Staff Report to the Zoning Administrator

Application Number: 121252

Applicant: Matson Britton
Owner: Jens and Susanne Meyerhoff
APN: 043-094-06, -13, -25

Agenda Date: December 20, 2013
Agenda Item #: 2
Time: After 9:00 a.m.

Project Description: Proposal to recognize emergency landslide repairs by installing 600 square feet of reinforced Maccaferri Macmat with soil nail application. Work performed under Emergency Coastal Permit (issued October 15. 2012) and Building Permits B-123584 and B-124182.

Location: Property located south side of Kinsbury Drive, about 1,000 fee east of the intersection of Kingsbury Drive and Rio Del Mar Blvd (340 Kingsbury Drive)

Supervisorial District: 2nd District (District Supervisor: Zack Friend)

Permits Required: Coastal Development

Technical Reviews: Geologic Report Review

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 121252, based on the attached findings and conditions.

Exhibits

A.	Categorical Exemption (CEQA determination)	E.	Assessor's, Location, Zoning and General Plan Maps
B.	Findings	F.	Geologic Report (excerpts)
C.	Conditions		
D.	Project plans		

Parcel Information

Parcel Size:	45,220 net square feet
Existing Land Use - Parcel:	Single-family residence
Existing Land Use - Surrounding:	Single-family residence
Project Access:	Kingsbury Drive

Planning Area:	Aptos
Land Use Designation:	R-UL (Urban Low Residential)
Zone District:	R-1-6 (Single-family residential - 6,000 square foot minimum net site area)
Coastal Zone:	_X_ Inside __ Outside
Appealable to Calif. Coastal Comm.	_X_ Yes __ No

Environmental Information

Geologic Hazards:	Instability associated with coastal bluff
Soils:	N/A
Fire Hazard:	Not a mapped constraint
Slopes:	Steep slopes associated with coastal bluff
Env. Sen. Habitat:	Not mapped/no physical evidence on site
Grading:	None
Tree Removal:	No trees proposed to be removed
Scenic:	Mapped Scenic Resource
Drainage:	Existing drainage adequate
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	_X_ Inside __ Outside
Water Supply:	Soquel Creek Water District
Sewage Disposal:	Public
Fire District:	Aptos-La Selva Fire Protection District
Drainage District:	Zone 6

Project Setting and History

The subject parcel consists primarily of a coastal bluff overlooking Beach Drive in Aptos. An unstable portion of the bluff was identified by Zinn Geology as an imminent landslide hazard, which threatened the occupants of two downslope residences on Beach Drive. Recommendations for emergency slope repair were presented to the County Geologist and an Emergency Coastal Permit issued on October 15, 2012.

The proposed repair consisted of the placement of reinforced erosion control matting, such as Macaferri's MacMat, or equivalent, secured to the slope with soil nails. The synthetic fibers are integrated with wire mesh and secured to the slope with a soil nail anchoring system. The repair zone was identified as a 600 square foot area encompassing the slide zone plus an additional five fee laterally beyond.

The matting is designed to be seeded to allow vegetative growth to take place over the repaired area.

The emergency work has been completed under Building Permits B-123584 and B-124182 and was performed under the guidance of the consulting Geotechnical Engineer and Engineering

Geologist. The County Geologist has also inspected the matting and found it to be in conformance with the accepted report recommendations.

Emergency Coastal Permit

The project site is located within the appeals jurisdiction of the Coastal Zone. Section 13.20.090 of the County Code states that Emergency Coastal Zone approvals may be granted at the discretion of the Planning Director for projects normally requiring a Coastal Zone Approval, which must be undertaken as emergency measures to prevent loss of or damage to life, health, or property. The work authorized under this approval has been limited to the removal of slide material and the construction of a retaining structure.

Matting

As stated, the matting that was installed under the Emergency Coastal Permit and Building Permit is approximately 25 feet wide and 25 feet in height, laid back against the slope. The wall is secured to the bluff face by 12-foot (minimum) long soils nails installed 6 feet on center, supported by helical anchors.

To keep surface and subsurface drainage away from the bluff face, drainage improvements are being installed in conjunction with the proposed replacement dwelling above the repair, to collect all surface and subsurface runoff and direct it eastward to the wooded arroyo. As stated, the matting will be seeded to allow for vegetative growth to further stabilize the slope and to provide visual screening from Beach Drive and the coastline beyond.

It should be emphasized that the stabilization of this section of the coastal bluff was undertaken to protect downslope residences from materials sloughing off of the face of the bluff, rather than to protect the replacement dwelling proposed under Coastal Development Application 131131. No instability has been identified along the coastal bluff which would negatively impact the upslope structures.

Local Coastal Program Consistency

The anchored matting is in conformance with the County's certified Local Coastal Program, in that the structure is sited and designed to be visually compatible, in scale with, and integrated with the character of the surrounding neighborhood. Portions of the coastal bluff in the vicinity of the project site are protected by several different types of retaining/protection structures. The subject matting has been designed to be compatible with the natural background of the bluff, with surrounding development and the project is conditioned to require plantings in order to provide additional vegetative screening from ocean and beach views.

