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Filed:	July 25, 2008
49th Day:	September 12, 2008
Staff:	Robert S. Merrill
Staff Report:	August 28, 2008
Hearing Date:	September 12, 2008

STAFF REPORT: APPEAL

SUBSTANTIAL ISSUE

APPEAL NO.:	**A-1-DNC-08-033**
APPLICANTS:	**Edward Pinger**
LOCAL GOVERNMENT:	County of Del Norte
DECISION:	Approval with Conditions
PROJECT LOCATION:	At 12510 South Indian Road, Smith River, Del Norte County (APN 102-050-14).
PROJECT DESCRIPTION:	Construct a two-story, approximately 4,400-square - foot single-family home with driveway and septic system.
APPELLANTS:	Friends of Del Norte
SUBSTANTIVE FILE: DOCUMENTS	1) Del Norte County Permit Application No. UP0640C; 2) Del Norte County Local Coastal Program.

SUMMARY OF STAFF RECOMMENDATION:

The staff recommends that the Commission, after public hearing, determine that a SUBSTANTIAL ISSUE exists with respect to the grounds on which the appeal has been filed and that the Commission hold a de novo hearing, because the appellant has raised a

substantial issue with the local government's action and its consistency with the certified Local Coastal Program (LCP).

The development, as approved by the County, consists of the construction of a two-story, approximately 4,400-square -foot single-family home with a driveway and septic system on an ocean bluff-top parcel just north of the mouth of the Smith River, at 12510 South Indian Road, in the unincorporated community of Smith River.

The appellants raise four basic contentions in their appeal. The appellants contend that the project as approved is inconsistent with Del Norte County LCP provisions regarding bluff retreat setbacks, the protection of environmentally sensitive sea cliff habitat, the protection of water quality from septic system discharges, and the protection of visual resources.

Staff recommends that the Commission find that the contention raised in the appeal regarding bluff retreat setbacks raises a substantial issue of the development's conformance to the bluff retreat hazards policies of the certified LCP. Because (a) no specific coastal retreat rate has been established for the project as approved, (b) the approved house is located in an area determined by the geotechnical report to be moderate risk zone where the level of risk of bluff retreat exceeds a reasonable level of risk, the degree of legal and factual support for the local government's decision that the development is consistent with the geologic hazard and sea cliff policies of the certified LCP requiring that necessary set-backs be utilized to avoid hazards associated with bluff failure is low. Therefore, staff recommends that the Commission find that the project as approved raises a substantial issue of conformance with the coastal bluff setback provisions contained in (1) the certified LUP Chapter on Marine and Water Resources, Section IV. Sensitive Coastal Habitat, Sub-Section F. Sea Cliffs, and (2) the certified LUP Chapter on Hazard Areas, Section IV. Policies and Implementation, Sub-Section D. LCP Policies and Implementation, 1. LCP Policies for Geologic Hazards.

In addition, staff recommends that the Commission find that the contention raised in the appeal regarding the protection of environmentally sensitive sea cliff habitat raises a substantial issue of the development conformance with the ESHA protection policies of the certified LCP. As noted above, a substantial issue of conformance with the LCP bluff retreat setback policies is raised by the approved project. In approving the project, the County did not impose a condition that would preclude the ability of the applicant to construct a seawall or other protective device along the sea cliff in the future if the house were threatened by bluff retreat. As a substantial issue exists as to whether the house will be safe from bluff retreat hazards over its economic life, and the applicant is not precluded from constructing a shoreline protective device in the future by the terms of the permit, conditions may very likely arise where the applicant may find it necessary to consider constructing a shoreline protection device along the bluff face. As noted above, the sea cliff is defined as ESHA under the certified LCP. Therefore, staff recommends that the Commission finds that a substantial issue is raised as to whether the development

as approved will ensure that the sea cliff ESHA at the site will be protected against any significant disruption of habitat values as required by the above cited ESHA policies of the LCP from future construction of shoreline protective devices.

Staff further recommends that the Commission continue the de novo portion of the hearing because the Commission does not have sufficient information to determine what development can be approved consistent with the LCP. Continuing the hearing would enable the applicant to provide (1) supplemental geotechnical information that determines a site specific rate of bluff retreat and establishes a setback necessary to protect the development from the hazards of bluff retreat over the economic life of the development, (2) a determination of the base flood elevation that applies to the subject property to establish a safe elevation for construction of the home to avoid flood hazards, and (3) an assessment of the conformance of the proposed Wisconsin Mound septic system with the applicable standards of the North Coast Regional Water Quality Control Board Basin Plan for on-site sewage disposal systems to ensure that the approved system will adequately protect the water quality of surface waters and ground waters. Such information is needed to enable the staff to complete its analysis of the development and its consistency with the certified LCP and develop a de novo recommendation.

The motion to adopt the staff recommendation of Substantial Issue is found on Page No. 5.

STAFF NOTES:

1. Appeal Process.

After certification of Local Coastal Programs (LCPs), the Coastal Act provides for limited appeals to the Coastal Commission of certain local government actions on coastal development permits (Coastal Act Section 30603).

Section 30603 states that an action taken by a local government on a coastal development permit application may be appealed to the Commission for certain kinds of developments, including developments located within certain geographic appeal areas, such as those located between the sea and the first public road paralleling the sea or within one hundred feet of a wetland or stream or three hundred feet of the mean high tide line or inland extent of any beach or top of the seaward face of a coastal bluff, or those located in a sensitive coastal resource area.

Furthermore, developments approved by counties may be appealed if they are not designated the “principal permitted use” under the certified LCP. Finally, developments constituting major public works or major energy facilities may be appealed whether approved or denied by the city or county. The grounds for an appeal are limited to an

allegation that the development does not conform to the standards set forth in the certified local coastal program and, if development is located between the first public road and the sea, the public access and public recreation policies set forth in the Coastal Act.

The approved development is appealable to the Commission pursuant to Section 30603(a)(2) of the Coastal Act because (a) it is located between the sea and the first public road paralleling the sea, and (b) it is located within 300 feet of the mean high tide line and the top of the seaward face of a coastal bluff.

Section 30625(b) of the Coastal Act requires the Commission to hear an appeal unless the Commission determines that the appeal raises no substantial issue of conformity of the approved project with the certified LCP. Since the staff is recommending substantial issue, unless three Commissioners object, it is presumed that the appeal raises a substantial issue and the Commission may proceed to its *de novo* review.

If the Commission decides to hear arguments and vote on the substantial issue question, proponents and opponents will have three minutes per side to address whether the appeal raises a substantial issue. It takes a majority of Commissioners present to find that no substantial issue is raised.

The only persons qualified to testify before the Commission on the substantial issue question are the applicants, the appellant and persons who made their views known to the local government (or their representatives). Testimony from other persons regarding substantial issue must be submitted in writing.

Unless it is determined that there is no substantial issue, the Commission will proceed to the *de novo* portion of the appeal hearing and review the merits of the proposed project. This *de novo* review may occur at the same or subsequent meeting. If the Commission were to conduct a *de novo* hearing on the appeal, because the proposed development is located between the first public road and the sea, the applicable test for the Commission to consider would be whether the development is in conformity with the certified Local Coastal Program and with the public access and public recreation policies of the Coastal Act.

2. Filing of Appeal

One appeal was filed by the Friends of Del Norte (see Exhibit No. 6). The appeal to the Commission was filed in a timely manner on July 25, 2008, within 10 working days of receipt by the Commission on July 15, 2008 of the County's Notice of Final Local Action.

I. MOTION, STAFF RECOMMENDATION AND RESOLUTION

Pursuant to Section 30603(b) of the Coastal Act and as discussed below, the staff recommends that the Commission determine that a substantial issue exists with respect to the grounds on which the appeal has been filed. The proper motion is:

MOTION:

I move that the Commission determine that Appeal No. A-1-DNC-08-033 raises No Substantial Issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act.

STAFF RECOMMENDATION:

Staff recommends a **NO** vote. Failure of this motion will result in a *de novo* hearing on the application, and adoption of the following resolution and findings. Passage of this motion will result in a finding of No Substantial Issue and the local action will become final and effective. The motion passes only by an affirmative vote of the majority of the appointed Commissioners present.

RESOLUTION TO FIND SUBSTANTIAL ISSUE:

The Commission hereby finds that Appeal No. A-1-DNC-08-033 presents a substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act regarding consistency with the Certified Local Coastal Plan and/or the public access and recreation policies of the Coastal Act.

II. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares:

A. APPELLANTS' CONTENTIONS

The Commission received one appeal of the County of Del Norte's decision to conditionally approve the development from the Friends of Del Norte. The project as approved by the County involves the construction of a two-story, approximately 4,400-square -foot single-family home with a driveway and septic system on an ocean bluff-top parcel just north of the mouth of the Smith River, at 12510 South Indian Road, in the unincorporated community of Smith River. (APN 102-050-14).

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The appellant raises four basic contentions in their appeal. The appellants' contentions are summarized below; the full text of the appeal is included in Exhibit No. 6.

1. Inadequate Setback to Protect Against Bluff Retreat

The appellants contend that the approved project does not provide adequate setback of the structure and septic system from a coastal bluff that experiences episodic undercutting, and significant bluff retreat. The geologic report does not determine a specific rate of bluff retreat and only indicates that erosion is episodic and that while 14 inches of bluff retreat per year has been determined for the area by others, recent retreat at the site has been minimal. Instead of recommending a specific bluff setback to protect the home from bluff retreat, the geologic report identifies zones of high, moderate, and low risk mapped in 1989. The project includes development in the moderate risk zone, which extends as close as 30 feet to the bluff edge. The average rate of bluff retreat of 14 inches (1.167 feet) per year of bluff retreat determined by others for the area would only protect the home for 25.7 years. Therefore the project as approved is inconsistent with LCP policies requiring that geologic studies for new development shall determine the necessary set backs required to avoid hazards associated with bluff failure.

2. Coastal bluff ESHA Will be Destroyed by Future Seawall.

The appellants contend that the project as approved does not adequately protect the coastal bluff ESHA, as the failure to provide for an adequate setback of the development from the bluff will result in the future placement of rip-rap over the coastal bluff ESHA. Therefore the project approved is inconsistent with LCP polices requiring the protection of environmentally sensitive sea cliff habitat.

3. Septic System is Improperly Sited and Designed to Protect Water Quality

The appellants contend that the septic system approved as part of the project by the County does not adequately protect water quality as it fails to meet minimum water quality requirements of the North Coast Region Water Quality control basin for setbacks from leach fields from unstable bluffs and unstable landforms and the leach field is endangered by bluff retreat. The appellants state that the North /Coast Region Water Quality Control Basin Plan requires that septic system leach fields are required to be set back a minimum of 50 feet from the bluff edge rather than the 30 feet that is provided. Therefore, the project as approved is inconsistent with LCP policies requiring that the water quality of surface and subsurface waters be maintained at the highest level of quality to insure the safety of public health and the biological productivity of coastal waters.

4. Approved Development Has Significant Adverse Impacts to Views of Highly Scenic Shoreline.

The appellants contend that the project as approved may result in significant negative impacts to a highly scenic visual coastal resource with unimpaired open views of the ocean and unique off shore rocks. Therefore, the project as approved is inconsistent with LCP Policy requiring that development in highly scenic areas be visually compatible with their scenic surroundings.

B. LOCAL GOVERNMENT ACTION

On July 2, 2008, the Del Norte County Planning Commission conditionally approved the coastal development permit for the project with 19 special conditions. (B30109C) (Exhibit No. 5). The conditions required, among other requirements, that (1) the development conform with the project approved by the Planning Commission, (2) the applicant record an irrevocable offer to dedicate an easement for lateral public access for passive recreation use by the general public inland of the mean high tide line to the first line of vegetation, (3) the placement of the structures must meet the setbacks recommended in the geotechnical report and be no closer than 30 feet from the top of the bluff, (4) placement of the foundation shall be in accord with the submitted plot plan and geotechnical report, (5) construction activities in designated leach field areas shall be kept to a minimum, (6) no grading be conducted between October 30 and April 30, (7) erosion and runoff control shall be in-place prior to and during and grading or excavating, and (8) the applicant shall invite the Smith River Rancheria to have an observer present during the initial excavation work and shall be responsible for the time and expenses of the observer.

The decision of the Planning Commission was not appealed at the local level to the County Board of Supervisors. The County's Notice of Final Action was received by the Commission staff on July 15, 2008 (Exhibit No. 5). Section 13573 of the Commission's regulations allows for appeals of local approvals to be made directly to the Commission without first having exhausted all local appeals when, as here, the local jurisdiction charges an appeal fee for the filing and processing of local appeals.

The County's approval of the project was appealed to the Coastal Commission in a timely manner on July 25, 2008, within 10-working days after receipt by the Commission of the Notice of Final Local Action.

C. SITE DESCRIPTION

The project site is a 1.2-acre ocean bluff-top parcel just north of Pyramid Point which borders the north side of the mouth of the Smith River. The property is located at 12510

South Indian Road, in the unincorporated community of Smith River, approximately three miles south of the Oregon border.

The roughly trapezoidal-shaped parcel extends on the west from the sandy beach along the shoreline, over a narrow dune area vegetated with grasses and shrubs, up a steep approximately 14-foot-high bluff, and across a relatively flat coastal terrace to its eastern boundary. The seaward side of the terrace is vegetated with a mixture of annual grasses and inland side of the terrace portion of the property is vegetated with a dense grove of Bishop pine (approximately 25 feet high) with an open understory containing only English ivy and very sparse blackberry and Salal throughout.

According to the biological assessment submitted by the applicant to the County, there are no wetlands, riparian habitat, or other sensitive habitat on or adjacent to the property (see Exhibit No. 9). However, the certified Del Norte County LCP designates sea cliffs as sensitive habitat (Policy, Marine and Water Resources, VI.C: 6). The biological assessment indicates that the pine trees offer limited foraging habitat for passerine land birds (e.g. Sparrows, wrens, and warblers), but fird nesting habitat is suboptimal due to exposure to weater and domestic cats.

An archaeological investigation was conducted in 1989 did not identify any archaeological sites on the parcel. However, the archaeological report indicates that previously unknown archaeological resources could be discovered during development.

The parcel is currently undeveloped. The property is surrounded on its north, east, and south sides by other rural single-family homes.

The Del Norte County Local Coastal Program (LCP) designates and zones the land as Rural Residential, limits the density to one unit per parcel, and sets a minimum parcel size of one acre. The parcel is also subject to a Coastal bluff Hazard overlay zone.

D. PROJECT DESCRIPTION

The approved project consists of a two-story, approximately 4,400-square -foot single-family home with a driveway and septic system (See Exhibits 2-4). Although the proposed height of the structure is not specified in the County's Notice of Final Local Action, the approved house is located in a zoning district that has a 25-foot maximum height limit.

The house would be located as close as 30 feet from the bluff edge in an area identified by the geotechnical report as subject to a moderate risk of geologic hazard.

The two-story generally square-shaped house would have an approximately 3,500-square-foot footprint. A tile roof is proposed. The exterior finishes and materials would

include some cultured stone on the chimneys and around certain windows, but the other exterior finishes and materials are unspecified.

The residence will be served by the local community water system. Sewage treatment will be provide by an onsite septic system that includes a septic tank and pump basin, and a leach field. Because of high groundwater conditions and other factors, a Wisconsin Mound septic system has been designed. The 30-foot by 60-foot mound leach field area would extend to approximately 30 feet from the bluff edge. A reserve leach field area is identified between the proposed primary leach field area and the eastern property boundary.

E. SUBSTANTIAL ISSUE ANALYSIS

Section 30603(b)(1) of the Coastal Act states:

The grounds for an appeal pursuant to subdivision (a) shall be limited to an allegation that the development does not conform to the standards set forth in the certified local coastal program or the public access policies set forth in this division.

As noted above, the grounds for an appeal are limited to an allegation that the development does not conform to the standards set forth in the certified local coastal program and, if the development is located between the first public road and the sea, as in this case, the public access policies set forth in the Coastal Act. Therefore, the contentions raised in this appeal present potentially valid grounds for appeal in that the contentions allege that the approval of the project by the County raises significant issues regarding consistency with the standards set forth in the certified local coastal program.

Coastal Act Section 30625(b) states that the Commission shall hear an appeal unless it determines:

With respect to appeals to the commission after certification of a local coastal program, that no substantial issue exists with respect to the grounds on which an appeal has been filed pursuant to Section 30603.

The term "substantial issue" is not defined in the Coastal Act or its implementing regulations. The Commission's regulations indicate simply that the Commission will hear an appeal unless it "finds that the appeal raises no significant question." (California Code of Regulations, Title 14, Section 13115(b).) In previous decisions on appeals, the Commission has been guided by the following factors:

- The degree of factual and legal support for the local government's decision that the development is consistent or inconsistent with the certified LCP and with the public access policies of the Coastal Act;

- The extent and scope of the development as approved or denied by the local government;

- The significance of the coastal resources affected by the decision;

- The precedential value of the local government's decision for future interpretations of its LCP; and

- Whether the appeal raises only local issues, or those of regional or statewide significance.

Even when the Commission chooses not to hear an appeal, appellants nevertheless may obtain judicial review of the local government's coastal permit decision by filing a petition for a writ of mandate pursuant to Code of Civil Procedure, Section 1094.5.

In this case, for the reasons discussed further below, the Commission exercises its discretion and determines that with respect to all four of the allegations raised in the appeal, including allegations concerning the consistency of the project as approved with the provisions regarding (1) the adequacy of bluff setbacks to protect the approved development from the geologic hazards of bluff retreat, (2) the protection of sea cliff ESHA from the possible future construction of a shoreline protection device, (3) the adequacy of the proposed septic system to prevent water quality impacts, and (4) the protection of visual resources, the appeal raises a substantial issue with regard to the approved project's conformance with the certified Del Norte County LCP.

1. Allegations Raising Substantial Issue:

a. Inadequate Setback to Protect Against Bluff Retreat

The appellants contend that the approved project does not provide adequate setback of the structure and septic system from a coastal bluff that experiences episodic undercutting, and significant bluff retreat.

LCP Policies and Standards:

LUP Marine and Water Resources Chapter, Section IV. Sensitive Coastal Habitat, Sub-Section F. Sea Cliffs, 4. Policies and Recommendations:

a. Geologic studies shall be required for new construction within the area of demonstration on bluff-tops to determine:

i. Their suitability for development; and

ii. The necessary set-backs required to avoid hazards associated with bluff failure

LUP Hazard Area Chapter, Section IV. Policies and Implementation, Sub-Section D. LCP Policies and Implementation, 1. LCP Policies for Geologic Hazards:

P-1. Any development proposed adjacent to coastline erosion areas shall be preceded by:

- *an assessment of the rates of coastal retreat, in the case of bluffs, a detailed examination of underlying geology by a registered geologist or engineering geologist or engineering geologist, and*
- *an assessment of the potential for tsunami run-up.*

Discussion:

The above-cited policies of the certified Land Use Plan require that geotechnical studies be performed for bluff-top development. The policies specifically require that the geotechnical study include an assessment of the rates of coastal retreat and the necessary set-backs required to avoid hazards associated with bluff failure. Similar policies are included in most LCPs for coastal jurisdictions up and down the coast. In practice, to implement such policies at specific locations, a setback adequate to protect development over the economic life of the development is established that takes into account both for the expected bluff retreat during that time period and the existing slope stability. Long-term bluff retreat is measured by examining historic data including vertical aerial photographs and any surveys conducted that identified the bluff edge. Slope stability is a measure of the resistance of a slope to land sliding, and is assessed by a quantitative slope stability analysis.

In 2007, the applicant commissioned Busch Geotechnical Consultants (BGC) to provide geologic and geotechnical information to support the location, design, and construction of a single-family home on the property. The firm performed an investigation and prepared an engineering geology and foundation soils investigation report dated July 16, 2007. BGC also prepared a report on this site for a prior owner in 1989 (See Exhibits 8-9).

The report states that the main geotechnical constraints that should be considered in the design and construction of the project include bluff retreat, flooding from the Smith River and from storm surge from the ocean, tsunami run-up, seismic subsidence, and differential settlement.

The BGC report notes that “the nature and rate of bluff retreat are the geotechnical issues of greater concern at the site. The abundance of driftwood logs on the back-beach

implies that the berm crest is frequently over-topped by storm waves. Battering of the bluff-face by tools (logs and cobbles) moved by storm waves is the primary mechanism causing bluff retreat at the site."

The report states that "details of the bluff face … suggest that the bluff is relatively stable. We infer that the bluff retreat is caused not be slope failures but by storm undercutting events…The most likely coastal erosion model is episodes of marine undercutting separated by longer intervals characterized by slow-rate mass wasting of terrace sediments through soil slip, soil creep, dry raveling, and bioturbation. However, the sea level rise now occurring as a result of global climate change might increase the frequency of marine erosion events."

