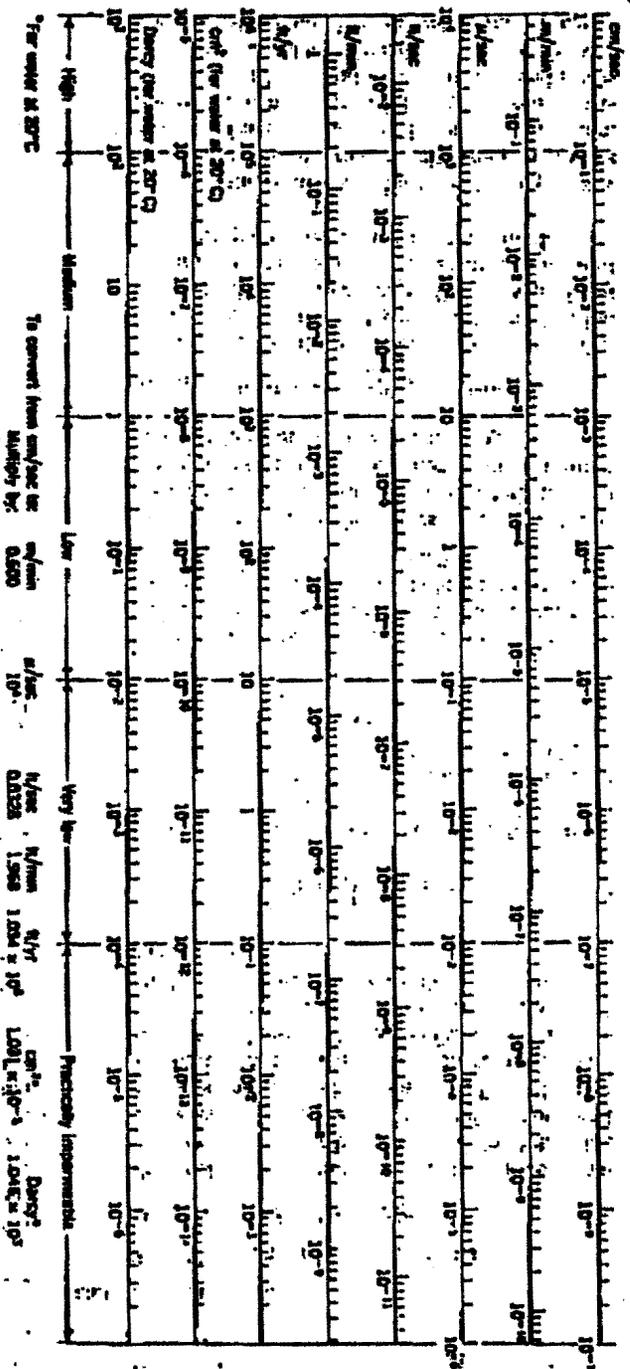
Sample Number and Depth	Soil Description	Moisture Content (Percent)		Dry Density (PCF)		Permeability (cm/sec)
		Before	After	Before	After	
HA-2 @ 3'1"	Clay (CH)	28.0	32.4	81	80	1.19×10^{-9}
HA-5 @ 2'	Clay (CH)	32.1	34.6	86	85	5.16×10^{-9}
HA-9 @ 4'8"	Clay (CH)	31.5	35.3	88	86	6.02×10^{-9}
HA-13 @ 2'9"	Clay (CH)	34.6	39.1	81	81	8.35×10^{-9}
HA-18-3 @ 2'5"	Clay (CH)	30.6	35.2	85	85	8.27×10^{-9}
H10-3 @ 2'11"	Clay (CH)	30.6	33.4	88	88	5.03×10^{-9}

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TABLE 3. - PERMEABILITY VALUES

PERMEABILITY CHARACTERISTICS OF SOILS AND THEIR METHODS OF MEASUREMENT										
Coefficient of Permeability k , cm/s (log scale)										
	10^2	10^1	10	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}	10^{-8}
Drainage				Good drainage			Poor drainage		Practically impervious	
Types of soil	Clean gravel	Clean sand Clean sand and gravel mixtures	Very fine sands; organic and inorganic silts; mixtures of sand, silt, and clay; local till stratified clay deposits, etc.	"Impervious soils" which are modified by the effects of vegetation and weathering	"Impervious soils, e. g., homogeneous clays below zone of weathering	Direct determination of coefficient of permeability				
						Indirect determination of coefficient of permeability				
Direct determination of coefficient of permeability	Direct testing of soil in its original position (e. g., field-pumping tests)		Constant-head permeameter		Falling-head permeameter		Computations from time rate of consolidation and rate of brecciation drop at constant volume			
	from grain size distribution, porosity, etc.		Compendiums		Horizontal capillarity test					
Indirect determination of coefficient of permeability	Compendiums		Horizontal capillarity test							
	from grain size distribution, porosity, etc.									

*After Casagrande and Fedun (1959) from Lambe (1952)



Permeability conversion chart (from Lambe and Whitman (1969)).

To convert from cm/sec to m/sec multiply by 0.0254
 To convert from m/sec to cm/sec multiply by 39.37
 To convert from ft/sec to cm/sec multiply by 30.48
 To convert from cm/min to cm/sec multiply by 0.0167
 To convert from cm/hr to cm/sec multiply by 0.000278

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**OCEAN TRAILS
LANDSLIDE REPAIR ALTERNATIVES MATRIX**

ALTERNATIVE	PROJECT DESCRIPTION	PUBLIC ACCESS AND SAFETY	HABITAT	GRADING	GOLF COURSE	SURF REPAIR	OVERALL FEASIBILITY
No. 1 No Project Alternative	No landslide stabilization measures would be implemented. The no project alternative is a major risk because of the potential of the landslide to reactivate as a result of the build-up of water within the graben and the slide area itself. Additional slope and bluff failures would be anticipated.	The beach would be closed indefinitely for public safety reasons. Coastal trails would not be rebuilt. Halfway Point Park would be reduced in size for public safety reasons. The trail through the project could be rebuilt, although it would not be recommended because of errant golf ball hazards.	The overall quality of native habitat that might establish on the landslide will be of low density, cover and diversity with a high occurrence of non-native annual species. There would be a significant impact on tide pool resources within the landslide area as a result of land movement and transport of rock debris and sediment particles into the tidal zone.	There are no significant grading constraints associated with this alternative.	The character and integrity of the golf course would change significantly with the final two holes consisting of two conservative par 3's. This would negatively affect rate structure, number of rounds, golf course length, tournament potential and marketing strategy for the golf course and clubhouse. The business plan for the golf course would not be feasible to implement and the financial viability of the golf course would be at a serious risk.	Surf repair work not implemented.	Public safety and public access provisions of the project would be severely compromised. Habitat values would be negatively affected and surf repair would not be completed. Golf course economics and market positioning would be impacted significantly. The factor of safety for the landslide area would not be increased. Estimated cost: \$ 1-3 million.