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 **121252,** 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: Robin Bolster-Grant
Santa Cruz County Planning Department
701 Ocean Street, 4th Floor
Santa Cruz CA 95060
Phone Number: (831) 454-5357
E-mail: robin.bolster@co.santa-cruz.ca.us

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 from 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: 121252
Assessor Parcel Number: 043-094-06
Project Location: 340 Kingsbury Drive, Aptos

Project Description: Proposal to recognize emergency landslide repairs by installing 600 square feet of reinforced Maccaferri Macmat with soil nail application. Work performed under Emergency Coastal Permit (issued October 15. 2012) and Building Permits B-123584 and B-124182.

Person or Agency Proposing Project: Cove Britton

Contact Phone Number: (831) 425-0544

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 Project** involving only the use of fixed standards or objective measurements without personal judgment.
D. __X__ **Statutory Exemption** other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).

Specify type:15269 Emergency Projects

E. _____ **Categorical Exemption**

Specify type:

F. Reasons why the project is exempt:

This project involves the construction of erosion matting secured by soil nails, which is necessary to prevent the failure of the coastal bluff and significant damage to downslope residences. Therefore, the construction of the replacement wall constitutes an emergency projectIn addition, none of the conditions described in Section 15300.2 apply to this project.

_____ Date:_____
Robin Bolster-Grant, Project Planner

EXHIBIT A

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 R-1-6 (Single-family residential - 6,000 square foot minimum net site area), a designation which allows residential uses. Bluff stabilization methods can be permitted in any zone district and the zoning is consistent with the site's (R-UL) Urbal Low Residential 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 no easements are known to encumber the 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 color and material. The matting shall be seeded to provide vegetative growth that will secure and screen the material from view.

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 while the project site is located between the shoreline and the first public road, there is no access in the vicinity of the project site. Consequently, the matting 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 matting will be covered in natural vegetation and will therefore be visually unobtrusive. Additionally, residential uses are allowed uses in the R-1-6 (Single-family residential - 6,000 square foot minimum net site area) zone district, as well as the General Plan and Local Coastal Program land use designation. Developed parcels in the area contain single family dwellings and a variety of bluff protection structures in a range of styles.

Conditions of Approval

Exhibit A: Project Plans, 2 sheets, prepared by RI Engineering, Inc.., dated October 2012.

I. This permit authorizes the installation of approximately 600 square feet MacMat, anchored with soil nails. This approval does not confer legal status on any existing structure(s) or existing use(s) on the subject property that are not specifically authorized by this permit. 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 a Final for Building Permit B-124182 from the Santa Cruz County Building Official.

1. Any outstanding balance due to the Planning Department must be paid prior to making a Building Permit application. Applications for Building Permits will not be accepted or processed while there is an outstanding balance due.

C. Submit proof that these conditions have been recorded in the official records of the County of Santa Cruz (Office of the County Recorder) within 30 days from the effective date of this permit.

II. 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. A site inspection shall be conducted by the Project Planner to ensure that vegetative growth adequately screens the matting from view to the largest extent practicable.

D. The project must comply with all recommendations of the approved soils and geology reports.

E. Complete and record a Declaration of Geologic Hazards for the work on the coastal bluff. **You may not alter the wording of this declaration.** Follow the instructions to record and return the form to the Planning Department.

EXHIBIT C

F. Provide Environmental Planning Staff with final observation letters from project Engineering Geology and Geotechnical Engineer, if required.

III. 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.

IV. 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, from 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 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.

Director at the request of the applicant or staff in accordance with Chapter 18.10 of the County Code.

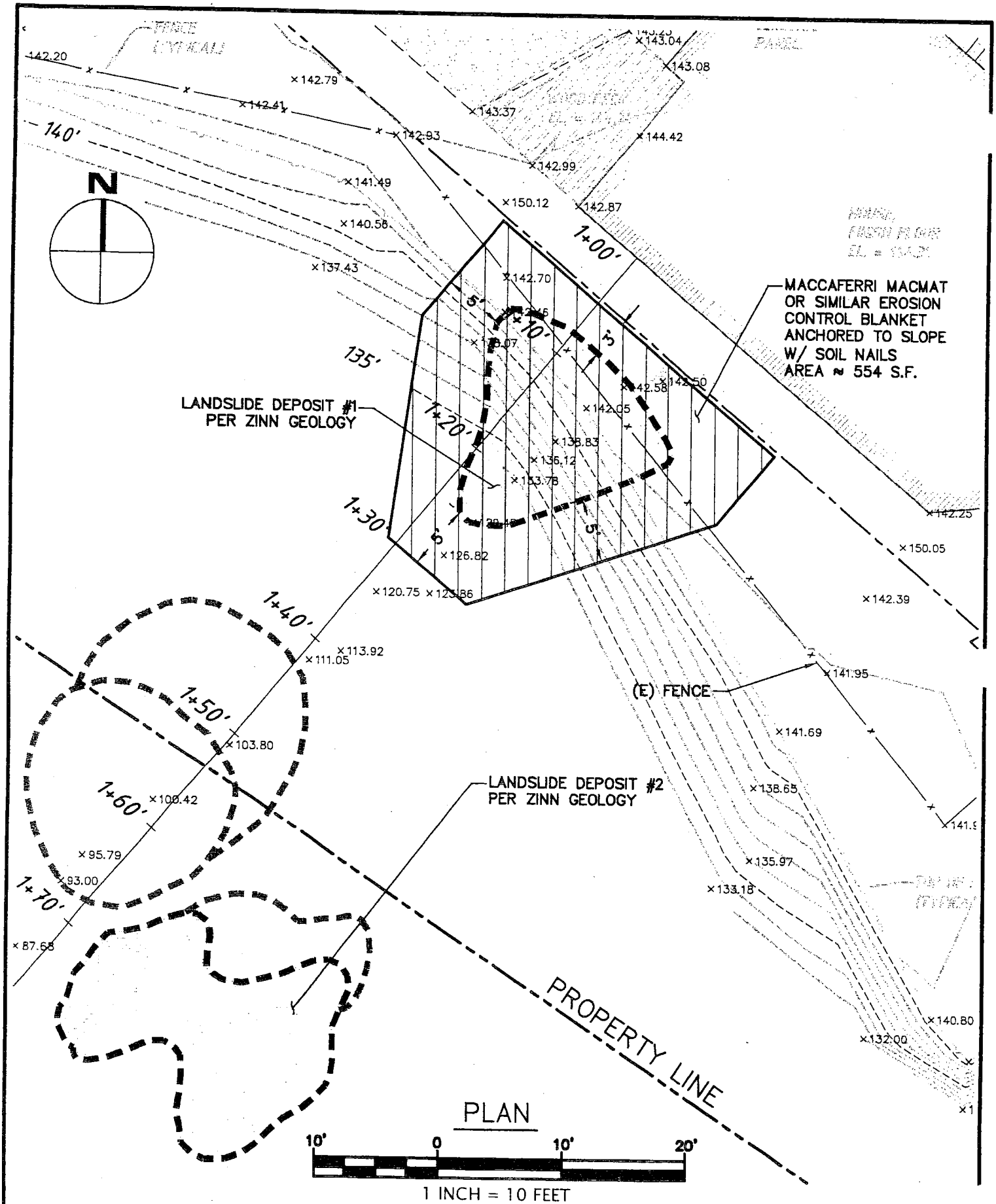
Approval Date: December 20, 2013

Effective Date: January 3, 2014

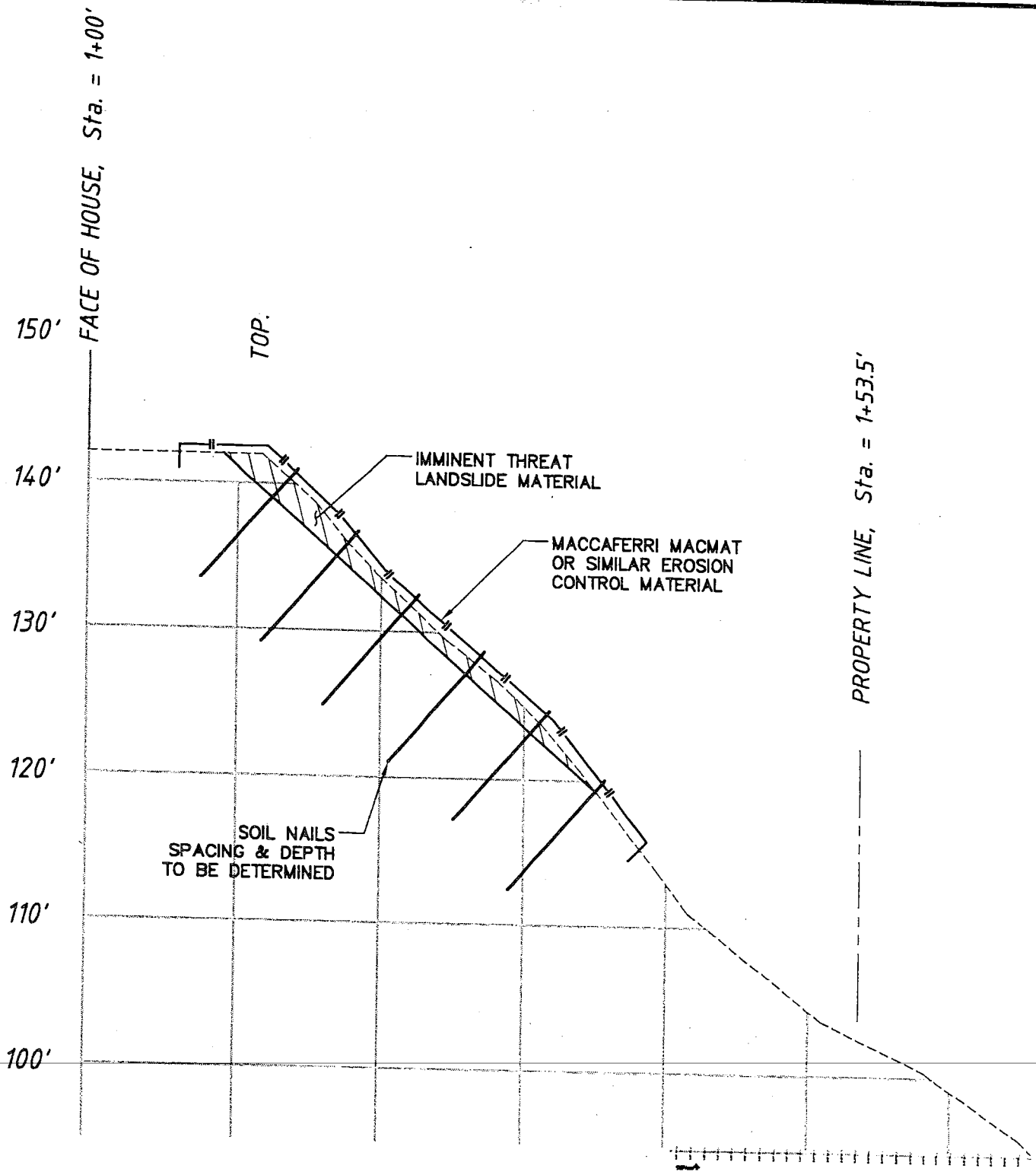
Expiration Date: January 3, 2017

Wanda Williams	Robin Bolster-Grant
Deputy Zoning Administrator	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.



project no. 12-028-1	ASSESSMENT OF EXISTING CONDITIONS FOR JENS AND SUSANNE MEYERHOFF 340 KINGSBURY DRIVE APTOS, CALIFORNIA APN:043-094-06	RI Engineering, Inc.
date SEPTEMBER 2012		
scale AS SHOWN		
dwg name LANDSLIDE1.DWG	LANDSLIDE REPAIR ALTERNATIVE 1	303 Potrero St., Suite 42-202, Santa Cruz, CA 95060 831-425-3901 www.riengineering.com



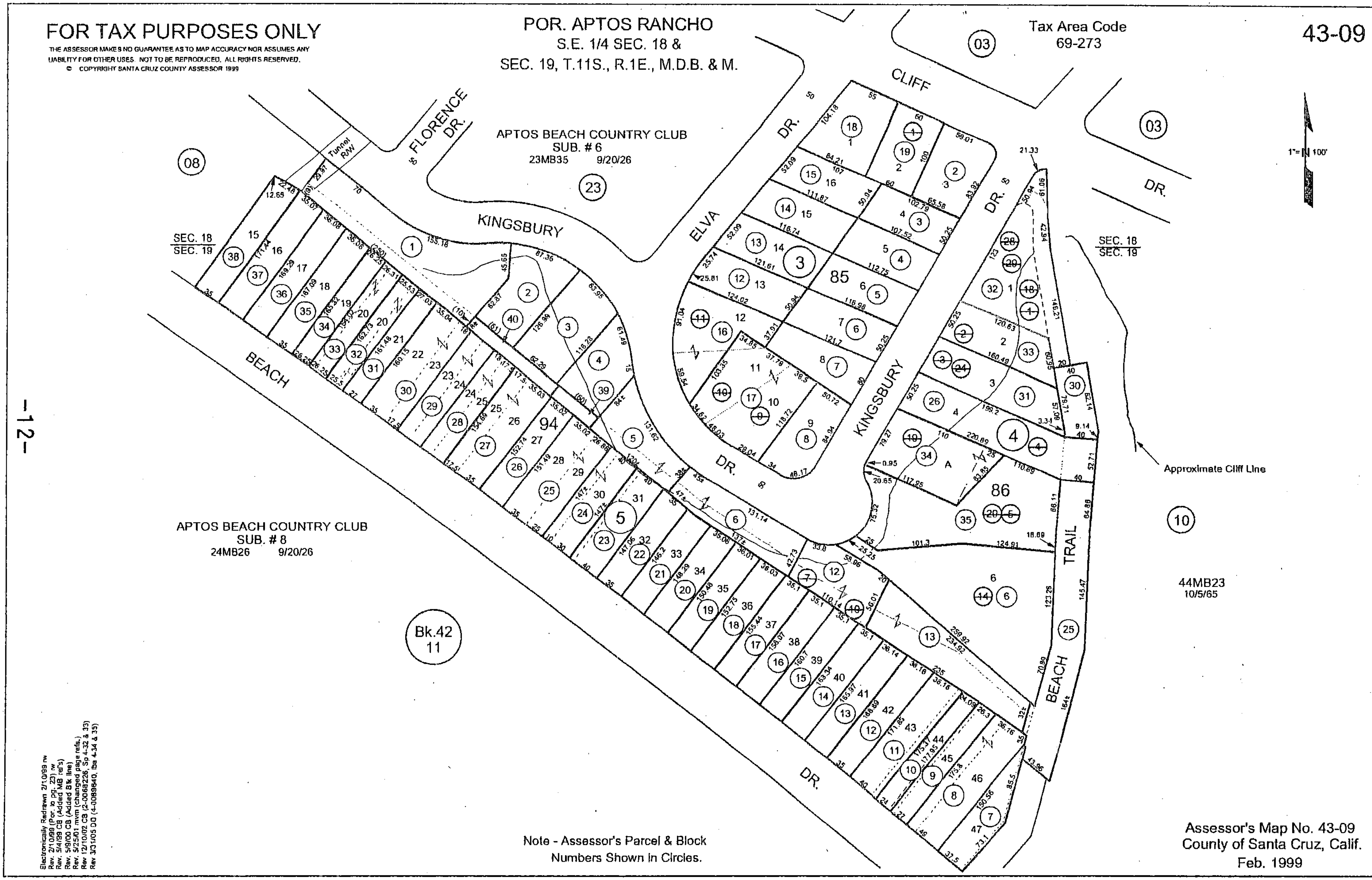
PORTION OF SECTION B

10' 0 10' 20'

1 INCH = 10 FEET

project no. 12-028-1 date SEPTEMBER 2012 scale AS SHOWN dwg name LANDSLIDE1.DWG	ASSESSMENT OF EXISTING CONDITIONS FOR JENS AND SUSANNE MEYERHOFF 340 KINGSBURY DRIVE APTOS, CALIFORNIA APN:043-094-06 LANDSLIDE REPAIR ALTERNATE 1	RI Engineering, Inc. 11 303 Potrero St., Suite 42-202, Santa Cruz, CA 95060 831-425-3901 www.riengineering.com

EXHIBIT E



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POR. APTOS RANCHO
S.E. 1/4 SEC. 18 &
SEC. 19, T.11S., R.1E., M.D.B. & M.
Tax Area Code
69-273
43-09
1"= 100'
APTOS BEACH COUNTRY CLUB
SUB. # 6
23MB35 9/20/26
APTOS BEACH COUNTRY CLUB
SUB. # 8
24MB26 9/20/26
44MB23
10/5/65
KINGSBURY
FLORENCE DR.
ELVA DR.
CLIFF DR.
KINGSBURY DR.
BEACH TRAIL
BEACH DR.
Tunnel R/W
SEC. 18
SEC. 19
Approximate Cliff Line
Bk.42
11
85
86
94
Note - Assessor's Parcel & Block Numbers Shown In Circles.
Assessor's Map No. 43-09
County of Santa Cruz, Calif.
Feb. 1999
Electronically Redrawn 2/10/99 rw
Rev. 2/10/99 (Por. to pg. 23) rw
Rev. 5/4/99 CB (Added MB ref's)
Rev. 5/9/00 CB (Added Bk line)
Rev. 5/25/01 mvm (changed page refs.)
Rev 12/10/02 CB (2-0068226, Sp 4-32 & 33)
Rev 3/31/05 DD (4-0089840, Iba 4-34 & 35)

Location Map

LEGEND

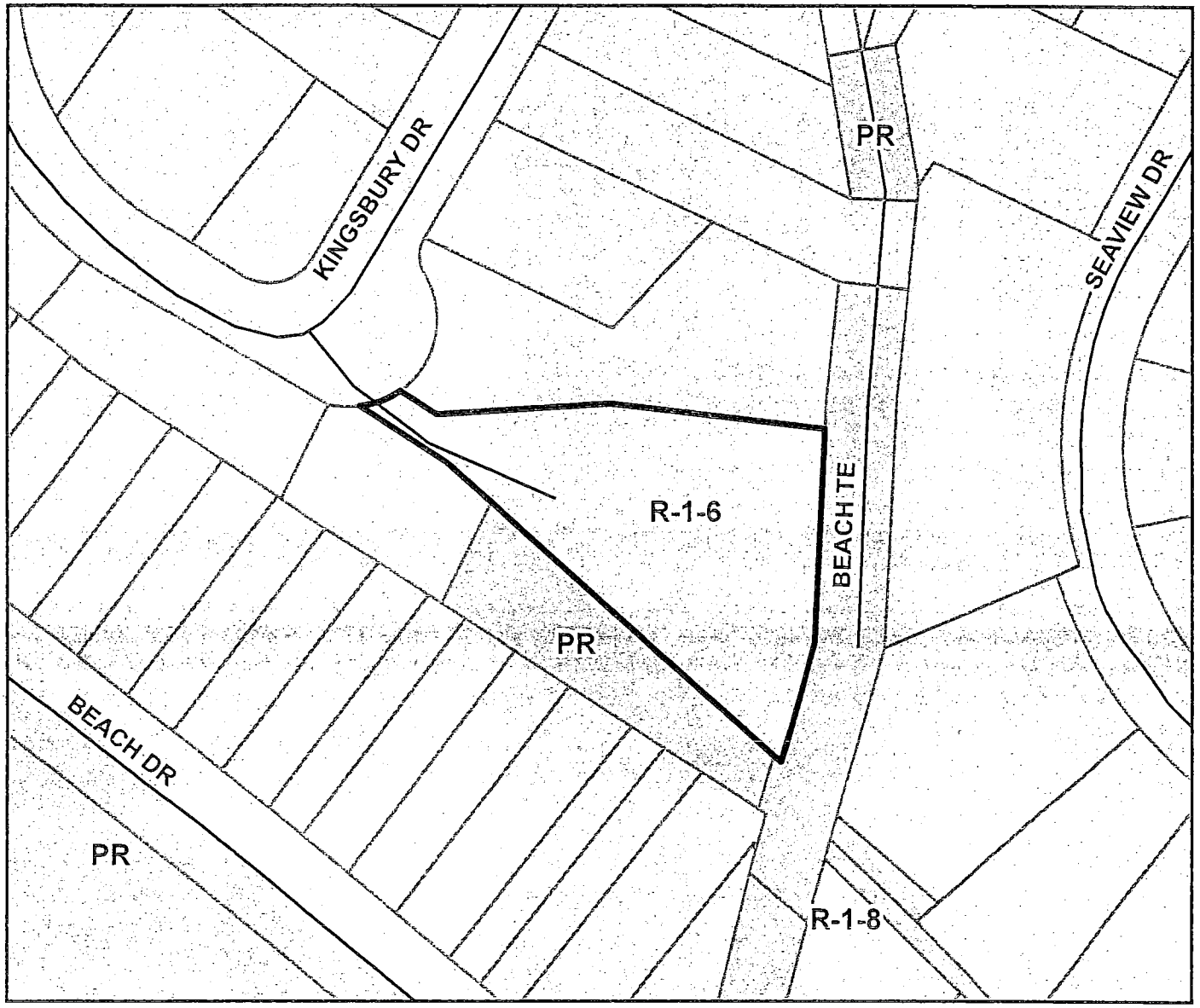
- APN: 043-094-06
- Assessors Parcels
- Streets
- County Boundary

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
May 2013

EXHIBIT F

Zoning Map



130 65 0 130 260 390 520 Feet

LEGEND

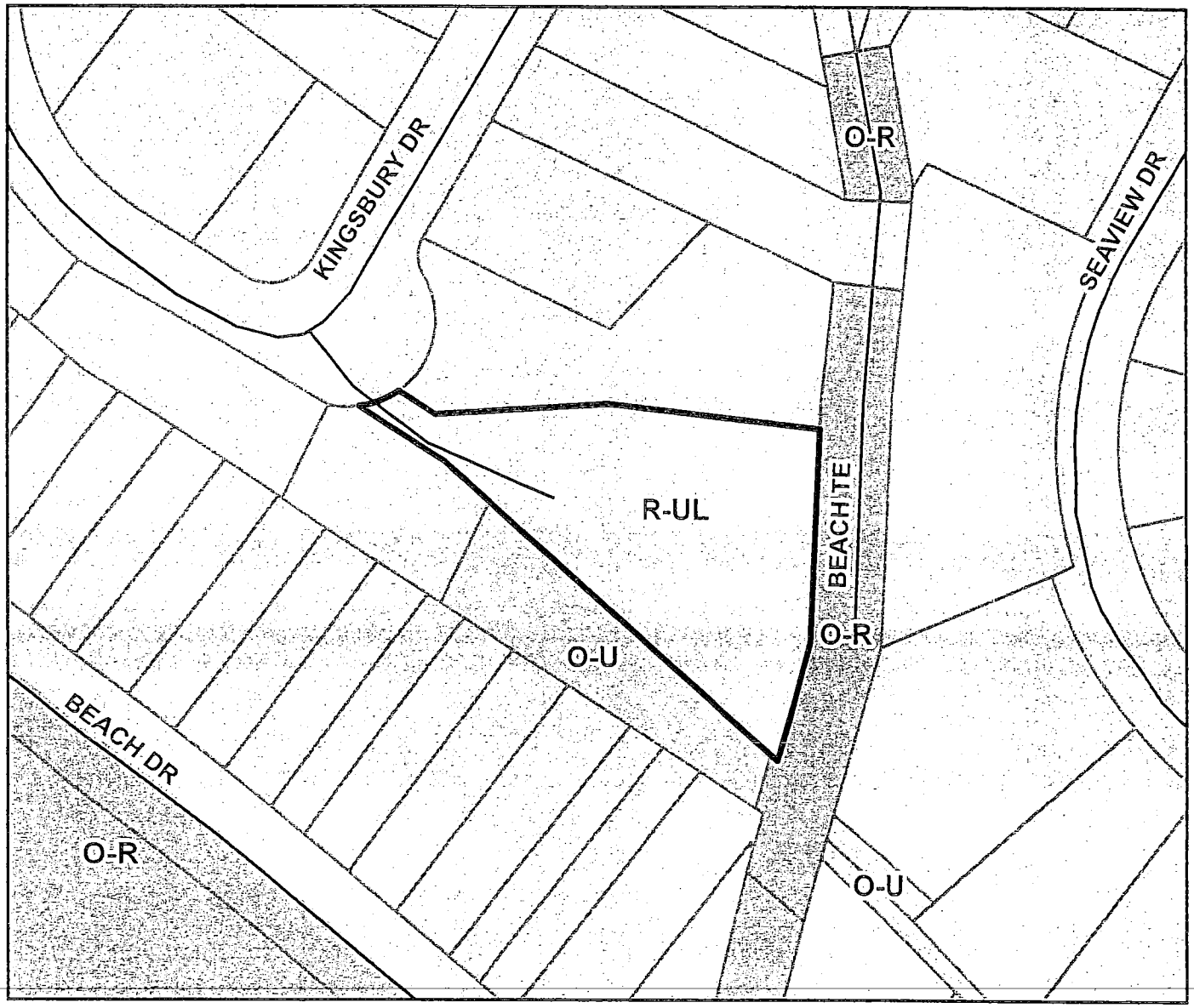
- APN: 043-094-06
- Assessors Parcels
- Streets
- RESIDENTIAL-SINGLE FAMILY
- PARK

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
May 2013

EXHIBIT F

General Plan Designation Map



130 65 0 130 260 390 520 Feet

LEGEND

- APN: 043-094-06
- Assessors Parcels
- Streets
- Residential - Urban Low Density
- Urban Open Space
- Parks and Recreation

N W E S

Map Created by
County of Santa Cruz
Planning Department
May 2013

EXHIBIT E

Pacific Crest Engineering Inc. www.4pacific-crest.com

444 Airport Blvd, Suite 10
Watsonville, CA95076
Phone: 831-722-9446
Fax: 831-722-9158

October 9, 2012 Project No. 1256.1-SZ70-C47

Mark and Anny Corley
225 Whippet Run
Watsonville, CA 95076

Subject: **Emergency Bluff Repair Recommendations**
Imminent Landslide Hazard
340 Kingsbury Drive
A.P.N. 043-094-06
Aptos, Santa Cruz County, California

Dear Mr. and Mrs. Corley,

As requested, Pacific Crest Engineering Inc. (PCEI) is providing geotechnical engineering services in conjunction with the emergency repair of an unstable portion of the coastal bluff at the above-referenced property in Santa Cruz County, California.