The BGC report does not determine a specific rate of bluff retreat for the site. The report does cite an erosion rate reported by Savoy and Rust (1985) for area extending north from Pyramid Point to Prince Island to be 14 inches per year. This stretch of shoreline includes the bluff at the subject property. However, the BGC report indicates that this relatively high rate of bluff retreat is not evidenced in BGC's analysis of its 18-year photographic record of the site which shows no visible signs of bluff retreat.

Instead of determining its own bluff erosion rate and establishing a specific bluff setback to protect the home from bluff retreat, the geologic report identifies zones of high, moderate, and low risk of bluff retreat mapped in its 1989 report. The project includes development in the moderate risk zone, which extends as close as 30 feet to the bluff edge. Moderate risk is defined in the BGC reports as follows:

> "A moderate risk level generally is a level of risk that exceeds a reasonable level of risk" with respect to loss of property, not of life. However, this level of risk sometimes may be acceptable to a prudent person of above average economic means.

As noted above, the certified LUP policies specifically require that the geotechnical study include an assessment of the rates of coastal retreat and the necessary set-backs required to avoid hazards associated with bluff failure. No specific rate of coastal retreat was established by the geotechnical assessment. The only available retreat rate information is the retreat rate attributed in the BGC report to Savoy and Rust (1985), which predicts an average rate of bluff retreat along this portion of the Del Norte County coastline of 14 inches (1.167 feet) per year. Applying this retreat rate, the approved location of the house set back 30 feet from the bluff edge would be affected by bluff retreat within only 25.7 years. This time period is far short of the economic life span of 75 to 100 years that is commonly assumed for single family residences. In addition, the BGC report itself characterizes the location where the house is approved as a "Moderate risk zone," where the level of risk of bluff retreat hazards "exceeds a reasonable level of risk with respect to loss of property."

Thus, because (a) no specific coastal retreat rate has been established for the project as approved, (b) the approved house is located in an area determined by the geotechnical report to be moderate risk zone where the level of risk of bluff retreat exceeds a reasonable level of risk, the degree of legal and factual support for the local government's decision that the development is consistent with the geologic hazard and sea cliff policies of the certified LCP requiring that necessary set-backs be utilized to avoid hazards associated with bluff failure is low. Therefore, the Commission finds that the project as approved raises a substantial issue of conformance with the coastal bluff setback provisions contained in (1) the certified LUP Chapter on Marine and Water Resources, Section IV. Sensitive Coastal Habitat, Sub-Section F. Sea Cliffs, and (2) the certified LUP Chapter on Hazard Areas, Section IV. Policies and Implementation, Sub-Section D. LCP Policies and Implementation, 1. LCP Policies for Geologic Hazards.

b. Coastal bluff ESHA Will be Destroyed by Future Seawall.

The appellants contend that the project as approved does not adequately protect the coastal bluff ESHA, as the failure to provide for an adequate setback of the development from the bluff will result in the future placement of rip-rap over the coastal bluff ESHA. Therefore the project approved is inconsistent with LCP polices requiring the protection of environmentally sensitive sea cliff habitat.

LCP Policies and Standards:

LUP Marine and Water Resources Chapter, Section IV. Sensitive Coastal Habitat, Sub-Section C Sensitive Habitat Types, states in applicable part:

> *Several biologically sensitive habitat types, designated though the application of the above criteria, are found in the coastal zone of Del Norte County. These include: offshore rocks; intertidal areas; estuaries; wetlands; riparian vegetations systems; sea cliffs; and coastal sand dunes. A brief description of these sensitive habitat types is given below:*
>
> *6. Sea Cliffs: High, steep bluffs fronting the ocean are valuable and sensitive assets within the coastal zone. Bluff face vegetation is often sparse and usually quite sensitive to disruptions such as trampling. Many wildlife species benefit from bluff habitats for nesting or feeding. Bluffs are generally composed of easily erodable, unconsolidated materials making them potentially hazardous for coastal access and as building sites.*

LUP Marine and Water Resources Chapter, Section VI. General Policies, Sub-Section C LCP Policies, Policy 6 states in applicable part:

> *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas. Development in areas adjacent to environmentally sensitive habitat areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.*

LUP Marine and Water Resources Chapter, Section IV. Sensitive Coastal Habitat, Sub-Section F. Sea Cliffs, 4. Policies and Recommendations:

The biological assessment prepared for the project states that the subject property contains no environmentally sensitive habitat. However, the subject property is a bluff property that includes a steep 14-foot-high sea cliff, and the above-cited policies of the certified Land Use Plan define sea cliffs as environmentally sensitive habitat. These policies also require that all environmentally sensitive habitat be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

As discussed in Finding E(1)(a) above, because (a) no specific coastal retreat rate has been established for the project as approved, (b) the approved house is located in an area determined by the geotechnical report to be moderate risk zone where the level of risk of bluff retreat exceeds a reasonable level of risk, the Commission finds that a substantial issue of conformance with the LCP bluff retreat setback policies is raised by the approved project. In approving the project, the County did not impose a condition that would preclude the ability of the applicant to construct a seawall or other protective device along the sea cliff in the future if the house were threatened by bluff retreat. As a substantial issue exists as to whether the house will be safe from bluff retreat hazards over its economic life, and the applicant is not precluded from constructing a shoreline protective device in the future by the terms of the permit, conditions may very likely arise where the applicant may find it necessary to consider constructing a shoreline protection device along the bluff face. As noted above, the sea cliff is defined as ESHA under the certified LCP. As Section 30240 of the Coastal Act requires that environmentally sensitive habitat in the coastal zone be protected from the impacts of development and as the cumulative impact of the loss of environmentally sensitive habitat over time throughout the coastal zone has been significant, the appeal raises issues of statewide significance rather than just a local issue. Therefore, the Commission finds that a substantial issue is raised as to whether the development as approved will ensure that the sea cliff ESHA at the site will be protected against any significant disruption of habitat values as required by the above cited ESHA policies of the LCP from future construction of shoreline protective devices.

F. INFORMATION NEEDED FOR *DE NOVO* REVIEW OF APPLICATION

As stated above, Section 30625(b) of the Coastal Act requires the Commission to hear an appeal unless the Commission determines that no substantial issue exists with respect to the grounds on which an appeal has been filed. Section 30621 of the Coastal Act instructs the Commission to provide for a *de novo* hearing on all appeals where it has determined that a substantial issue exists with respect to the grounds on which an appeal has been filed. If the Commission finds substantial issue as recommended above, staff also recommends that the Commission continue the *de novo* portion of the hearing to a subsequent date. The *de novo* portion of the appeal must be continued because the Commission does not have sufficient information to determine what, if any, development can be approved, consistent with the certified LCP.

Given that the project the Commission will be considering *de novo* has come to the Commission after an appeal of a local government action, the Commission has not previously been in the position to request information from the applicant needed to determine if the project can be found to be consistent with the certified LCP. Following is a discussion of the information needed to evaluate the development. Staff notes that as of the date of this report, Commission staff has not received a copy of the local record from the County which may contain some of the following information.

1. Supplemental Geotechnical Analyses

   As discussed above, authorization of the placement of the proposed structures on a bluff top lot is contingent on making findings that (a) the approved development will be set back a sufficient distance from the bluff edge to avoid risks of bluff retreat. Because the existing geotechnical report does not have sufficient information with which to make these findings, an evaluation of the specific erosion rate that applies to the subject property is required. In addition a specific bluff setback recommendation that would assure the project will avoid risks of bluff retreat over the expected economic life of the structure that takes into account the bluff retreat rate and the slope stability of the site is needed. If in the opinion of the Commission staff geologist slope stability cannot adequately be determined by other means, a "quantitative slope stability analysis" may be needed that determines: (1) the static minimum factor of safety against landsliding of the bluff in its current configuration; (2) assuming that factor of safety obtained in (1) is less than 1.5, the location on the bluff top where a factor of safety of 1.5 is obtained; (3) the pseudostatic minimum factor of safety of the bluff, using a horizontal seismic coefficient of 0.15g; and (4) assuming that the factor of safety in (3) is less than 1.1, the location on the bluff top where a factor of safety of 1.1 is obtained.

2. Base Flood Elevation

The geotechnical report prepared for the project indicates that the subject property is subject to flood hazards from flooding of the Smith River. The report notes that a base flood elevation will need to be established to determine the appropriate elevation at which to construct the home to avoid flood hazards. To enable the Commission to determine if the proposed development is designed to be safe from flood hazards and consistent with the flood hazard policies of the certified LCP, a determination by a certified engineer of the base flood elevation needs to be provided.

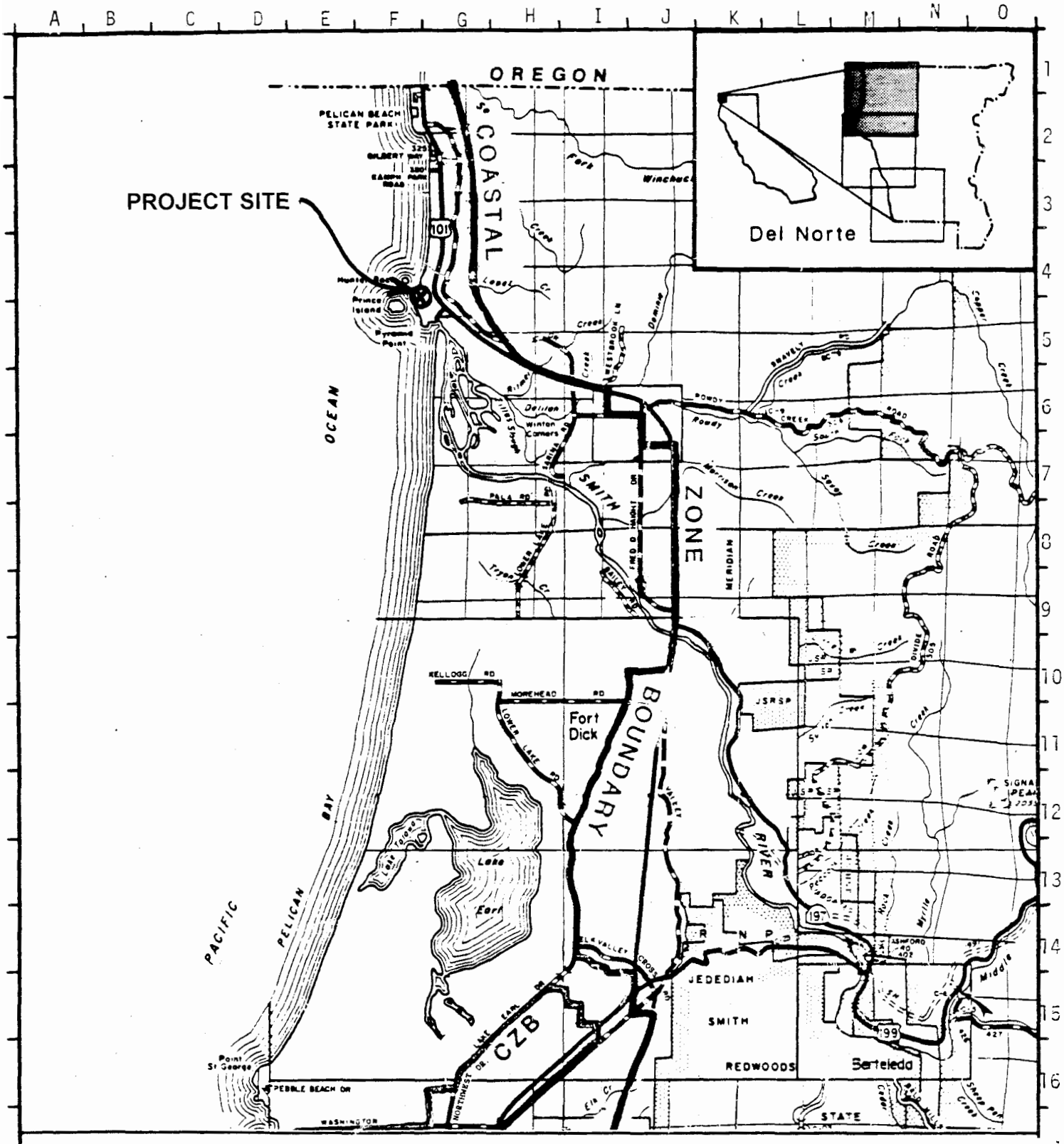
3. Evaluation of Conformance of the Proposed Septic System with Regional Board Basin Plan Septic System Standards

The appeal raises concerns as to whether the proposed Wisconsin Mound Septic System conforms with the North Coast Regional Water Quality Control Board Basin Plan site criteria for assessing site suitability for on-site discharges of waste from residences. To enable the Commission to determine if the proposed septic system will protect surface and subsurface water quality as required by the policies of the certified LCP, an evaluation of the septic system's conformance with applicable Regional Board standards for septic systems prepared by a qualified engineer is required.

Without the above information, the Commission cannot reach a final determination concerning the consistency of the project with policies of the LCP. Therefore, before the Commission can act on the proposed project *de novo*, the applicant must submit all of the above-identified information.

Exhibits:

1. Regional Location Map
2. Parcel Map
3. Site Plan
4. Building Elevations
5. Notice of Final Local Action
6. Appeal (Friends of Del Norte)
7. Geotechnical Report
8. Excerpt from 1989 Geotechnical Report
9. Habitat Assessment
10. Septic System Specifications



California Coastal Commission

LOCATION MAP

1 0 mi

County of Del Norte

EXHIBIT NO. 1

APPEAL NO.
A-1-DNC-08-033

PINGER

REGIONAL LOCATION MAP

T AN OFFICIAL MAP
IMENT PURPOSES ONLY

SMITH RIVER RANCHERIA SUBDN
POR SEC 17 T18N R1W H.M.
Bk. 4 Pg 118-124
Bk. 4 Pg. 204-208 (revised)

102-5

1" = 200'

