Staff Report to the Zoning Administrator

Application Number: **06-0486**

Applicant: Jack Drew
Owners: Gerald & Teresa K. Fehr
APN: 046-091-24

Agenda Date: December **15,2006**
Agenda Item #: **3**
Time: After 10:00 a.m.

Project Description: Proposal to construct a replacement 150 linear foot retaining wall along a coastal bluff. (Emergency Coastal Permit Application 06-0468, Building Permit 61404M.)

Location: Property located on the west side of Lilly Way about 0.3 miles west of the intersection with Zils Road, at 95 Lilly Way in La Selva Beach.

Supervisorial District: Second District (District Supervisor: Pine)

Permits Required Coastal Development Permit

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 06-0486, based on the attached findings and conditions.

Exhibits

A.	Project plans		2006
B.	Findings	I.	Engineering Geology Report acceptance letter by Hanna/ Crawford dated Oct 12, 2006
C.	Conditions	J.	Schnieder Engineering Structural Calculations 8-18-06
D.	Categorical Exemption (CEQA determination)	K.	Site photographs
E.	Assessor's parcel map, Location map	L.	UPP Plan review letter 8-22-06
F.	Zoning/General Plan map		
G.	Comments & Correspondence		
H.	Geotechnical Investigation UPP Geotechnology Inc dated July 26,		

Parcel Information

Parcel Size:	1.285 acres
Existing Land Use - Parcel:	Single-family residence
Existing Land Use - Surrounding:	Single-family residences, agriculture, state beach

Project Access:	San Andreas Road to Zils Road and Lilly Way
Planning Area:	San Andreas
Land Use Designation:	A (Agriculture)
Zone District:	CA (Commercial Agriculture)
Coastal Zone:	X Inside __ Outside
Appealable to Calif. Coastal Comm.	X Yes __ No

Environmental Information

Geologic Hazards:	Mapped floodplain
Soils:	Beaches, Elder sandy loam
Fire Hazard:	Not a mapped constraint
Slopes:	2 – 9 percent, steep cliff at rear of parcel adjacent to the beach
Env. Sen. Habitat:	Mapped biotic/no physical evidence on site
Grading:	No grading proposed
Tree Removal:	No trees proposed to be removed
Scenic:	Mapped resource
Drainage:	Existing drainage adequate
Archaeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	__ Inside X Outside
Water supply:	San Andreas Mutual Water Company
Sewage Disposal:	CSA#12, private septic system
Fire District:	Aptos/La Selva Fire Protection District
Drainage District:	Non-zone

History

The parcel was reconfigured in Lot Line Adjustment 97-0710. A Geologic Hazards Assessment was completed for the site as Application 97-0404 on 7-23-1997 and a Geotechnical Report was reviewed and accepted by the Planning Department as Application 98-0697 on 11-13-1998. The single-family dwelling approved as Coastal Development Permit 98-0122. The residence was constructed under Building Permit 120474 with final inspection clearance on 11-18-1999. Emergency Coastal Development Permit 06-0468 to construct a 150-footlinear coastal retaining wall requiring a Grading Permit, Soils and Geologic report reviews was approved on 10-12-2006. The Building Permit for wall construction is being processed as Application 61404M.

Project Setting

The site is generally level, about 75 feet above the adjacent Manresa State Beach. The immediate neighborhood is developed with low-density residential development and commercial agriculture. **A** shared driveway, leading to the home extending from Lilly Way, accesses the property. The driveway extends along the northern property boundary to a circular turn-around located in front ofthe subject residence. The residence is set back 75 feet from the edge of the coastal bluff as per the Geologic Hazards Assessment.

Emergency Coastal Permit #06-0468 was issued to address emergency mitigation measures to repair and restore a bluff failure west of the existing residence, near the top of the slope and to maintain the goal of a 100-year lifetime for the structure. These measures consist of replacement of a 150-foot linear retaining wall along the 70-foot contour. The purpose of the wall is to prevent additional future land sliding of the bluff and to replace the failed retaining wall. Structural calculations indicate that land sliding has already occurred as the result **of** soil saturation fiom past rains (Exhibit J). The new retaining wall will replace an existing non-engineered wood retaining wall, which failed (Exhibit K). The replacement wall will consist of pressure-treated wood lagging which is laterally supported by vertical steel soldier beams (Exhibit A).

Zoning & General Plan Consistency

The subject property is a 1.28-acre lot, located in the CA (Commercial Agriculture) zone district, a designation that allows residential uses. The proposed replacement retaining wall is a permitted use accessory to the existing single-family dwelling within the zone district. The existing single-family residence is in compliance with development regulations of the CA zone district as per County Code Section 13.10.313. The project is consistent with the site's (A) Agriculture General Plan designation in that one single-family dwelling is permitted on small parcels and the site is located adjacent to other residential parcels and a state park which do not support commercial agriculture. A Statement of Acknowledgement regarding issuance of a county building permit in an area determined by the County of Santa Cruz to be subject to Agricultural-Residential use conflicts was recorded as Document 1998-0073082 on 30-Nov-1998.

Local Coastal Program Consistency

The proposed replacement retaining wall is in conformance with the County's certified Local Coastal Program, in that the structure is sited and designed to minimize visual intrusion and will assist in meeting the goal of maintaining the 100-year lifetime of the existing single-family dwelling. Developed parcels in the area contain single-family dwellings, some of which are down slope from the project site, which could potentially be threatened by slope failure if the failed wall is not replaced. The project site is located between the shoreline and the first public road but is not identified as a priority acquisition site in the County's Local Coastal Program. Consequently, the proposed project will not interfere with public access to the beach, ocean, or other nearby body of water. Public coastal access is available at Sunset and Manresa State beaches in the project vicinity. The proposed replacement retaining wall is consistent with the LCP in that the protection structure does not reduce nor restrict public beach access.

Design Review

The proposed IO-foot high wood lagging retaining wall complies with the requirements of the County Design Review Ordinance, in that the proposed project will incorporate site and architectural design features such as natural materials and earth tone colors to mitigate the visual impact of the proposed development on the beach and coastline below.

Environmental Review

Environmental review has not been required for the proposed project per the requirements of the California Environmental Quality Act (CEQA). The project is Categorically Exempt from **further** review under Section 15303, Class 3(a) New Construction or Conversion of Small Structures.

Conclusion

As proposed and conditioned, the project is consistent with all applicable codes and policies of the Zoning Ordinance and General Plan/LCP. Please see Exhibit "B" ("Findings") for a complete listing of findings and evidence related to the above discussion.

Staff Recommendation

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- APPROVAL of Application Number **06-0486,** based on the attached findings and conditions.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, **as** well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

Report Prepared By: Joan **Van** der Hoeven
Santa Cruz County Planning Department
701 Ocean Street, 4th **Floor**
Santa Cruz CA 95060
Phone Number: (831) 454-5174
E-mail: pln140@co.santa-cruz.ca.us

Coastal Development Permit Findings

1. That the project is a use allowed in one of the basic zone districts, other than the Special Use (SU) district, listed in section 13.10.170(d) as consistent with the General Plan and Local Coastal Program LUP designation.

This finding can be made, in that the property is zoned CA (Commercial Agriculture), a designation which allows retaining walls accessory to residential uses. The proposed replacement retaining wall is a permitted use within the zone district, consistent with the site's (A) Agriculture General Plan designation.

2. That the project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.

This finding can be made, in that the proposal does not conflict with any existing easement or development restriction such as public access, utility, or open space easements in that no such easements or restrictions are known to encumber the project site.

3. That the project is consistent with the design criteria and special use standards and conditions of this chapter pursuant to section 13.20.130 et seq.

This finding can be made, in that the development is consistent with the surrounding neighborhood in terms of architectural style; lots developed to a low-density surround the site; the colors shall be natural in appearance and complementary to the site. Although the development site is on a prominent bluff top, its visibility is mitigated by the use of natural materials of neutral colors.

4. That the project conforms with the public access, recreation, and visitor-serving policies, standards and maps of the General Plan and Local Coastal Program land use plan, specifically Chapter 2: figure 2.5 and Chapter 7, and, as to any development between and nearest public road and the sea or the shoreline of any body of water located within the coastal zone, such development is in conformity with the public access and public recreation policies of Chapter 3 of the Coastal Act commencing with section 30200.

This finding can be made, in that although the project site is located between the shoreline and the first public road, public access is available at Manresa State Beach in the project vicinity. Consequently, the replacement retaining wall will not interfere with public access to the beach, ocean, or any nearby body of water. Further, the project site is not identified as a priority acquisition site in the County Local Coastal Program.

5. That the proposed development is in conformity with the certified local coastal program.

This finding can be made, in that the structure is sited and designed to be visually compatible, in scale with, and integrated with the character of the surrounding neighborhood. Additionally, residential uses are allowed uses in the CA (Commercial Agriculture) zone district of the area, as well as the General Plan and Local Coastal Program land use designation. Developed parcels in the area contain single-family dwellings. Size and architectural styles vary widely in the area, and the design submitted is not inconsistent with the existing range.

Development Permit Findings

1. That the proposed location of the project and the conditions under which it would be operated or maintained will not be detrimental to the health, safety, or welfare of persons residing or working in the neighborhood or the general public, and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity.

This finding can be made, in that the project is located in an area designated for residential uses and is not encumbered by physical constraints to development. Construction will comply with prevailing building technology, the Uniform Building Code, and the County Building ordinance to insure the optimum in safety and the conservation of energy and resources. The proposed retaining wall will not deprive adjacent properties or the neighborhood of light, air, or open space, in that the structure meets all current setbacks that ensure access to light, air, and open space in the neighborhood.

2. That the proposed location of the project and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the zone district in'which the site is located.