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**OCEAN TRAILS
LANDSLIDE REPAIR ALTERNATIVES MATRIX**

ALTERNATIVE	PROJECT DESCRIPTION	PUBLIC ACCESS AND SAFETY	HABITAT	GRADING	GOLF COURSE	SURE REPAIR	OVERALL FEASIBILITY
<p>No. 2 Complete Landslide Removal and Replacement</p>	<p>Remove and replace all traces of landslide materials from edge of golf course to the beach. Original beach profile would be reestablished. Reconstruction of the bluff face with a manufactured slope of approximately 1.5-2.0:1 would be required.</p>	<p>Public access trails through the project and to the beach would be reestablished. Halfway Point Park would be stabilized and opened for public use. The beach would also be open for public use.</p>	<p>Native vegetation areas impacted by the landslide would be reestablished.</p>	<p>This alternative faces significant logistical (engineering) constraints related to earthwork and stockpiling of excavated soils. Approximately 3 million cubic yards of bedrock/landslide materials would be excavated. There are no feasible areas within the project to safely stockpile the amounts of excavated material necessary to achieve an economical solution to stabilizing the area. Any significant stockpiling of materials anywhere within the limits of the project could produce additional, large-scale landslides. Extensive dewatering would also be required.</p>	<p>The 18th hole of the golf course would be rebuilt to standards acceptable to Ocean Trails. Golf course business operations including rate structure, number of rounds, tournament potential and marketing strategy would be implemented as originally planned.</p>	<p>Creation of a new access road to the beach. Remove uplifted portion of rocky beach area to mean sea level and reestablish pre-slide gradient of beach area, inland of mean sea level. Redistribute larger boulders along toe of the manufactured bluff.</p>	<p>Stockpiling excavated material on the golf course would be required in order to implement this alternative. This would likely create landslide instability and public safety issues during reconstruction of the landslide area to the extent that reactivation of the landslide would also be likely. Very significant amounts of dewatering of groundwater contribute to reconstruction unfeasibility. If construction were feasible, the factor of safety for the landslide area would be increased with this alternative.</p> <p>Estimated cost: \$50-80 million.</p>

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**OCEAN TRAILS
LANDSLIDE REPAIR ALTERNATIVES MATRIX**

ALTERNATIVE	PROJECT DESCRIPTION	PUBLIC ACCESS AND SAFETY	HABITAT	GRADING	GOLF COURSE	SURF REPAIR	OVERALL FEASIBILITY
<p>Notes Partial Landslide Removal and Replacement</p>	<p>Excavation of approximately one-half of the southern portion of the landslide (including the bluff area) which would involve excavating large "slot cuts" extending from the beach northward.</p>	<p>Public access trails through the project and to the beach would be reestablished. Halfway Point Park would be stabilized and opened for public use. The beach would also be open for public use.</p>	<p>Native vegetation areas impacted by the landslide would be reestablished.</p>	<p>Each slot cut would likely be no more than 100-feet wide and would require the creation of extensive access roads. Significant amounts of temporary shoring would be needed to stabilize remaining landslide materials during grading. Extensive, significant dewatering would also be required.</p>	<p>The 18th hole of the golf course would be rebuilt to standards acceptable to Ocean Trails. Golf course business operations including rate structure, number of rounds, tournament potential and marketing strategy would be implemented as originally planned.</p>	<p>Creation of a new access road to the beach. Remove uplifted portion of rocky beach area to mean sea level and reestablish pre-slide gradient of beach area, inland of mean sea level. Redistribute larger boulders along toe of the manufactured bluff.</p>	<p>The remaining landslide mass left behind could reactivate and possibly create major safety issues during grading and reconstruction. Safety, significant, extensive amounts of dewatering and cost are major factors that contribute to the unfeasibility of this alternative.</p> <p>Estimated cost: \$20-30 million.</p>

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**OCEAN TRAILS
LANDSLIDE REPAIR ALTERNATIVES MATRIX**

ALTERNATIVE	PROJECT DESCRIPTION	PUBLIC ACCESS AND SAFETY	HABITAT	GRADING	GOLF COURSE	SURF REPAIR	OVERALL FEASIBILITY
<p>No. 4 Manufactured Slope Repair at 2:1</p>	<p>Create a 2:1 (horizontal to vertical) cut-slope along the bluff face within the limits of the landslide. This cut-slope would extend from the existing toe of the landslide approximately 200-250 feet northerly to the current bluff top.</p>	<p>Because there would be significant potential for the landslide to reactivate, the beach would be closed indefinitely. Coastal trails would not be rebuilt. Halfway Point Park would be reduced in size for public safety reasons. The trail through the project could be rebuilt, although not recommended because of errant golf ball hazards.</p>	<p>The overall quality of native habitat that might establish on the slope will be of low density, cover and diversity with a high occurrence of non-native annual species. There would be a significant impact on tide pool resources within the landslide area as a result of potential land movement and transport of rock debris and sediment particles into the tidal zone.</p>	<p>This alternative would involve excavation of approximately 28,000 cubic yards of materials. There is no area within the project where this material could be placed as engineered fill. The project area cannot accept any more fill placement without adversely affecting the overall stability of the area. This alternative is a major risk because of the potential of the landslide to reactivate. The active rock slumps that comprise the bluff face helps to stabilize the main slide area.</p>	<p>The character and integrity of the golf course would change significantly with the final two holes consisting of two conservative par 3's. This would negatively affect rate structure, number of rounds, golf course length, tournament potential and marketing strategy for the golf course and clubhouse. The business plan for the golf course would not be feasible to implement and the financial viability of the golf course would be at a serious risk.</p>	<p>Creation of a new access road to the beach. Remove uplifted portion of rocky beach area to mean sea level and reestablish pre-slide gradient of beach area, inland of mean sea level. Redistribute larger boulders along toe of the manufactured bluff.</p>	<p>This alternative is not feasible as the removal of the outer portion of the existing landslide greatly aids in maintaining a factor of safety of 1.05. Removal of the rockslides along the bluff face would reduce the factor of safety to below 1.0.</p> <p>Estimated cost: \$8 million, plus additional unknown costs to be incurred once the landslide became reactivated.</p>

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**OCEAN TRAILS
LANDSLIDE REPAIR ALTERNATIVES MATRIX**

ALTERNATIVE	PROJECT DESCRIPTION	PUBLIC ACCESS AND SAFETY	HABITAT	GRADING	GOLF COURSE	SURF REPAIR	OVERALL FEASIBILITY
<p>No. 5 Installation of Earthen Buttress and Shear Pins</p> <p>[Alternative No. 5 is Ocean Trails' proposed repair alternative]</p> <p style="text-align: right; font-size: 2em;">p5</p>	<p>Filling and sealing of open surface fissures with solid materials and installation of approximately 150-200 below grade pipe pile/shear pins that would extend into the upper bentonite layer. Replace the landslide mass within graben area with reinforced earthen buttress. Earthen buttress would also to extend below the upper bentonite layer.</p> <p style="text-align: right; font-size: 2em;">ASRPV Exhibit 19 9305A14</p>	<p>Public access trails through the project and to the beach would be reestablished. Halfway Point Park would be stabilized and opened for public use. The beach would also be open for public use.</p>	<p>Native vegetation areas impacted by the landslide would be reestablished.</p>	<p>Excavate soil and rock debris within a 1,800-foot long section of the landslide graben down to just below the upper bentonite layer (i.e., basal landslide slip surface). Replace excavated material with geotextile-reinforced earthen buttress using soil and rock materials excavated from the removals in the graben area. Total grading of approximately 1 million cubic yards. Limited stockpiling would not create additional unnecessary instability. The entire area of the excavation would be backfilled and regraded to conform to the adjacent topography. Surface drainage would be reestablished to conform to previous, pre-landslide patterns.</p>	<p>The 18th hole of the golf course would be rebuilt to standards acceptable to Ocean Trails. Golf course business operations including rate structure, number of rounds, tournament potential and marketing strategy would be implemented as originally planned.</p>	<p>Creation of a new access road to the beach; trimming back the current face of the bluff created by the landslide over a lateral distance of approximately 250 feet. Remove uplifted portion of rocky beach area to mean sea level and reestablish pre-slide gradient of beach area, inland of mean sea level. Redistribute larger boulders along toe of the bluff.</p>	<p>This alternative represents Ocean Trails' proposed repair plan. It is the most feasible and meets the original goals of the project. This alternative provides for a significant increase in public safety, reestablishes public access and provides for habitat restoration. The factor of safety within the landslide area would be increased to near 1.1 to 1.15 with the implementation of this alternative. The factor of safety for the golf course and Halfway Point park is expected to increase significantly to 1.5.</p> <p>Estimated cost: \$10-15 million.</p>