0701
0678

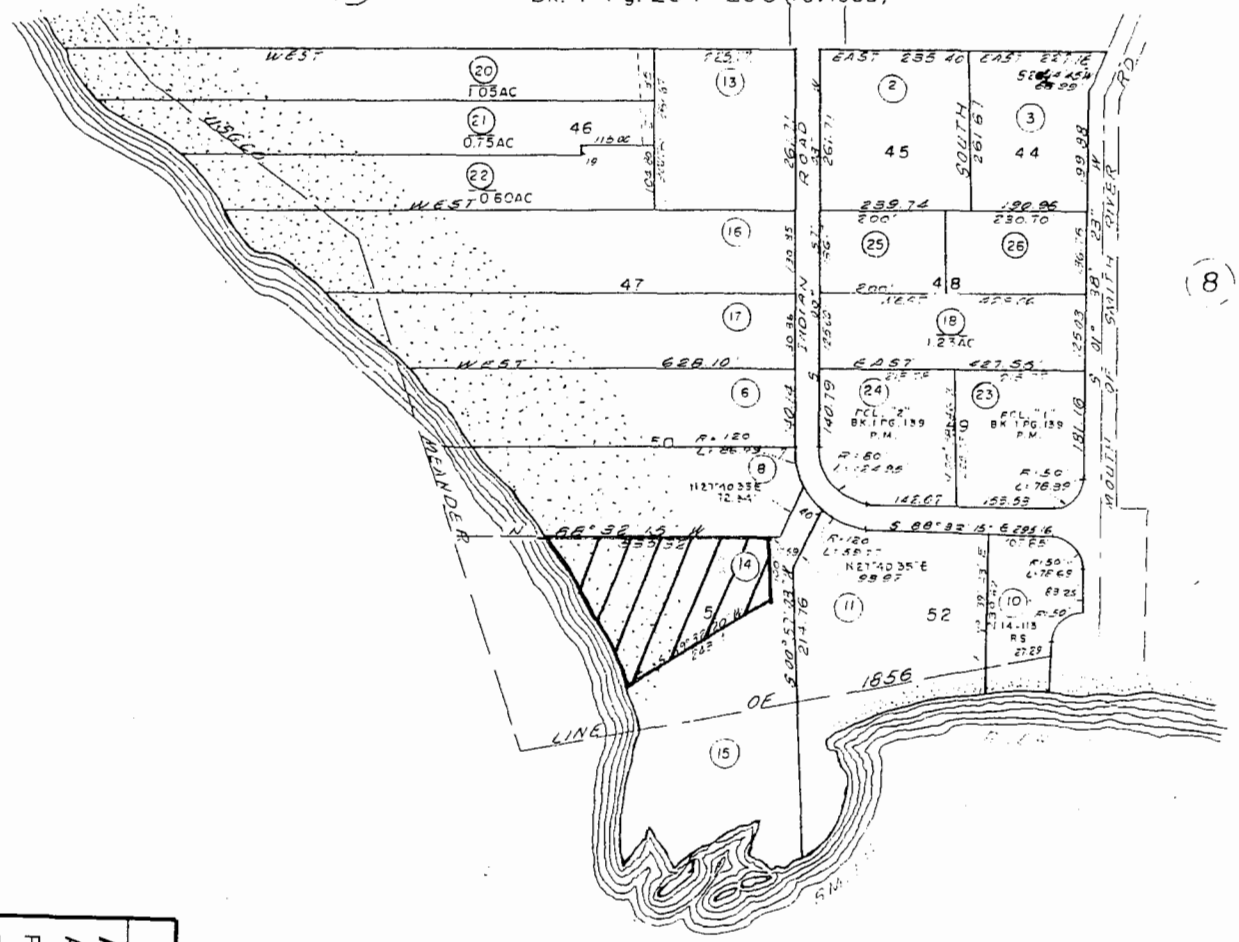


EXHIBIT NO. 2
APPEAL NO.
A-1-DNC-08-033
PINGER
PARCEL MAP

Pinger, Edward
–CDP New Residence

B30109C
102-050-14

110

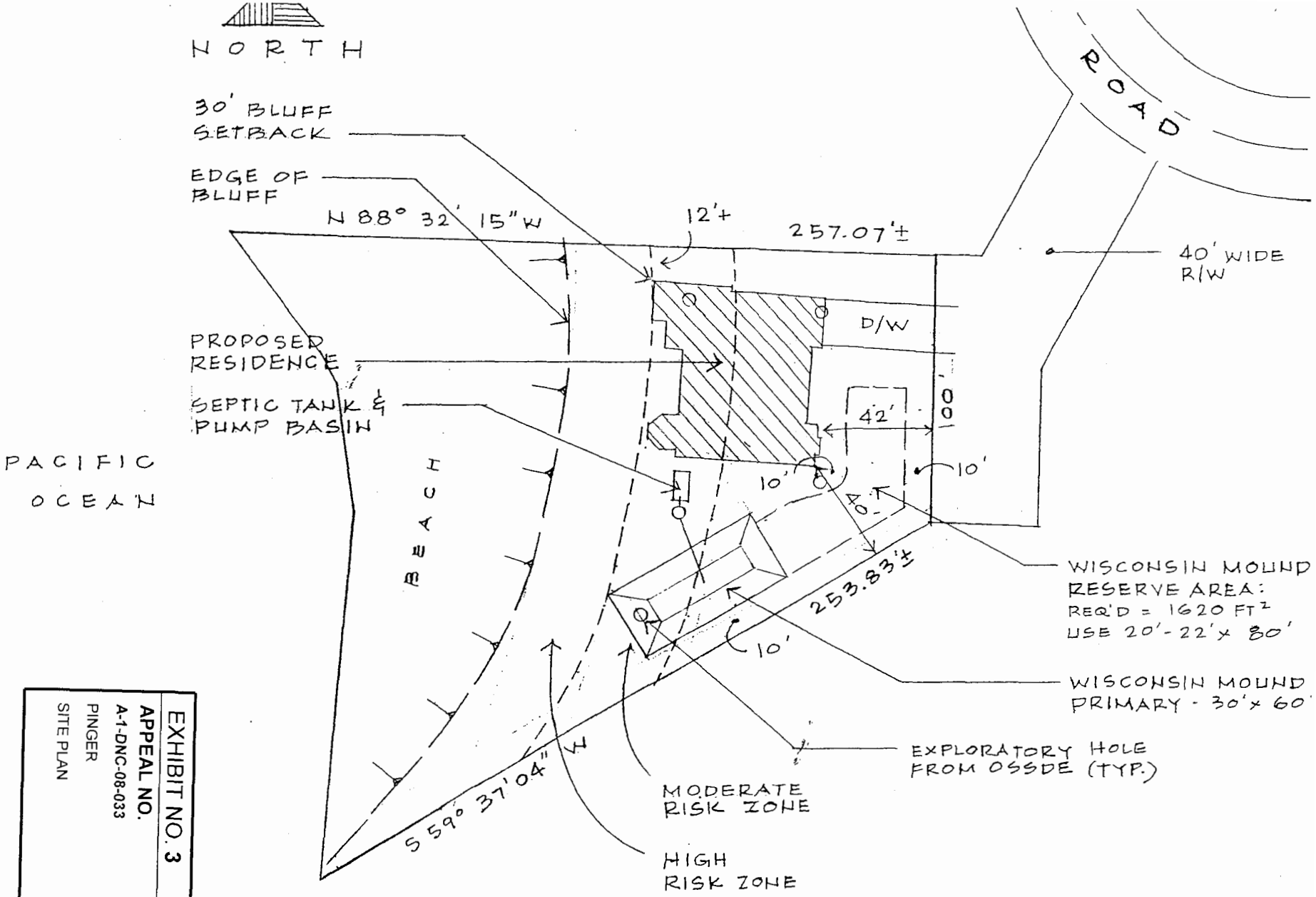


EXHIBIT NO. 3
APPEAL NO.
A-1-DNC-08-033
PINGER
SITE PLAN

LOCATION MAP

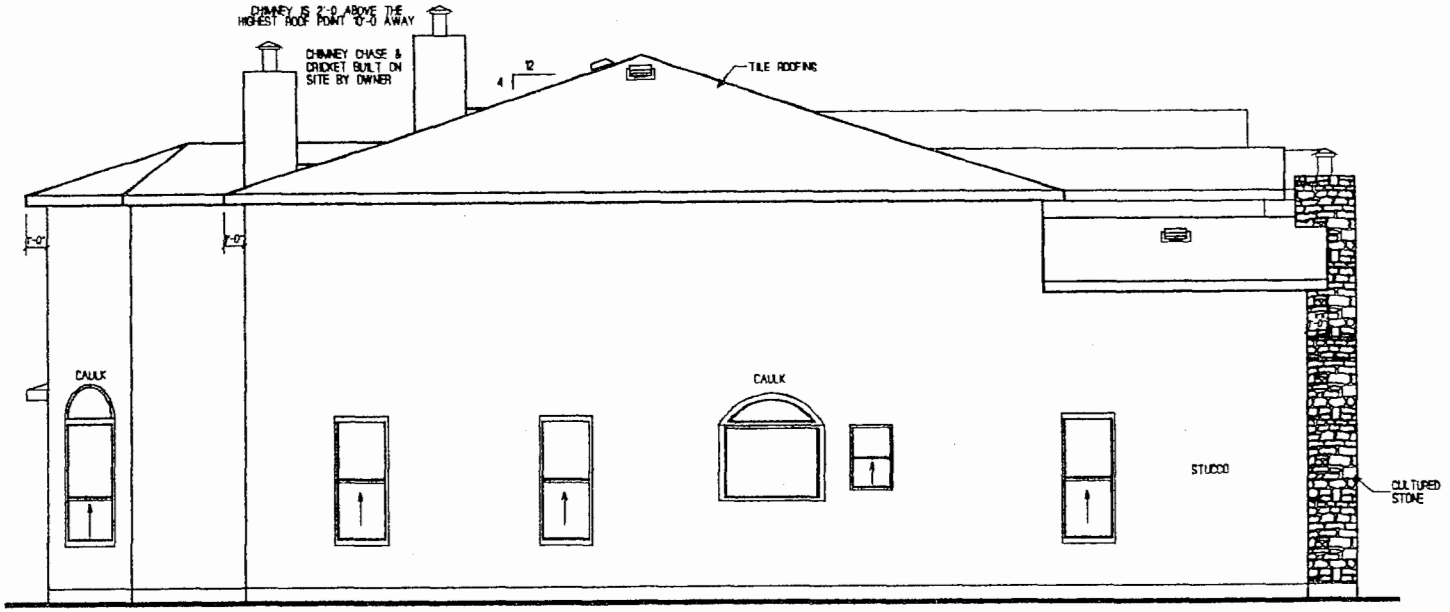
SCALE: 1" = 50'

PLOT PLAN APN 102-050-14

FRONT ELEVATION

NOTE!
ALL EXTERIOR FINISHES BY OWNER

#3 FLASHING REQUIRED OVER ALL DOORS & ALL WINDOWS ON THIS ELEVATION



LEFT ELEVATION

NOTE!
ALL EXTERIOR FINISHES BY OWNER

#3 FLASHING REQUIRED OVER ALL DOORS & ALL WINDOWS ON THIS ELEVATION

EXHIBIT NO. 4
APPEAL NO.
A-1-DNC-08-033
PINGER
BUILDING ELEVATIONS
(1 of 2)

SIDING PACKAGE AS SHOWN

GRADE IS ONLY SUGGESTED AND MUST BE ADJUSTED TO SUIT INDIVIDUAL SITE CONDITIONS

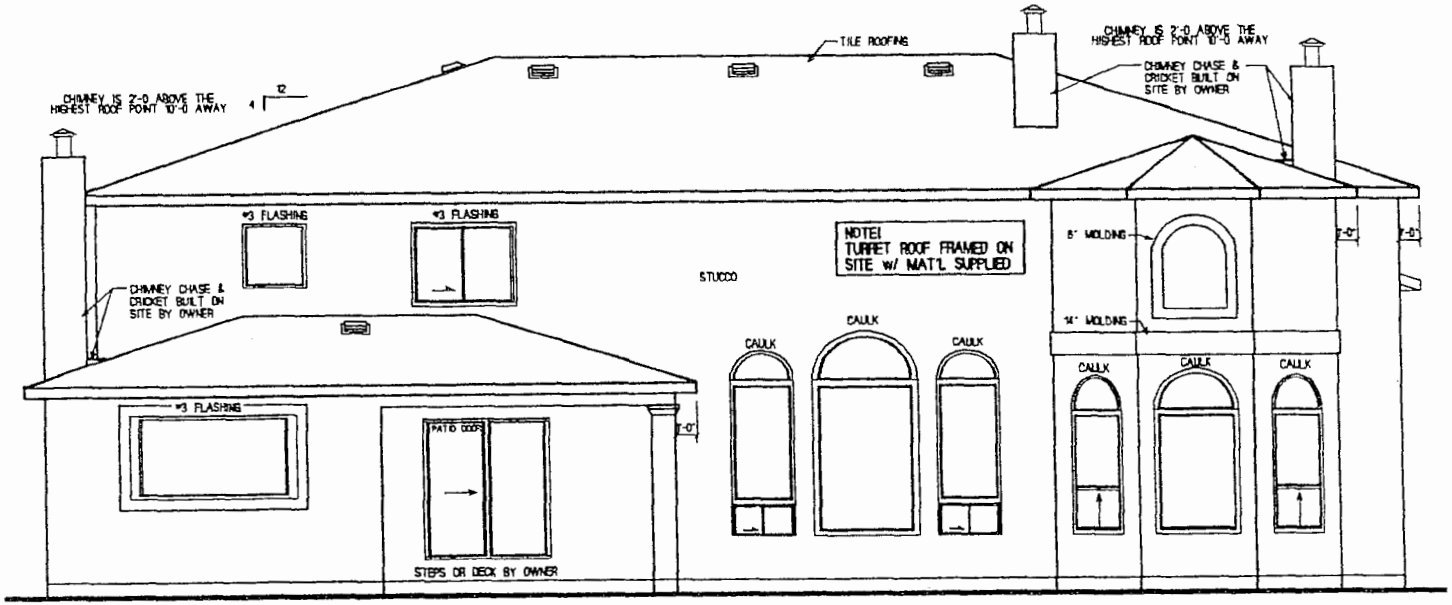
ADJUST CONCRETE STEPS TO SUIT GRADE

Nelson OPERATIONS
BOX 809 LLOYDMINSTER, ALBERTA S9V 0Y8
PHONE (780) 871-8300 FAX (780) 871-8368

PINGER
CUSTOM
H6518

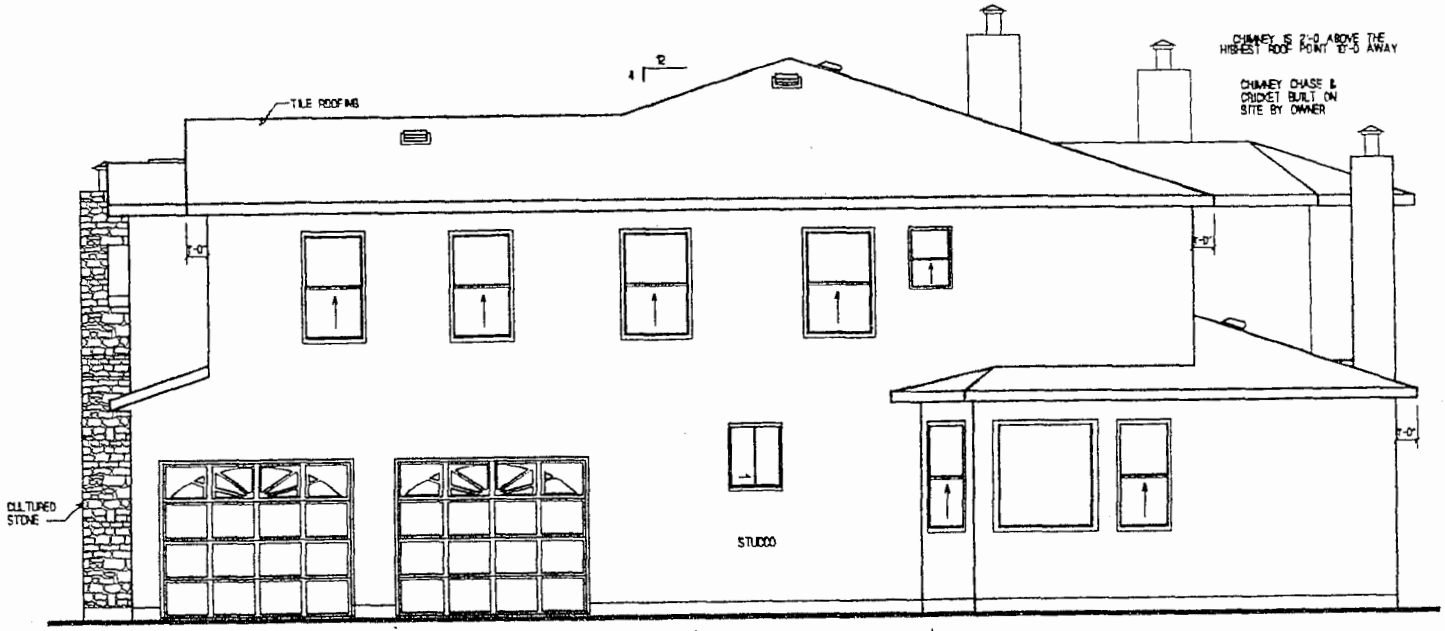
Pinger, Edward
CDP New Residence

B30109C
102-050-14



REAR ELEVATION

NOTE!
ALL EXTERIOR FINISHES BY OWNER



RIGHT ELEVATION

NOTE!
ALL EXTERIOR FINISHES BY OWNER

#3 FLASHING REQUIRED OVER ALL DOORS & ALL WINDOWS ON THIS ELEVATION

2 of 2

SIDING PACKAGE AS SHOWN

GRADE IS ONLY SUGGESTED AND MUST BE ADJUSTED TO SUIT INDIVIDUAL SITE CONDITIONS

ADJUST CONCRETE STEPS TO SUIT GRADE

Nelson Operations
BOX 880 LLOYDMINSTER, ALBERTA S9V 0Y5
PHONE (780) 871-8080 FAX (780) 871-5398

OWNER: FINGER
MODEL: CUSTOM
JOB #: H6518
DRAWN BY: NELSON HOMES
CHECKED BY CHECKER
DATE DRAWN: JANUARY 1, 2003
REVISION PAGE
SPECIFICATION UPDATE 2007

REVISIONS	DATE DRAWN	DRAWN	INITIALS
BONUS ROOMS	MAR 07	BP	
WINDOW REMARKS	24 AUG 07	LATERANCE	
REMARKS	27 AUG 07	LATERANCE	
STRUCTURAL	0 DEC 07	LATERANCE	
STRUCTURAL REMARKS	3 DEC 07	LATERANCE	

EXHIBIT NO. 5
APPEAL NO.
A-1-DNC-08-033
PINGER
NOTICE OF FINAL ACTION (1 of 9)

DEL NORTE COUNTY COMMUNITY DEVELOPMENT DEPARTI
981 H STREET, SUITE 110
CRESCENT CITY, CA 95531

NOTICE OF ACTION

I. Notice is hereby given that the **Planning Commission** of Del Norte County took the following action on **July 2, 2008** regarding the application for development listed below:

Action: ✓ Approved ___Denied ___Continued ___Recommended EIR
___Forwarded to Board of Supervisors

RECEIVED
JUL 0 9 2008
CALIFORNIA
COASTAL COMMISSION

Application Number: B30109C
Project Description: Coastal Development Permit for a New Residence
Project Location: 12510 South Indian Road, Smith River
Assessor's Parcel Number: 102-050-14
Applicant: Edward Pinger
Applicant's Mailing Address: 5489 Jonathan Place, Newark, CA 94560
Agent's Name & Address: , ,

A copy of any conditions of approval and/or findings adopted as part of the above action is attached.

II. **If Approved:**

✓ This County permit or entitlement serves as a Coastal permit. No further action is required unless an appeal is filed in which case you will be notified.

This County permit or entitlement DOES NOT serve as a Coastal permit. Consult the Coastal Zone Permit procedure section of your NOTICE OF APPLICATION STATUS or the Planning Division of the Community Development Department if you have questions.

III. **Notice is given that this project:**

Is not appealable to the California Coastal Commission, however, a local appeal period does exist.

✓ Is appealable to the California Coastal Commission.

✓ Any appeal of the above decision must be filed with the Clerk of the Board of Supervisors by July 14, 2008 for consideration by the Board of Supervisors.

✓ Any action of the Board of Supervisors on this item may be appealed to the California Coastal Commission within 10 working days or 21 calendar days subject to the requirements of Chapter 21.52 DNCC and Coastal Regulations.

Must be forwarded to the California Coastal Commission for final action. You will be notified of its status by the Coastal Commission Office.

(Continued on the next page)

Is not subject to Coastal Commission regulations, however, a local appeal process is available. Written appeals must be filed with the Clerk of the Board of Supervisors by _____. Consideration will be by the Board of Supervisors.

Requests for deferment of road improvement standards or for modification of road improvement standards must be filed in writing with the Clerk of the Board of Supervisors by July 14, 2008, with a copy provided to the Secretary of the Planning Commission. Consideration will be by the Board of Supervisors.

Parcel map must be filed within 24 months of the date of approval.

Record of Survey and new deeds must be filed within 24 months of the date of approval.

New deeds must be filed within 24 months of the date of approval.

EXTENSIONS – MAJOR & MINOR SUBDIVISIONS OR BOUNDARY ADJUSTMENTS – Maps (or Records of Survey/Deeds) must be filed within 12 months after the original date of expiration.

NOTICE – SECTION 1.40.070

The time within which review of this decision must be sought is governed by the California Code of Civil Procedure, Section 1094.6, and the Del Norte County Ordinance Code, Chapter 1.40. Any petition seeking judicial review must be filed in the appropriate court not later than the 90th day following the date on which this decision was made; however, if within 10 days after the decision was made, a request for the record of the proceedings is filed and the required deposit in an amount sufficient to cover the estimated cost of preparation of such record is timely deposited, the time within which such petition may be filed in court is extended to no later than the 30th day following the date on which the record is either personally delivered or mailed to you or your attorney of record.

FISH AND GAME FILING FEES

N/A

Projects subject to CEQA are also subject to the following fees as required by the California Department of Fish and Game:

Applicable Fee - ___Neg. Dec. ($1,926.75) ___EIR ($2,656.75) ___Exempt

This fee is due and payable to the County Clerk's Office. The applicant or agent is responsible for paying the current Fish and Game fee, which is subject to change. If not paid within 5 working days of the date of action of the Planning Commission, your project may be invalid by law (PRC 21089(b)) and will be referred to Fish and Game's Department of Compliance and External Audits in the Clerk's monthly deposit and report to Fish and Game.

ATTENTION APPLICANT

As a subdivider or adjuster of property, this notice is to advise you that **all taxes** must be paid in full prior to the recordation of your map or deeds. If the map or deeds are filed **after December 16th, you must pay all taxes due PLUS NEXT YEAR'S TAXES** before the map or deeds can be recorded.

If you have any questions regarding the payment of taxes, call the Del Norte County Tax Collector's Office at (707) 464-7283.

BELOW ARE LISTED THE CONDITIONS OF APPROVAL FOR YOUR PROJECT. PLEASE BE AWARE THAT COMPLIANCE WITH THESE CONDITIONS, AS WELL AS ANY APPLICABLE COUNTY STANDARDS, IS YOUR RESPONSIBILITY AS THE APPLICANT. NEITHER THE PLANNING COMMISSION NOR ANY OTHER AGENCY OF THE COUNTY OF DEL NORTE WILL TAKE ANY ACTION TO COMPLY WITH THE CONDITIONS OR DO ANY OTHER WORK TO FINALIZE YOUR PROJECT. YOUR PROJECT WILL NOT BE FINALIZED UNTIL THESE CONDITIONS AND/OR STANDARDS HAVE BEEN MET. IF YOU HAVE ANY QUESTIONS REGARDING THE CONDITIONS AND/OR STANDARDS FOR YOUR PROJECT, YOU SHOULD CONTACT THE DEPARTMENT OR AGENCY WHICH REQUIRED THAT CONDITION AND/OR STANDARD

1) A Notice of Conditional Approval for this project shall be recorded prior to issuance of the building permit at the applicant's expense;
2) Issuance of the building permit shall be subject to final review and approval by the Building Inspection Division;
3) Maximum building height within the applicable Coastal Zone District (RR-1-C(H) is 25-feet for single family residences;
4) The project shall comply with the requirements of the California Fire Code applicable at the time of complete application (6/08);
5) All construction shall comply with Section 14.16.027 and Section 14.16.028 of Del Norte County Code regarding the addressing and the posting of address numbers;
6) The placement of the structures shall be in strict accordance with the applicant's submitted plot plan and must meet required construction setbacks (Del Norte County §21.16.080 - §21.16.100) and recommended geotechnical setbacks (Busch Geotechnical Consultants - July 16, 2007);
7) The applicant or his designated agent shall contact the Planning Division for a footings inspection to ensure placement of the foundation is in accord with the submitted plot plan and Geotechnical Report (Busch Geotechnical Consultants - July 16, 2007);
8) Proposed construction activities must be conducted in accordance with the recommendations of the submitted Geotechnical Report. Specifically the placement of the structure must be no closer than 30-feet from the top of the bluff as identified in the Geotechnical Report (Busch Geotechnical Consultants - July 16, 2007);
9) The applicant shall be on notice that it is the policy of the County of Del Norte that, should any archaeological resources be found during site excavation for the proposed residence, construction activities shall be halted until an evaluation of the find is made either by a qualified archaeologist or a representative of the local Rancheria;
10) If human remains are encountered during future ground disturbing activities within the project area, the County Coroner shall be contacted immediately. If the Coroner determines that the burial(s) are likely to be Native American, the Native American Heritage Commission must be contacted within 24 hours;
11) Prior to issuance of the Certificate of Occupancy, the landowner shall submit a preliminary title report and an irrevocable offer to dedicate an easement free of prior liens and encumbrances (except tax liens) for the public access way described below. Upon review and acceptance of the document by the County and Coastal Commission, the document shall be recorded with the County of Del Norte. This offer can be accepted by an appropriate agency within 21 years, but the County shall have the first right of refusal:

    "Lateral access shall be provided for passive recreational use by the general public inland of the mean high tide line to the first line of vegetation."

12) The applicant shall be on notice that construction activities within the designated primary and reserve sewage disposal areas be kept to a minimum. Additionally, extensive grading or soil removal may render the lot unbuildable;
13) If grading is necessary, no grading shall be conducted on any parcel between October 30 and April 30;

14) Erosion and runoff control shall be in-place prior to and during any grading or excavating;
15) The access road will be constructed to the County road standard of 20 feet wide with 4 inches compacted thickness of ¾" minus crushed rock travel way with a 3% cross slope. Asphalt paving of the access road shall extend twenty feet from the centerline of South Indian Road or to the property line which ever distance is greater;
16) An encroachment permit shall be obtained from Del Norte County Community Development Department, Engineering and Surveying Division for any work in the County right-of-way on South Indian Road;
17) Any grading that disturbs more than 1-acre of land is required to obtain a State Water Resources Control Board Construction Storm water Permit. Disturbed land includes new access roads, soil stockpiling, staging areas and offsite disposal of soils; and
18) This entitlement is specifically conditioned on the applicant agreeing to indemnify and hold harmless the County of Del Norte, the Planning Commission of the County of Del Norte, the Board of Supervisors of the County of Del Norte, their officers, employees and agents against any and all claims arising out of the issuance of the entitlement and specifically against any expense arising from defending any legal action challenging the issuance of the entitlement, including but not limited to the value of time devoted to such defense by County officers, employees and agents and the amount of any judgment, including costs of suit and attorney fees, recovered against the County or any of its officers, employees or agent in such legal action. The County of Del Norte reserves the option to either undertake the defense of any such legal action or to tender such defense to the applicant. Should the County tender such defense to the applicant and the applicant fail or neglect to diligently defend such legal action, the County may consider such failure or neglect to be a material breach of this conditions and forthwith revoke this entitlement.