This finding can be made, in that the proposed location of the replacement retaining wall and the conditions under which it would be maintained will be consistent with all pertinent County ordinances and the purpose of the CA (Commercial Agriculture) zone district in that the primary use of the property remains residential and meets all current site standards for the zone district.

3. That the proposed use is consistent with all elements of the County General Plan and with any specific plan which has been adopted for the area.

This finding can be made, in that the continued residential use is consistent with the use and density requirements specified for the Agriculture (A) land use designation in the County General Plan.

The proposed replacement retaining wall will not adversely impact the light, solar opportunities, air, and/or open space available to other structures or properties, and meets all current site and development standards for the zone district as specified in Policy 8.1.3 (Residential Site and Development Standards Ordinance), in that the retaining wall will not adversely shade adjacent properties, and will meet current setbacks for the zone district that ensure access to light, air, and open space in the neighborhood.

The proposed retaining wall will not be improperly proportioned to the parcel size or the character of the neighborhood as specified in General Plan Policy 8.6.1 (Maintaining a Relationship Between Structure and Parcel Sizes), in that the proposed retaining wall will comply with the site standards for the CA zone district and will result in a structure consistent with a design that could be approved on any similarly sized lot in the vicinity.

A specific plan has not been adopted for this portion of the County.

4. That the proposed use will not overload utilities and will not generate more than the acceptable level of traffic on the streets in the vicinity.

This finding can be made, in that the proposed replacement retaining wall is to be constructed on an existing developed lot. There is no expected increase in the level of traffic generated by the proposed retaining wall. There shall be no adverse impact on existing roads and intersections in the surrounding area of Lilly Way or Zils Road.

5. That the proposed project will complement and harmonize with the existing and proposed land uses in the vicinity and will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood.

This finding can be made, in that the proposed structure is located in a mixed neighborhood containing a variety of architectural styles, and the proposed retaining wall is consistent with the land use intensity and density of the neighborhood. The new retaining wall will replace an existing non-engineered wood retaining wall, which failed (Exhibit K). The replacement wall will consist of pressure-treated wood lagging, laterally supported by vertical steel soldier beams (Exhibit **A).**

6. The proposed development project is consistent with the Design Standards and Guidelines (sections 13.11.070 through 13.11.076), and any other applicable requirements of this chapter.

This finding can be made, in that the proposed retaining wall will be of an appropriate scale and type **of** design that will enhance the aesthetic qualities of the surrounding properties and will not reduce or visually impact available open space in the surrounding area.

Conditions of Approval

Exhibit A: project Plans, 2 sheets by Schneider Engineering dated 8/06.

I. This permit authorizes the construction of a retaining wall. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall:

A. Sign, date, and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.

B. Obtain Building Permit 61404M from the Santa Cruz County Building Official.

II. Prior to issuance of a Building Permit the applicant/owner shall:

A. Submit proof that these conditions have been recorded in the official records **of** the County of Santa Cruz (Office of the County Recorder).

B. Submit final architectural plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "**A**" on file with the Planning Department. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Building Permit must be clearly called out and labeled by standard architectural methods to indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Building Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. Drainage and erosion control plans.

C. Submit four copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

D. Meet all requirements of the County Department of Public Works, Drainage. Drainage fees will be assessed on the net increase in impervious area.

E. Complete and record a Declaration of Restriction of Geologic Hazards. **You may not alter the wording of this declaration.** Follow the instructions to record and return the form **to** the Environmental Planning Division of the Planning Department.

F. **All** construction shall comply with the recommendations of the approved Engineering Geology Report and the Geotechnical Engineering Report by UPP Geotechnology, Inc. dated July 26,2006, Project Number 3023.2R1.

G. Final plans shall reference the reports and include a statement that the project shall

conform to the reports' recommendations.

H. Before building permit issuance a plan review letter shall be submitted to Environmental Planning. The authors of the reports shall write plan review letters which must state that the project plans conform to their report's recommendations.

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicant/owner must meet the following conditions:

A. All site improvements shown on the final approved Building Permit plans shall be installed.

B. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

C. The project must comply with all recommendations of the approved soils reports.

D. At the completion **of** construction, final letters fiom your soils engineer and engineering geologist are required to be submitted to Environmental Planning that summarizes the observations, testing, and inspections made during construction. The final letters must also state the following: "Based upon our observations, tests and/or inspection, the project has been completed in conformance with our **report** recommendations and is suitable for its intended use".

IV. Operational Conditions

A. In the event that future County inspections of the subject property disclose noncompliance with any Conditions of this approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.

V. **As** a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, fiom and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents to attack, set aside, void, or **annul** this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

A. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty ***(60)*** days of any such claim, action, or proceeding, or fails **to** cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to

EXHIBIT C

defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.

B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

1. COUNTY bears its own attorney's fees and costs; and

2. COUNTY defends the action in good faith.

C. Settlement. The Development Approval Holder shall not be required to pay **or** perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the **prior** written consent of the County.

D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

Minor variations to **this** permit which do not affect the overall concept or density may be approved by the Planning Director at the request of the applicant or **staff** in accordance with Chapter 18.10 of the County Code.

Please note: This permit expires on the expiration date listed below unless you obtain the required permits and commence construction.

Approval Date: 12-15-2006

Effective Date: 12-30-2006

Expiration Date: 12-30-2008

Don Bussey
Deputy Zoning Administrator

Joan Van der Hoeven
Project Planner

Appeals: Any property owner, **or** other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the Santa Cruz County Code.

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

The Santa Cruz County Planning Department has reviewed the project described below and has determined that it is exempt fiom the provisions of CEQA as specified in Sections 15061 - 15332 of CEQA for the reason(s) which have been specified in this document.

Application Number: 06-0486
Assessor Parcel Number: 046-091-24
Project Location: 95 Lilly Way, Aptos CA 95003

Project Description: Proposal to construct a replacement retaining wall on site with an existing single-family dwelling

Person or Agency Proposing Project: Jack Drew

Contact Phone Number: (408) 640-5614

A. _____ The proposed activity is not a project under CEQA Guidelines Section 15378.
B. _____ The proposed activity is not subject to CEQA as specified under CEQA Guidelines Section 15060 (c).
C. _____ **Ministerial Proiect** involving only the use of fixed standards or objective measurements without personal judgment.
D. _____ **Statutory Exemption** other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).

Specify **type:**

E. __X__ **Categorical Exemption**

Specify type: Class **3** - Small Structure (Section 15303)

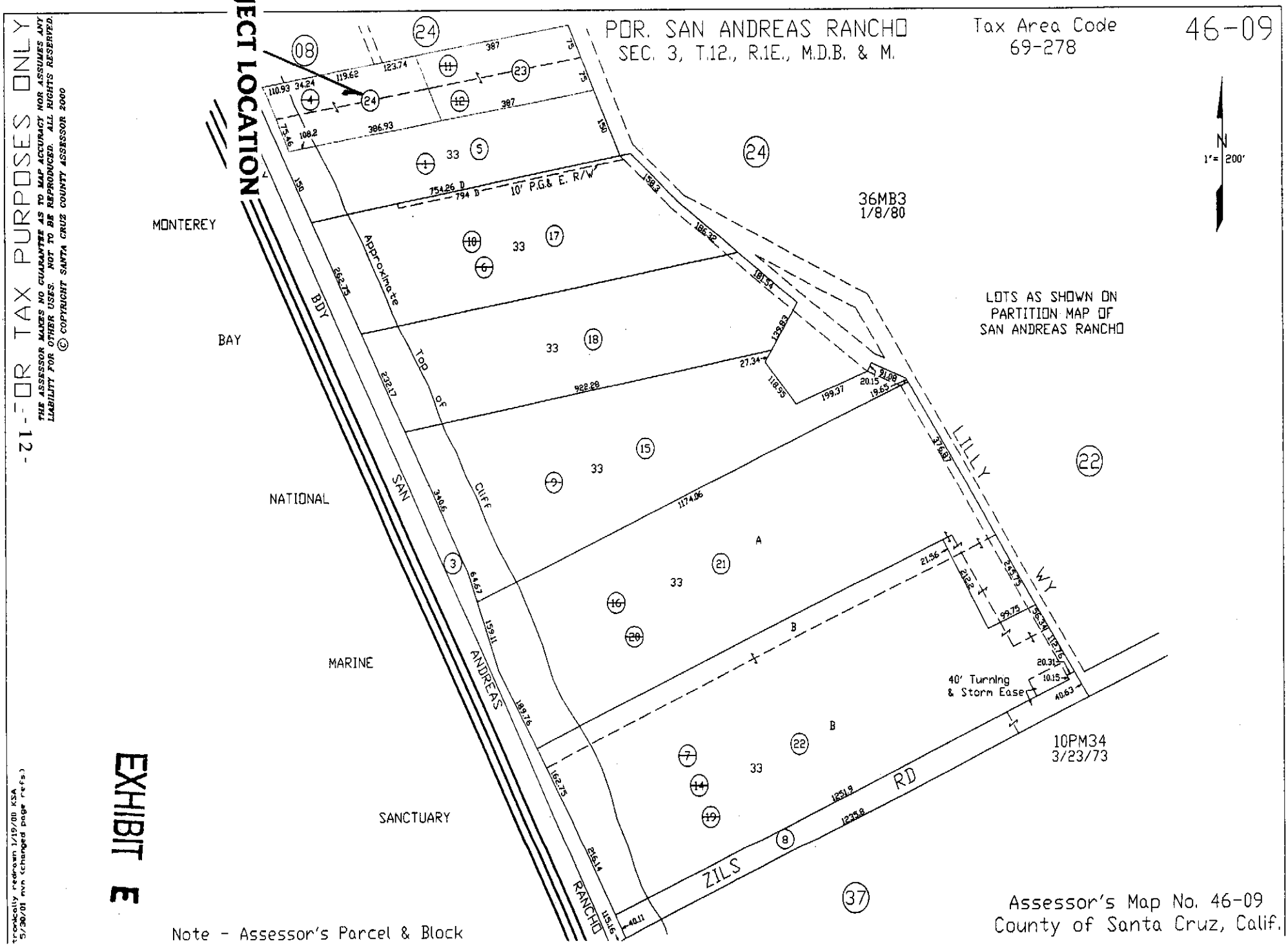
F. Reasons why the project is exempt:

Proposal to construct a small structure - retaining wall

In addition, none of the conditions described in Section 15300.2 apply to this project

_____ Date: December 15, 2006
Joan **Van** der Hoeven, Project Planner

EXHIBIT D

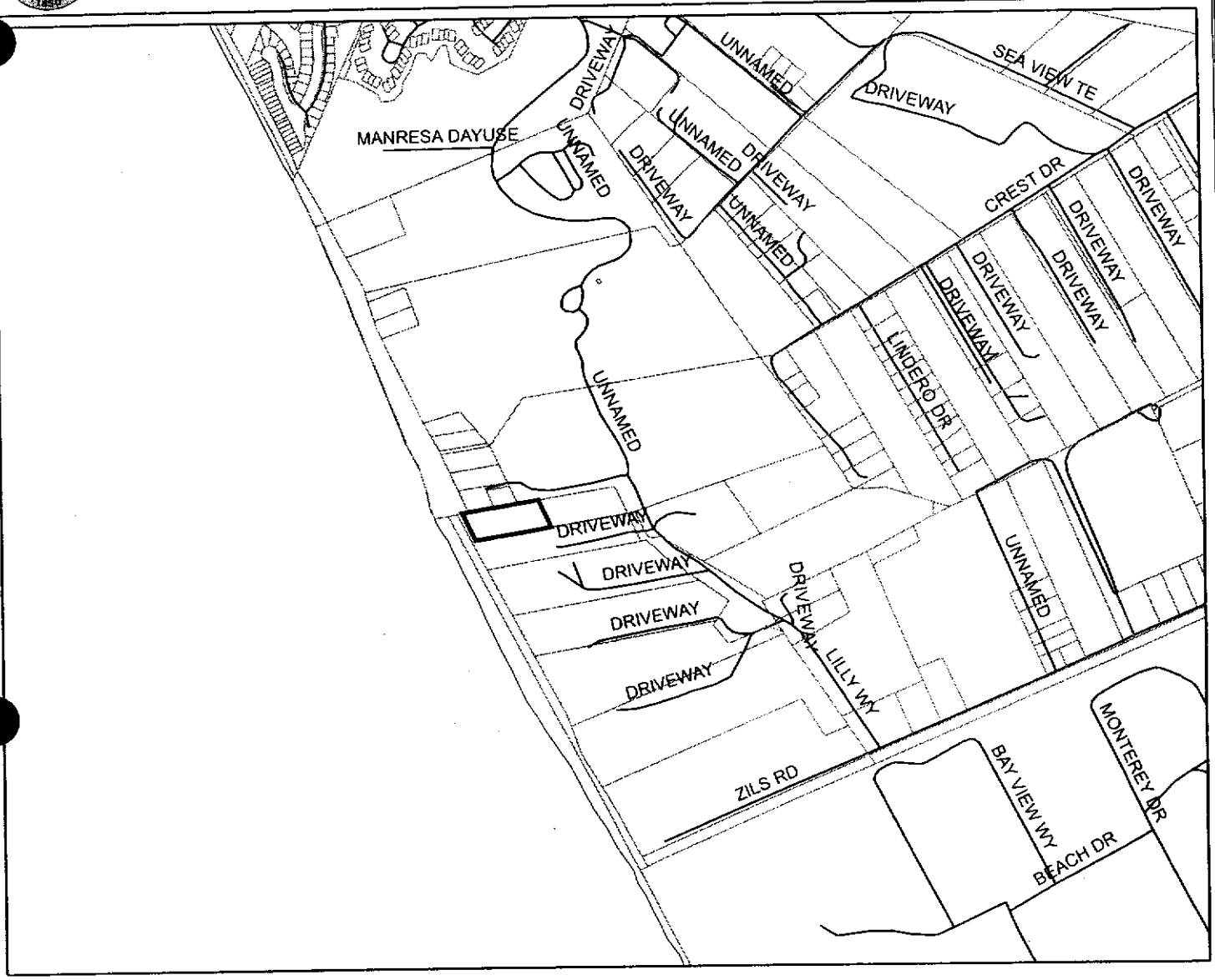


FOR TAX PURPOSES ONLY

-12-

Digitally redrawn 1/19/00 KSA
5/30/01 mm (changed page refs)

Location Map



0 700 1,400 2,800 4,200 5,600 Feet

Legend

- APN 046-091-24
- Assessors Parcels
- Streets
- County Boundary

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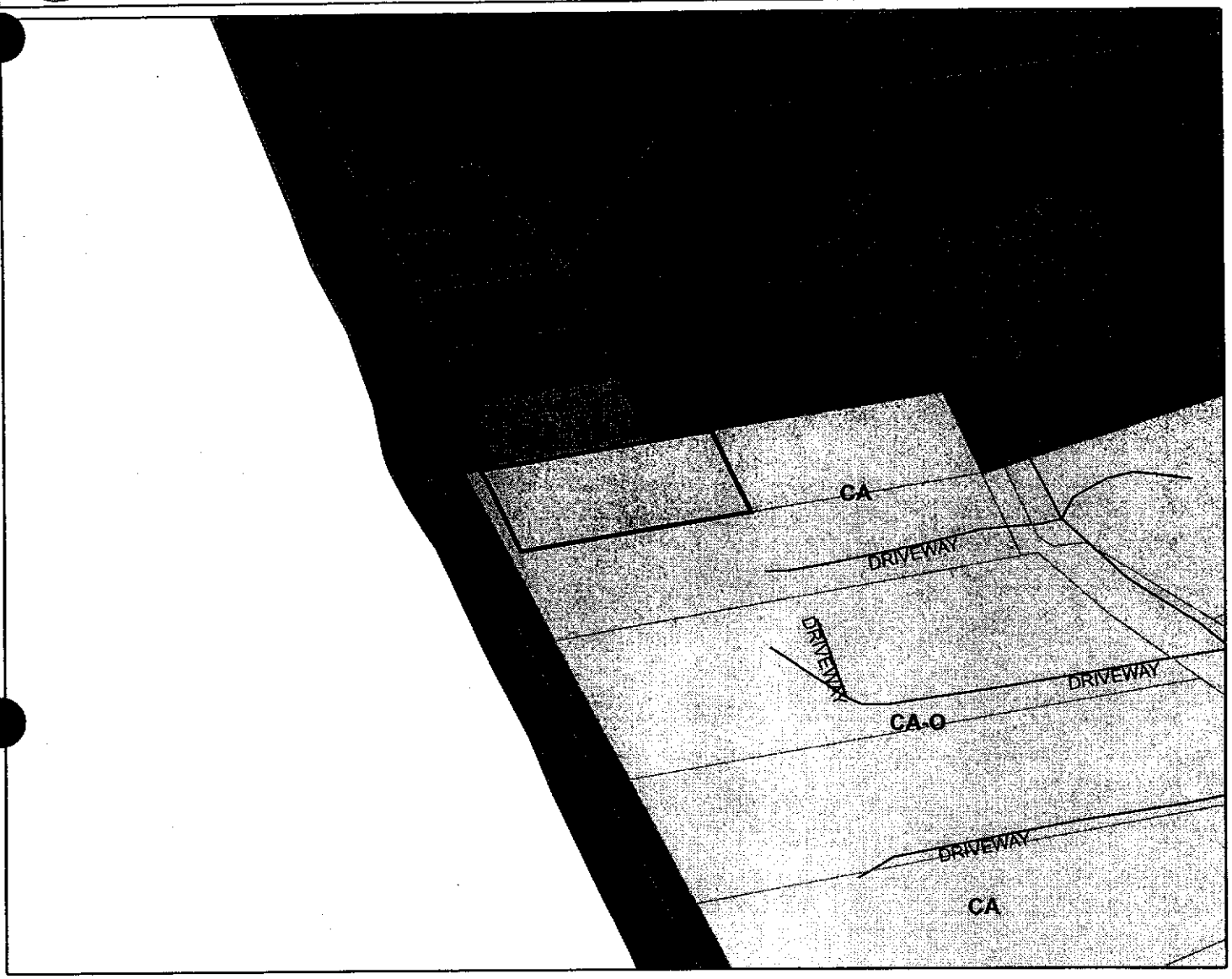
Map Created by
County of **Santa Cruz**
Planning Department
September 2006

EXHIBIT

Zoning Map



0 240 480 960 1,440 1,920 Feet

Legend

- APN 046-091-24
- Assessors Parcels
- Streets
- AGRICULTURE COMMERCIAL (CA)
- AGRICULTURE RESIDENTIAL (RA)
- PARK (PR)