**OCEAN TRAILS
LANDSLIDE REPAIR ALTERNATIVES MATRIX**

ALTERNATIVE	PROJECT DESCRIPTION	PUBLIC ACCESS AND SAFETY	HABITAT	GRADING	GOLF COURSE	SURF REPAIR	OVERALL FEASIBILITY
<p align="center">NO. 6</p> <p align="center">Installation of Earthen Buttress</p> <p align="center">Note: This alternative is the same as No. 5 above, without shear pins</p>	<p>Filling and sealing of open surface fissures with solid materials. Replace landslide mass within graben area with reinforced earthen buttress. Earthen buttress would extend below upper bentonite layer.</p>	<p>Long term performance and safety of bluff top trails would be a concern. Public access trails through the project and to the beach would be reestablished. Halfway Point Park would be stabilized and opened for public use. The beach would likely not be open for public use.</p>	<p>Native vegetation areas impacted by the landslide would be reestablished.</p>	<p>Similar to Alternative No. 5, with no appreciable changes to overall landform modification.</p>	<p>The 18th hole of the golf course would be rebuilt to standards acceptable to Ocean Trails. Golf course business operations including rate structure, number of rounds, tournament potential and marketing strategy would be implemented as originally planned.</p>	<p>Not repaired. No grading of the bluff face would be performed due to creation of greater overall instability of the main landslide mass.</p>	<p>Grading within the graben area without the shear pins in place would not provide for the long-term stabilization of the area. The overall factor of safety of the landslide would remain near 1.0. Any minor or moderate perturbation, such as an earthquake, build up of groundwater or significant erosion along the toe of the bluff could cause reactivation of the landslide.</p> <p align="right">Estimated cost: \$8-10 million.</p>

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**BIOLOGICAL RESOURCES REPORT &
IMPACT ANALYSIS
for
LANDSLIDE C
at
OCEAN TRAILS
RANCHO PALOS VERDES, CALIFORNIA**

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Ocean Trails Landslide C Biological Resources Report & Impact Analysis

Table 3. Landslide Impacts By Habitat Type (Continued)

ACTIVITY	RVG/ CSS (Acres)	dRVG/ ¹ CSS (Acres)	dCSS (Acres)	SCS (Acres)	dSCS (Acres)	CBS (Acres)	dCBS (Acres)	Total Habitat (Acres)
Pre-Landslide Vegetation	2.54	0.0	1.98	0.36	0.0	5.19	0.82	11.89
Post Landslide Vegetation	0.0	2.46	1.63	0.0	0.31	0.1	2.66	7.16
Total Landslide Change	-2.54	+2.46	-0.35	-0.36	+0.31	-5.09	+0.84	-4.73
Geological Investigation Habitat Impacts	0.0	1.52	0.74	0.0	0.0	0.0	0.1	2.36
Reconstruction Habitat Impacts	0.4 ²	0.94	0.87	0.09 ²	0.31	0.07 ²	1.17	3.85
Total Project Habitat Impacts	0.4	2.46	1.61	0.09	0.31	0.07	1.27	-6.21

¹ A small 'd' before a habitat designation means disturbed habitat

² Habitat impact located outside landslide boundary

A secondary impact of the landslide was the significant reduction of quality of the remaining habitat. This impact resulted from the landscape fracturing that occurred throughout the landslide area. The fractures vary from several inches to 10 feet wide and the larger openings are believed to extend up to 90 feet deep. The fractures and land movement disturbed the root zone within many habitat areas causing unknown impacts to individual plants. Smaller disjunct pieces of land were observed to desiccate quickly, killing the plants that occupied these sites. Larger blocks are expected to dry more slowly, but with a similar result. A few large blocks may sustain existing habitat, however, this can only be assessed after a full annual cycle of seasons.

Post-landslide geological investigations impacted 2.36 acres of additional habitat (*Table 3*). Habitat patches were impacted by grading for access roads and drill rig pads. This post-landslide activity impacted habitat that was already disturbed by the landslide event including RVG/CSS (1.52 acres), dCSS (0.74 acre), and dCBS (0.1 acre). *Figure 5* shows the location of these impacts on the post-landslide vegetation map.

Anticipated habitat impacts that will occur from landslide reconstruction are developed from analysis of the preferred reconstruction alternative that involves 1) fissure filling, sealing, and surface drainage control, 2) installation of 150-200 - 36-inch diameter below grade shear pins, and 3) stabilization of the graben area through the construction of a reinforced earthen wall.

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Exhibit 20 p 2

Ocean Trails Landslide C Biological Resources Report & Impact Analysis

5.1 Impacts to Plant Communities

Table 2 summarizes total habitat impacts by HCP area. Table 3 provides a detailed breakdown of impacts by habitat type within each HCP area. The landslide event impacted 4.73 acres of habitat area as described in the pre-landslide condition (Table 2). Approximately 4.25 acres of CBS habitat account for this total impact. This impact was caused by the burial of existing habitat by the collapsing cliff face (Figure 4). The remaining impacts were to dCSS (0.35 acre), RVG/CSS (0.08 acre), and SCS (0.05 acre) habitat.

Table 2. Habitat Impacts by HCP Area

Area Description	Landslide Area ¹ (Acres)	Pre-Landslide Habitat ² (Acres)	Landslide Habitat Impact ² (Acres)	Graded Area Impact ⁴ (Acres)	Landslide Repair Impact ⁵ (Acres)
Ocean Trails Park	0.14	0.0	0.0	0.0	0.0
Golf Course	2.72	0.0	0.0	0.0	0.0
Non-Golf Setback	0.30	0.30	0.3	0.0	0.0
East-West Bluff Top Complex Revegetation	3.42	3.08	0.35	1.58	1.15
Nesting Bird Preserve	3.53	2.38	0.21	0.72	1.45
Coastal Bluff Preserve	7.09	6.13	5.02	0.06	1.05
Total	17.2	11.89	5.88	2.36	3.65

¹ Acreage of each preserve area affected by the landslide

² Total habitat acreage by preserve area before landslide (excludes developed area, golf, disturbed habitat, rock, and beach)

³ Total habitat acreage impacted by the landslide (excludes developed area, golf, disturbed habitat, rock, and beach)

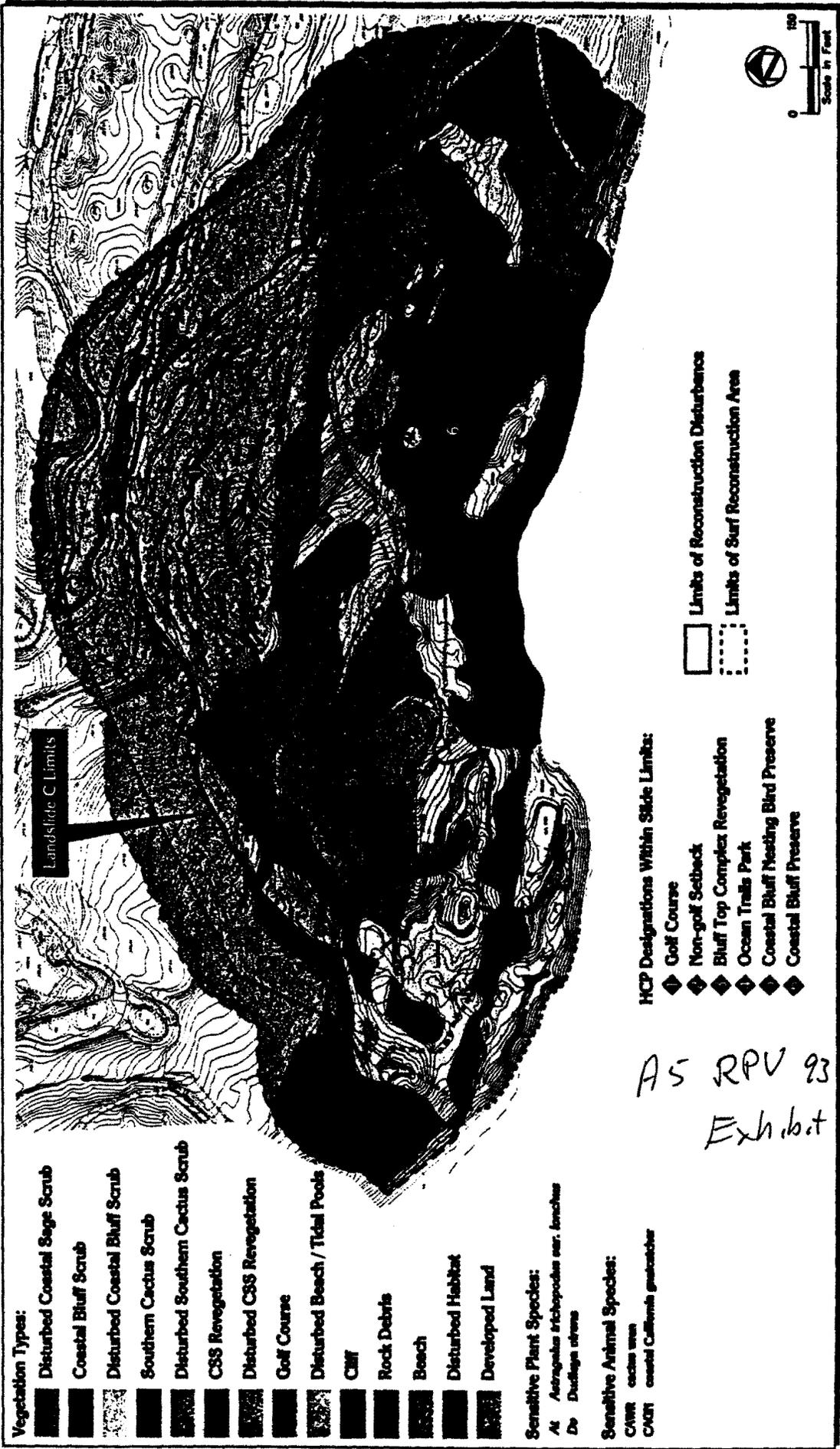
⁴ Total habitat acreage impacted by geologic investigations

⁵ Total habitat acreage impact anticipated for the proposed landslide repair project

Table 3. Landslide Impacts By Habitat Type

ACTIVITY	DEV (Acres)	DH (Acres)	Golf (Acres)	Cliff (Acres)	Rock (Acres)	Beach (Acres)
Pre-Landslide Vegetation	0.73	1.14	0.0	0.0	0.0	0.59
Post Landslide Vegetation	0.48	1.31	0.6	0.30	4.45	0.05
Total Landslide Change	-0.25	+0.17	+0.6	+0.30	+4.45	-0.54
Geo. Investigation Habitat Impacts	0.11	0.22	0.6	0.03	0.64	0.0
Reconstruction Habitat Impacts	1.77	4.0	0.0	0.06	0.97	0.0
Total Project Habitat Impacts	1.88	4.22	0.6	0.09	1.6	0.0

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- Vegetation Types:**
- Disturbed Coastal Sage Scrub
 - Coastal Bluff Scrub
 - Disturbed Coastal Bluff Scrub
 - Southern Cactus Scrub
 - Disturbed Southern Cactus Scrub
 - CSS Revegetation
 - Disturbed CSS Revegetation
 - Golf Course
 - Disturbed Beach / Tidal Pools
 - CWIF
 - Rock Debris
 - Beach
 - Disturbed Habitat
 - Developed Land
- Sensitive Plant Species:**
- At *Argemone trichopoda* var. *lanchea*
 - Do *Dudleya stricta*
- Sensitive Animal Species:**
- CWIF *ocotea*
 - CWIF *coastalis*

- HCP Designations Within Slide Limits:**
- ◆ Golf Course
 - ◆ Non-golf Setback
 - ◆ Bluff Top Complex Revegetation
 - ◆ Ocean Trails Park
 - ◆ Coastal Bluff Nesting Bird Preserve
 - ◆ Coastal Bluff Preserve

- Limits of Reconstruction Disturbance
- Limits of Surf Reconstruction Area



AS RPV 93 GOS A14
 Exhibit 20 p4

FIGURE 6

Ocean Trails Landslide C - Biological Resources Report & Impact Analysis
 Post-slide/Post-Geologic Investigation Biological Resources Map With Reconstruction Impacts

Ocean Trails Landslide C

Biological Resources Report & Impact Analysis

6.1 Mitigation Program

The mitigation program is intended to fully mitigate impacts arising from the landslide and subsequent human activities. Habitat mitigation will replace biological resources that were being used by 2 pair of the threatened coastal California gnatcatcher and 1 pair of cactus wren, a sensitive species. The mitigation program must be reviewed and approved by the US FWS, CDFG, California Coastal Commission (CCC), and the City of Rancho Palos Verdes (RPV).

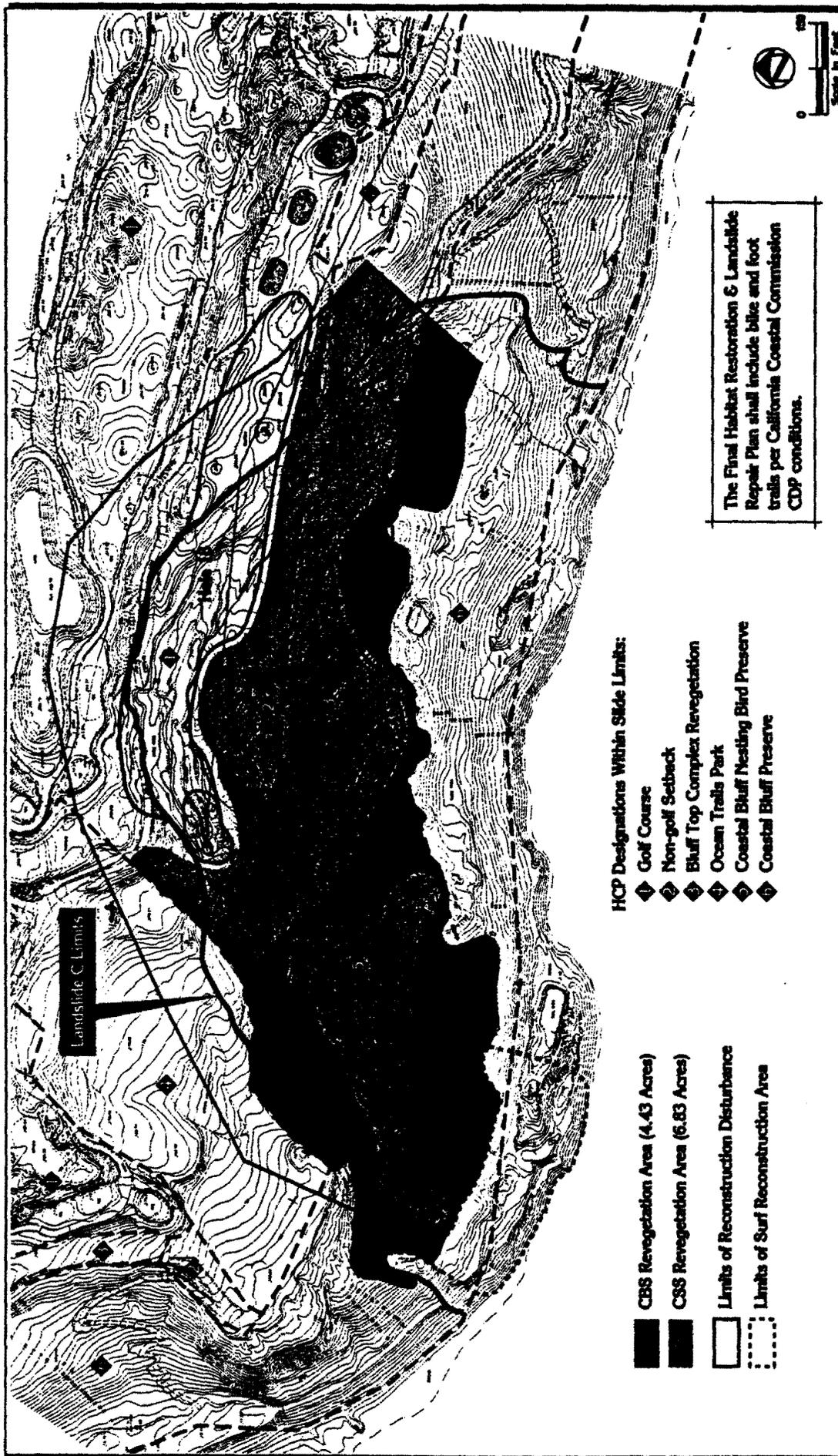
6.1.1 Impact Summary and Mitigation Ratios

The U.S. Fish & Wildlife Service and California Department of Fish & Game have determined that the landslide event and subsequent human activities relating to geological and forensic investigations, and landslide stabilization and repairs has resulted in impacts to 11.89 acres of existing habitat. The habitats impacted by the landslide include CBS (5.19 acre), dCBS (0.82 acre), SCS (0.36 acre), dCSS (1.98 acres), and RVG/CSS (2.54 acres). Additional impacts to RVG/CSS (0.4 acre), CBS (0.07 acre), and SCS (0.9 acre) result from reconstruction activity outside the landslide boundary. *Table 4* summarizes the total habitat impact by HCP area and the recommended mitigation acreage calculated using replacement ratios as agreed upon by Ocean Trails, USFWS, and CDFG. A total of 25.46 acres of habitat restoration will occur to mitigate habitat impacts resulting from the landslide and subsequent human activity.

Table 4. Habitat Impact and Mitigation Summary

HCP AREA DESCRIPTION	Total Habitat Impact (Acres)	Direct Loss Mitigation Ratio	Temporal Loss Mitigation Ratio	Total Habitat Mitigation (Acres)
Non-Golf Setback	0.30	1:1	1:1	0.6
East-West Bluff Top Complex Revegetation	3.08	1:1	1:1	6.16
Nesting Bird Preserve	2.38	1:1	1:1	4.76
Coastal Bluff Preserve	6.13	1:1	1:1	12.26
Habitat Outside Landslide Boundary	0.56	2:1	1:1	1.68
TOTAL	12.45			25.46

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Exhibit 20 p 5



Landslide C Limits

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 93005 A14
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October 7, 1999

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COASTAL COMMISSION

Ms. Barbara Dye
Environmental Project Manager
Ocean Trails Golf Club
One Ocean Trails Drive
Rancho Palos Verdes, CA 90275

SUBJECT: Preliminary Grading Plans for Restoration of Coastal Access and Surfing Resources, Ocean Trails.

Dear Ms. Dye,

At your request we are pleased to provide this letter report discussing the preliminary grading plans for the restoration of coastal access and the surfing spot known as BA's. Accompanying this report are preliminary grading plans for the restoration project. The drawings, in their current form, are not sufficient for final grading approval from the geologist peer review panel and various regulatory agencies, including the City of Rancho Palos Verdes, the US Army Corps of Engineers, and the California Coastal Commission. However, they do accurately represent the nature and extent of the proposed grading/restoration project.

The proposed project is the minimum quantity of removals to restore the surfing resources to the extent possible and to restore and provide safe lateral beach access. The grading can begin immediately following the stabilization of the slide with the proposed shear pin system. The removal of slide material and restoration of the shoreline will take about one week. The grading and placement of the removals inland within the slide area is the best course of action to reduce further sedimentation of the intertidal area and degradation of coastal waters as a result of the slide material encroaching into the intertidal zone.

It is very important to point out that stabilization of the slide with the proposed shear pin system is the most immediate and very essential first step to the over all restoration

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Surf repair
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Exhibit 21 pl

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and stabilization project. This stabilization needs to be done immediately to prevent further movement of the slide and impact on public and private resources. There restoration of the coastal access and surfing spot can begin only after the shear pin system is installed.

Three alternatives to the grading project were considered. The first alternative considered was to take no action. There are several adverse impacts that result from not taking action. These include; (1) loss of lateral beach access along the shoreline in front of Ocean Trails, (2) partial destruction of a valuable surfing resource (BA's), and (3) increased sedimentation in the coastal waters and intertidal areas from erosion of the talus pile from both ocean waters and surface/ground water. These three adverse impacts alone are sufficient to warrant no further consideration of the no action alternative. In addition, in the September California Coastal Commission hearing the Commissioner's stated that consideration of restoration of the surfing resources and coastal access were necessary elements for the overall landslide mitigation program.

The second alternative considered was to remove all of the landslide material that fell onto the beach area. The proposed grading project calls for the removal of about 60% of the material that forms the talus finger on the western end of the landslide. While the shoreline in front of the entire slide was impacted this talus finger makes up only about 20% of the impacted shoreline. In as much as landslides have occurred naturally in this area, the landslide material along the entire slide can be viewed as natural deposit. Removal of the landslide materials along the entire slide was not necessary to restore lateral access and the surfing resources.

The final alternative to the propose grading plan was to try to control the sedimentation of the slide using conventional siltation/erosion control systems such as silt fences and hay bales. Based upon a visual inspection of the scree slope the material is large to very large rocks. The use of siltation control systems along the shoreline would prove to be labor intensive and most likely ineffective. The action of the ocean waves on the large rocks would pull more material down slope into the intertidal and surfzone areas regardless of the presence of an erosion/siltation control system. Any system would require daily inspection and could be partially or totally destroyed at each high tide. In addition siltation control systems alone will not restore lateral beach access and the surfing resources in the area.

In anticipation of additional geotechnical information to refine the grading plans we have attached to this letter General Earthwork and Grading Guidelines. These guidelines

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Exhibit 21 p2

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are general in nature and are not meant to supercede the forth coming geotechnical report and reccomendations. As we have discussed before, the grading operation should be conducted under the supervision of the usual and customary professional and, in addition, a coastal engineer. If you have any questions regarding the preliminary grading plans please contact us at the number below.

Sincerely,



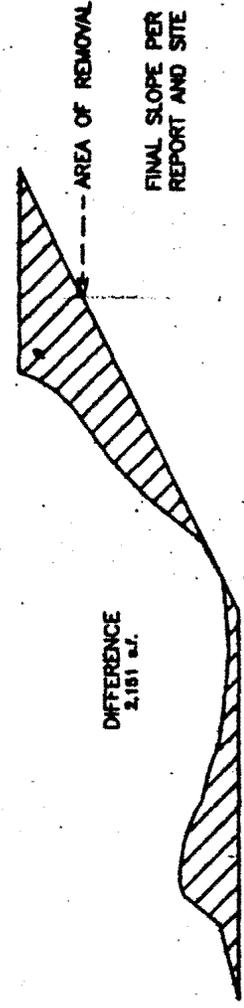
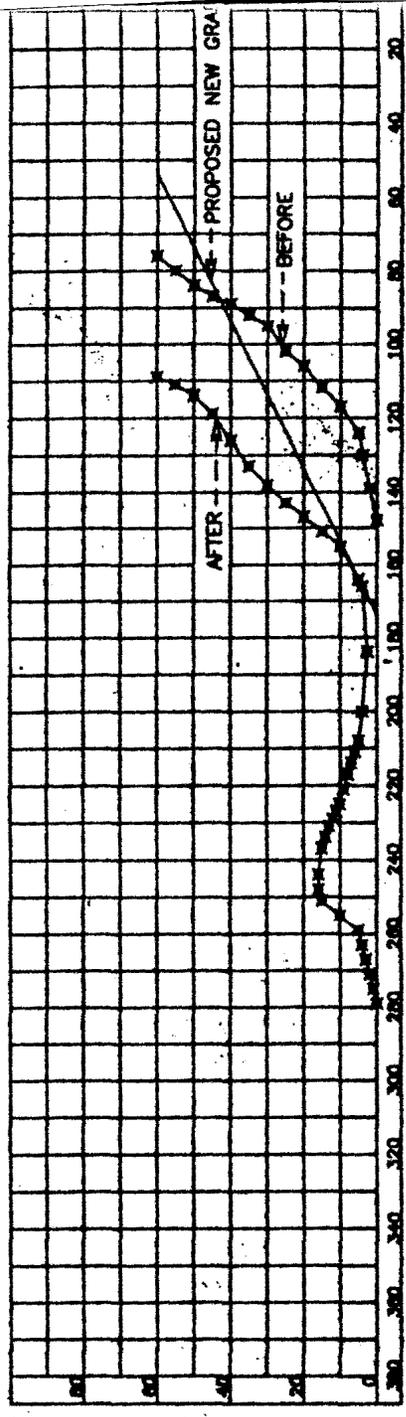
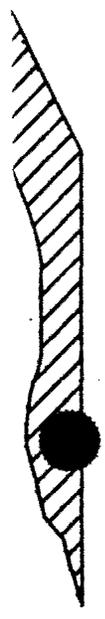
David W. Skelly MS,PE
RCE#47857



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Exhibit 21
P 3

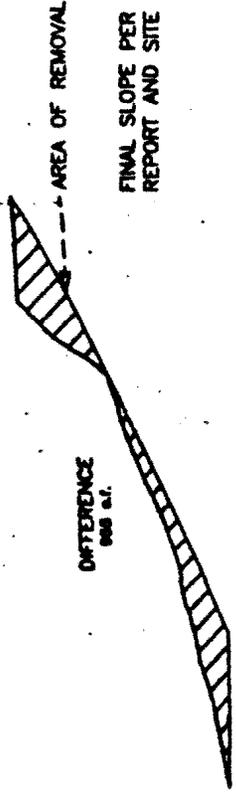
SECTION 2
SCALE: 1"=40'



FINAL SLOPE PER GEO TECHNICAL
REPORT AND SITE CONDITIONS

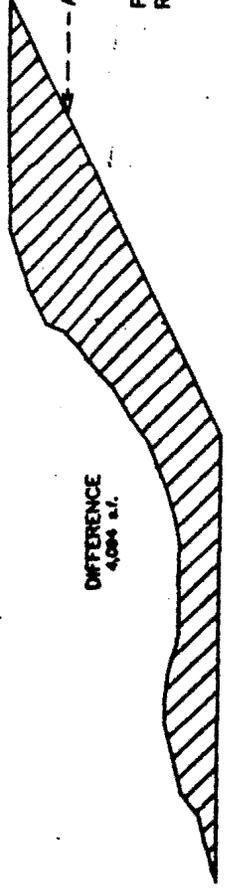
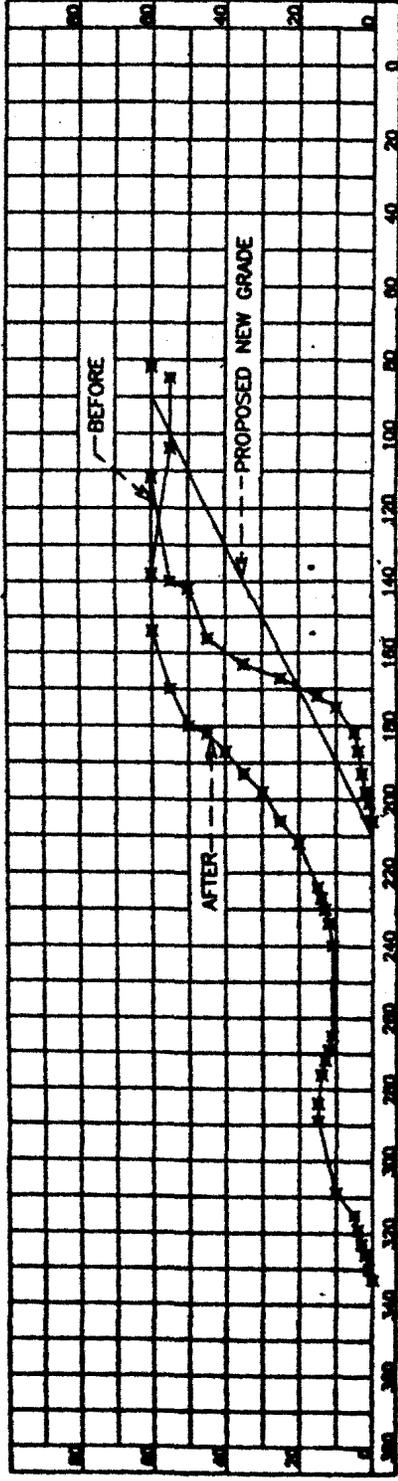
SECTION 3
SCALE: 1"=40'

AS RPU 9360(A14)
Exhibit 21
P4



FINAL SLOPE PER GEO TECHNICAL
REPORT AND SITE CONDITIONS

SECTION 1
SCALE: 1"=40'



FINAL SLOPE PER GEO TECHNICAL
REPORT AND SITE CONDITIONS

SECTION 2
SCALE: 1"=40'

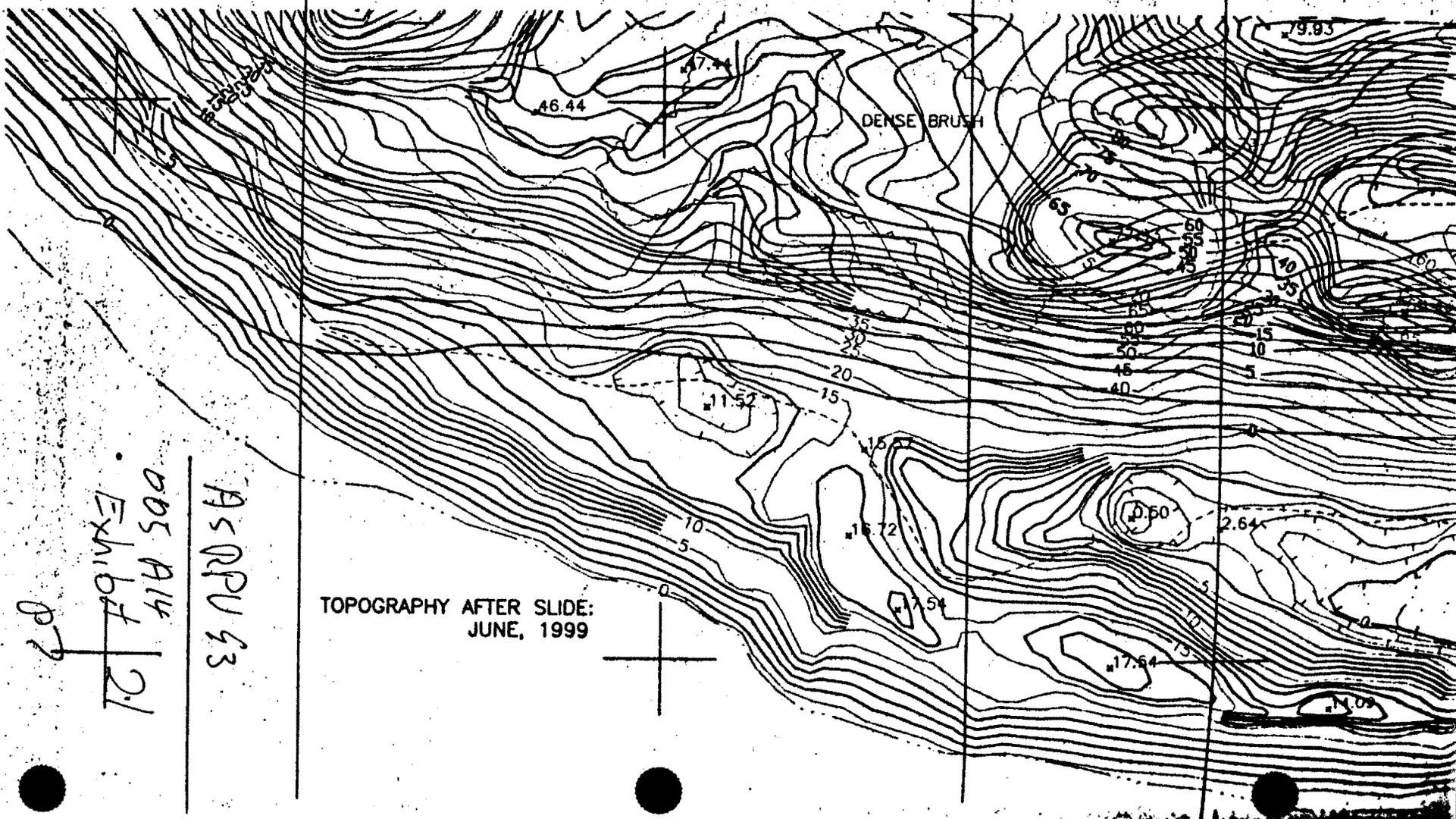
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Exhibit 21 p5

1

TOPOGRAPHY BEFORE SLIDE: SPRING, 1999

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3



AS RPU 43
 005 A14
 Exhibit 21

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SOCIATES
Exhibit 3



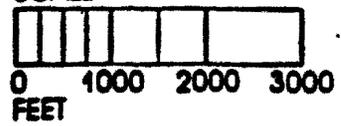
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Exhibit 2 Regional Map
Showing Site

RANCHO PALOS VERDES

Vicinity Map

*Adapted from U.S.G.S. Quadrangle San Pedro,

SCALE



RAFT

**PRELIMINARY LANDSLIDE MAP
SLIDE C - OCEAN TRAILS**

DRAFT

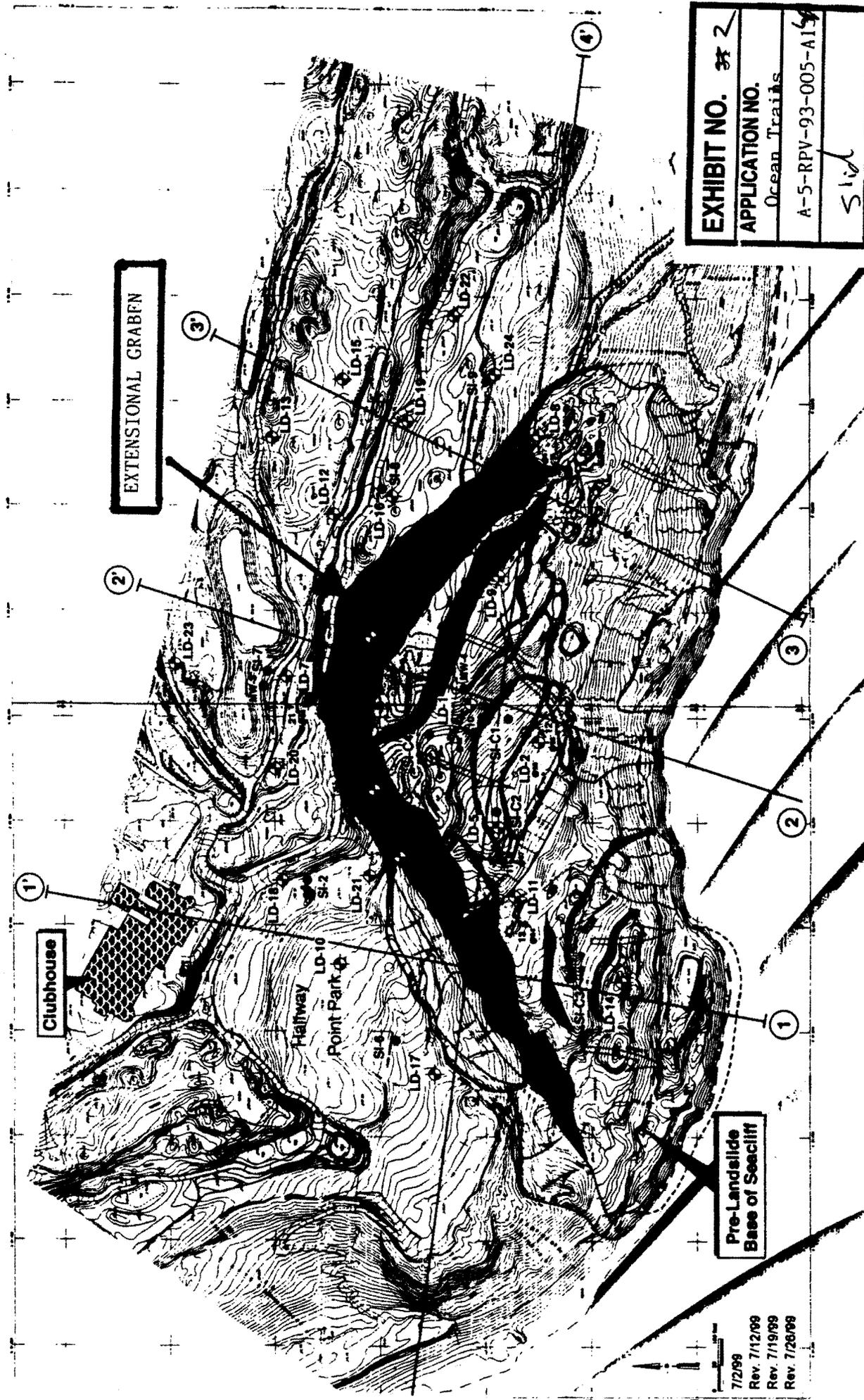


EXHIBIT NO. 32
APPLICATION NO. Ocean Trails
A-5-RPV-93-005-A15
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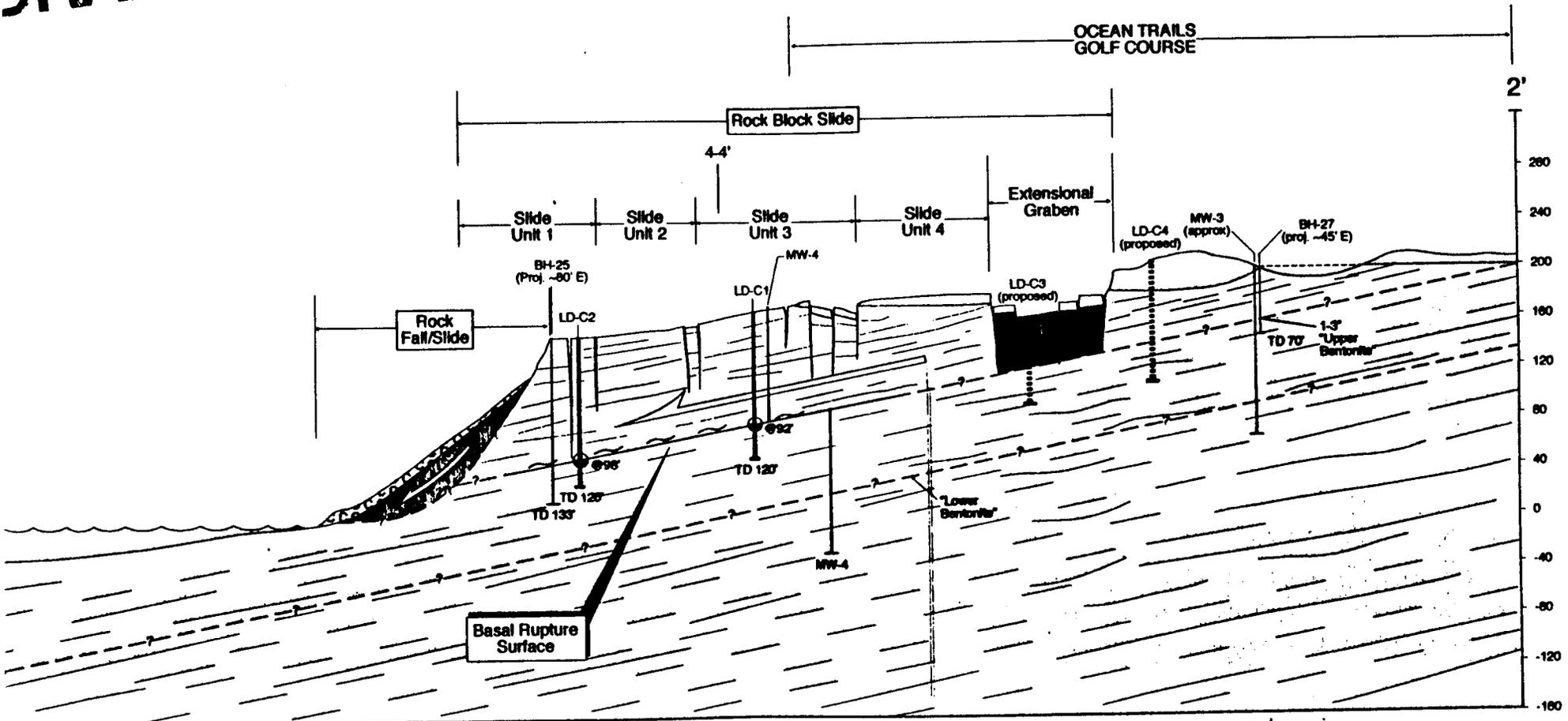
 **COTTON, SHIRES & ASSOCIATES**
CONSULTING ENGINEERS AND GEOLOGISTS

7/2/99
Rev. 7/12/99
Rev. 7/19/99
Rev. 7/26/99

PRELIMINARY GEOLOGIC CROSS SECTION 2-2' SLIDE C / OCEAN TRAILS

DRAFT

DRAFT



A 5 RPV 93 005 A1#
cross section of slide
Exhibit 3

7/2/99
Revised 7/8/99

NO VEGETATION WILL BE RE
APPROVAL OF THE PROJECT

AS RPU 93005-~~14~~ A14

Exhibit 4

Topsoil salvage

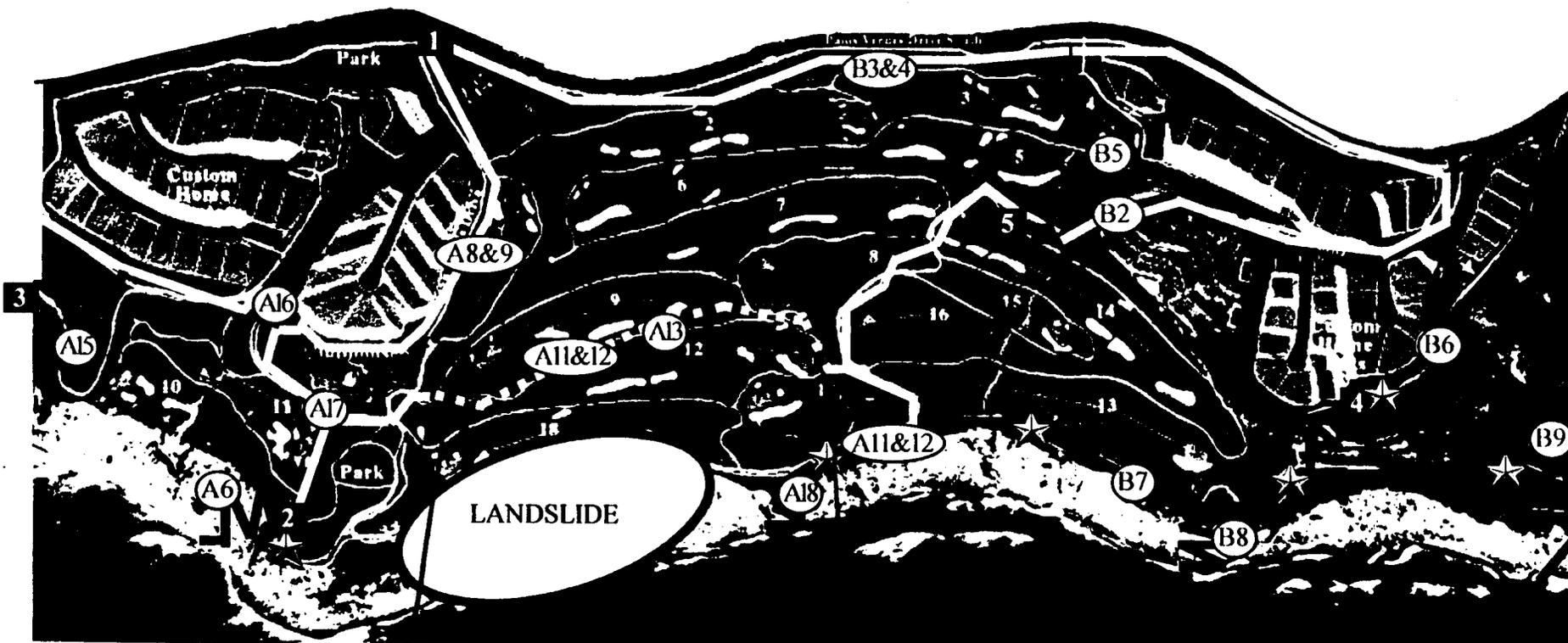
approach A13

AREA OF POTENTIAL
TOPSOIL SALVAGE





OCEAN TRAILS PUBLIC ACCESS 9/1/99



- ★ VIEW OVERLOOKS
- BIKEWAY/TRAILS
- PEDESTRIAN TRAILS

- 1 VISTA CATALINA PARK
- 2 OCEAN TRAILS MINIPARK
- 3 PORTUGUESE BEND OVERLOOK

- 4 BUNKER OVERLOOK
- 5 LA ROTONDA PARKING LOT PICNIC AREA
- (A2) CCC TRAIL BY CONDITION NUMBER

A 5 RPV 93005 A14 Exhibit 5
 proposed trails (A19 temporarily substitute for 1, 2)

**EXHIBIT E
FEE OFFER
PERMIT NO. A-5-RPV-93-005
Dedicated Property
page 2 of 5**

A-5-RPV-93-005 A ~~14~~ **A14**
Exhibit Recorded
open space depictions
and List of Recorded
offers to dedicate open
space

Exhibit ~~14~~ **6**

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MAR 26 1999
CALIFORNIA
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