Agent: None

APP# B30109C

STAFF REPORT

APPLICANT: Edward Pinger

APPLYING FOR: Coastal Development Permit for a New Residence

AP#: 102-050-14 LOCATION: 12510 South Indian Road, Smith River

PARCEL(S) SIZE: 1.2 acres | EXISTING USE: Vacant | EXISTING STRUCTURES: None

PLANNING AREA: 1 GENERAL PLAN: RR(1/1)

ADJ. GEN. PLAN: Same

ZONING: RR1-C(H) ADJ. ZONING: Same, RR-1

1. PROCESSING CATEGORY: NON-COASTAL / NON-APPEALABLE COASTAL / APPEALABLE COASTAL X / PROJECT REVIEW APPEAL

2. FIELD REVIEW NOTES: DATE: 1/4/08 HEALTH DEPT / PLANNING X / BUILDING INSP X / ENGINEERING/SURVEYING X

ACCESS: South Indian Road ADJ. USES: Residential
TOPOGRAPHY: Flat site on top of ocean bluff DRAINAGE: Surface

DATE OF COMPLETE APPLICATION: June 12, 2008

3. ERC RECOMMENDATION:
CEQA Class 3 Categorical Exemption. Post Public Hearing Notice. Approval with conditions.

4. STAFF RECOMMENDATION:
Edward Pinger has submitted an application for a Coastal Development Permit in order to construct a two-story single-family residence. The project is located on a 1.2-acre parcel on South Indian Road in the community of Smith River. The project area is zoned RR-1-C(H) (Rural Residential – one acre minimum lot size with a coastal bluff hazard overlay); the General Plan land use designation is RR-1/1 (Rural Residential – one dwelling unit per acre). The parcel is served by public water and an onsite sewage disposal system. Access to the parcel is from South Indian Road, near the mouth of the Smith River.

As indicated in the zoning designation, the parcel is subject to a Coastal Bluff Hazard overlay. Due to the proximity of the parcel to the coastal bluff the applicant was required to submit a Geotechnical Report to identify safe and unsafe building areas. The applicant retained Busch Geotechnical Consultants to conduct the assessment. Busch identified three areas of descending risk from the ocean bluff. Essentially, from the top of the edge of the bluff extending eastwards 30-feet is identified as a "High

Risk Zone"; 60-feet eastwards is identified as a "Moderate Risk Zone." As indicated on the submitted plot plan the applicant has chosen to locate a portion of his proposed residence within the Moderate Risk Zone. It is important to note that no portion of the residence is proposed to be located within the High Risk Zone, which for development to occur, would require significant engineering to even be considered.

The applicant hired a biologist to conduct a biological assessment of the property in order to determine if the site had any environmental sensitive habitat areas onsite. The assessment was conducted in January 2008 by Craig Strong, a local biological consultant. Mr. Strong's assessment of the site did not identify any biologically sensitive habitat on the property. The Strong report concludes, "There are no wetlands or riparian habitat on or adjacent to the property. Soils were dry and acidic, offering no habitat to amphibians. The pine trees offer limited foraging habitat for a few passerine land birds (eg sparrows, wrens, and warblers), but bird nesting habitat is suboptimal due to exposure to weather and cats. No sensitive habitat or wildlife species were found or could be expected at or near this area. New construction on this property will have no impact to sensitive wildlife species or sensitive wildlife habitats. Loss of pine trees will have a negligible effect to foraging birds; landscaping vegetation could actually improve foraging opportunity for some bird species."

An Archeological Investigation was conducted by James Roscoe, M.A. in 1989 for this parcel. Despite the report being prepared in 1989 the investigation is still considered relevant because of the limited-to-no disturbances that have occurred on the parcel in the intervening years. Roscoe's report details past Native American activities that occurred on the parcel and makes recommendations if buried archeological materials are encountered. Roscoe states, "No archeological sites were located within the subject parcel as a result of the investigation. While the project will not impact any known cultural resources, measures are recommended in the event buried archeological materials are encountered during future construction activities." Conditions of approval have been attached to this project which addresses potential archeological and/or human material discoveries. The local Rancheria (Smith River Rancheria) is represented on the County's Environmental Review Committee and reviewed the Roscoe report and staff-suggested conditions. The project was not objected to by the Rancheria's representative.

Lee Tromble, a California licensed civil engineer, was hired by the applicant to prepare plans for the construction of an onsite sewage disposal system. Mr. Tromble has submitted construction plans for the placement of a Wisconsin Mound system on the property. Leon Perreault, Del Norte County Environmental Health Scientist, has reviewed Mr. Tromble's plans and has confirmed that the design is acceptable. Mr. Tromble states in his report, "...no deviations from the plans and specifications are permitted except with the Engineer's written approval."

The County's Local Coastal Program calls for the maximization of public access both to and along the shoreline where it is consistent with public safety, property owner rights and the protection of fragile coastal resources. The ERC has recommended that this new development (because it is along the immediate shoreline) be required to provide lateral access by easement along the shoreline, inland of the mean high tide to the crest of the paralleling bluff for passive recreational use. Prior to issuance of the Certificate of Occupancy for the residence, the applicant is required to record an Irrevocable Offer of Dedication of this area. The Offer can be accepted by an appropriate agency which may or may not be the local government, within 21 years. Staff will work with the applicant and Coastal Commission legal staff to prepare the paperwork. Conditions of approval reflect this requirement. Vertical access is not required since public access to the shoreline is available one mile or less from the project site and immediately adjacent to the project site.

Standard conditions for Coastal Development Permits have been placed on the project including compliance with the California Fire Code, addressing requirements, construction setbacks, height requirements, and sewer and water.

The project is Class 3 exempt from the requirements of the California Environmental Quality Act. Issues raised by the ERC and noted during the field visit of the site have been discussed in this report.

Staff recommends the Commission adopt the findings and approve the project with the below listed conditions:

5. FINDINGS:

A) The project is subject to the dedication of lateral public access due to its location along the California coastline. It is a programmatic goal of the County's Local Coastal Plan (LCP) and California Coastal Act to ensure public access is maintained along California's coastline;
B) The project is NOT subject to the dedication of vertical access because existing vertical public access exists within 1-mile of the project;
C) The project, as conditioned and sited on the parcel, is consistent with the policies and standards of the Local Coastal Plan Land Use Plan and Title 21 Zoning;
D) The project is exempt from the California Environmental Quality Act (Class 3);
E) The project, as before the Commission, is in accord with the Busch Geotechnical analysis (Busch Geotechnical Consultants – July 16, 2007) which defines areas of high, moderate, and low risk on the parcel;
F) A biological report has been prepared (Crescent Coastal Research – January 28, 2008) regarding the biological significance of the subject parcel. The report did not identify any environmentally sensitive habitat areas; and
G) The Notice of Conditional Approval which will formalize acceptance and acknowledgement of the conditions of approval by the applicant and provide constructive notice to subsequent owners and other parties of interest.

6. CONDITIONS:

1) A Notice of Conditional Approval for this project shall be recorded prior to issuance of the building permit at the applicant's expense;
2) Issuance of the building permit shall be subject to final review and approval by the Building Inspection Division;
3) Maximum building height within the applicable Coastal Zone District (RR-1-C(H) is 25-feet for single family residences;
4) The project shall comply with the requirements of the California Fire Code applicable at the time of complete application (6/08);
5) All construction shall comply with Section 14.16.027 and Section 14.16.028 of Del Norte County Code regarding the addressing and the posting of address numbers;
6) The placement of the structures shall be in strict accordance with the applicant's submitted plot plan and must meet required construction setbacks (Del Norte County §21.16.080 - §21.16.100) and recommended geotechnical setbacks (Busch Geotechnical Consultants - July 16, 2007);
7) The applicant or his designated agent shall contact the Planning Division for a footings inspection to ensure placement of the foundation is in accord with the submitted plot plan and Geotechnical Report (Busch Geotechnical Consultants - July 16, 2007);
8) Proposed construction activities must be conducted in accordance with the recommendations of the submitted Geotechnical Report. Specifically the placement of the structure must be no closer than

30-feet from the top of the bluff as identified in the Geotechnical Report (Busch Geotechnical Consultants - July 16, 2007);

9) The applicant shall be on notice that it is the policy of the County of Del Norte that, should any archaeological resources be found during site excavation for the proposed residence, construction activities shall be halted until an evaluation of the find is made either by a qualified archaeologist or a representative of the local Rancheria;
10) If human remains are encountered during future ground disturbing activities within the project area, the County Coroner shall be contacted immediately. If the Coroner determines that the burial(s) are likely to be Native American, the Native American Heritage Commission must be contacted within 24 hours;
11) Prior to issuance of the Certificate of Occupancy, the landowner shall submit a preliminary title report and an irrevocable offer to dedicate an easement free of prior liens and encumbrances (except tax liens) for the public access way described below. Upon review and acceptance of the document by the County and Coastal Commission, the document shall be recorded with the County of Del Norte. This offer can be accepted by an appropriate agency within 21 years, but the County shall have the first right of refusal:

    "Lateral access shall be provided for passive recreational use by the general public inland of the mean high tide line to the first line of vegetation."

12) The applicant shall be on notice that construction activities within the designated primary and reserve sewage disposal areas be kept to a minimum. Additionally, extensive grading or soil removal may render the lot unbuildable;
13) If grading is necessary, no grading shall be conducted on any parcel between October 30 and April 30;
14) Erosion and runoff control shall be in-place prior to and during any grading or excavating;
15) The access road will be constructed to the County road standard of 20 feet wide with 4 inches compacted thickness of ¾" minus crushed rock travel way with a 3% cross slope. Asphalt paving of the access road shall extend twenty feet from the centerline of South Indian Road or to the property line which ever distance is greater;
16) An encroachment permit shall be obtained from Del Norte County Community Development Department, Engineering and Surveying Division for any work in the County right-of-way on South Indian Road;
17) Any grading that disturbs more than 1-acre of land is required to obtain a State Water Resources Control Board Construction Storm water Permit. Disturbed land includes new access roads, soil stockpiling, staging areas and offsite disposal of soils;
18) This entitlement is specifically conditioned on the applicant agreeing to indemnify and hold harmless the County of Del Norte, the Planning Commission of the County of Del Norte, the Board of Supervisors of the County of Del Norte, their officers, employees and agents against any and all claims arising out of the issuance of the entitlement and specifically against any expense arising from defending any legal action challenging the issuance of the entitlement, including but not limited to the value of time devoted to such defense by County officers, employees and agents and the amount of any judgment, including costs of suit and attorney fees, recovered against the County or any of its officers, employees or agent in such legal action. The County of Del Norte reserves the option to either undertake the defense of any such legal action or to tender such defense to the applicant. Should the County tender such defense to the applicant and the applicant fail or neglect to diligently defend such legal action, the County may consider such failure or neglect to be a material breach of this conditions and forthwith revoke this entitlement; and

19) *** Added per PC Mtg 7/2/08 *** The applicant or their representative shall contact the Smith River Rancheria two weeks prior to excavation of footings in order to allow the Rancheria to have an observer present during the initial excavation when the footings are dug and prior to pouring of the concrete. The applicant is responsible for any charge by the Rancheria for the time and expenses (if any) of the observer. Should the Rancheria determine that they do not wish to have an observer present; a written statement to that effect will meet the intent of this condition. *** Added per PC Mtg 7/2/08 ***

*** Added per PC Mtg 7/2/08 ***

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET, SUITE 200
EUREKA, CA 95501
VOICE (707) 445-7833 FAX (707) 445-7877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: Friends of Del Norte
Mailing Address: P.O. Box 229
City: Gasquet Zip Code: 95543 Phone: 707-465-8904

SECTION II. Decision Being Appealed

1. Name of local/port government: Del Norte County

2. Brief description of development being appealed:
Development Permit for a New Residence

3. Development's location (street address, assessor's parcel no., cross street, etc.):
12510 South Indian Rd, Smith River

RECEIVED
JUL 25 2008
CALIFORNIA
COASTAL COMMISSION

4. Description of decision being appealed (check one.):

☐ Approval; no special conditions
☒ Approval with special conditions:
☐ Denial

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

TO BE COMPLETED BY COMMISSION:
APPEAL NO: A-1-DNC-08-033
DATE FILED: 7/25/08
DISTRICT: North Coast

EXHIBIT NO. 6
APPEAL NO.
A-1-DNC-08-033
PINGER
APPEAL (1 of 11)

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 2)

5. Decision being appealed was made by (check one):

- ☐ Planning Director/Zoning Administrator
- ☐ City Council/Board of Supervisors
- ☒ Planning Commission
- ☐ Other

6. Date of local government's decision: hearing - July 2, 2008

7. Local government's file number (if any): B30109C

SECTION III. Identification of Other Interested Persons

Give the names and addresses of the following parties. (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:
Pacrim Electronics c/o Edward Pinger
5489 Johnathan Place
Newark, CA 94560-2556

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearing(s). Include other parties which you know to be interested and should receive notice of this appeal.

(1) Eileen Cooper
1093 HWY 101 N #18
Crescent City CA 95531

(2) Sunnae Walker,
no address available

(3)

(4)

page 3 - Section IV APPEAL
Reasons supporting this Appeal -
as attached / pages 1-8

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 4)

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Del Norte

Signature on File

N - Boardmember

Signature of Appellant(s) or Authorized Agent

Date: July 25, 2008

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby authorize Signature on File er to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature on File 1 - FDN

Signature of Appellant(s)

Date: July 25 - 2008

Friends of Del Norte, *Committed to our environment since 1973.*
A nonprofit, membership based conservation group
advocating sound environmental policies for our region.
PO Box 229, Gasquet, CA 95543, e-mail: friendsdelnorte@yahoo.com

July 25, 2008
ATT: California Coastal Commission, Jim Baskin, 707-445-7877
REGARDING: Coastal Appeal of Del Norte County Planning Commission,
Edward Pinger, # B30109C, CDP for new residence, APN 102-050-14
12510 So. Indian Rd., Smith River

The project places a septic system and a large residential structure only 30 feet from a clearly distinct coastal bluff ESHA (environmentally sensitive habitat area), and within a moderate hazard zone, as indicated by the geologic/topographic map, pages 111 and 112.

The project is inconsistent with Del Norte County LCP because:

* The project does not adequately protect water quality and is inconsistent with Local Coastal Plan, *LCP Policy, Marine and Water Resources, VI. C:1,3,4, and 6*), as evidenced by the project's failure to meet minimum water quality requirements of the North Coast Region Water Quality Control Basin Plan for setbacks of leach fields from bluffs and unstable land forms.

* The project does not adequately protect the coastal bluff ESHA, as it does not provide adequate setback of the structure and septic system from a coastal bluff that experiences episodic undercutting, and significant bluff retreat. This is likely to result in future rip-rapping of the coastal bluff ESHA, to protect the residence and provide adequate service life. Within Del Norte LCP, the designated Coastal Bluff ESHA extends inland of the mean high tide line to the crest of the bluff.

* The project may result in significant negative impacts to a highly scenic visual coastal resource, with unimpaired open views of the ocean and unique off shore rocks.

*Testimony at the planning commission hearing was given regarding inadequate review and conditions for survey of archeological artifacts. Please contact Sunnae Walker. No address is available at this time. We do have a contact telephone number.

Discussion- Water Quality-Bluff Retreat- ESHA issues

A mounded leach field system is being required because of high groundwater conditions. Therefore, the setback of the leach field from the bluff is required to be 50 feet (water quality basin plan implementation, page 4-12.00 as attached), rather than the 30 feet that is provided, in order to prevent negative water quality effects that are inconsistent with the Local Coastal Plan, *LCP*

Policy, Marine and Water Resources, VI. C:1,3,4, and 6 , as evidenced by our Regional Water Quality Control Basin Plan. Our Regional Water Quality Control Basin Plan states, as attached page 4-11.00:

"The following site criteria are considered necessary for the protection of water quality and the prevention of health hazards and nuisance conditions arising from the on-site discharge of wastes from residential and small commercial establishments. They shall be treated as region-wide standards for assessing site suitability for such systems. .... Systems resulting in large wastewater loads may require additional criteria which are not covered in this policy, and which require review by the Regional Water Board on a case by case basis."

Please note, the setback of the leach field from an unstable land form is also required to be 50 feet (water quality basin plan implementation, page 4-12.00 as attached), rather than the 30 feet that is provided, in order to prevent negative water quality effects that would be inconsistent with the Local Coastal Plan, *LCP Policy, Marine and Water Resources, VI. C:1,3,4, and 6* LCP, as evidenced by our Regional Water Quality Control Basin Plan. The bluff is retreating towards the leachfield/septic system.. The leachfield can negatively impact water quality of the Coastal Bluff ESHA if the bluff retreats towards the leachfield. Therefore, to provide a reasonable service life for the leachfield, a distance greater than 50 feet should be provided.

The geological report specifies that erosion is episodic and results from undercutting of the bluff during large storm surge events. The geological report states that 14 inches per year bluff retreat is predictable for this area. The report states that recent retreat has been minimal, however:

"the recorded lengthy period of stasis must not be taken as an assurance of safety."

The report makes no recommendation at the conclusion of the Coastal Bluff Retreat Hazard and Risk Assessment section(packet pages 137 and 138).

An average rate of 14 inches (1.167 feet) per year bluff retreat results in a service life of only 25.7 years for a building setback of only 30 feet (the moderate hazard setback), and a service life of 51.4 years for a setback of 60 feet (the low hazard setback). A service life of 51 years is a minimal expectation for a well built residence.

The geologic report does emphasize that current sea level rising might increase the frequency of marine erosion events. It seems unadvisable to build in the moderate zone that was mapped according to the report (page 127) in 1989. This would likely result in LCP conflict in retaining natural land forms and avoiding riprap of the beautiful, scenic, and fragile coastal bluff ESHA..

The project makes no attempt at modesty, in order to meet basic water quality requirements and conserve the bluff ESHA. The residence main floor is 2627 sq.ft. And the upper floor is 1760 sq.ft. The project should be scaled back to accommodate the structure and the septic system within the

low hazard zone, in order to provide a reasonable service life for structure and septic system, to prevent negative water quality impacts, and rip-rapping with significant impact to the bluff ESHA.

The leachfield should be located greater than 50 feet from the bluff in order to protect water quality of the bluff ESHA for a reasonable length of time, as the bluff erodes towards the leachfield.

The reserve leachfield or replacement area should also be held to the same criteria, as stated in water quality basin plan requirement #7 replacement area:

" An adequate replacement area equivalent to and separate from the initial effluent disposal area shall be reserved at the time of site approval. The replacement system area shall not be disturbed to the extent that it is no long(er) suitable for wastewater disposal."

Further review by the Regional Water Board is necessary, as the building is oversized, and may overburden the septic system. Therefore, according to Criteria of our Regional Water Quality basin plan, page 4-11:

" Systems resulting in large wastewater loads may require additional criteria which are not covered in this policy, and which will require review by the Regional Water Board on a case by case basis."

The letter and map from Crescent Coastal Research concerning biology, pages 115 and 116, describes in generality grass and shrubs at storm level, typical of vegetation along the zone of coastal bluff ESHA. However, the biological report fails to explain the special coastal status of ESHA that this band of vegetation along coastal bluffs retains under Del Norte County LCP. The biological report does not identify specific species within the ESHA area, and does not survey for animals. Our coastal bluff ESHAs typically are composed of grasses and dense willow thickets, rich in bird life. These willow thickets are wetland indicators typical of riparian areas. The report does state this area is at storm level.

The project is inconsistent with the following relevant sections of Del Norte LCP:

Marine and Water Resources: IV.C.6. lists sea cliffs as ESHA (environmentally sensitive habitat area, and specifically Under Table *1: Sensitive Habitat Types and Their Principle Locations: sea cliffs north of Smith River:*

" High steep bluffs fronting the ocean are valuable and sensitive assets within the coastal zone. Bluff face vegetation is often sparse and usually quite sensitive to disruptions such as trampling. Many wildlife species benefit from bluff habitats for nesting or feeding. Bluffs are generally composed of easily erodible, unconsolidated materials making them potentially hazardous for coastal access and as building sites. The principal issues associated with the management of sea cliffs includes their fragile nature and their potential for geologic hazards."

Marine and Water Resources, LCP Present Local Policy, VI.B.4:

The following areas are recognized as major locations of excellent wildlife habitat, native or natural vegetation and of aesthetic value. These areas should be maintained as wildlife habitats and protected from adverse activity. No further commitment to development should be allowed except that which is in the best interest of the public health, safety and welfare, or as noted: b: Inland of the mean high tide line to the first line of vegetation (except in the areas of coastal bluffs when the area will be to the crest of the bluff), excluding the harbor area.

LCP Policy, Marine and Water Resources, VI, C:

1. The County seeks to maintain and where feasible enhance the existing quality of all marine and water resources.

3. All surface and subsurface waters shall be maintained at the highest level of quality to insure the safety of the public health and the biological productivity of coastal waters.

4. Wastes from industrial, agricultural, domestic or other uses shall not impair or contribute significantly to a cumulative impairment of water quality to the extent of causing a public health hazard or adversely impacting the biological productivity of coastal waters.

5. Water conservation measures (e. g., flow restrictors, industrial recycling of usable waste waters) should be considered by present users and required in new development to lessen cumulative impacts on existing water systems and supplies.

6. Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas. Development in areas adjacent to environmentally sensitive habitat areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

LCP Specific Area Policies and Recommendations, Sea Cliffs VII. F:

Planning issues, F.3:

"The vegetation of sea cliffs serves to stabilize the generally unconsolidated material of bluff faces. The plant life of sea cliffs, although adapted to the harsh environmental conditions of wind and salt spray, is typically fragile and highly subject to disturbance. The faces of sea cliffs provide a special habitat for nesting marine birds and various burrowing species."

Policies F.4:

a. Geologic studies shall be required for new construction within the area of demonstration on bluff-tops to determine:

i.) Their suitability for development; and

ii.) The necessary set-backs required to avoid hazards associated with bluff failure.

Aesthetics V. C. LCP Policies: The visual resources of Del Norte County are important to the County's tourist economy and are a continuing source of enjoyment to its residents. Policies designed to maintain the scenic resources of the Coastal Zone of Del Norte County are stated here:

1. The County encourages the continuation of existing land uses, where appropriate, to maintain open views in highly scenic areas.

2. Proposed development within established highly scenic areas shall be visually compatible with their scenic surroundings, by being reflective of the character of the existing land uses while conforming to the land use criteria. As set forth in the land use component and subsequent zoning ordinance.

The Del Norte County LCP criteria, for designating highly scenic areas are as follows:

1. Views of special interest to the general public (e.g., Pacific Ocean, lighthouses, old growth forest).

2. Visually distinctive scenes resulting from unique contrasts or diversity in landscape patterns (e.g., offshore rocks, forested uplands).

3. Views with special integrity or unimpaired conditions (e.g. open space, nature preserves).

LCP- Hazard Areas, Policies IV.D.1, Policies for Geologic Hazards:

P-1: Any development proposed adjacent to coastline erosion areas shall be preceded by

- an assessment of the rates of coastal retreat, in the case of bluffs, a detailed examination of underlying geology by a registered geologist or engineering geologist, and

- an analysis of the potential for tsunami run-up

Attachment: Water Quality Control Plan for the North Coast Region, pages 4-11 and 12
pages 6, 7, 8 of appeal

Thank you, Signature on File

Eileen Cooper, Boardmembers FDN

Joe Gillespie, President

Eileen Cooper contact: 707-465-8904, upsprout@yahoo.com

WATER QUALITY CONTROL PLAN
FOR THE
NORTH COAST REGION

JANUARY 2007

NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

Telephone: (707) 576-2220

page 6 of 8 attachment

on waste load densities for land developments and other facilities may be necessary to avert such eventualities.

11. New technologies for on-site waste treatment and disposal continue to evolve. Means should be promoted to allow for timely and orderly consideration of promising alternative methods of waste treatment and disposal. Where alternative methods demonstrate enhanced performance, consideration may be given for utilization of different site criteria.

12. All aspects of on-site waste treatment and disposal would benefit from improved professional training and public education programs. Such training and education programs should be promoted by the Regional Water Board in cooperation with local regulatory agencies and public and private sector professional associations.

III. Site Evaluation Criteria and Methods

A. Criteria

The following site criteria are considered necessary for the protection of water quality and the prevention of health hazards and nuisance conditions arising from the on-site discharge of wastes from residential and small commercial establishments. They shall be treated as region-wide standards for assessing site suitability for such systems. Waiver of individual criterion may be made in accordance with the "Provision for Waiver" contained in this policy. Systems resulting in large wastewater loads may require additional criteria which are not covered in this policy, and which will require review by the Regional Water Board on a case by case basis.

1. Subsurface Disposal

On-site waste treatment and disposal systems shall be located, designed, constructed, and operated in a manner to ensure that effluent does not surface at any time, and that percolation of effluent will not adversely affect beneficial uses of waters of the State.

2. Ground Slope and Stability

Natural ground slope in all areas to be used for effluent disposal shall not be greater than 30 percent.

All soils to be utilized for effluent disposal shall be stable.

3. Soil Depth

Soil depth is measured vertically to the point where bedrock, hardpan, impermeable soils or saturated soils are encountered.

The minimum soil depth immediately below the leaching trench shall be three feet.

Lesser soil depths may be granted only as a waiver or for alternative systems.

4. Depth to Groundwater

Minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench shall be determined from Figure 4-1.

5. Percolation Rates

Percolation test results in the effluent disposal area shall not be less than one inch per 60 minutes (60 MPI) for conventional leaching trenches. Percolation rates of less than one inch per 60 minutes (60 MPI) may be granted as a waiver or for alternative systems.

6. Setback Distances

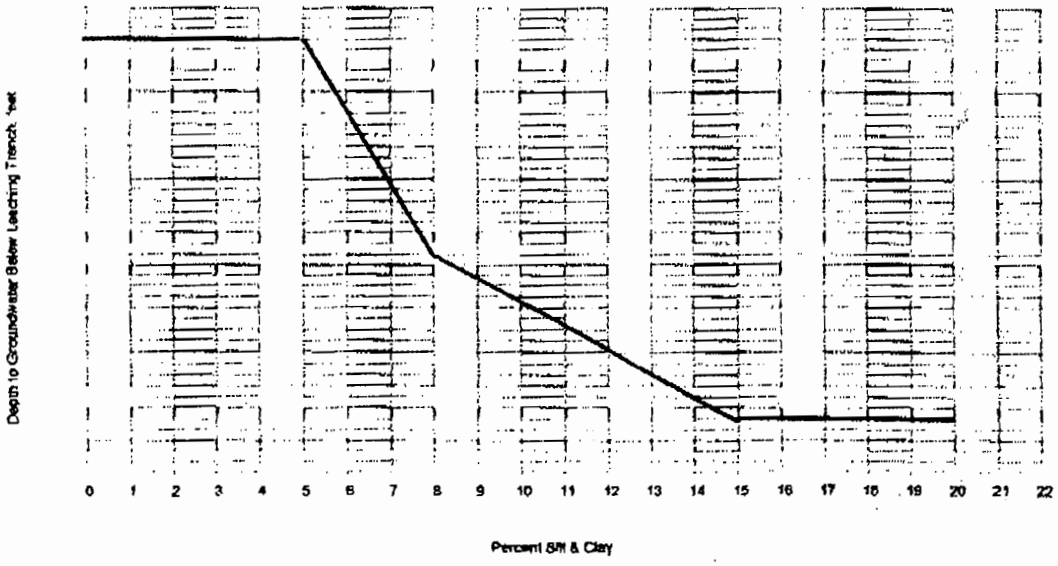
Minimum setback distances for various features of individual waste treatment and disposal systems shall be as shown below in Table 4-1.

7. Replacement Area

An adequate replacement area equivalent to and separate from the initial effluent disposal area shall be reserved at the time of site approval. The replacement system area shall not be disturbed to the extent that it is no long suitable for wastewater disposal. The replacement system area shall not be used for the following: construction of buildings, parking lots or parking areas, driveways, swimming pools, or any other use that may adversely affect the replacement area.

Pg 7 of 8 attachment

4. IMPLEMENTATION PLANS



Notes:

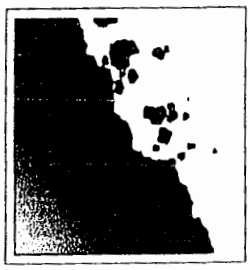
1. The Silt & Clay content shall be determined after adjustment for coarse fragments as indicated in the method set forth in Figure 4-2, and must exist for a minimum of three feet between the bottom of the leaching trench and groundwater.
2. For percolation rates slower than 5 mpi, a minimum depth to groundwater below the leaching trench shall be five feet.
3. For soils having greater than 15% Silt & Clay, lesser depths to groundwater, to a minimum depth of two feet below the leaching trench, may be granted only as a waiver or for alternative systems.

Table 4-1
Minimum Setback Distances (Feet)

Facility	Well	Perennially Flowing Stream [1]	Ephemeral Stream [2]	Ocean Lake or Reservoir [3]	Cut Banks, Natural Bluffs and Sharp Changes in Slope	Unstable Land Forms
Septic Tank/Sump	100	50	25	50	25	50
Leaching Field	100	100	50	100	25 [4]	50

[1] As measured from the line which defines the limit of 10 year frequency flood.
[2] As measured from the edge of the water course.
[3] As measured from the high-water line.
[4] Where soil depth or depth to groundwater below the leaching trench are less than five feet, a minimum set back distance of 50 feet shall be required.

pg 8 of 8 Attachment



16 July 2007

BUSCH GEOTECHNICAL CONSULTANTS

Guy Pinger
5489 Jonathan Place
Newark, California, 94560

Engineering Geology and Foundation Soils Investigation For a Single-Family Bluff-Top Home, Smith River, California [APN 102-050-14]

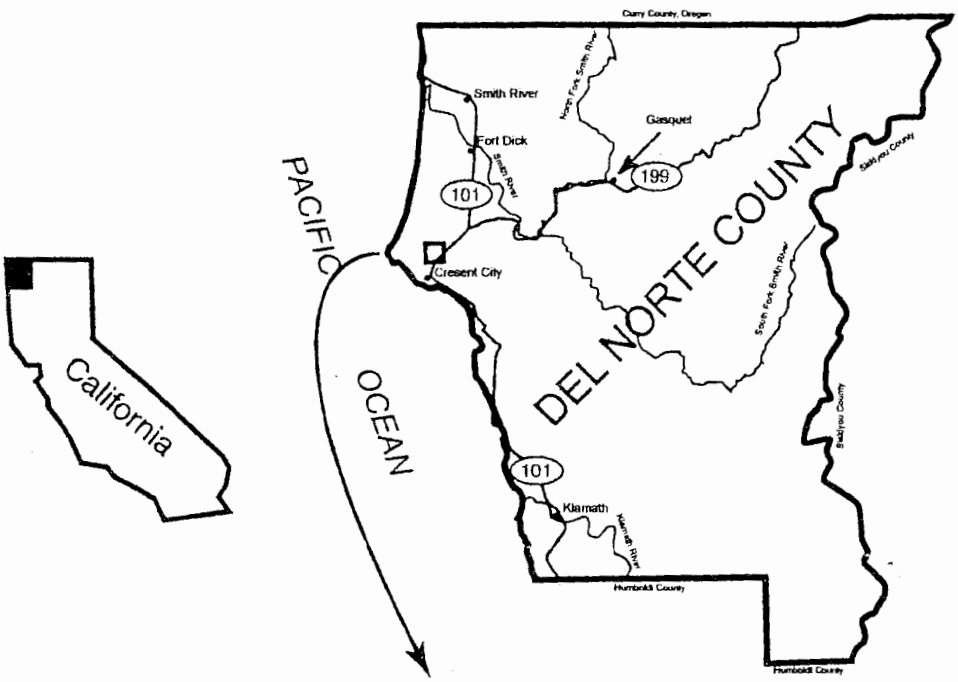
INTRODUCTION

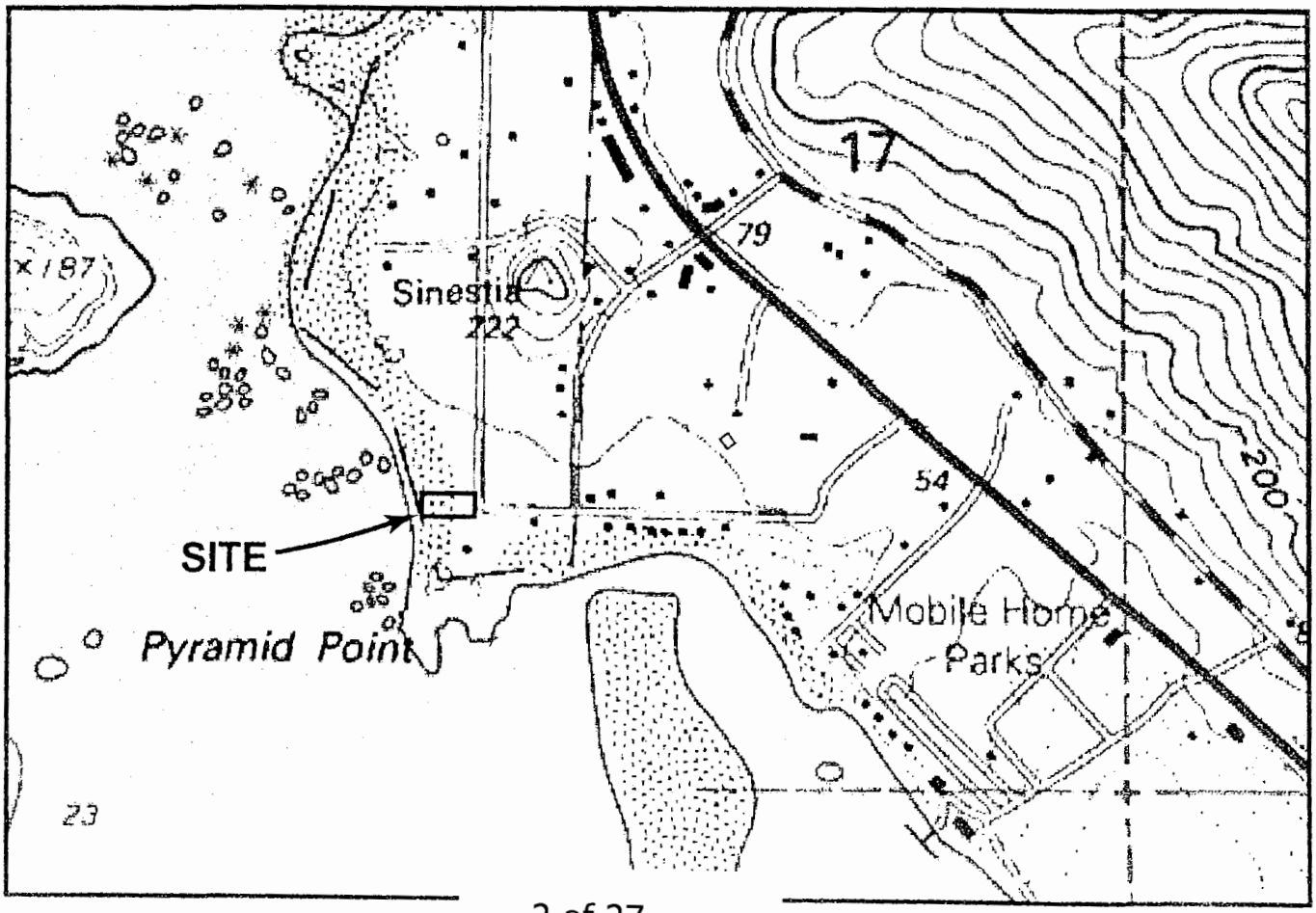
Contract Information and Purpose of the Report

We are providing you with this report under the terms of Busch Geotechnical Consultants (BGC) contract #07-029 dated 5/25/2007. **The purpose of the report is to provide geologic and geotechnical information to support the location, design, and construction of a single-family home in a bluff-top setting.** The report explains our scope-of-work and methods; presents an abbreviated discussion of the tectonic setting, site geology, and regional seismic hazard and risk; discusses site-specific foundation soils characteristics, hazards, and risks; provides our database (soils logs and references); and presents geotechnical recommendations. We previously prepared a report on this site for a prior owner (BGC, 1989), but the report is now outdated because of new geologic information (e.g., seismic hazard and risk, tsunami hazard and risk, and sea level rise), but also because of changes in building codes. Finally, Busch Geotechnical Consultants now delivers more comprehensive reports than it used to.

P.O. BOX 222 • ARCATA, CA 95518-0222 • 707-822-7300 • FAX 707-822-9011

Figure 1. Nested Site Location Map. The topographic maps are portions of the USGS Crescent City and Sister's Rocks 7.5' quadrangle maps. Various scales.





Site Description

The Pinger property is an unimproved parcel located near the mouth of the Smith River in northwesternmost California. The property is in section 17, T18N, R1W, HBM, of the USGS Smith River 7.5-minute quadrangle map (see Figure 1). An on-site wastewater treatment system will be used; it was designed by others. A public utility will provide water.

When we did our onsite work (June 5, 2007), the precise building footprint had not been determined. The property is negligibly sloping tree- and grass-covered oceanfront bluff-top lot about 28 feet above mean sea level.

Scope-of-work and Methods

Our scope-of-work for the project included:

- Reviewing pertinent professional literature and maps (references provided);
- Reviewing pertinent in-house reports (references provided);
- Using a hand auger to advance boreholes to determine the geotechnical characteristics of the subsoils and to identify soils hazards and risks;
- Collecting representative "undisturbed" samples of the native soils for standard soils index tests and reviewing soils data from our previous study of the site (BGC, 1989);
- Creating a survey-control topographic map of a portion of the property showing our borehole locations;
- Summarizing the regional geologic hazards and risks;
- Writing this report to provide descriptive information, our database, and recommendations to support the design and construction of a single-family home on the property.

In addition to providing site-specific soils information, the report presents the pertinent information required by the 2001 edition of the California Building Code (ICBO, 2002) (see **RECOMMENDATIONS**).

We use standard practices and professional standards of care for all of our studies, and we follow American Society of Testing and Materials (ASTM) procedures for sampling and lab testing. We also follow the recommendations provided by the Southern California Earthquake Center (SCEC) for the implementation of CDMG Special Publication 117 (SCEC, 2002).

ENGINEERING GEOLOGY

Site Geology

The project site is on an uplifted marine terrace of low relief that lies on the accretionary margin of North America (see Figure 3). For millions of years, bedrock has been added to the western edge of North America as offshore oceanic plates and the sediments covering them plunged beneath the continent, then uplifted creating new land. The low uplifted terrace surface is flat or slopes slightly seaward, and ends as a coastal bluff above a narrow log-covered beach. The terrace is a regionally prominent geomorphic surface that extends from Pyramid Point, just south of the site, along the coast to Oregon. Elevation of the terrace surface ranges from about 28 ft MSL at the Pinger site, to about 40 ft MSL near Gilbert Creek to the north, indicating that this once-horizontal surface has been differentially uplifted.

On the property to the north, the otherwise flat terrace surface is marked by a pronounced swale of unknown origin. The axis of this swale roughly parallels the trend of the coast. The swale contained standing water during our onsite work in March of 1989. The southern tip of this northward sloping feature extends just onto the northeastern corner of the Pinger site. The morphology of the swale has been altered and we observed no standing water during our 2007 site investigation. (See additional discussion in the Site Soils section.)

At the site, the marine terrace is called the Battery Formation (Maxson, 1933; Back, 1957; Davenport, 1983). The Battery Formation is a Pleistocene ("Ice-Age") terrace that is composed mostly of nearshore sands and sand dune deposits resting on top of a surface eroded into bedrock by waves (an abrasion platform). Based on our stratigraphic and geomorphic correlation to mapping by Polenz and Kelsey (1999), the abrasion platform is about 80,000 years old (80 ka).

Between the Oregon border and the Smith River, the coast is characterized by high-energy sand and cobble beaches backed by bluffs up to 40 ft high (Savoy and Rust, 1985). Scattered sea-stacks lie offshore along the entire stretch but are especially abundant near the mouth of the Smith River between Hunter Rock and Pyramid Point. The two named promontories are isolated hard rock masses ("knockers") within the regional bedrock, here the Jura-Cretaceous Franciscan mélange. (Here the mélange is a "mixture" of hard rocks within a "softer," more erodible matrix.) During our previous investigation of the site, we observed mélange exposed just north of the lot (BGC, 1989). The erosion-resistant "knockers" within the mélange form the promontories on this portion of the coast. Some of these knockers are relic sea-stacks that protrude through the terrace surface inland of the active coastline. Many of them are visible along Highway 101 near the site.

Tectonic Setting

The north coast of California is one of the most seismically active regions in the United States (Dengler et al., 1992). About 25% of California's annual release of seismic energy comes from the north coast. Since 1980, at least 12 earthquakes of M_w 6 to 7 have shaken the area. The principal sources of seismicity that could affect the site are: 1) internal faults within the offshore Gorda plate; 2) the Mendocino fault (the boundary between the southern edge of the Gorda plate and the Pacific plate); 3) the Cascadia subduction zone (Csz); and 4) thrust faults within the accretionary margin of North America (the coastal region and adjacent offshore).

Petersen et al. (1996) indicate that each year the probability is 1 chance in 475 (or 10% in 50 years) that a peak horizontal ground acceleration of 0.25 to 0.30 g will occur in the site vicinity. The earthquake that could produce this acceleration is the design-basis earthquake, or DBE. By definition, the risk that the DBE will occur within the next fifty years is LOW. The spectral acceleration (5% damped) for the 0.2 sec spectra acceleration period of the DBE is likely to be between 0.6 and 0.8 g (USGS, 2002). For a 1.0-second period, it is likely to be between 0.25 and 0.30 g (based on a zip code of 95567; USGS, 1996).

Figure 3. Quaternary folds and faults near the Pinger site (Personius et al., 2003). The structures shown either have evidence of activity within the last 15 ka (15,000 years), 130 ka, or 175 ka. See Text for discussion. Scale: 1 inch = ~10 miles.