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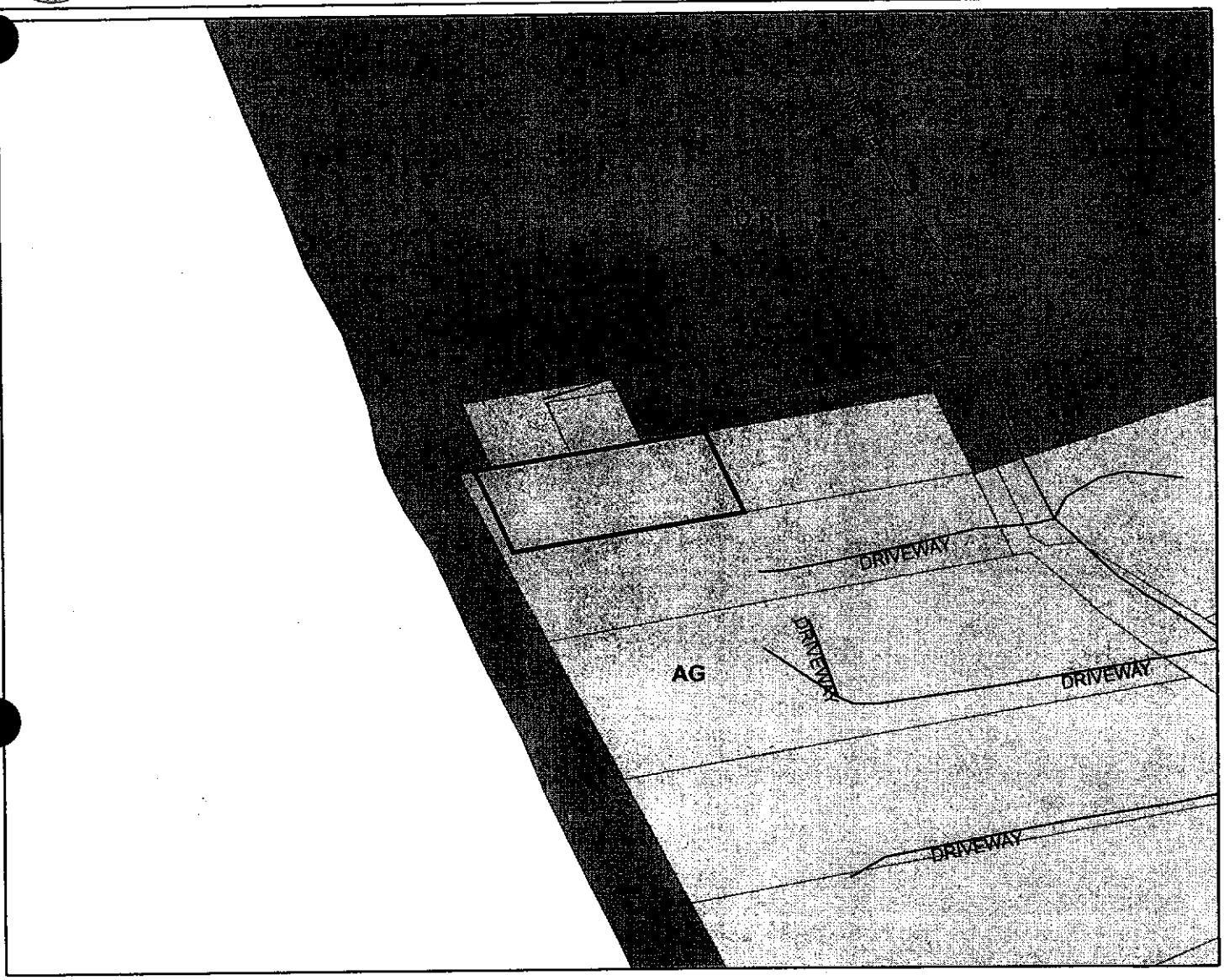
Map Created by
County **of Santa Cruz**
Planning Department
September 2006

EXHIBIT F

General Plan Designation Map



0 240 480 960 1,440 1,920 Feet

Legend

- APN 046-091-24
- Assessors Parcels
- Streets
- Agriculture (AG)
- Parks and Recreation (O-R)

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Map Created by
County of Santa Cruz
Planning Department
September 200

EXHIBIT F

COUNTY OF SANTA CRUZ
DISCRETIONARY APPLICATION COMMENTS

Project Planner: Joan Van Der Hoeven
Application No.: 06-0486
APN: 046-091-24

Date: November 6, 2006
Time: 13:56:42
Page: 1

Environmental Planning Completeness Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========== REVIEW ON OCTOBER 2, 2006 BY ROBERT S LOVELAND ==========

NOTE TO PROJECT PLANNER:

Joe Hanna will make any comments necessary for this project.

Environmental Planning Miscellaneous Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========== REVIEW ON OCTOBER 2, 2006 BY ROBERT S LOVELAND ==========
NO COMMENT

Project Review Completeness Comments

========== REVIEW ON OCTOBER 6, 2006 BY JOAN VAN DER HOEVEN ==========
Emergency Permit being processed by County Engineering Geologist as Application 06-0468, different application number

e j e c t Review Miscellaneous Comments

========== REVIEW ON OCTOBER 6, 2006 BY JOAN VAN DER HOEVEN ==========
NO COMMENT

Environmental Health Completeness Comments

========== REVIEW ON SEPTEMBER 13, 2006 BY JIM G SAFRANEK ==========
NO COMMENT

Environmental Health Miscellaneous Comments

========== REVIEW ON SEPTEMBER 13, 2006 BY JIM G SAFRANEK ========== For EHS building clearance the applicant will need to show the location of the approved septic system on the site plan.

EXHIBIT G

GEOTECHMCAL INVESTIGATION

BLUFF FAILURE AND EMERGENCY MITIGATION

FEHR PROPERTY
95 LILLY WAY
SANTA CRUZ COUNTY, CALIFORNIA

PREPARED FOR

MR. GERALD FEHR
95 LILLY WAY
WATSONVILLE, CALIFORNIA

JULY 26,2006

UPP GEOTECHNOLOGY, INC.
Engineering Geology • Geotechnical Engineering

EXHIBIT H

06-0486

UPP GEOTECHNOLOGY, INC.

Engineering Geology • Geotechnical Engineering

July 26,2006
Project No. 3023.2R1
Serial No. 14137

Mr. Gerald Fehr
95 Lilly Way
Watsonville, CA 95076

SUBJECT: GEOTECHNICAL INVESTIGATION
BLUFF FAILURE AND EMERGENCY MITIGATION
FEHR PROPERTY
95 LILLY WAY
SANTA CRUZ COUNTY, CALIFORNIA

Dear Mr. Fehr:

As you requested, we have performed a geotechnical investigation for the emergency mitigation of the bluff failure that has occurred on your property located at 95 Lilly Way in the La Selva Beach area of unincorporated Santa Cruz County, California. The accompanying report presents the results of our investigation and testing, and our conclusions and recommendations concerning the geotechnical engineering aspects of the project. The findings and recommendations presented in this report are contingent upon our review of the final grading, foundation and drainage control plans and our observation of the grading and the installation of the foundation and drainage control systems.

This report includes information vital to the success of your project. We strongly urge you to thoroughly read and understand its contents. Please refer to the text of the report for detailed findings and recommendations.

UPP GEOTECHNOLOGY, INC.

Christopher R. Hundemer
Senior Engineering Geologist
Certified Engineering Geologist 2314

R. Rexford Upp, Principal
Certified Engineering Geologist 1083
Registered Geotechnical Engineer 2046

CRH/RRU:jc

Copies: Addressees (1)
Mr. Jack Drew, Soil Stability Construction (4)

REGISTERED PROFESSIONAL ENGINEER
R. REXFORD UPP
No. 2046
Exp. 6-30-06
GEOTECHNICAL
STATE OF CALIFORNIA

EXHIBIT H

750 Camden Avenue. Suite 18 Campbell, CA 95008
(408) 866-5436 • FAX: (408) 866-9436

elevation (approximately 46 feet). Our interpretations of subsurface conditions are presented on Figures 5 and 6, Geologic Cross-Sections A-A' and B-B'.

Groundwater

Free groundwater was not encountered in any of the excavations. However, it should be noted that fluctuations in the level of subsurface water could occur due to variations in rainfall, temperature, and other factors not evident at the time our observations were made.

FINDINGS AND RECOMMENDATIONS

Based upon the results of our investigation, it is our opinion that mitigation measures must be constructed at the top of the bluff at the rear of the property before the next winter season. It is our opinion that the recent heavy rains saturated the surficial terrace deposit materials, and this prolonged saturation resulted in the recent landsliding. In our opinion, the most feasible form of mitigation is the construction of a new pier and lagging retaining wall along the top of the bluff extending the entire width of the property (approximately 160 feet long). The wall would be constructed to replace the failed non-engineered wood wall located at the slope, and would extend below grade a sufficient depth to mitigate future bluff failure from impacting the top of the bluff.

We recommend that the wall be constructed as a drilled pier and wood-lagging retaining wall. The wall can be supported by piers extending through the terrace deposits and gaining strength in the

EXHIBIT H

underlying dense to very dense eolian lithofacies. The wall must be a minimum of 10 feet in height, with 5 feet extending above grade and 5 feet extending below the lowest adjacent grade.

The following recommendations must be incorporated into all aspects of future development:

Location **of** Proposed Improvements

The proposed improvement wall must be confined to the approximate area shown on Figure 4. Construction of improvements outside of this generalized area is not recommended without written approval from this firm. In addition, if other structures are planned in the future, we should be contacted to evaluate their location and to provide appropriate geotechnical engineering design criteria.

Seismic Design Criteria

We recommend that the project structural design engineer provide appropriate seismic design criteria for proposed foundations and associated improvements. The following information is intended to aid the project structural design engineer to this end and is based on criteria set forth in Chapter 16 of the 2001 California Building Code (CBC) (International Conference of Building Officials, 2002).

The subject property is located within Seismic Zone **4,** as depicted in Figure 16A-2 of the 2001 CBC. Based on Table 16A-J and the definitions presented in Section 1636A of the 2001 CBC, in our opinion, Soil Profile Type S_D must be used for structural analyses. Appendix A of the report

EXHIBIT H

entitled *"Probabilistic Seismic Hazard Assessment for the State of California"* (CDMG and USGS, 1996), and Table 16A-U of the 2001 CBC, shows that the San Andreas fault is classified as a Seismic Source Type A fault and is approximately 13¾ km from the subject property.