Zinn Geology has identified an imminent landslide hazard on your property, as discussed in their October 2, 2012 letter. The landslide is identified as "Imminent Threat Landslide Deposit #1" on their map entitled "Map Showing Imminent Threat Landslides". This landslide hazard represents a potential life-safety issue for occupants of two downslope residences on Beach Drive. In our opinion, it is imperative that this area be stabilized prior to commencement of the impending winter rainy season.

Due to the urgency of the situation resulting in a compressed investigation and design schedule, we have provided preliminary geotechnical recommendations for the pending slope repair based primarily upon available subsurface information obtained from nearby studies and our professional judgment gained from experience with similar coastal bluff projects. They are as follows:

1. In our opinion a suitable option for securing this unstable section of slope includes permanent, reinforced erosion control matting such as Macaferri's MacMat®R or approved equivalent, secured to the slope with soil nails. This product provides an increased resistance to soil erosion with UV resistant, non-degradable synthetic fibers. The fibers are integrated with steel wire mesh and secured to the slope with a soil nail anchoring system to provide reinforcement to unstable slopes. The mesh is conducive to the establishment of protective vegetation that will also provide a more natural appearance.

2. Design and installation of a MacMat®R system should consider the geotechnical criteria outlined in this report as well as the recommendations of the product manufacturer, who should also be consulted during final design and bidding phases.

3. The slope reinforcement system should be designed and constructed in accordance with the recommendations and design criteria as outlined in this report. Inspection of the completed

EXHIBIT F

improvements and surrounding coastal bluff should be performed by a qualified licensed professional every five years and following damaging winter storms.

4. The repair zone should include, as a minimum, the area encompassed by the depicted slide zone plus an additional five feet laterally beyond the limits of the slide zone.

5. The matting should be seeded to allow vegetative growth to take place over the repaired area.

6. Design plans should be reviewed by Pacific Crest Engineering Inc. and Zinn Geology during their preparation and prior to contract bidding.

7. Pacific Crest Engineering Inc. should be notified at least seven (7) working days prior to any site clearing and grading operations on the property in order to observe the stripping and disposal of unsuitable materials, and to coordinate this work with the grading contractor. During this period, a pre-construction conference should be held on the site, with at least the grading contractor, a county representative and one of our engineers present. At this meeting, the project specifications and the testing and inspection responsibilities will be outlined and discussed.

8. Field observation and testing must be provided by a representative of Pacific Crest Engineering Inc., to enable them to form an opinion as to the degree of conformance of the exposed site conditions to those foreseen in this report, the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. **Any work related to the proposed repair that is performed without the full knowledge and direct observation of Pacific Crest Engineering Inc., the Geotechnical Engineer of Record, will render the recommendations of this report invalid, unless the Client hires a new Geotechnical Engineer who agrees to take over complete responsibility for this report's findings, conclusions and recommendations.** The new Geotechnical Engineer must agree to prepare a Transfer of Responsibility letter. This may require additional test borings and laboratory analysis if the new Geotechnical Engineer does not completely agree with our prior findings, conclusions and recommendations.

SITE PREPARATION AND COMPACTION REQUIREMENTS

9. We anticipate that initial preparation of the site will consist of the removal of surface vegetation, loose fill, and/or debris from the affected area. Tree removal, if required, should include the entire stump and root ball. The required extent of stripping and grubbing must be based upon visual observations of a representative of Pacific Crest Engineering Inc. in the field. This material must be removed from the site.

10. Any voids created by removal of tree and root balls, debris or other deleterious materials must be backfilled with properly compacted native soil that is free of organic and other deleterious materials or with approved imported fill.

SOIL PROPERTIES AND LATERAL EARTH PRESSURES

11. The following criteria should be used in developing the design of a slope reinforcement system:

Effective Cohesion = 300 psf
Peak Phi angle = 35 degrees
Residual Phi Angle = 23 degrees
Average density = 120 pcf
Pore Water Pressure Ratio (r_u) = .45

12. We recommend an at-rest earth pressure of 70 psf/foot of depth be used for design of slope reinforcement systems.

13. The seismic design of the project should be based on the 2010 California Building Code (CBC) as it has incorporated the most recent seismic design parameters. The following values for the seismic design of the project site were derived or taken from the 2010 CBC:

TABLE No. 1, The 2010 CBC Seismic Design Parameters

Design Parameter	Specific to Site ASCE 7-05	Reference (See Note 1)
Site Class	D, Stiff Soil	Table 1613.5.2
Mapped Spectral Acceleration for Short Periods	Ss = 1.500 g	Fig. 22-1 ASCE 7-05
Mapped Spectral Acceleration for 1-second Period	S_1 = 0.613 g	Fig. 22-2 ASCE 7-05
Short Period Site Coefficient	Fa = 1.0	Table 1613.5.3(1)
1-Second Period Site Coefficient	Fv = 1.5	Table 1613.5.3(2)
MCE Spectral Response Acceleration for Short Period	S_{MS} = 1.500 g	Section 1613.5.3
MCE Spectral Response Acceleration for 1-Second Period	S_{M1} = 0..920 g	Section 1613.5.3
5% Damped Spectral Response Acceleration for Short Period	S_{DS} = 1.000 g	Section 1613.5.4
5% Damped Spectral Response Acceleration for 1-Second Period	S_{D1} = 0.613 g	Section 1613.5.4

Note 1: Design values may also have been obtained by using the Ground Motion Parameter Calculator available on the USGS website at https://geohazards.usgs.gov/secure/designmaps/us/signup.php

SOIL NAILS

14. The MacMat®R system will require soil nails to secure the matting and provide effective slope reinforcement. Soil nail design and the construction techniques for installing them are the responsibility of the specialty contractor. The soil nail design must adhere to the following criteria.

15. The soil nails may be either grouted in place or helical-type screw nails. Either way the length and density of the nails will need to be determined based on the material properties of the soil being reinforced, the height of the repair area, the diameter of the nails or helix blades, and the strength of the steel, but we envision a maximum spacing of approximately 6 feet on center with a minimum length of approximately 12 feet.

16. All soil nails must be double corrosion protected.

EXHIBIT F

17. Design criteria for soil nails are as follows:

Cohesion = 300 psf
Phi angle = 35 degrees
Average density = 120 pcf

18. All soil nails must have a minimum embedment length of 12 feet. Actual lengths will depend on the required soil nail capacity.

19. As a general guide only, approximate soil nail strength which may develop along the grouted length of an eight-inch diameter grouted hole is 850 pounds per grouted foot. Actual strengths developed depend upon several factors, including diameter of the drilled hole, roughness of the hole grouting technique, grout strength and other construction factors. It is the contractor's responsibility to construct soil nails which develop the required capacity.

20. The Contractor must test 10% of all soil nails in the presence of the Geotechnical Engineer to at least 200% of their design capacity. Any nails which fail must be removed and reinstalled at the Contractor's expense. More nails may be tested at the discretion of the Geotechnical Engineer.

21. If helical screw-type soil nails are used, the selection of helical pier type and size should consider difficult and/or very dense subsurface conditions within the design depths. A helical pier with a higher torque rating which exceeds the design loads may be required in order to achieve the minimum embedment length.

22. The number of helix blades, spacing and pier configuration should be selected by the Contractor, based on the axial and lateral design loads developed by the Project Civil Engineer. The pier shafts may be rounded or square; if tubular shafts are used they should be filled with grout or soil.

23. The axial capacity of each helical soil nail should be based upon the installation torque achieved. All helix soil nails shall be installed at the appropriate torque as required by the Civil Engineer. The manufacturer's recommendations should be followed regarding the torque and capacity relationship for the particular soil nail selected.

24. Helical soil nails which lose their torque while being drilled to the minimum depth required will be rejected and a new anchor shall be installed at the contractor's expense.

25. The subsurface soils should be considered corrosive and helical soil nail design should incorporate a factor for corrosion loss. Corrosion protection should be maintained at all times during installation; if anchors are cut or scraped, corrosion protection should be re-applied to all areas of exposed steel.

26. All soil nail construction must be observed by a representative of Pacific Crest Engineering Inc. Any soil nails constructed without the full knowledge and continuous observation of a representative from Pacific Crest Engineering Inc. will render the recommendations of this report invalid. You should notify your Contractor and drilling Subcontractor regarding this requirement.

EXHIBIT F

27. Soil nail designs, construction details and corrosion protection systems must be submitted to the Civil Engineer and the Geotechnical Engineer prior to the commencement of soil nail construction for review and approval.

SURFACE DRAINAGE

28. Following completion of the project we recommend that storm drainage provisions and performance of permanent erosion control measures be closely observed by a representative of Pacific Crest Engineering, Inc. through the first season of significant rainfall, to determine if these systems are performing adequately and, if necessary, resolve any unforeseen issues.

29. The control of surface runoff is essential to the long term performance of any bluff protection scheme. At no time should storm or surface water should be allowed to flow toward the bluff top or be concentrated on the face of the bluff.

30. The recommended slope improvements and/or surface drainage facilities must not be altered nor any filling or excavation work performed in the area without first consulting Pacific Crest Engineering Inc. Surface drainage improvements developed by the Project Civil Engineer must be maintained at all times, as improper drainage provisions can produce undesirable affects.

PLAN REVIEW

31. We respectfully request an opportunity to review the project plans and specifications during preparation and before bidding to ensure that the recommendations of this report have been included and to provide additional recommendations, if needed. These plan review services are also typically required by the reviewing agency. Misinterpretation of our recommendations or omission of our requirements from the project plans and specifications may result in changes to the project design during the construction phase, with the potential for additional costs and delays in order to bring the project into conformance with the requirements outlined within this report.

We appreciate the opportunity to be of service on this project. If you have any questions concerning this report, please contact me at your convenience. I can be reached at 831-722-9446.

Sincerely,

PACIFIC CREST ENGINEERING INC.

REGISTERED PROFESSIONAL ENGINEER
ELIZABETH MAE BARNS MITCHELL
No. GE2718
Exp. 12/31/12
GEOTECHNICAL
STATE OF CALIFORNIA

Elizabeth M. Mitchell, G.E.
Vice-President, Geotechnical Group
GE 2718, Expires 12/31/12

Copies: 3 to Client
1 to Zinn Geology
1 to RI Engineering
1 to Matson-Britton Architects

EXHIBIT F