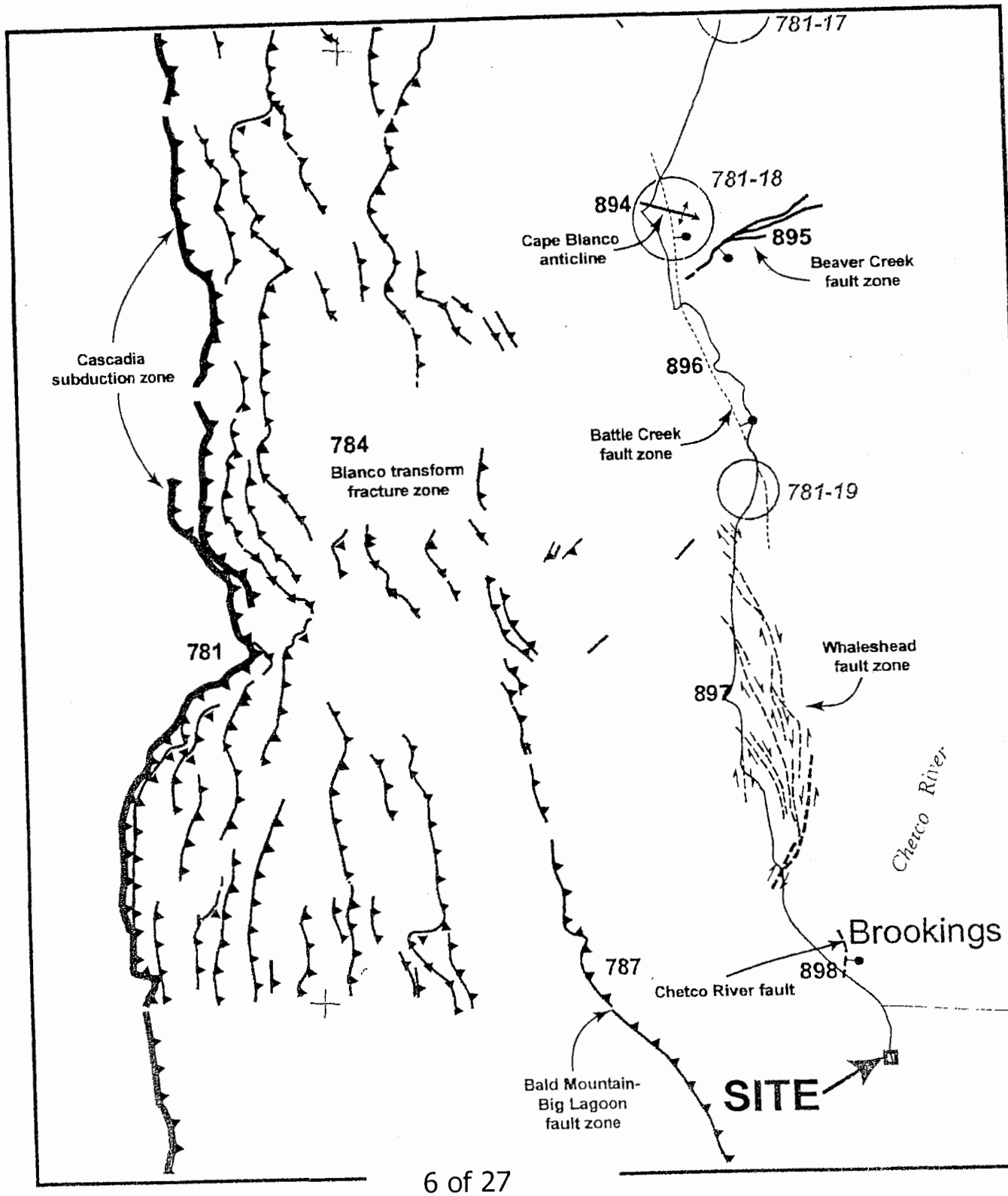
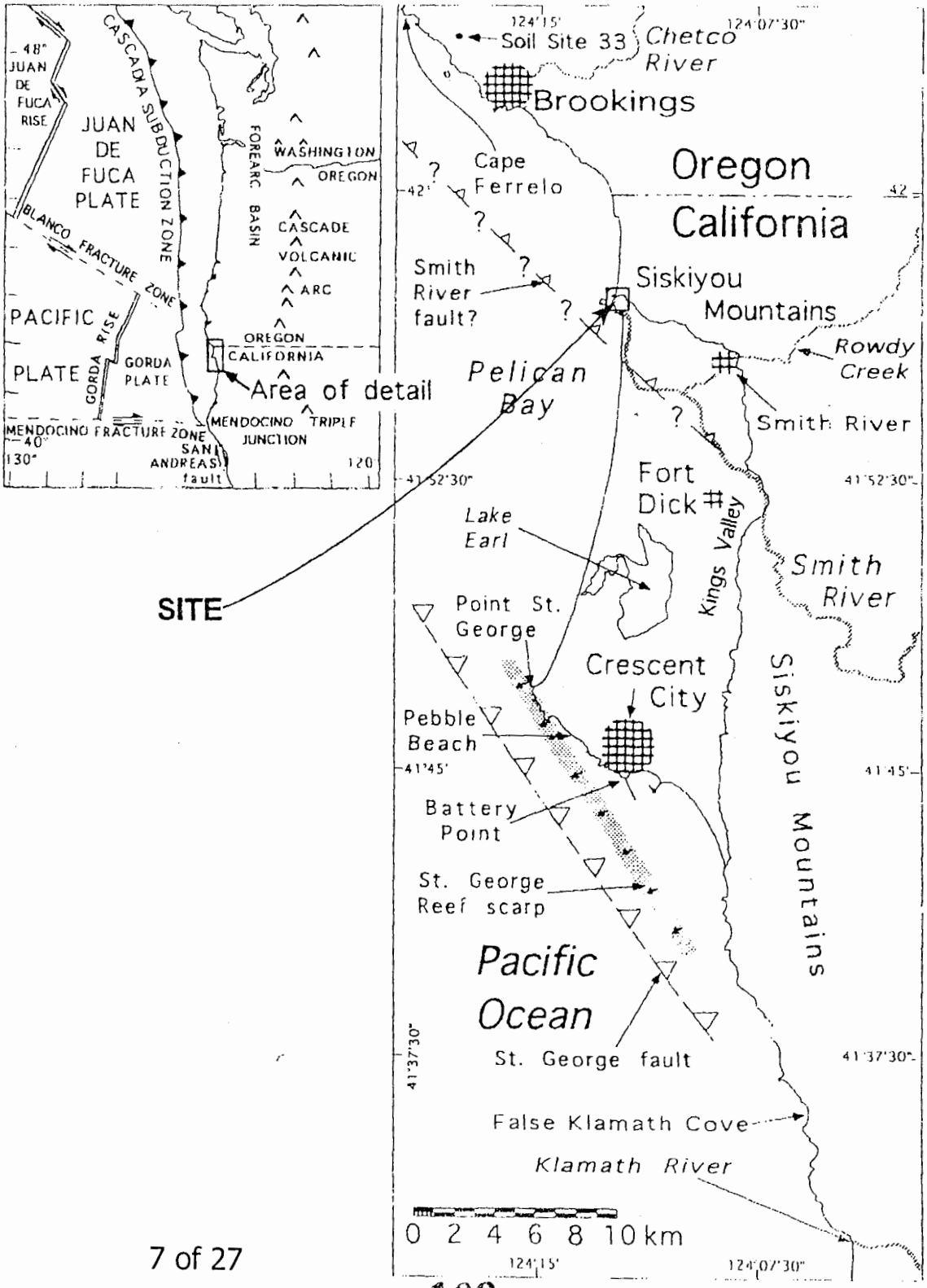


Figure 4. Left: Regional tectonic setting of the Pacific Northwest. Right: Physiographic setting of the Crescent City area. Both figures from Polenz and Kelsey (1999). St. George fault and Smith River fault from Clarke (1992); St. George Reef scarp from Roberts and Dolan (1968).



Faults near the site include the St. George fault, the Rowdy Creek / Del Norte fault, and the Smith River fault (see Figures 3 and 4), all of which have been recognized in offshore seismic reflection lines (Field et al., 1980; Clarke, 1992). The capability of these faults is unknown. The evidence for both the St. George Reef Scarp fault (Roberts and Dolan, 1968), which was proposed to explain an 8- to 9-m-high offshore bedrock ridge paralleling the St. George fault, and the Rowdy Creek / Del Norte fault (Maxson, 1933; not shown on any figure), which was proposed to explain the abrupt north-south boundary of the Siskiyou Mountains east of the coastal plain, is equivocal.

Geoscientists working on land have confirmed that 13 great (M_w 8.0 to 9.0+) earthquakes have occurred in the coastal Pacific Northwest during the past 7700 years (Adams, 1990). These earthquakes occur along the dipping interface between the oceanic Gorda plate and the continental North America plate. Plate tectonic processes are causing the offshore Gorda plate to subduct (dive down) beneath the North America plate, so it underlies North America, beginning at the base of the continental slope, which is offshore. This tectonic interface, known as the Cascadia subduction zone or Csz, last ruptured on January 26, 1700 (Satake et al., 1996; Jacoby et al., 1997). The event—a "megathrust"—probably triggered a tsunami of the magnitude of the Andaman Sea earthquake of December, 2004.

From 1995 until late 2004, researchers cited the probability of a Csz event as ranging from ~5% (Adams, 1990) to ~20% within the next 50 years (Geomatrix, 1995). They based those probabilities in part on the mean recurrence interval of Csz earthquakes as it was understood at the time. For example, assuming a unimodal distribution of events, Clark and Carver (1992) cited the recurrence interval as ~300 to 500+ years. More recently, workers have cited it as 480-535 yrs (Kelsey et al., 2002), 570-590 yrs (Witter et al., 2003), and ~564 years (Goldfinger et al., 2003).

An even more recent (2004) analysis of the paleoseismic record concluded that Csz events might be bimodal, occurring in sets or clusters of earthquakes roughly 300 years apart, separated by a long (>700-yr) period. The recognition of this possibility resulted in the postulation of new, conditional probability estimates. To simplify, if we are living in a period in which clustered events are to be expected, the conditional near-term probability for the next great Csz event could be as high as 45% within the next 50 years (Mazzotti and Adams, 2004). On the other hand, if the current interval is long, the conditional probability

could be less than 1% (ibid.). Unfortunately, we do not know under which scenario we are living, or if the bimodal distribution hypothesis is accurate. To wit, an M 9.0 Csz event could occur today, tomorrow, or not for centuries. A Csz event would cause a regional catastrophe in the Pacific Northwest. The Sumatra-Andaman Islands M 9.3 earthquake of December 26, 2004, was caused by a megathrust of nearly 75 ft on just such a dipping subduction zone.

In addition, earthquakes generated by shallow crustal faults pose a seismic hazard to the Smith River area (the risk is MODERATE). Such faults can produce >M 6.0 earthquakes. Even though most crustal fault earthquakes are <M 4.0 and generally cause little or no damage, occasionally a larger one causes extensive damage in the epicentral region (ODLCD, 2000). The crustal faults that are closest to the site and show evidence of activity in the late Quaternary are the Chetco River fault (to the north) and the Whaleshead fault zone (to the north) (Figure 3). The closest equivalent fault to the south is the Big Lagoon-Bald Mountain fault, which is offshore.

Kelsey and Bockheim (1994) mapped and named the Chetco River fault. Evidence for the existence of this structure is equivocal. As mapped, the fault is a north-trending, high-angle reverse fault that roughly follows the trend of the Chetco River near Brookings, then bends to the north. The fault has offset the 125 ka (125,000-year-old) Gowman marine terrace by ~30 meters across the river (fault terminology explanation follows)

About 9.4 mi (15.1 km) north of Brookings is the southern end of the Whaleshead fault zone. It consists of many north-northwest-striking, left- and right-lateral strike-slip faults that separate Jurassic through Cretaceous rocks of the Gold Beach and Yolly Bolly geologic terranes (Kelsey and Bockheim, 1994; Personius et al., 2003). Collectively, the faults form a broad right-lateral shear zone. However, some Quaternary marine terraces near the southern end of the zone (north of Brookings) show evidence of left-lateral strike slip movement (Kelsey and Bockheim, 1994). The work by Kelsey and Bockheim suggests that the southern end of the zone has had an average Quaternary (last ~1.7 my) vertical slip rate of 0.5 mm/yr and a horizontal slip rate of 2.5 m/ky since ~200 ka. The youngest offset terrace sediments are ~80,000 years old.

Numerous other active faults (<10,000 years old) are located offshore in the Blanco transform fracture zone, the Cascadia subduction zone, and the Bald Mountain - Big Lagoon fault zone.

> (A *high-angle fault* is a fault with a steeply dipping *slip plane*. In a *normal fault*, the *upper block* slides downward relative to the *lower block*. In a *reverse fault*, the movement direction is upper block up. A *strike-slip fault* is a fault that exhibits primarily horizontal movement. A *right-lateral* or *dextral strike-slip fault* is a fault on which the displacement of the far block is to the right when viewed from either side of the fault. A *left-lateral* or *sinistral strike-slip fault* has the opposite sense of motion. A *slip rate* is an estimate of the rate of movement on a fault, usually given in mm or m per 1000 yrs.

The trace of the megathrust of the Csz lies about 90 km (56 mi) west of the site (the "trace" of a fault is the "map position" of the fault, or the location of the intersection of the fault plane with the ground surface). The fault plane passes beneath the Pinger site at about 17 km (10.8 mi) in depth (assuming an 11° dip on the fault plane, per Toppozada et al., 1995). Structures of the Csz fold and thrust belt are recognizable offshore by the topography of the sea floor and in deep seismic reflection profiles that show faults displacing Pleistocene sediments (Clarke and Carver, 1992; Clarke, 1992).

In conclusion, considered over the next 50 years, the risk of a moderate earthquake is MODERATE, the risk of a strong earthquake (the DBE) is LOW, and the risk of a great (Csz) earthquake is UNCERTAIN (based on variability in modeling, the conditional probability [chance of occurrence] is 1% or 45%).

Site Soils

Our hand auger boreholes revealed that the site soils consist of up to 2.5 ft of soft (seasonally, very soft), organic-rich, brown topsoil (USCS, ML, per Appendix IB). These unsuitable foundation-bearing soils overlie medium dense, yellow-brown, silty fine sand subsoils (SM), or basal lag sandy gravels (GW), or rock of the abrasion platform (Appendix IA). These sand and gravel subsoils and / or the bedrock are the target foundation-bearing soils. They are competent foundation-bearing soils where undisturbed. Typically, the subsoils are medium dense to dense, dry to damp, and yellow-brown. We retrieved an occasional gravel from the bottom of our boreholes but were unable to retrieve any fragmented

bedrock from the abrasion platform. Presumably, bedrock is present at shallow (<10 ft) depth everywhere on the property. The swale we discussed in Site Geology section might be a surficial expression of the subsurface bedrock topography (it might be a shallow paleo Smith River channel). We encountered bedrock immediately beneath the topsoil in all of our 2007 boreholes except BGC-3. We did not encounter bedrock in 1989 boreholes BGC-1, -2, and -3, which all were in the northern part of the lot. We infer from the variable nature of the shallow site stratigraphy that the marine terrace sands were deposited on a bedrock surface with considerable relief. At places, the sands may not have completely buried the bedrock. Then later, after uplift had occurred, eolian processes deposited a wind-blown soil cap (the topsoils) across the site, covering the terrace sands and any exposed bedrock.

In general, the topsoils have relatively low dry densities (~71 pcf average) **(see Appendix IC for summary of lab data)** and are susceptible to strain softening, densification, organic decay, and differential settlements over time in response to typical building total design loads. **In conclusion, all of the native subsoils are competent foundation-bearing soils with a NEGLIGEBLE risk of settlement exceeding typical tolerances under the expected loads from a conventional foundation. However, these target foundation-bearing soils are covered with up to 2.5 ft of unsuitable topsoils. All load bearing foundation elements must extend through the topsoils to rest in native subsoils.**

Site-Specific Hazards and Risks
(see Appendix IV for Risk Terminology)

Coastal Bluff Retreat Hazard and Risk

The nature and rate of bluff retreat are the geotechnical issues of greatest concern at the site. The abundance of driftwood logs on the back-beach implies that the berm crest is frequently over-topped by storm waves. Battering of the bluff-face by tools (logs and cobbles) moved by storm waves is the primary mechanism causing bluff retreat at the site.

Details of the bluff-face (its uniformly sloping face, linear non-cuspate edge, and general lack of talus) suggest that the bluff is relatively stable. We infer that

the bluff retreat is caused not by slope failures but by storm undercutting events. Although small-scale debris and block falls and slumps or planar slides must occur on recently over-steepened portions of the bluff, we see no evidence that large-scale, deep-seated mass wasting has occurred in the bluff at the site.

The bluff face appears to slope seaward at about 25° to 40°. Both times we worked on the site the bluff face was vegetated. The vegetation is growing on a colluvial mantle (a veneer of soils that are moving downslope). The most likely coastline erosion model is episodes of marine undercutting separated by longer intervals characterized by slow-rate mass wasting of terrace sediments through soil slip, soil creep, dry raveling, and bioturbation. **However, the sea level rise now occurring as a result of global climate change might increase the frequency of marine erosion events.**

In summary, the topsoils and upper subsoils tend to back-waste via small-scale slope failure processes. They reach an equilibrium profile that is less steep than that of the underlying massive gravels, which are removed episodically by large storm waves. The bluff face assumes the angle of repose of the colluvial material until such time as the materials are removed by wave undercutting. However, the waves and storm surge that would accompany a great storm or a series of large storms could remove much or all of the beach berm, which would allow a rapid-rate bluff undercutting event to occur. Although this has not occurred since 1989, despite a very strong El Niño (in 1997), a significant La Nina (in 1998), and other notable storms, we cannot preclude the possibility of a catastrophic bluff erosion event. In conclusion, the rate of bluff retreat is primarily controlled by the frequency and characteristics of storms striking the site and, secondarily, by the erodibility of the basal gravels within the bluff itself.

The erosion rate for this stretch of coastline, from Pyramid Point north to Prince Island, is reported by Savoy and Rust (1985) to be 14 in/yr. This inferred relatively high erosion rate is based on the presence of abundant driftwood, a high energy beach, and a base-of-bluff composed of erodible sediments. Although long-time residents of the area indicate bluff retreat has been virtually non-existent near the project site, and our photographic record of the site spanning 18 years show no visible signs of bluff retreat, marine erosion is an episodic process. The recorded lengthy period of stasis must not be taken as an assurance of safety.

Flooding

Introduction

Four possible sources of flooding exist at the site. These are 1) flooding from the Smith River; 2) seasonal storm surge and storm surge during an El Niño year; 3) inundation by a tsunami; and 4) marine flooding due to the coseismic subsidence accompanying a Cascadia subduction zone earthquake.

1) Smith River

The property is in "Zone A" of the revised Flood Insurance Rate Map (FIRM) of the area (FEMA, 1983). FEMA did not determine the BFE (base elevation of the 100-year flood) for the area. Because local building codes impose restrictions on structures built below the BFE, it is important that the elevation of the lower floor of home is above the BFE and that the elevation control is accurate. A licensed-surveyor should determine the BFE for the site.

2) Seasonal Storm and El Niño Storm Surge

An El Niño is a common cyclical climatic event that produces oceanic temperature variations, sea level changes, and changes in wind and current patterns. During the very strong 1982-83 El Niño, sea level along the Oregon and California coasts exceeded all previously recorded levels, reaching 10 to 20 cm higher than previous maxima and about 35 cm (14 inches) higher than the average winter level (Komar, 1986). In addition, wave conditions were exceptional that year; three winter storms achieved breaker heights of 20 to 25 feet (Komar, 1986).

To qualitatively evaluate the approximate level of risk of damage by a future El Niño, we reviewed Quinn et al. (1987), a monographic paper that tabulates all El Niños between 1525 and 1983, and we accessed more recent NOAA information (NOAA, 1998). During this 458-year period (1525-1983) there were 8 very strong El Nino events recorded (1578, 1728, 1791, 1828, 1877-78, 1891, 1925-26, and 1982-83). Based on these data, the average time between very strong events is ~50.3 years, but the recurrence interval varies between ~13 and 150 years. If we exclude the anomalous 150-year period between 1578 and 1728, the recurrence

interval varies between 13 and ~63 years. The very strong 1997-1998 El Nino occurred 15 years after the 1982 event, lowering the average recurrence interval to ~38 years. With climate change for the warmer a reality, El Niños conceivably could be more frequent, not less (NOAA, 2004).

We found no readily available record of the effects of either the 1997 El Niño or the 1998 La Nina on the coast near the mouth of Smith River, although we know that the New Year's Day storm of 1997 caused widespread landsliding in coastal northern California and southern Oregon. Evidently the nearshore conditions in both cases did not cause significant, encroaching waves and localized coastal flooding, despite record offshore wave heights. The very strong 1997 El Nino caused significant beach erosion and bluff retreat in some coastal areas of Oregon during the 1997-98 winter.