Earthwork

At the time of this investigation, we anticipate that the extent of earthwork will be limited to excavations for a working bench to construct the retaining wall and backfill of the wall. Based on the site geometry, we anticipate that a non-reinforced fill slope with gradients between 3:1 and 4:1 will be constructed from the top of the new wall up to the level of the backyard above. This fill slope could be up to approximately 10 feet in height (see Figures 5 and 6). Any proposed earthwork should be performed in accordance with the recommendations provided below:

1. Clearing and Site Preparation

Any areas to be graded must initially be cleared of all obstructions, including brush, trees not designated to remain, and debris. Holes or depressions resulting from the removal of underground obstructions below proposed finished subgrade levels must be cleared, and backfilled with suitable material compacted to the requirements for engineered fill given below.

After clearing, the site must be stripped to a sufficient depth to remove all surface vegetation and organic-laden topsoil. At the time of our field investigation, we estimated that a stripping depth of

EXHIBIT H

approximately 3 inches would be required on natural slope areas. This material must not be used as engineered fill; however, it may be used for landscaping purposes.

2. Fill Material

On-site materials having an organic content of less than 3% by volume can be used as engineered fill. Material used for fill must not contain rocks or lumps greater than 6 inches in diameter, and no more than 15% of the fill material must be larger than 2% inches in diameter. Based on our investigation, the subsurface materials encountered in the exploration pits should be suitable for use as fill. Any required imported fill must have a plasticity index of 15% or less.

3. Compaction Procedures

Prior to fill placement, the surface to receive the fill must be scarified to a depth of *6* inches, moisture conditioned to approximately the materials' optimum moisture content and then compacted as engineered fill. Fill material must be moisture conditioned to approximately the materials' optimum moisture content and then spread and compacted in lifts not exceeding 8 inches in loose thickness. In general, fill should be compacted to at least 90% relative compaction by the Modified Proctor Test method, in general accordance with the ASTM Test Designation D1557 (latest revision).

EXHIBIT H

4. Permanent Slopes

Any required fill slopes must have gradients no steeper than 3:1 (horizontal to vertical). All graded surfaces or areas of disturbed ground must be revegetated prior to the onset of the rainy season following construction to prevent soil erosion. If vegetation is not established, other erosion control provisions must be employed. Ground cover vegetation, once established, must be properly maintained to provide long-term erosion control.

Foundations

We recommend that the wall be supported on drilled, cast-in-place, straight-shaft concrete friction piers gaining support in the underlying dense eolian lithofacies. The piers may be designed to resist lateral loads as cantilever piers or be tied-back using helical-anchor tiebacks.

1. Drilled **Piers** and Grade Beams

We recommend that drilled piers have a minimum diameter of 2 feet and be embedded a minimum of 10 feet into the underlying dense eolian lithofacies. Total pier depth will vary across the building site depending on the depth of the non-supportive soil and the extent of prior grading. Based on our subsurface investigation and the currently proposed development concept, we anticipate pier depths of approximately ***26*** to **32** feet below the base of the proposed retaining wall.

The portion of the piers in the eolian lithofacies may be designed using a skin friction value of 400 psf for dead plus live loads, with a 1/3 increase for transient loads, including wind and seismic. Any

EXHIBIT H

portion of the piers in the terrace deposits and any point-bearing resistance must be neglected for support.

Active loads on the upper portion of the piers in the terrace deposits must be figured on the basis of an equivalent fluid weight of 40 pcf taken over **2** pier diameters. We anticipate that active loads may extend to depths of approximately 16 to 22 feet below the bottom of the retaining wall. We recommend that the project structural engineer provide a schedule of reinforcement and minimum depths based on varying depths to support.

Lateral loads can be resisted using a passive pressure equal to an equivalent fluid weight of 350 pcf to a maximum of 3,000 psf may be taken over **1½** pier diameters for the length of the piers in the eolian lithofacies. As an alternative, helical anchor tiebacks may be used to pin the tops of the piers to resist lateral movement. **All** tiebacks must be designed to be installed at a 15-degree down-angle, and be a minimum of 40 feet into the terrace deposits. All tiebacks must be pull-tested to twice their design capacity.

The bottoms of the pier excavations must be free of all loose cuttings and soil fall-in prior to the installation of the reinforcing steel and the placement of the concrete. To verify that the piers are founded in material of sufficient supporting capacity, are of sufficient depth, and have been properly prepared, **it** is essential that **we** observe the piers **as** they are being drilled.

EXHIBIT H

2. Retaining Walls

We recommend that the retaining wall be designed to resist both lateral earth pressures and **any** additional lateral loads caused by surcharge loads on the adjoining ground surface. We recommend that unrestrained walls be designed to resist an equivalent fluid pressure of 40 pcf. Restrained walls must be designed to resist an equivalent fluid pressure of 40 pcf plus an additional uniform lateral pressure of 8 H psf, where H = height in feet of backfill above the top of the wall footing. Wherever the walls will be subjected to surcharge loads, they must be designed for an additional uniform lateral pressure equal to 1/2 or **1/3** the anticipated surcharge load for restrained or unrestrained walls, respectively. In addition, walls with sloping backfill must be designed for an additional 1 pcf for each *3* degrees of slope inclination.

The preceding pressures assume that sufficient drainage is provided behind the walls to prevent the buildup of hydrostatic pressures from surface or subsurface water infiltration. Adequate drainage may be provided by means of a backdrain system consisting of an approximately 1-foot thick curtain of drainrock (crushed rock or gravel) placed behind the wall. The drainrock must be separated from the backfill by a geotextile filter fabric, such as Mirafi 140 or an alternate, approved by the soil engineer. One-quarter-inch spacers must be provided between each member of the retaining wall lagging to promote downslope discharge of collected water through the face of the wall.

Backfill placed behind the walls must be compacted to at least 90% relative compaction, using light compaction equipment, in accordance with the compaction procedures given above. If heavy

EXHIBIT H

compaction equipment is used, the walls should be appropriately temporarily braced, as the situation requires.

We recommend that annual maintenance of retaining wall backdrain systems be performed. This maintenance must include inspection of the spacers in the lagging and the slope below the wall to verify that introduced water flows freely through the wall and that no excessive erosion has occurred. If erosion is detected, we must be contacted to evaluate its extent and to provide mitigation recommendations, if needed.

PLAN REVIEW AND CONSTRUCTION OBSERVATION

We must be retained to review the final grading, retaining wall, and drainage control plans in order to verify that our recommendations have been properly incorporated into the proposed project. **WE MUST BE GIVEN AT LEAST ONE WEEK TO REVIEW THE PLANS AND PREPARE A PLAN REVIEW LETTER.**

We also must be retained to observe the grading and the installation of foundations and drainage systems in order to:

- Verify that the actual soil conditions are similar to those encountered in our investigation
- Provide us with the opportunity to modify the foundation design, if variations in conditions are encountered
- Observe whether the recommendations of our report are followed during construction

EXHIBIT H

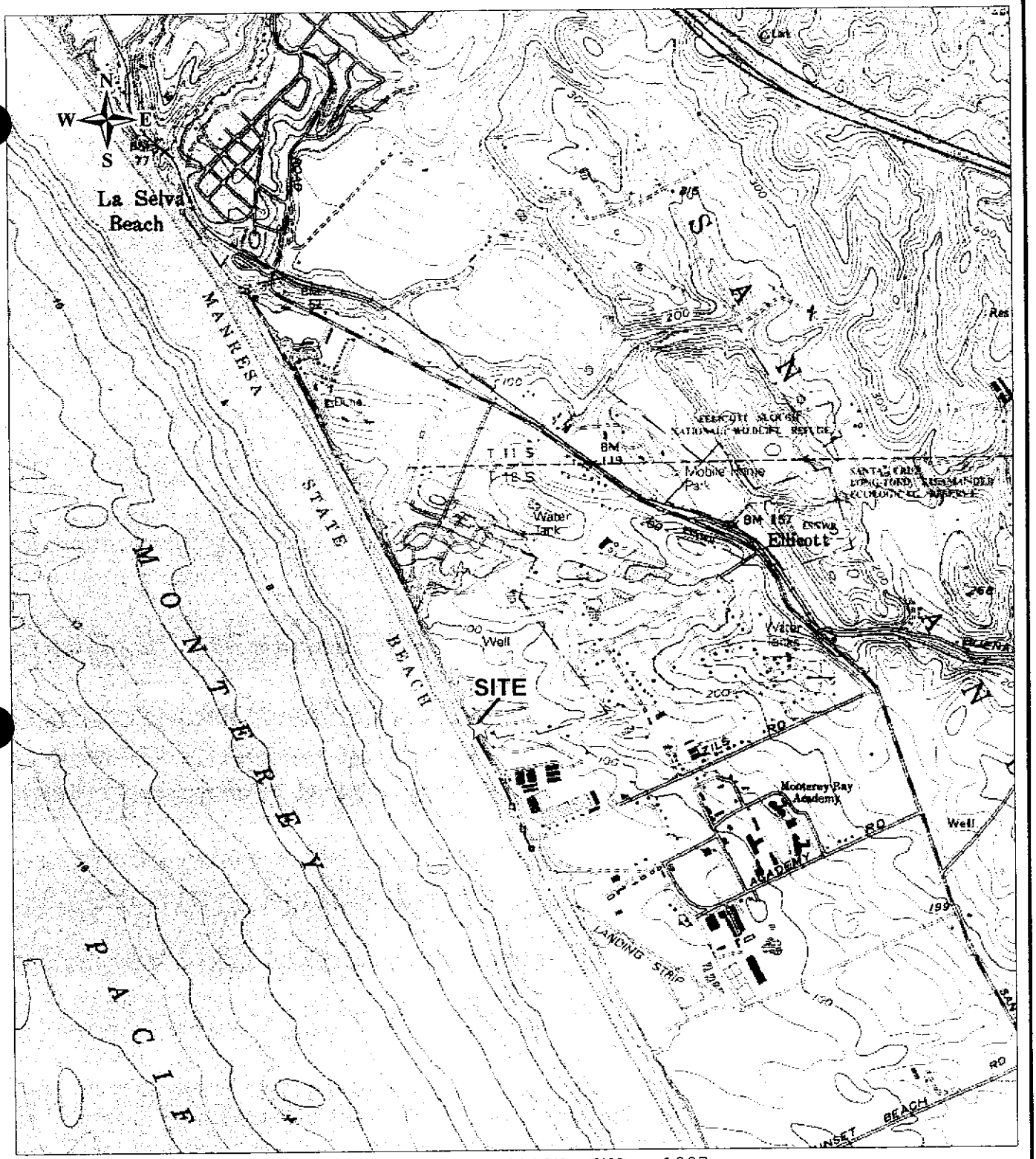
Sufficient notification prior to the start of construction is essential in order to allow for **the** scheduling of personnel to insure proper monitoring. **WE MUST BE NOTIFIED AT LEAST TWO WEEKS PRIOR TO THE ANTICIPATED START-UP DATE. IN ADDITION, WE MUST BE GIVEN AT LEAST TWO WORKING DAYS NOTICE PRIOR TO THE START OF ANY ASPECTS OF CONSTRUCTION WHICH WE MUST OBSERVE.**

The phases of construction to be observed by this firm must include, but are not necessarily limited to, the following:

1. **DRILLED PIER EXCAVATION:** During drilling to evaluate depth to supportive material **and** final pier depths
2. **RETAINING WALL BACKDRAIN:** During installation
3. **RETAINING WALL BACKFILL:** During backfill to observe **and** test compaction

* * * * * * * * *

EXHIBIT H



Base: USGS Topographic Map; HORIZONS TECHNOLOGY, INC.; 1997

SITE LOCATION MAP

UPP GEOTECHNOLOGY, INC.
Engineering Geology • Geotechnical Engineering

FEHR PROPERTY
95 Lilly Way
Santa Cruz County, California

APPROVED BY	SCALE	PROJECT NO.	DATE	
CH.	1" = 2000'	3023.2R1	July 2006	Figure 1

EXHIBIT H

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831)454-2580 FAX: (831)454-2131 TDD: (831)454-2123
TOM BURNS, PLANNING DIRECTOR

October 12,2006

Jack Drew
3435 Sierra Road
San Jose, CA 95123

Subject: **Review of Engineering Geology Report, and Geotechnical Engineering Report, by UPP Geotechnology, Inc., Dated July 26,2006, Project Number 3023.2R1;** ***APN 046-091-24, Application 06-0468***

Dear Applicant,

The purpose of this letter is to inform you that the Planning Department *has* ***accepted*** the subject reports and the following items shall be required

1. All construction shall comply with the recommendations of the reports.

2. Final plans shall reference the reports and include a statement that the project shall conform to the reports' recommendations.

3. Before building permit issuance a *plan* ***review letter*** shall be submitted to Environmental Planning. The authors of the reports shall write the *plan* ***review letters*** which **must** state that the project plans conform to their report's recommendations.

4. The applicant **must** record the attached Declaration of Geologic Hazards before the issuance of a building permit.

After building permit issuance the geotechnical engineer and engineering geologist ***must remnin involved with the project*** during construction. Please review the *Notice to* ***Permits Holders*** (attached).

Our acceptance of these reports is limited to its technical content. Other project issues such as zoning, fire safety, septic or sewer approval, etc. may require resolution by other agencies.

Please call the undersigned at (831) 454-3175, e-mail: pln829@co.santa-cruz.ca.us if we can be of any further assistance.

Sincerely,

Joseph L. Hanna CEG1313
County Geologist

Kevin Crawford PE
Civil Engineer

Cc: Gerald Fehr, Owner
Andrea Koch, Resource Planner
File

EXHIBIT I

NOTICE TO PERMIT HOLDERS WHEN A **SOILS** REPORT HAS BEEN PREPARED, REVIEWED AND ACCEPTED **FOR** THE PROTECT

After issuance of the building permit, the County requires your soils engineer to be involved during construction. Several letters **or** reports are required to be submitted to the County at various times during construction. They are as follows:

1. When a project has engineered **fills** and / or grading, letters from your soils engineer, ***and engineering geologist***, must be submitted to the Environmental Planning section of the Planning Department before foundations being excavated. This letter must state that the grading has been completed in conformance with the recommendations of the soils report. Compaction reports **or** a summary thereof must be submitted.

2. Prior to placing concrete **for** foundations, a letter from the soils engineer must be submitted to the building inspector and to Environmental Planning stating that the soils engineer has observed the foundation excavation and that it meets the recommendations of the soils report.

3. At the completion of construction, *final letters* from your soils engineer, ***and engineering geologist***, are required to be submitted to Environmental Planning that summarizes the observations, testing, and inspections made during construction. The final letters must also state the following: "Based upon our observations, tests and/or inspection, the project has been completed in conformance with our report recommendations and is suitable for its intended use."

   If the final *letters* identifies any items of work remaining to be completed **or** that any portions of the project were not observed, you will be required to complete the remaining items of work and may be required to perform destructive testing in order for your permit to obtain a final inspection.

EXHIBIT I

RECORDED AT REQUEST OF:
County of Santa Cruz

WHEN RECORDED MAIL T O

Santa Cruz County Planning
701 Ocean St.
Santa Cruz, CA 95060

(Space above this line for Recorder's use only)

Note to County Recorder:
Please return to the staff geologist in the Planning Department when comuleted.

DECLARATION REGARDING THE ISSUANCE OF A DEVELOPMENT PERMIT IN AN AREA SUBJECT TO GEOLOGIC HAZARDS

The undersigned RON GARTHWAITE does hereby certify to be the owner of the real property located in the County of Santa Cruz, State of California, commonly known as 95 Lily Way; legally described in that certain deed recorded in Book ____ on Page ____ of the Official Records of the Santa Cruz County Recorder on ____ (deed recordation date): Assessor's Parcel Number 046-091-24

And, acknowledge that records and reports, filed with the Santa Cruz County Planning Department, indicate that the above-described property is located within an area that is subject to geologic hazards, to wit: The subject property is located on a coastal bluff in an area of known slope instability. A landslide has occurred during the winter of 2005-2006, causing the retaining wall at the top of the bluff to fail. The landslide has been investigated by UPP Geotechnology (August 26,2006) and a mitigation plan has been prepared to replace the retaining wall to increase the stability of the bluff. The proposed repair will reduce, but not eliminate, the effects of coastal erosion on the property. Moreover, having full understanding of said hazards, I elect to pursue development activities in an area subject to geologic hazards and do hereby agree to release the County from any liability and consequences arising from the issuance of the development permit.

This declaration shall run with the land and shall be binding upon the undersigned, any future owners, encumbrancers, their successors, heirs, or assignees. This document should be disclosed to the forgoing individuals. This declaration may not be altered or removed from the records of the County Recorder without the prior consent of the Planning Director of the County of Santa Cruz.

OWNER _____ OWNER _____
Signature Signature

ALL SIGNATURES ARE TO BE ACKNOWLEDGED BEFORE A NOTARY PUBLIC. IF A CORPORATION, THE COMPARE FORM OF ACKNOWLEDGEMENT SHALL BE USED.

EXHIBIT I

(over)

SCHNEIDER ENGINEERING
CIVIL/STRUCTURAL ENGINEERING

STRUCTURAL CALCULATIONS FOR EMERGENCY BLUFF REPAIR RETAINING WALL

FEHR PROPERTY
95 *LILLY* WAY
LA SELVA BEACH, CALIFORNIA

CLIENT: SOIL STABILITY CONSTRUCTION, INC.

REFERENCE: 2001 EDITION CALIFORNIA BUILDING CODE (1997 U.B.C.)

DRAWINGS: BY SCHNEIDER ENGINEERING, CONSISTING OF TWO (2) SHEETS, DATED 8/06. SITE PLAN B/S-1 INFORMATION TAKEN FROM SANTA CRUZ COUNTY GEOGRAPHIC INFORMATION SYSTEM. SITE SECTIONS E/S-1 & F/S-1 ADAPTED FROM FIGURES 5 & 6 OF SOILS REPORT (BELOW), RESPECTIVELY.

SOILS REPORT: BY UPP GEOTECHNOLOGY, INC. ENTITLED *"GEOTECHNICAL INVESTIGATION, BLUFF FAILURE AND EMERGENCY MITIGATION, FEHR PROERTY, 95 LILLY WAY...."*, DATED JULY 26, 2006 (THEIR PROJECT NO. 3023.2R1, SERIAL NO. 14137).

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WHALER BEAM DESIGN	**6**
TIE-BACK BEARING PLATE	**6**

EXHIBIT J

503 RAYMOND AVENUE
SAN JOSE, CALIFORNIA 95128
E-MAIL: FASENGINEER@SBCGLOBAL.NET
PHONE: (408) 275-6482
FAX: (408) 298-1025

Scope of Work:

These calculations are for the analysis and design of emergency mitigation measures to repair and restore a bluff failure west of the existing residence, near the top of the slope. These measures will consist of a new retaining wall spanning the width of the subject property along what is now approximately the existing elevation +70 contour. The purpose of this construction is to prevent additional future land-sliding of the bluff. The land-sliding which has already occurred was the result of soil saturation from past rains. Therefore, it is vital that the new construction take place before the next rainy season as recommended by the project Soils Engineer.

The new retaining wall will replace an existing non-engineered wood retaining wall, which has already failed. It will consist of pressure-treated wood lagging laterally supported by vertical steel "soldier" beams. The beams will be embedded in a series of poured-in-place concrete drilled piers, laterally restrained **just** above the base of the wall with helical steel anchors drilled near- horizontally into the Terrace Deposits behind the and piers. The wall itself will not be horizontally restrained, but will cantilever from the tops of the piers above the tie-backs. The bottoms of the piers will be embedded for lateral support in the underlying Eolian Lithofacies. **No** other construction is included in this scope of work.

Geotechnical Design Parameters:

Drilled Piers Shall Have Minimum Plan Dimensions of **24" in Diameter.**
Piers Must Be Embedded in the Underlying Eolian Lithofacies
Permanent Slopes Must Have Gradients no Steeper than **3:1** (Horizontal:Vertical)

Allowable Skin Friction in Eolian Lithofacies, p_{max} = 400psf (Dead + Live Loads)
Skin Friction May be Increased by ⅓ for Transient Forces (Wind & Seismic).

Active Pressure, **E.F.W. = 40pcf** on Walls & Pier Width **X** 2 in Terrace Deposits
Design Walls **w/** Sloping Backfill for Additional **1pcf for Each 3°** of Backfill Slope
Typ. Retaining **Wall Height = 10'- 0"**, Depth to **Eolian Lithofascies = 19'- 0"**

Passive Pressure Resistance in Eolian Lithofascies, **E.F.P. = 350pcf X 1%Ø**
Uniform Lateral Pressure, **p = 3,000psf**

Use **Helical Steel Anchor** Tie-backs Provide Lateral Resistance @ Base of Wall
Tie-backs Shall be Installed @ a **15° Down Angle** (from Horizontal)
Tie-backs Shall be Embedded a Minimum of 40-feet into the Terrace Deposits

EXHIBIT J

Horizontal Lagging Design:

Design Lagging for I-Foot Wide Strip @ Base of Max. 10-0" Tall Retaining Wall

Max. Span = Pier Spacing = **10.0ft**
3:1 Backfill Slope Inclination = 19.5°
Backfill Slope Surcharge = 19.5pcf/3 = 6.5pcf
Total Active Load, **p** = 40pcf + 6.5pcf = **46.5pcf**
Max. Uniform Load, **w** = 10.0ft **x** 46.5pcf x 1.0ft = **465plf**

Adjust Allowable Stresses for Wet Service, (C_M = 0.97, 0.85 & 0.9 Respectively)
Designing for I-Foot Wide Strip of Wall, b = 12in.

Section Properties for 6x1-Foot Lagging are as Follows:
Area, A_f = 12in x 5.5in = **66.0in²**
Section Modulus, $S_f = {}^1/_6 \times [12in \times (5.5in)^2]$ = **60.50in³**
Moment of Inertia, $I_f = {}^1/_{12} \times [12in \times (5.5in)^3]$ = **166.38in⁴**

$V_{max} = R = ½ \times 10ft \times 465plf$ = **2,325#**
A_v = (2,325# x 1.5)/(85psi x 0.97) = **42.30in²** < 66.0in² → O.K.

$M_{max} = ⅛ \times 465plf \times (10ft)^2$ = **5,813ft#**
S_x = (5,813ft# x 12in/ft)/(1,350psi **x** 0.85) = **60.79in³** ≈ 60.50in³ → O.K.

For Walls, Max. Deflection, $\Delta_{max} = {}^L/_{120}$ = (10.0ft x 12in/ft)/120 = **1.0in**
I_r = **56.25in⁴** < 166.38in⁴ → O.K.

Use 6X **No. 1** P.T.D.F. Beams **or** Dense **No. 1** Timbers Lagging **@ Base of** Wall

Section Properties for 4x1-Foot Lagging are as Follows:
Area, A_f = 12in x 3.5in = **42.0in²**
Section Modulus, $S_f = {}^1/_6 \times [12in \times (3.5in)^2]$ = **24.50in³**
Moment of Inertia, $I_f = {}^1/_{12} \times [12in \times (3.5in)^3]$ = **42.88in⁴**

For Shear, $w_{max} = (2 \times A \times F_v \times C_m)/(L \times 1.5)$
$= [2 \times 42.0in^2 \times 95psi \times 0.97]/(10.0ft \times 1.5)$ = **516plf**
Therefore, d_{max} = 516plf/46.5psf = **11.10ft** > 3.40ft → O.K.

For Bending, $w_{max} = (8 \times S \times F_b \times C_f \times C_r \times C_m)/[L^2 \times 12]$
$= [8 \times 24.5in^2 \times 825psi \times 1.2 \times 1.15 \times 0.85]/[(10.0ft)^2 \times 12]$ = **158plf**
Therefore, d_{max} = 158plf/46.5psf = **3.40ft ← Controls**

EXHIBIT J

Assuming Flexible Walls, Max. Deflection, $\Delta_a = L/120$
For Deflection, $w = (I \times 384 \times E \times C_m)/(5 \times L^3 \times 144 \times 120) =$
$= \frac{[42.88in^3 \times 384 \times (1.6 \times 10^6 psi) \times 0.91}{[5 \times (10.0ft)^3 \times 144 \times 120]} = \mathbf{274plf}$
Therefore, $d = 274plf/46.5psf = \mathbf{5.89ft} > 3.40ft \rightarrow O.K.$

Use 4X No. 2 P.T.D.F. Lagging Above 3'- 4" Height of Wall (Max. Span = 10'-0")

Soldier Beam Design for 10ft. Tall Wall Over 20ft. Active Pressure:

Design for **24"Ø Drilled Piers & Soldier Beams @ 10'- 0"o.c.**

Cantilevered Height of Wall = **10.0ft**
For Computer Analysis, **a** = **5.75ft**

Determine *Lateral Loads (Passive* Pressures) for *Beam* Segments:
@ Base of Wall (Triangular Load):
Max. Uniform Load, w = 10.0ft x 46.5pcf x 10.0ft = 4,650plf
Adjusted *Max.* Uniform Load, $w_{a\ max.} = 10.0ft/5.75ft \times 4,650plf = \mathbf{8,087plf}$

Back-span of Wall = **20.0ft** > 19.0ft (Conservative Allowance)
For Computer Analysis, **L** = 2 x 5.75ft = **11.5ft**

@ Base of Wall (Rectangular Load):
Min. Uniform Load, w = 10.0ft x 46.5pcf x (2 x 2.0ft) = 1,860plf
Adjusted Min. Uniform Load, $w_{L\ min.} = 20.0ft/11.5ft \times 1,860plf = \mathbf{3,235plf}$

@ Mid-span of Pier (Triangular Load):
Max. Uniform Load, **w** = 10.0ft x 40.0pcf x (2 x 2.0ft) = 1,600plf
Adjusted Max. Uniform Load, $w_{L\ max.} = 20.0ft/11.5ft \times 1,600plf = \mathbf{2,783plf}$

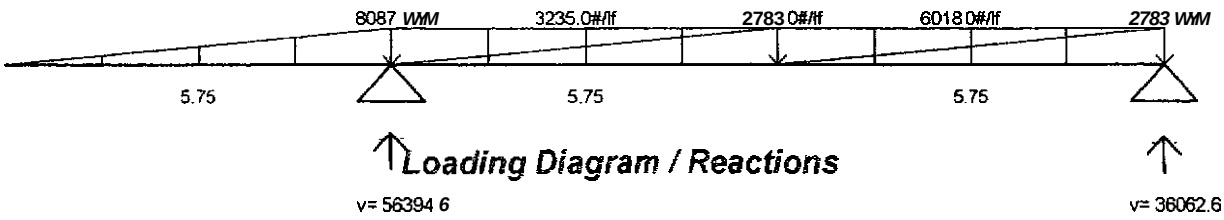
@ Mid-span of Pier (Rectangular Load):
Adjusted Min. Uniform Load, $w_{L\ min.} = 3,235plf + 2,783plf = \mathbf{6,018plf}$

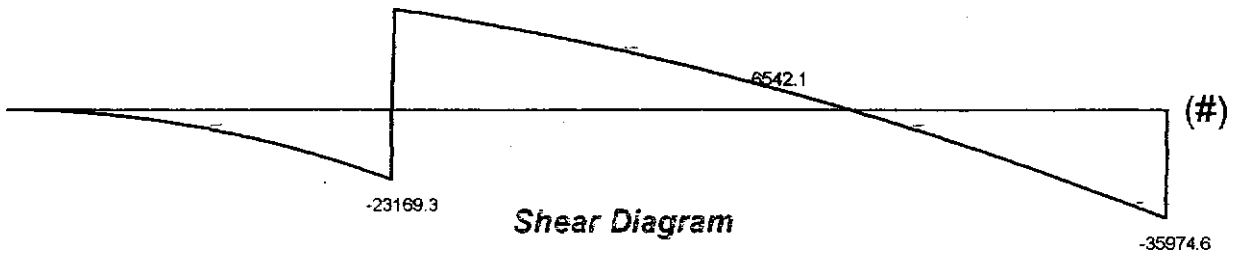
@ Base of Pier (Triangular Load):
Max. Uniform Load, **w** = 10.0ft x 40.0pcf x (2 x 2.0ft) = 1,600plf
Adjusted Max. Uniform Load, $w_{L\ max.} = 20.0ft/11.5ft \times 1,600plf = \mathbf{2,783plf}$

Pier / *Beam Embedment:*
From Loading Diagram on Sheet 5, $R_{Base} = \mathbf{36,063\#} \rightarrow$ Use F.O.S. = 2.0

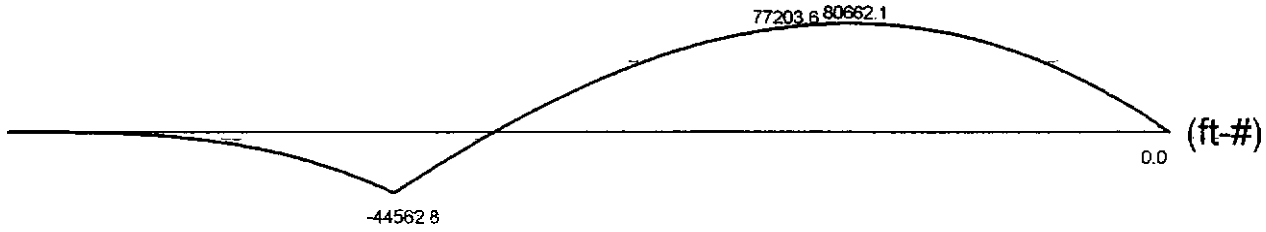
$d_{min.} = [2 \times (2 \times 36,063\#)/(350pcf \times 2.0ft \times 1.5)]^{1/2} = \mathbf{11.72ft} \rightarrow$ **Use d = 12'- 0"**

EXHIBIT J

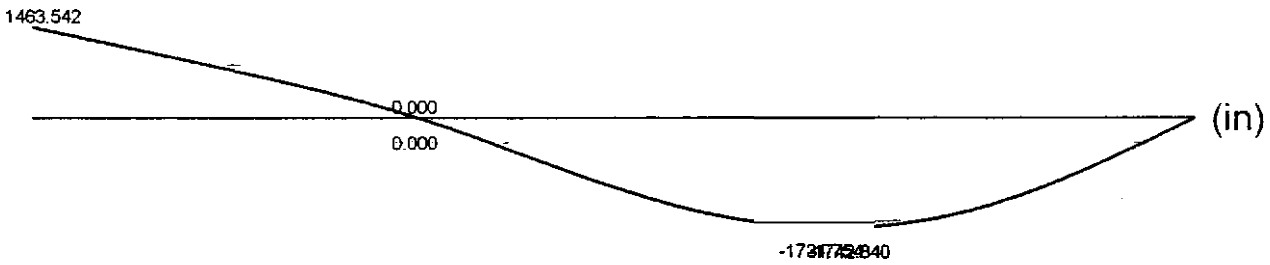




M



Moment Diagram



Deflected Shape

M_{max} = 80,662ft# x 20ft/11.5ft = **140,282ft#**

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DATE ====> 8/18/2006 10:39:03 AM
COMMENTS ====>
====>
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For F_y = ***36ksi Steel*** Shape,
$S_r = \frac{(140{,}282\text{ft\#} \times 12\text{in/ft})}{(36{,}000\text{psi} \times 0.66)} = \mathbf{70.85in^3}$

Use W16X45 or W14X48

Tie-back Desian:

From *"Loading Diagram / Reactions"* (Sheet 5), **R** @ Base of Wall = 56,395#

Tie-back Force @ 15°, **T = 58,250#**

Test Load w/ F.O.S. = 2.0 = 2.0 x 58,250# = 116,500# = **116.5K**

Use Helical Anchor by Chance (or Equal) @ Base of Wall, Each Pier

Whaler Beam Desian:

Span = Pier Spacing, L = **10.0ft**

Max. Helix O = 12in
Max. Soldier Beam Flange Width @ W14X48 = 8.03in

Anchor Offset = ½ x (12in + 8.03in) = 10.02in → **Use e = 11.0in**
P = Tie-back Force, **T = 58,250#**

M_j = 11.0in x 58,250# = **640,750in#**

For F_y = 36ksi Steel Shape,
S_r = 640,750in#/(36,000psi x 0.66) = **26.97in^3** < 27.0in^3 → O.K.

Use 2-C10X15.3 Whalers (S_f = 2 **x** 13.5in^3 = 27.0in^3)

Tie-back Bearina Plate:

Plate Span = Max. Whaler Gap, L **= 3in**
P = Tie-back Force, **T = 58,250#**

Assuming Distributed Uniformly Across Plate By Nut &Washers,
Uniform Load, **w** = 58,250#/3in = **19,417#/in**

M_j = ⅛ x (3in)^2 x 19,417#/in = **21,844in#**

w/ Min. 1%" Bearing Each Side of Gap, Plate Width = 3in + (2 x 1.5in) = 6.0in
For 6"X6" Bearing Plate, t_{min} = [(6 x 21,844in#)/(6in x 36,000psi x 0.75)]^{½} = **0.90in**

Use 6" X 6" x 1" Bearing Plate Across Whalers

EXHIBIT J

EXHIBIT K

2006

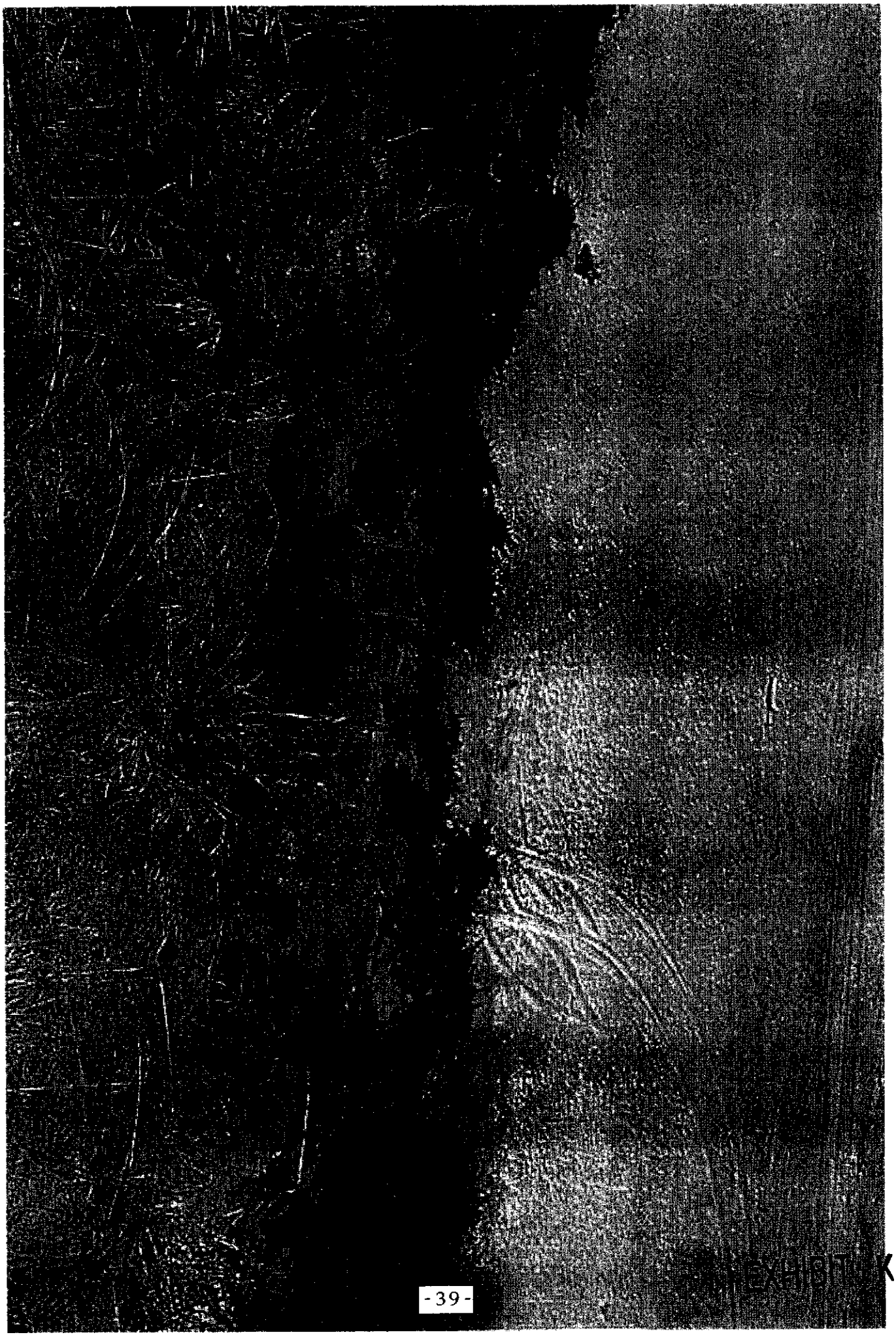

EXHIBIT K

06-0486

UPP GEOTECHNOLOGY, INC.

Engineering Geology • Geotechnical Engineering

August 22,2006
Project No. 3023.3L1
Serial No. 14184

Mr. Gerald Fehr
95 Lilly Way
Watsonville, CA 95076

SUBJECT: PLAN REVIEW
EMERGENCY BLUFF FAILURE MITIGATION
FEHR PROPERTY
95 LILLY WAY
SANTA CRUZ COUNTY, CALIFORNIA

Dear Mr. Fehr:

As you requested, we have reviewed the structural plans and calculations (dated August 2006) by Schneider Engineering for the new site retaining wall to be constructed on your site to mitigate the recent bluff failures that have occurred on your property located at 95 Lilly Way in Watsonville, California Our Geotechnical Investigation report (dated July 26, 2006) presented our recommendations for the earthwork and foundation design aspects of the project. Because of the high risk for additional landsliding to occur this winter, we recommend that these mitigation measures be constructed as soon as possible.

Our plan review was made from a soil and foundation engineering viewpoint; no review was made of other aspects of the project design, such as project structural engineering. In our opinion, the plans for the emergency bluff mitigation appear to be in general conformance with the recommendations of our report. However, we make no representation as to the accuracy of dimensions, measurements, calculations or any portion of the design, other than that covered by our recommendations.

We appreciate the opportunity to have reviewed these plans. If you have any questions, please call.

Yours very truly,

UPP GEOTECHNOLOGY, INC.

REGISTERED PROFESSIONAL ENGINEER
R. REXFORD UPP
No. 2046
Exp. 6-30-08
GEOTECHNICAL
STATE OF CALIFORNIA

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EXHIBIT L