In conclusion, an analysis of published data suggests that there is a HIGH risk that at least one very strong El Nino will occur within the next 40 to 50 years. Based on the recent past, the risk is LOW that a very strong El Nino will cause flooding of the site vicinity. However, global sea level rise is likely to increase the risk. The risk of damage to structures built on the site will depend on the floor elevation of the first floor, details of the design of the structure and the quality of workmanship, the strength of the El Niño, mean sea level, and tidal heights at the time the El Niño swell comes ashore.

3) Tsunami

A tsunami is a series of surges of water caused by an undersea earthquake or landslide, or by a meteorite impact within the ocean. There are two categories of tsunamis: distant-source and near-source. The tsunamis that struck Crescent City, California in 1964 and 2007 were distant-source tsunamis because the earthquake that caused each of them occurred far away, the first in Prince William Sound, Alaska, the second off the coast of Japan.

If a great Csz earthquake were to occur and the megathrust ruptured seaward of the site, a near-source tsunami would be generated and arrive at the coast within about 15 to 20 minutes. Although there is no tsunami inundation map covering this portion of California, the map for Brookings shows an open-coast run-up of about 33 feet. Based on wave propagation models (Hebenstreit, 1988) and empirical data

from other subduction zones (Heaton and Hartzell, 1986), a 8.5 M Csz earthquake along the northern California and southern Oregon coast in theory could generate a near-source tsunami with a run-up of over 10 m (33 ft) in low-lying coastal areas. Evidence for paleo-tsunami run-up heights of 6+ meters (20 ft) has been discovered in mid coastal Oregon (Gallaway et al., 1992).

In conclusion, the risk of inundation of the site by a near-source (Csz-generated) tsunami is about the same as the risk of a Csz earthquake (i.e., UNCERTAIN, somewhere between 1% and 45%). The risk of inundation by a distant-source tsunami is UNKNOWN but probably NEGLIGIBLE to LOW.

4) Coseismic Subsidence

During past large-magnitude Cascadia subduction zone events, large areas of the Washington, Oregon, and northern California coasts have subsided instantaneously—during the causative earthquake—up to about 6 ft, causing the semi-permanent inundation of low-lying coastal areas (Atwater, 1987; Darienzo, 1987, 1992; Grant and McLaren, 1987; Vick, 1988; Kelsey et al., 2002; Witter et al., 2003; Atwater et al., 2005). The compelling data on this phenomenon come primarily from estuaries in these states. Evidence of episodic Holocene subsidence in southern Oregon has been tentatively recognized near Cape Blanco (Briggs and Peterson, 1992). Research is underway to determine whether areas that subsided during one particular Csz event did so simultaneously in response to a single great earthquake that affected the entire length of the Csz, or whether the subsidence occurred in response to ruptures of smaller lengths of the Csz that occurred at slightly different times. Either way, coseismic subsidence of ~two meters is a well-documented phenomenon along subduction zone coasts (Plafker, 1972, 1969, 1965; Plafker and Savage, 1970; Atwater, 1987; Vick, 1988).

Coseismic subsidence at the site would greatly increase the risk of river and marine flooding. Subsidence also would effectively increase the height of an arriving tsunami and consequent damage to structures built on the property.

In conclusion, the risk of coseismic subsidence of up to about 6 feet, and of increased exposure to flooding from all sources because of the subsidence, presumably is the same as the risk of a Csz event (~ 1 to 45% within the next 50 years).

Shallow Soils Hazards and Risks

There are two soils hazards of concern at the site: (1) the HIGH potential for the organic-rich silt topsoils (ML) to densify and differentially settle over time and (2) the MODERATE potential for differential settlement to occur if the foundation bears partially on competent subsoils and partially on dense bedrock. Both hazards could damage a foundation, primarily by causing cracking, but it is likely that damage to the superstructure would be mitigated to a large extent by the foundation itself. (This might not be true if the difference in the thickness of unsuitable soils [topsoils and disturbed soils] beneath the foundation exceeds about 5 ft, or if the difference in the thickness of the subsoils exceeds about 10 ft.) To reduce the risk of damage to LOW, it is necessary to extend all load-bearing foundation elements through the incompetent topsoils to rest on the target foundation-bearing soils or on a structural fill bearing on the subsoils. To reduce the risk of damage to NEGLIGIBLE, extend the foundation to bedrock. Similarly, it will be important to remove the topsoils from beneath areas that will be paved (see **RECOMMENDATIONS** ***Section 2.0***).

In summary, to realize a LOW risk of differential settlement, all foundation elements should bear on the sand subsoils (SM. If the foundation were to bear partially on sands and partially on bedrock, differential settlement might occur and locally damage the foundation in excess of tolerances. To realize a NEGLGIBLE risk of damage due to settlement, bear the foundation on bedrock. Unless you plan to extend all foundations to bedrock, or to bear the foundation on structural fill that bears on bedrock, **we recommend that we inspect the open, unformed footing excavations and, if necessary, issue "as-built" recommendations designed to lower the risk of foundation distress (see RECOMMENDATION *Section 2.0 and 8.0*).** For example, it might be necessary to deepen and widen foundation sections resting on sands, increase the reinforcement in certain sections of the foundations; to support sections on shallow reinforced cast-in-place (CIP) concrete piers; to use a flowable backfill (such as "two-bag sand slurry") in deepened trenches; or to use a combination of measures. It will be most cost-efficient to determine the "best" approach when the site is prepared for the foundation, or nearly so.

Qualitative Evaluation of Liquefaction-Induced Ground Failure Potential

Liquefaction is the temporary partial or total loss of shear strength of a soil in response to cyclic loading, typically earthquake shaking. Saturated, geologically young (Holocene), unconsolidated, cohesionless, fine-grained sediments are particularly susceptible to liquefaction (CEE, 1985). There are no written records of liquefaction in the site vicinity (Youd and Hoose, 1978), but liquefaction nevertheless might have occurred.

The qualitative approach to evaluating the liquefaction potential of a site is based on a consideration of the seismic setting (the probable accelerations), the site geology, the age of the sediments, the general physical characteristics of the sediments, and the groundwater conditions. Low potential seismic accelerations, more dense sediments, preHolocene sediments, fine-grained sediments, and a deeper groundwater table all reduce the potential for liquefaction and liquefaction-induced ground failure. Using a decision tree that considers the age of the deposit and the depth to groundwater, the liquefaction potential of the site sediments is LOW (e.g., Youd and Perkins, 1978; Hitchcock et al., 1999). However, the Humboldt and Del Norte Planning Scenario (Toppozada et al., 1995, Map S-3) assigns no liquefaction potential to the site area for a great (8.4 M_{max}) earthquake on the Gorda segment of the Csz. **In conclusion, in our opinion the liquefaction potential of the site is NEGLIGIBLE, even for an extreme earthquake event.**

Migration of the Smith River Hazard and Risk

The present course of the westernmost reach of the Smith River is northward, parallel to the coast. There the river crosses a wide, low network of sand and sloughs created during the Late Pleistocene and Holocene by the lateral migration of the river mouth. Northward flow of the outlets of high-discharge, high sediment load rivers is common in northern California (e.g., the Eel, Mad, Klamath, and Smith Rivers) due to the winter dominance of northeasterly directed longshore drift.

The extent of northward migration of the mouth of the Smith River is limited by the rocky headland at Pyramid Point, just south of the site. The natural geomorphic evolution of this coastline, assuming constant sea level and status quo river hydraulic conditions, might include continued erosion behind Pyramid Point leading to the eventual isolation of this promontory as a sea stack. This transition from a headland adjoined to the coast to an offshore sea stack would be consistent with the numerous other sea stacks found offshore of the immediate vicinity (Prince Island, Hunter Rock). Continued erosion of this nature would eventually "eat through" the lot under investigation here as the Smith River breaks through the erodible terrace sediments and progresses northward.

Although the natural progression of events presents a long-term risk to the site, it is probable that, barring unpredicted future changes in conditions, the erosion rate of the river at Pyramid Point is too slow to cause concern during the project design life. **We therefore assign a NEGLIGIBLE to LOW risk to the Smith River migration hazard.**

Fault Rupture Hazards and Risk

Because there are no known faults aligned with the site and we did not observe any field evidence suggesting that a fault exists at or projects into the site, **we conclude that the risk of fault rupture of the project site is NEGLIGIBLE.**

Slope Instability Hazard and Risk

Because of the lack of nearby relief, we have no concerns about the stability of the ground surface under either static or "noncatastrophic" dynamic conditions. **There is no risk of slope instability unrelated to marine erosion at the site. That is, catastrophic marine erosion could cause instability as the erosion proceeds toward the home, but there is no risk of instability during static or dynamic, non-Csz earthquake conditions.**

RECOMMENDATIONS

Discussion

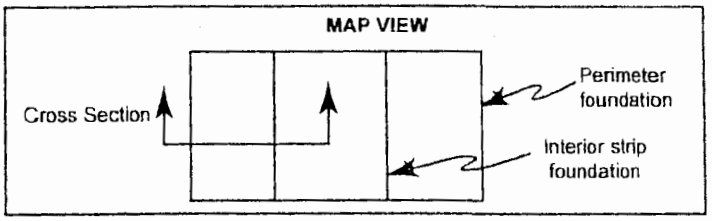
Because there are unsuitable soils within the proposed footprint, competent subsoils with a highly variable thickness, bedrock, and a seasonal high water table, we present several foundation design options (see Figure 5). The deep foundation options (Options 2A, 2B) will require that an engineer registered in California design the foundation and that we inspect the construction of the deep elements.

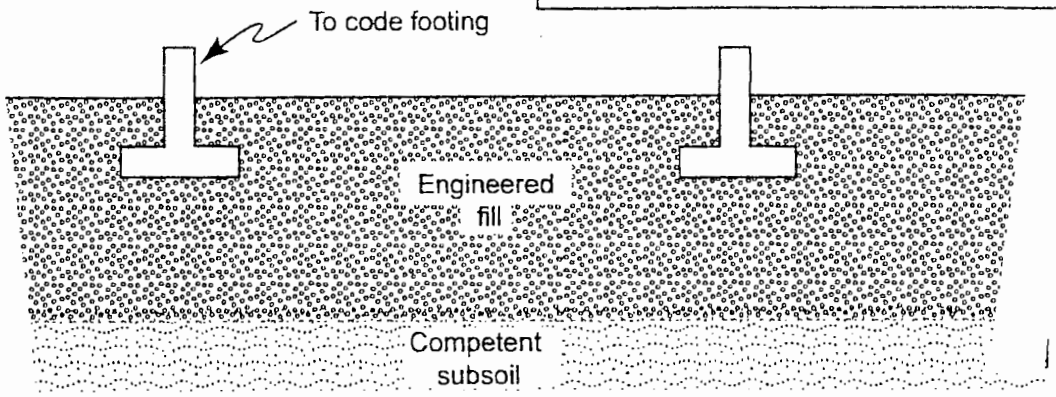
"To-Code" Foundation (Option 1)

It is possible to build a "to code" foundation (Option 1) or an "engineered foundation" (Options 2A, 2B) (see Figure 5).

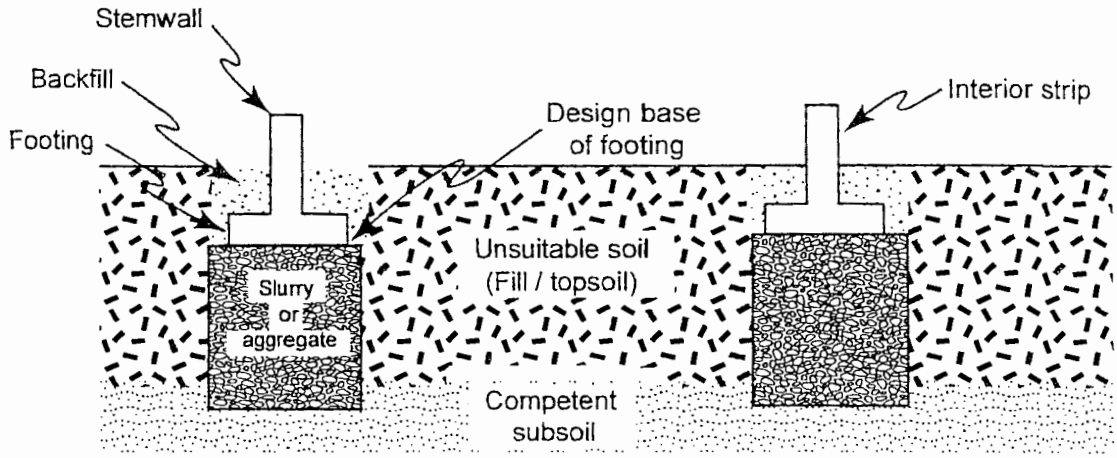
Option 1) is to remove the unsuitable soils (the topsoils, any fill soils, and any disturbed soils) down to the in-place sandy subsoils below about 2.5 to 3.0 ft in depth, then replace part or all of the excavated soils to design base-of-footing grade with a structural (load-bearing) fill. The structural fill can be either a slurry backfill or a compacted aggregate fill such as "river-run" sand and gravel or crushed baserock (see ***Section 5.1***). Then a non-engineered, "to code" foundation can be constructed on top of the structural fill. Although the topsoil and any other unsuitable soils could be removed within the entire home footprint ("global removal"), this would require hauling off or spoiling onsite a large volume of soil and importing a large volume of structural fill. The cost-effective approach would be to excavate slightly widened footing trenches down into the competent sand subsoil, then backfill them to design base-of-footing grade with a structural fill. The trenches need to be wider than the footings, and instead of using isolated interior posts and pier blocks, the interior loads should be supported on linear or strip footings constructed in the same way as the perimeter foundation. In this option, the bottom of the foundation trenches can be at any elevation below the bottom of the unsuitable soils. The deeper the structural fill, the less the total settlement will be over the life of the home.

Figure 5. Foundation Design Options.
Cross-Sectional View. Not to scale.

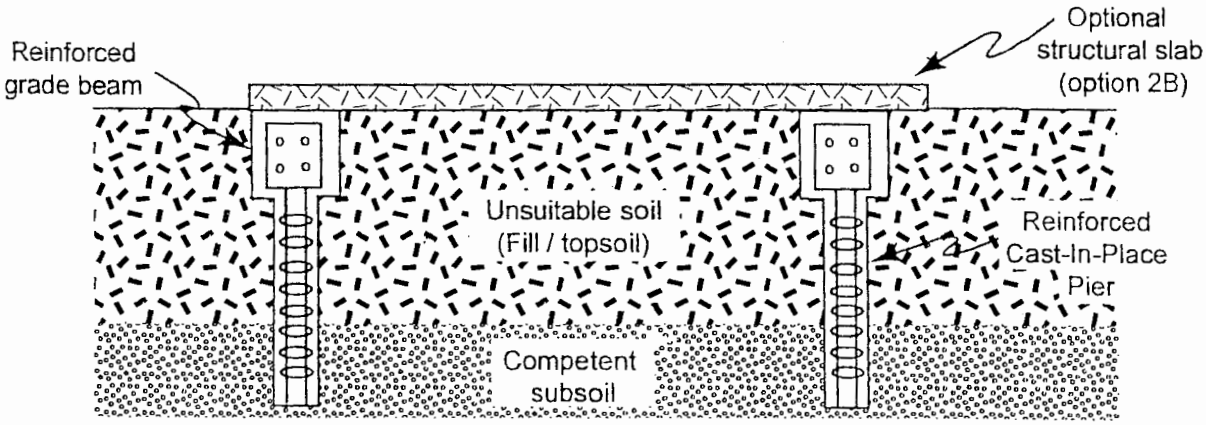




OPTION 1: TO CODE FOUNDATION ON **GLOBAL** ENGINEERED FILL



OPTION 1: TO CODE FOUNDATION ON SLURRY OR STRUCTURAL FILL



OPTION 2A,B: CIP PIER AND GRADE BEAM FOUNDATION

Option 2) is to construct an engineered foundation consisting of deeply embedded reinforced cast-in-place (CIP) concrete piers supporting both perimeter and interior strip grade beams (Option 2A) or supporting a structural slab (Option 2B). The volume of unsuitable soils excavated is comparatively small with either choice because boreholes for residential CIP piers generally are 12"-18" in diameter. The excavated soils sometimes can be spoiled onsite (as landscaping mounds, for example). When the homesite is on a slope, the CIP piers must bear well within the bearing soils, not just on them. However, one issue of concern at this site is the possibility that the deeper sands will be saturated and calve. Boreholes into calving sands require casing, which drives up the cost of the job. For this reason, helical soil anchors (or micropiles) are an attractive solution (as long as they bear on bedrock).

The following formal recommendations address the identified soils, slope, and geologic hazards. Adherence to these recommendations will reduce—but not necessarily entirely eliminate—the level of risk associated with each hazard.

Formal Recommendations

Section 1.0 Site Preparation

1.1 ***Have a licensed surveyor determine the elevation of the 100-year flood plain at the site.*** After the flood elevation is determined, the grade of the home might need to be raised or other measures taken to reduce the risk of damage from possible flooding from the Smith River.

1.2 ***Follow appropriate grading and clearing practices.*** The building area is a negligibly sloping terrace surface. No site preparation beyond that needed for foundation construction is necessary.

1.3 ***Set the home foundation back a minimum of 30 feet from the top of the bluff*** (see Figure 2). Be advised that building the foundation closer than 60 ft from the bluff top will place the home in the MODERATE RISK ZONE as defined in our initial site report (BGC, 1989). (See that report for discussion, and see Appendix IV herein for our Risk Terminology.)

Section 2.0 Foundation

2.1 ***Follow good construction practices.*** Rest all load-bearing foundation elements, all isolated interior elements, all deck supports, and all isolated roof supports (if any) on suitable soils. "Suitable soils" are the yellow-brown silty sands (SM) just below the topsoils (beginning at about 3 ft in depth); the deeper poorly graded sands (SP), gravelly sands (SW), and sandy gravels (GW); and the bedrock. **If possible, rest the entire foundation on the same material—suitable soils or bedrock—to reduce the differential settlement potential. Note that deeper sands might be saturated.**

2.2 ***If the bottom of the foundation excavations exposes both soils and rock, contact us.*** We will inspect the excavations, hand-auger boreholes to determine the depth to rock, and will provide "as-built" advice about how to better prepare the site for the foundation and/or whether it is necessary to strengthen the foundation. After we have documented the work we will prepare a letter of certification for the client and project engineer.

If for some reason the grade of the site or part of the site were to be raised using a fill that is to support the home, use an engineered fill resting on competent soils (per ***Section 5.1***).

Section 3.0 Design Parameters

3.1 ***Use presumptive foundation-bearing pressures.*** Use California Building Code (CBC) presumptive allowable foundation pressures, with allowances. For bearing on the native sands use a presumptive bearing value of 1500 psf, and for bearing on a structural fill four feet or more deep, use a presumptive bearing value of 2000 psf (ICBO, 2002, Table 18-I-A). For bearing on the bedrock, you may use a presumptive bearing value of 2500 psf, with allowances. If you elect to use A. B. Chance helical anchors or micropiles (or an equivalent manufactured by a different company), assume the bedrock is Soil Class 3 (per ABC, 1990). If a higher bearing value is necessary for the chosen foundation type, contact us for assistance or refer to NAVFAC (1986).

3.2 ***Use appropriate seismic design.*** Design to California Building Code (CBC) Seismic Zone 4 guidelines or better (per ICBO, 2002, or the currently in-use edition). For greater protection, at your option, structurally upgrade the home beyond CBC specifications. For additional design information, contact us. For compliance with the CBC, design to the following seismic parameters.

- Seismic Zone Factor, **Z = 0.40.**
- The site is over 15 km from the shaded zone of a mapped Type A fault (per 2001 CBC Table 16-U and CDMG, 1998).
- The applicable Near-Source Factors are:
  - Acceleration, **Na = 1.0** (Table 16-S),
  - Velocity, **Nv = 1.0** (Table 16-T).
- The Soil Profile Type is **S_B** (per CBC, 2001, Table 16-J and Section 1636).
- The Seismic Coefficients are:
  - Acceleration, **Ca = 0.40 Na** (Table 16-Q),
  - Velocity, **Cv = 0.40 Nv** (Table 16-R).

3.3 ***Alternative seismic design approach.*** The Pinger site is only a few miles from Brookings, Oregon, which also is in Seismic Zone 4. Oregon engineers design to the guidelines of the 2003 International Building Code (IBC) as approved by Oregon (2004) (ICCI, 2003) (see following table and please call us if you have any questions).

TABLE. Alternative Seismic Design Parameters*

*Based on the Oregon-approved methodology

Parameter	Short Period (T_s = 0.2 seconds)	1-Second Period (T_1 = 1.0 second)
Maximum Credible Earthquake Spectral Acceleration, S	S_s = 1.50 g	S_1 = 0.60 g
Site Class	C	
Site Coefficient, F	F_A = 1.00	F_V = 1.30
Adjusted Spectral Acceleration, S_M	S_{MS} = 1.50 g	S_{M1} = 0.78 g
Design Spectral Response Acceleration Parameters, S_D	S_{DS} = 1.00 g	S_{D1} = 0.53 g
Design PGA, S_{aPGA}	0.53 g	

Section 4.0 Cutslopes

4.1 ***Plan cutslopes carefully.*** **Not applicable based on the present plan.** There are no cuts proposed for this homesite. If the plan changes and includes a proposed cut (for a daylight basement, for example), contact us.

Section 5.0 Fills

5.1 ***Use structural fills for load-bearing applications.*** Use a controlled density flowable fill (CDFF) (e.g., "2-bag sand slurry") or an engineered fill for structural (load-bearing) applications. Wait two days before pouring concrete foundations on top of slurry. An engineered fill is a well-graded, nonplastic or low plasticity, granular material compacted to specifications. If it will have a free face, it should have about 35% binder (silt + clay) by volume. Otherwise, it can be free-draining. It should contain no organics, no trash, and no clasts over 3" in diameter. The liquid limit of the binder should be <35, its plasticity index, <16, as determined by plasticity testing (ASTM D 4318). An engineered fill should be compacted to 90% or greater of its maximum dry density (MDD) as determined by a "modified proctor" test (ASTM D 1557) and verified by field compaction testing (ASTM D 1556 or 2922). The engineered fill must rest on subsoils or bedrock. Suitable engineered fills include "river run" sand and gravel and crushed aggregate baserock. River-run can be compacted by flooding; baserock and other poorly-draining fills must be compacted within a specified range of moistures per the modified proctor test results.

Section 6.0 Groundwater / Moisture / Drainage Control

6.1 ***Use a moisture break and vapor barrier beneath all slabs-on-grade.*** To reduce the potential for interior water damage, construct a moisture break and vapor barrier beneath all slabs, as follows: Place 4 to 6 inches of "river-run" (sand and gravel less than 3" in diameter) or Class 2 aggregate base compacted to 90% or greater of ASTM 1557-78 on a prepared (cleaned and proof-rolled) subgrade. Place a plastic sheet on top of the compacted aggregate and 1 to 2 inches of clean sand on top of that. Carefully lap and tape all seams and utility pipe openings. Avoid puncturing the sheet during construction.

6.2 ***Control residential drainage and other potentially damaging water.*** To reduce the possibility that water will intrude the home and that residential run-off will cause downslope erosion and sediment transport:

- Construct a proper slab underlayment (see ***Section 6.1***).
- Finish-grade so that surface water flows away from the home and does not pond against foundations or beneath the home; and
- Collect residential run-off (i.e., roof and driveway run-off) and disperse it away from the home to as many locations as possible (that is, do not collect the water in one or two locations and then discharge it in a single location).

6.2 ***Anticipate having to case boreholes.*** If you elect to bear the home on reinforced CIP piers drilled to bedrock, be advised that zones of saturated sands are likely to be present in the subsurface. Saturated sands will calve and require casing.

Section 7.0 Erosion and Sediment Control

7.1 ***During construction, use standard "Best Management Practices" (BMPs) to minimize the potential for sediment to leave the site.*** For example, place silt fences and/or straw "burritos" along the top of the bluff; immediately seed, straw, and water all bare soil areas that will not be developed; wash off muddy trucks before they pull onto the nearest paved road; cover each temporary spoils pile with a tarp and surround it with a silt fence; etc. If you have to provide Del Norte County with a site-specific erosion- and sediment-control plan and would like us to prepare it, please call.

Section 8.0 Plan and Construction Inspections

8.1 ***Regardless of the type of foundation chosen, have us review the intended final foundation and drainage plans for conformance of the intent of our recommendations.*** If we recognize an issue of concern we will contact your project engineer and will provide assistance as appropriate. Upon the completion of our review we will issue a "conformance letter" to you for submittal to the County.

8.2 ***If you decide to support the home on helical soil anchors, helical micropiles, or reinforced CIP concrete piers, contact us to observe the installation of the anchors / micropiles or the drilling of the boreholes to verify the subsurface conditions and conformance with the intent of our recommendations.*** Following our inspection we will issue a certification letter.

8.3 ***If you would like us to inspect the site as prepared for any other type of foundation, please call.*** We are not requiring a conformance inspection for any type of "to-code" foundation. If we do an inspection we will issue a conformance letter. **See Section 2.2.**

Section 9.0 Documentation, Records, and Disclosure

8.1 ***If the location or style of the home changes substantially from the location / style addressed in this report, contact us to review the new plan for conformance with our recommendations and intent.*** In this context, "substantially" means "if the home is designed with a basement or a daylight basement or is moved into the "HIGH RISK ZONE" shown on Figure 2.

8.2 ***Retain this report.*** Retain a copy of this report and any others generated to support the project (e.g., certification letters per ***Section 2.2***). Keep them on file with your deed for use in possible future realty transactions.

CLOSURE and AUTHENTICATION

Our conclusions and recommendations are based on the results of a limited-scope but appropriately detailed geotechnical study. The report provides general and site-specific recommendations designed to lower—and in some cases eliminate—levels of risk associated with the identified geologic and soils hazards. Although our work was limited, we believe our report accurately characterizes site conditions when we worked, and that it predicts, as much as is possible, the types of problems that could result if our recommendations are ignored.

This said, the region is subject to great storms and earthquakes beyond modeling. We therefore cannot preclude the possibility of a catastrophe. By necessity, the current and all future owners of this property must assume the risks associated with any "act of God" and hold harmless their realtors, consultants, contractors, and involved regulatory agencies.

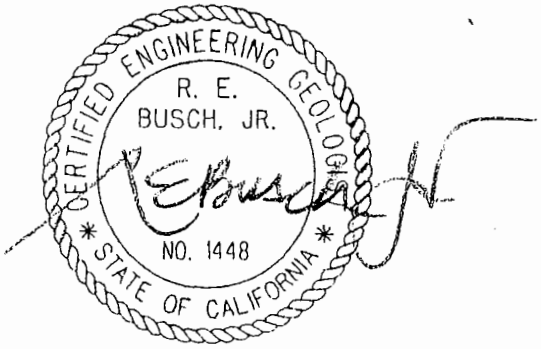
We are available to provide the recommended follow-up services. Please contact us at your convenience when you are ready to proceed.

Thank you for hiring Busch Geotechnical.

Busch Geotechnical Consultants

Martha Mitchell
Staff Geologist

Beau Whitney
Staff Engineering Geologist
P.G. #8364



R. E. Busch, Jr., Ph.D.
Principal Engineering Geologist
C.E.G. #1448

Repository/GeotechClosed/Pinger/Pinger.SS.SE.doc
Attachments: **REFERENCES CITED, LIST OF APPENDICES, APPENDICES**

APPENDIX IV

EXPLANATION OF RISK ZONES

(Paraphrased from Moore & Taber, 1978; standardized with BGC's slope-stability classification)

The level of risk associated with a geologic hazard that potentially could cause a loss is described in terms of risk classes ranked in the following ascending scale:

NONE, NEGLIGIBLE, LOW, MODERATE, HIGH, VERY HIGH

The risk or probability of loss due to an action of a recognized geologic hazard is directly related to the level of risk associated with the hazard and to the nature of the potentially affected facility. A "reasonable risk" is defined as a probability of significant loss that is low enough to be acceptable to a prudent person (owner) of average economic means.

The nature, cost, and projected economic lifespan of an improvement, the economic means of the owner, the type and level of site maintenance, the feasibility of making potentially necessary repairs, public policy, etc., are factors that collectively established an acceptable (a "reasonable") level of risk. The definition of "reasonable risk" for a present owner/user must be compatible with "reasonable risk" for projectable successor owners and/or users.

For fixed improvements susceptible to permanent damaging effects of ground movement—such as a typical single family residence, a "reasonable level of risk" for a prudent person of average economic means generally is considered to be NEGLIGIBLE or LOW. For similar improvements, a MODERATE risk level generally is a level of risk that exceeds "a reasonable level of risk" with respect to loss of property, not of life. However, this level of risk sometimes may be acceptable to a prudent person of above-average economic means. HIGH and VERY HIGH levels of risk almost always pose a level of risk that exceeds a "reasonable risk" and would be unacceptable to any prudent person for such improvements.

For improvements of low cost that are readily amenable to repair or are not susceptible to the damaging affects of ground movement, or for land uses that might not be affected seriously by ground movement (i.e., some roads, picnic areas, or campgrounds, etc.), a MODERATE or HIGH level of risk may be considered to be a "reasonable risk."

EXHIBIT NO. 8
APPEAL NO.
A-1-DNC-08-033
PINGER
EXCERPT FROM GEO-TECHNICAL REPORT – 1989

Crescent
Coastal
Research

P. O. Box 2108
Crescent City CA 95531
(707) 487-0246
cstrong.ccr@earthlink.net

28 January 2008

Del Norte Community Development Dept.
Planning and inspection
The Flynn Center
981 H. St., Suite 110
Crescent City, CA 95531

EXHIBIT NO. 9
APPEAL NO.
A-1-DNC-08-033
PINGER
HABITAT ASSESSMENT
(1 of 2)

Hello Planning Dept.

I was contacted by Guy Pinger regarding a wildlife habitat assessment prior to construction of a single family home at the property located at 12510 South Indian Road in Smith River (APN 102-050-14).

I inspected the site on 26 January 2008 to assess wildlife habitat or sensitive species that could be impacted by residential construction.

More than half of the 1.3 acre parcel is either within the range of storm waves from the beach or on unstable sand just above the highest high water mark. These areas, labeled 'Beach' and 'grass and shrubs' in Figure 1, are clearly unsuitable for construction due to hazards from the ocean. A steep bank averaging 14 ft. elevation separates the eastern 1/3 of the property from the beach. The eastern portion is a mixture of annual grasses on the west (seaward) side and Bishop pine on the east (see Fig. 1). The pines are 25 ft. high at most, and open underneath, with only English ivy at the northeast corner and very sparse blackberry and Salal throughout.

The property is bounded on the north by recent construction and a chain link fence, and to the east and south by Smith River Rancheria houses and the driveway easement access from South Indian Road. Domestic animals (dogs, cats) are common in the area.

There are no wetlands or riparian habitat on or adjacent to the property. Soils were dry and acidic, offering no habitat to amphibians. The pine trees offer limited foraging habitat for a few passerine land birds (eg, sparrows, wrens, and warblers), but bird nesting habitat is suboptimal due exposure to weather and cats. No sensitive habitat or wildlife species were found or could be expected at or near this area. New construction on this property will have no impact to sensitive wildlife species or sensitive wildife habitats. Loss of pine trees will have a negligible effect to foraging birds; landscaping vegetation could actually improve foraging opportunity for some bird species.

If you have any questions regarding this survey and assessment, please contact me.
Thank you

Craig S. Strong
Wildlife Biologist

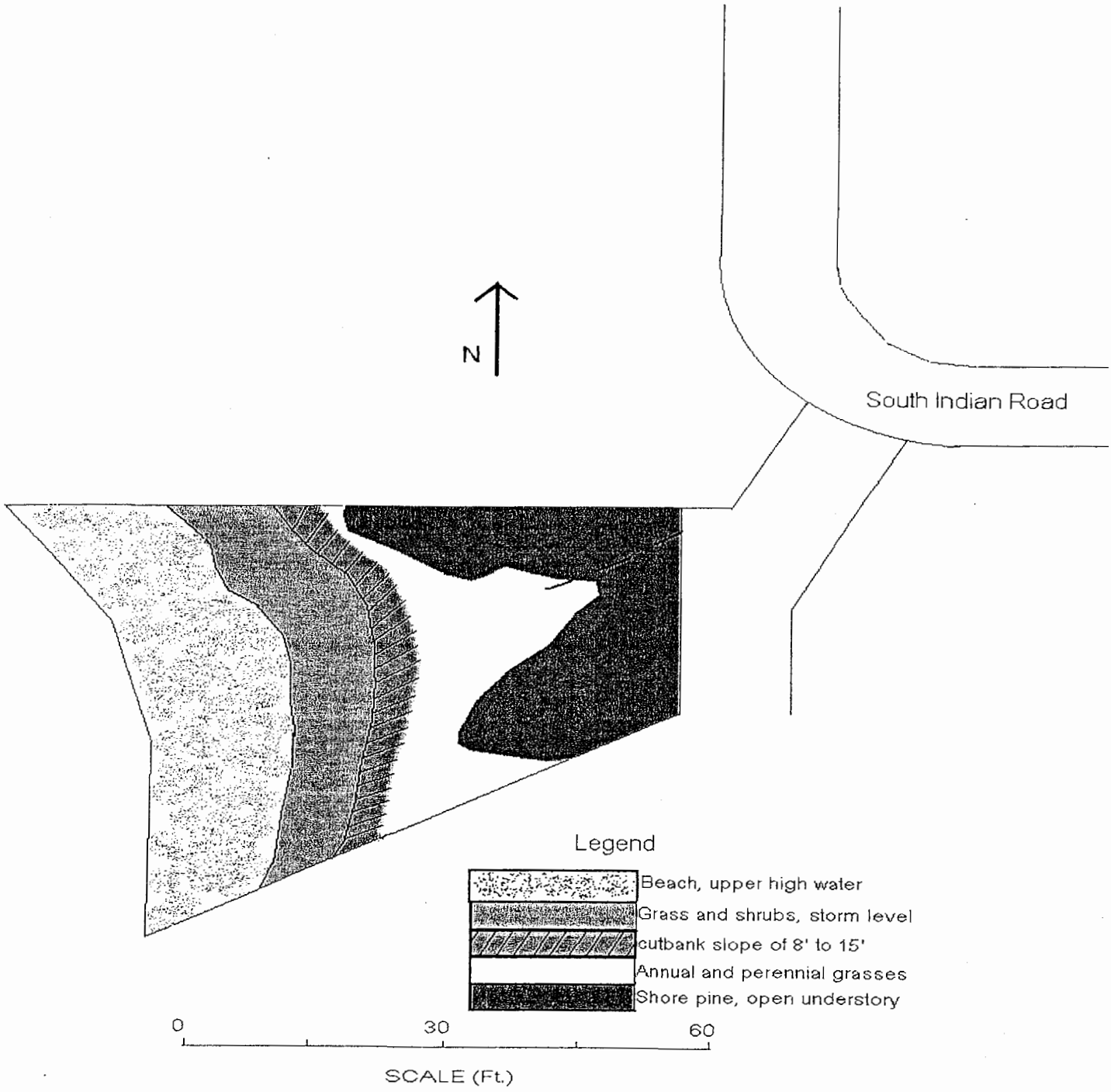


Figure 1. Property of Guy Pinger at 12510 South Indian Road, Smith River, CA (APN 102-050-14). Shown are approximate boundaries of major habitat types. The dashed marks indicate a primitive driveway.

CONSTRUCTION SPECIFICATIONS
WISCONSIN MOUND
ON-SITE SEWAGE DISPOSAL SYSTEM
APN 102-050-14

These specifications are for the construction of a "Wisconsin Mound" system for the on-site sewage disposal of septic tank quality effluent on APN 102-050-14, Del Norte County. The "Wisconsin Mound" is to serve a new single family residence located on the above mentioned parcel. For proper functioning of the "Wisconsin Mound" it is important that the system be constructed in accordance with the plans and these specifications.

The mound is designed to function as a unit and changes in any one component may result in changes in other components. As a result, no deviations from the plans and specifications are permitted except with the Engineer's written approval. This is not to exclude alternatives and changes to various components but they must be reviewed by the Engineer to determine if they comply with the design concept.

SEPTIC TANK

The septic tank shall have two chambers, a minimum capacity of 1200 gallons and may be of any material and construction conforming to the Uniform Plumbing Code, latest edition. The septic tank and all connections thereto shall be water tight.

PUMP SYSTEM

Effluent from the septic tank shall discharge into a pump chamber from which the effluent will be pumped to the "mound" for disposal. The pump chamber shall be constructed as shown on the drawings. Any construction joints in the pump chamber shall be adequately sealed to prevent infiltration of the ground water.

The pump shall be as specified on the drawings or equal. An alternative pump must have a pressure/discharge relationship equal to or exceeding the pump specified. Any alternative pump submitted for consideration must be accompanied with a complete pump discharge curve.

The pump shall be provided with a float switch assembly set to turn the pump on and off as shown on the plans. Pumps with built in pressure switches will not be acceptable.

The suction and discharge lines shall be Schedule 40 PVC pipe.

An alarm system shall be installed in the pump chamber on a separate electrical circuit from the pump. The alarm system shall include a float switch set to trip the alarm at the water surface elevation shown on the plan. The alarm, when tripped, shall turn on a light and set off a low voltage buzzer. The buzzer may be similar to a door buzzer, provided it provides a continuous buzzing noise as long as the circuit is closed. The light and buzzer shall be mounted in the residence on the property.

DISPOSAL "MOUND"

Proper construction of the "mound" is critical to proper functioning of the disposal system. Therefore, the following construction sequence shall be followed:

1. The mound site shall be cleared and mowed of all vegetation to within 1/2 inch of the ground surface.

2. After clearing and mowing, the pump discharge line shall be installed from the center of the mound to a distance of at least 20 feet outside the toe of the slope of the mound. It is permissible to construct the entire pump discharge line, if desired. The pump discharge line shall be at least 24 inches below the ground surface, capped off and backfilled.

3. After installation of the pump discharge line, the surface which is to receive the mound shall be plowed with a moldboard or standard chisel point plow or other method to receive similar results. Plowing shall turn over the top 12 inches of the existing topsoil. Rototilling of the surface is permitted only if a minimum of 4 inches of the fill material specified below is first placed over the mound site and the rototilling thoroughly mixes the fill material with at least 8 inches of the topsoil material beneath.

4. Upon completion of the preparation of the surface by plowing or rototilling, the pump discharge line shall be exposed and extended to the elevation of the discharge manifold.

5. The mound fill material can now be placed. Trucks delivering the fill material shall approach the mound from only one of the sides. Rubber tired equipment traffic around the other three sides of the mound is prohibited. The fill material shall be placed by a crawler tractor, by hand or other methods which do not excessively compact the fill material. Rubber tire equipment shall not be permitted on the "mound". A crawler tractor shall have a minimum of 6 inches of fill material, at all times beneath the tracks and the plowed surface. If rubber tire equipment encroaches onto the mound, or crawler equipment encroaches onto the uncovered mound surface, the compacted areas shall again be plowed per (3) above.

The mound fill material shall meet the following specifications.

SIEVE	PERCENT PASSING
3/8	100
#8	80-100
#16	50-85
#30	25-60
#50	10-20
#100	0-10

6. Upon completion of placement of the fill material, the absorption bed can be shaped and leveled. The bottom of the absorption bed shall be level. The maximum difference in the elevation between any two points on the absorption bed shall not exceed 0.10 foot.

7. Upon leveling the absorption bed, 6 inches of the washed rock shall be placed. The washed rock size shall range from 3/4 to 1-1/2 inch.

8. After placing the washed rock, the distribution system, including the manifold and distribution laterals shall be placed. All materials for the manifold and laterals shall be Schedule 40 PVC pipe. It is important that the distribution laterals be constructed as shown on the plans. The hole spacing, the number of the holes, the size of the holes and the hole orientation shall not be modified.

9. The distribution system shall be tested before it is covered by connecting the system to the pump and manifold with the holes pointed upward. The pump shall then be turned on to pump clean water through the system. The discharge through any hole in the distribution laterals shall be to a height of at least 60% of the maximum height of any hole.

10. Upon completion of a satisfactory test, "O.S.I" orifice shields shall be installed over the holes in accordance with the manufacturer's instructions. The holes shall remain pointed upward with the discharge spraying into the orifice shields. All elements of the pump discharge line, manifold and distribution laterals shall be solvent welded so as to be leak proof.

11. After placement of the manifold and distribution laterals, 2 inches of absorption bed material, as specified above, shall be placed over the distribution lines.

12. Over the entire absorption bed, place a highly permeable filter fabric.

13. Upon completion of all of the above, place 12 inches of good quality top soil over the entire mound surface and 12 to 18 inches of top soil over the absorption bed as shown on the plans. The top soil should be lightly compacted with a hand roller and prepared to receive the landscaping specified.

14. Upon completion of the construction of the mound, the mound shall be seeded with 10 pounds of tall fescue and 1 pound of creeping red fescue seed for every 1,000 square feet of mound area.

INSPECTIONS

The following inspections shall be made by the Engineer, or his designated representative. The Contractor shall provide the Engineer with 24 hours advance notice of any inspection. The required inspections are as follows;

1) The Contractor shall submit a sample or gradation report on the fill material before placing any fill;

2) After the plowing and surface preparation, but before any fill is placed. This inspection will be to determine if the ground has been properly plowed and if the mound is properly located on the property;

3) Upon completion of the mound fill material placement and preparation of the absorption bed, but before placement of absorption bed gravel. This is to verify size, depth and configuration of the fill and material quality;

4) Upon completion of the placement of the absorption bed gravel and ready to test the distribution manifold piping;

5) Upon completion.

NOTES: