Staff Report to the Zoning Administrator

Application Number: 07-0040

Applicant: Stephen Graves & Associates
Owner: Casa De Mare LLC
APN: 046-173-02

Agenda Date: May 2, 2008
Agenda Item #: 2
Time: After 10:00 a.m.

Project Description: Proposal to construct a 1,673 square foot 2-story replacement dwelling to include construction of an attached single car garage, a stitch pier retaining wall, a structural slab foundation, an enhanced septic treatment system and 107 cubic yards of grading.

Location: Property located on the west side of Sunset Drive approximately 500 feet south from Sunset Beach Road at 44 Sunset Drive.

Supervisoral District: 2nd District (District Supervisor: Ellen Pirie)

Permits Required: Coastal Development Permit and a Variance to reduce the required 20-foot front yard setback to approximately 5 feet, to reduce the required 15-foot rear yard setback to approximately 8.5 feet and a Variance to reduce the offstreet parking requirement from 3 spaces to 1 space.

Technical Reviews: Preliminary Grading Review
Geologic and Geotechnical Report Reviews (under previous application #06-0241)

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 07-0040, based on the attached findings and conditions.

Exhibits

A. Project plans
B. Findings
C. Conditions
D. Categorical Exemption (CEQA determination)
E. Assessor's parcel map
F. Zoning map
G. Comments & Correspondence
H. Updated Engineering Geology Report and Response to County Review by Nielsen and Associates, (introduction and recommendations) dated Sept. 2005 and June 26, 2006

I. Geotechnical Investigation by Haro, Kasunich & Associates, Inc. (introduction and recommendations), dated April 2006.

J. Geotechnical/Geology Report Review Letter by County Geologist, dated February 22, 2007

K. Foundation Damage Letter by Haro, Kasunich & Associates, Inc. dated March 26, 2008

Parcel Information

Parcel Size:	5,140 square feet
Existing Land Use - Parcel:	Residential
Existing Land Use - Surrounding:	Residential
Project Access:	Sunset Drive
Planning Area:	San Andreas
Land Use Designation:	R-UL (Urban Low Density Residential)
Zone District:	R-1-6 (Single Family Residential - 6,000 square foot minimum site area)
Coastal Zone:	X Inside __ Outside
Appealable to Calif. Coastal Comm.	X Yes __ No

Environmental Information

Geologic Hazards:	Coastal Bluff Instability – Mitigation Proposed via New Retaining Wall
Soils:	128-Dune Land
Fire Hazard:	Not a mapped constraint
Slopes:	30-50% Slopes
Env. Sen. Habitat:	Mapped Central Dune Scrub; no development proposed within habitat
Grading:	Approximately 107 cubic yards
Tree Removal:	No trees proposed to be removed
Scenic:	Mapped Scenic Resource
Drainage:	No proposed change to drainage patterns
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	X Inside __ Outside
Water Supply:	Public
Sewage Disposal:	Proposed Enhanced Onsite Septic System
Fire District:	County Fire
Drainage District:	No Drainage District

History

According to Assessor Records, the existing 2-story dwelling and attached garage were constructed in 1941. In 1959 a roof was installed over an existing porch under permit 3959. In 1959 permit 6528 was issued for a porch remodel and to enclose a stairway. Building Permit

72078 was issued in 1982 for the replacement of 46 lineal feet of foundation beneath the dwelling. Permits 105413 and 148440 were issued in 1993 and 2007, respectively, for the construction of a replacement roof and for a new electrical circuit to power the septic system. An unpermitted second floor 96 square foot addition appears in the 2002 Assessor's appraisal. Also in 2002, complaints were received regarding unpermitted work and subsequent code compliance investigation revealed the illegal conversion of the second floor of the residence into a second unit, the unpermitted construction of exterior stairs from the main floor to the second floor, and the unpermitted conversion of the garage into a habitable accessory structure with a bathroom and bedroom. All code violations remain outstanding and will be corrected by the issuance of this Coastal Permit and subsequent building permit.

Project Setting and Scope

The subject parcel is about 5,195 square feet in area and is developed with an approximately 1,545 square foot house, 255 square foot attached garage, and 720 square foot uncovered deck. The residence is located at the crest of a steep coastal bluff leading down to the beach. The west-facing portion of the house is two-story, while the east or street-facing side of the house presents a single story, approximately 18 feet in height. The lot itself has moderate slopes of less than 10% atop the bluff. The slope of the bluff face ranges between 60% and 70%. According to submitted Geotechnical and Engineering Geology reports, the bluff is "in a very fragile state of stability" requiring the construction of an engineered foundation system and retaining wall.

The adjacent residence to the north, built in 1946, is located approximately 2.75 feet from the subject dwelling, making the subject dwelling significantly nonconforming. The subject dwelling encroaches 15 feet into the required 20-foot front yard setback, about 2.25 feet into the required 5-foot side yard setback, and about 6.5 feet into the required 15-foot rear yard setback. The majority of the existing house is additionally located within 25 feet of the edge of the coastal bluff. The house to the north is similarly situated on the adjacent parcel. Although the front and rear encroachment cannot feasibly be cured by the construction of the replacement dwelling, the side yard encroachment will be eliminated by relocated the new house approximately 2.75 feet to the south-southeast. The new location will also provide relief for the adjacent dwelling, in that it is currently significantly nonconforming due to the proximity of the subject house, but will no longer be significantly nonconforming as a result of the revised building envelope for the replacement house.

The existing dwelling is also nonconforming with respect to offstreet parking requirements. The parcel fronts Sunset Drive, a private 40-foot right of way. The traveled road is located between 18 to 22 feet away from the edge of the subject parcel with a paved apron located in the right-of-way. Three spaces are required, but only one space is currently accommodated entirely within the parcel boundary. The existing garage provides space for one car, while the two remaining spaces are located in the apron and partially within the private right-of-way. The paved parking area that serves the subject parcel and adjacent properties is located well away from the traveled roadway, and provides adequate ingress and egress without creating any visual hazards or other impacts to the traffic along Sunset Drive. Other properties along Sunset Drive are similarly constrained and also use the right-of-way for parking. Although the right-of-way is private, the Department of Public Works reviewed the plans for conformance with County standards for traffic safety compliance. The Road Engineering Section of the Department of Public Works has

reviewed this application and approved the design. The location of the bluff as well as the septic tank and expansion area in the front yard, make the placement of additional parking spaces entirely within the property boundary infeasible. The replacement house represents a *reduction* in the bedroom count, from three to two, and thus would not be expected to exacerbate any existing traffic or parking concerns in the neighborhood.

The property is zoned R-1-6 and is located within the San Andreas Planning Area. The subject proposal is to demolish the existing dwelling and attached garage, construct a 1,673 square foot 2-story replacement dwelling with an attached single car garage, a stitch pier retaining wall, structural slab foundation, enhanced septic treatment system and excavate about 107 cubic yards.

The proposed project will result in a dwelling that has virtually the same footprint as the existing dwelling, with the proviso that the replacement dwelling will be located approximately 2.75 feet to the south-southeast of the present dwelling location. This will resolve the existing significant non-conformity for both the subject dwelling as well as the adjacent dwelling. Both the existing and proposed houses present a two-story profile to the street, however the replacement house is designed with a somewhat steeper roof pitch resulting in a slight increase in height relative to the street. The difference in height and location on the lot both represent small changes and are not anticipated to adversely affect the viewshed of the surrounding properties nor the view from the beach.

Zoning & General Plan Consistency

The subject property is a 5,195 square foot lot, located in the R-1-6 (Single Family Residential - 6,000 square foot minimum site area) zone district, a designation which allows residential uses. The proposed replacement single-family dwelling is a principal permitted use within the zone district and the project is consistent with the site's (R-UL) Urban Low Density Residential General Plan designation.

Local Coastal Program Consistency

The proposed replacement dwelling is in conformance with the County's certified Local Coastal Program, in that the structure is sited and designed to be visually compatible, in scale with, and integrated with the character of the surrounding neighborhood. The replacement dwelling will incorporate several craftsman-style design features including wooden shingle siding with stone veneer at the foundation, a low-pitched roof and projecting rafters. The proposed colors are muted earth tones, which shall be as unobtrusive as practicable. Developed parcels in the area contain single-family dwellings. Size and architectural styles vary widely in the area, and the design submitted is not inconsistent with the existing range. The dwellings on either side of the subject replacement house are characterized by similar mass and bulk as well as similar color range as the proposed dwelling. While the project site is located between the shoreline and the first public road, it is not identified as a priority acquisition site in the County's Local Coastal Program. The replacement dwelling will occupy virtually the same footprint as that occupied by the existing dwelling and does not represent any proposed expansion or appreciable increase in structure height. There is no beach access in proximity to the existing and proposed dwelling location. Consequently, the proposed project will not interfere with public access to the beach, ocean, or other nearby body of water.

Design Review

The proposed single-family dwelling complies with the requirements of the County Design Review Ordinance, in that the proposed project will incorporate site and architectural design features such as wood shingle siding and stonework to reduce the visual impact of the proposed development on surrounding land uses and the natural landscape. The project design was reviewed and accepted by the Lawrence Kasparowitz, the County Urban Designer.

Geologic Hazards

The subject dwelling is situated on the ocean side of a coastal bluff composed of old sand dune deposits. During the 1989 Loma Prieta earthquake, landsliding occurred on the bluff, leaving the west side of the dwelling approximately 3 feet from the top edge of a landslide scarp. Subsequent heavy rainstorms reactivated the slide. According to a Geotechnical Investigation prepared by Haro, Kasunich and Associates, dated April 2006 and Engineering Geology Report prepared by Nielsen and Associates, dated September 2005, future landslides will undermine the dwelling without protection. All technical reports have been reviewed and accepted by the County Geologist.

To stabilize the bluff, a stitch pier retaining wall is proposed beneath the rear portion of the house. Additionally, a new structural slab foundation will be constructed on engineered fill. According to the project geotechnical engineer and County Geologist, the new retaining wall will provide 100-year stability for hillside adjacent to the proposed structure. Conditions of approval require preconstruction meetings with the County Geologist and Senior Civil Engineer as well as inspections during the grading and retaining wall construction to ensure compliance with County grading and erosion control ordinances. The proposed piers will be drilled, rather than pounded and therefore will entail minimal vibration and/or risk to the fragile bluff or surrounding properties.

In his letter dated July 8, 2006, project Engineering Geologist Hans Nielsen states that while the stitch pier retaining wall is designed to prevent the potential for failure of sand from between and behind the piers, the design cannot prevent this failure over time. Therefore, a plan must be developed for the construction of an "engineered reinforced structural face" between the piers as they become exposed. This construction, when necessary, will require a very short timeline for approval. Therefore, in order to ensure that the design is visually compatible as well as sound from a geologic and engineering standpoint, a condition of approval has been included to require the applicant to apply for an amendment to this permit prior to the final of the building permit for the replacement dwelling. The amendment will be processed as a Level V, requiring a public hearing and attendant noticing, again to provide an opportunity for public comment.

The County Geologic Hazards Ordinance requires all development to maintain a minimum of 25 feet from the top edge of the coastal bluff or distance necessary to provide stability over a 100-year lifetime of the structure, whichever is greater. An exemption is provided under Section 16.10.070(h)(4) for the alteration or replacement of existing damaged structures. According to the County Geologist, the existing 67-year old structure has been damaged. Additionally, a letter prepared by Haro, Kasunich and Associates, the project geotechnical engineer, dated March 26, 2008 states "the residence has suffered damage at the seaward perimeter, which has settled due to

the substandard foundation, loose condition of the underlying sand, and the seaward creep of the bluff." Therefore, the proposed replacement structure can be built within the 25-foot setback. No increase in the existing footprint is allowed and none is proposed by this project, which constitutes "in-kind" replacement.

Septic System

The existing septic system is proposed to be replaced with an alternative septic system. Due to the proximity of the coastal bluff, limited site area and high percolation rate of the sandy soil, the new system will use enhanced treatment for the effluent. The proposed system consists of a 1,500-gallon tank and two 20-foot long rock-filled dispersal trenches located away from the bluff side of the lot. The engineering geologist for this project has reviewed the proposed location of the trenches and states that there will be no impact of the septic system on the stability of the bluff.

Environmental Review

The proposed residential addition is categorically exempt from review under the Environmental Quality Act (CEQA) consistent with CEQA Guidelines Section 15303, New Construction or Conversion of Small Structures.

Conclusion

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

Staff Recommendation

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.

- **APPROVAL** of Application Number **07-0040,** based on the attached findings and conditions.

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

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

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

Coastal Development Permit Findings

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

This finding can be made, in that the property is zoned R-1-6 (Single Family Residential - 6,000 square foot minimum site area), a designation which allows residential uses. The proposed single-family dwelling is a principal permitted use within the zone district, consistent with the site's (R-UL) Urban Low Density Residential General Plan designation.

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

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

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

This finding can be made, in that the development is consistent with the surrounding neighborhood in terms of architectural style; the site is surrounded by lots developed to an urban density; the colors and materials shall be natural in appearance and complementary to the site; the development site is located on top of a prominent bluff, however the dwelling is proposed to replace and occupy the same foot print as the existing dwelling, which has been in place for over 65 years. The proposed bluff protection structure will be hidden from view beneath the replacement dwelling. The new dwelling will also have nearly the same height and visual impact as the existing dwelling.

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

This finding can be made, in that, although the project site is located between the shoreline and the first public road, there is no public access in the vicinity of the site. Consequently, the replacement single-family dwelling will not interfere with public access to the beach, ocean, or any nearby body of water. Further, the project site is not identified as a priority acquisition site in the County Local Coastal Program.

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

This finding can be made, in that the structure is sited and designed to be visually compatible, in scale with, and integrated with the character of the surrounding neighborhood. Additionally, residential uses are allowed uses in the R-1-6 (Single Family Residential - 6,000 square foot minimum site area) zone district of the area, as well as the General Plan and Local Coastal Program land use designation. Developed parcels in the area contain single family dwellings. Size and architectural styles vary widely in the area, and the design submitted is not inconsistent with the existing range.

Development Permit Findings

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

This finding can be made, in that the project is located in an area designated for residential uses and, while the site is somewhat encumbered by bluff stability issues, a stitch pier retaining wall will provide necessary stability in order to protect the health, safety and welfare of the residents of the subject dwelling and surrounding properties. Construction will comply with prevailing building technology, the California Building Code, and the County Building ordinance to insure the optimum in safety and the conservation of energy and resources. The proposed single-family dwelling will not deprive adjacent properties or the neighborhood of light, air, or open space, in that the structure will occupy the same footprint and profile as the existing dwelling, which has been located on the site for over 65 years.

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

This finding can be made, in that the proposed location of the single-family dwelling and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the R-1-6 (Single Family Residential - 6,000 square foot minimum site area) zone district in that the primary use of the property will be one single-family dwelling. While the dwelling will not conform to all site standards for the zone district, the proposed dwelling will maintain the setbacks of the structure, which has historically occupied the site, with no increase in the degree of encroachment. Additionally, the dwellings occupying the adjacent parcels are similarly situated with respect to the front and rear setbacks, having been constructed during the same early to mid-1940s time period.

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

This finding can be made, in that the proposed residential use is consistent with the use and density requirements specified for the Urban Low Density Residential (R-UL) land use designation in the County General Plan.

The proposed single-family dwelling will not adversely impact the light, solar opportunities, air, and/or open space available to other structures or properties. While the proposed replacement dwelling will encroach into front, side and rear yard setbacks, the structure will not increase the degree of encroachment that has historically characterized the house on the subject parcel. ensure access to light, air, and open space in the neighborhood. The orientation of the surrounding dwellings maximizes their own access to light and air and they will not be compromised by the replacement of an existing dwelling by a new dwelling of the same essential scale and mass.

The proposed single-family dwelling will not be improperly proportioned to the parcel size or the character of the neighborhood as specified in General Plan Policy 8.6.1 (Maintaining a Relationship Between Structure and Parcel Sizes), in that the proposed single-family dwelling will replace an existing structure and will be have no increase in footprint or appreciable increase in building height and will result in a structure consistent with a design that could be approved on any similarly sized lot in the vicinity.

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

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

This finding can be made, in that the proposed replacement single-family dwelling is to be constructed on an existing developed lot and will replace an existing dwelling with the virtually the same configuration and a reduction in the number of bedrooms. There is expected to be no increase in the number of trips and the project is thus not likely to adversely impact existing roads and intersections in the surrounding area.

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

This finding can be made, in that the proposed structure is located in a mixed neighborhood containing a variety of architectural styles, and the proposed single-family dwelling is consistent with the land use intensity and density of the neighborhood.

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

This finding can be made, in that the proposed single-family dwelling will be of an appropriate scale and type of design that will enhance the aesthetic qualities of the surrounding properties and will not reduce or visually impact available open space in the surrounding area. The dwelling does not represent an appreciable change in scale, bulk or mass with respect to the existing house and the proposed design features, such as wood shingle siding and stone facing, will increase the degree of compatibility with both the surrounding built environment as well as with the natural environment.

Variance

1. **That because of Special circumstances applicable to the property, including size, shape, topography, location, and surrounding existing structures, the strict application of the zoning ordinance deprives such property of privileges enjoyed by other property in the vicinity and under identical zoning classification.**

This finding can be made in that due to the steep topography of the coastal bluff (65-70%) and relative shallow configuration of the remaining portion of the lot (approximately 45-50 feet), it is not possible to meet the required front and rear yard setbacks without losing the economic benefit of the property. The dwelling is significantly nonconforming in that the adjacent dwelling was constructed within 5 feet of the existing dwelling on the subject lot. The project is conditioned to re-position the replacement house to meet the side yard setbacks, thus resolving the significant nonconformity. Because of the necessity to provide coastal bluff stabilization by constructing a new foundation and retaining wall, a small-scale repair, rather than a full replacement is not feasible. Given the full replacement, a variance is necessary to replace the existing house in-kind. Strict application of the zoning regulations would not allow the property owner to re-build the existing house in the same configuration as that of the legal dwelling that currently occupies the site. There will be no additional encroachment into the front or rear yards, and the existing side yard encroachment will be cured. The strict application of the zoning ordinance with respect to setbacks would deprive the property owner of the ability to live in a dwelling that is essentially that same as the house that has occupied the lot for over 65 years, a privilege enjoyed by other properties in the area.

The topography and shallow configuration of the lot present similar constraints with respect to offstreet parking availability. The proposed replacement dwelling and garage will occupy a footprint that is virtually identical to the existing footprint. The number of bedrooms will *decrease* from three to two and existing parking spaces located within the right-of-way will continue to provide parking for the subject parcel without creating any conflicts with the flow of traffic. The subject proposal extends the same use and parking situation that has existed on the site for the past 65 years. The strict application of the zoning ordinance with respect to offstreet parking requirements would deprive the property owner of the ability to build a dwelling unit of *any* size, regardless of the number of bedrooms. Properties in the vicinity are similarly constrained with respect to offstreet parking availability and use the "turn-outs" that exist along Sunset Drive in the right-of-way to accommodate their parking needs. Creating additional parking within the front yard is not feasible due to the proximity of the bluff and the location of the septic system and leachfield entirely within the front yard.

2. **That the granting of the variance will be in harmony with the general intent and purpose of zoning objectives and will not be materially detrimental to public health, safety, or welfare or injurious to property or improvements in the vicinity.**

The granting of the variance to the setback requirements will be in harmony with the general intent and purpose of zoning objectives and will not be materially detrimental to public health, safety, or welfare or injurious to property or improvements in the vicinity in that the existing structure has not been materially detrimental to public health, safety or welfare or injurious to property or improvements in the vicinity. The granting of the Variance will allow the property owner to replace the existing house in-kind without the loss of any existing living space that has been provided by the existing house for over 65 years. Additionally, the existing side yard encroachment will be eliminated by the re-location of the replacement dwelling to the south-southeast.

With respect to offstreet parking requirements, the distance between the traveled roadway and the location of the two parking spaces within the right-of-way provides a buffer that allows safe ingress and egress without impeding the flow of traffic along Sunset Drive. The Road Engineering Section of the Department of Public Works reviewed this application and approved it without comment. The placement of additional parking spaces within the front yard would entail increased impervious surface and the runoff would present a negative impact to the nearby fragile bluff. Additionally, the septic system is located entirely within the front yard and additional paving would interfere with the proper functioning of the septic system.

3. That the granting of such variances shall not constitute a grant of special privileges inconsistent with the limitations upon other properties in the vicinity and zone in which such is situated.

The majority of the dwellings on the bluff side of Sunset Drive were developed prior to the adoption of the zone district standards and without the benefit of accurate property surveys. Many of the older dwellings on the block encroach into one or more setbacks. Thus, most of the structures on this block of Sunset do not conform to this zone district site development standard. Any repairs or replacement of exterior elements of these structures will require a variance approval. Therefore, granting of this variance will not constitute a grant of special privileges inconsistent with the limitations upon the surrounding neighbors. The granting of the variance to reduce the front yard setback will allow for the replacement house to be located as far away from the coastal bluff as practicable. Allowing the rear yard setback encroachment to continue will allow the property owner to continue to enjoy the same amount of living space that has existed on the site for many years. Denial of the proposed variance to setback requirements would result in a hardship for the property owner by not allowing the continued enjoyment of the house in its present configuration.

Most of the dwellings in the vicinity are similarly constrained with respect to offstreet parking and make use of the paved aprons that are located within the public right-of-way in order to provide adequate parking. The granting of the Variance to reduce the required number of offstreet parking spaces from three to one will allow for the replacement house and garage to be constructed in the same configuration as that which has existed on the site for more than 65 years. Denial of the proposed Variance to offstreet parking requirements would prevent the property owner from constructing a replacement dwelling of *any* size.

Conditions of Approval

Exhibit A: Architectural Plans (8 Sheets), prepared Nolan Designs, dated 10/31/07, Septic System Plan (1 Sheet) prepared by Biosphere Consulting, dated 7/02/07, Engineered Plans for Retaining Wall (5 Sheets) prepared by Soil Engineering Construction, inc. dated 11/29/06, Surveyed Plans (2 Sheets) prepared by Paul Hanagan Land Surveying, dated 11/05/04

I. This permit authorizes the construction of a 1,673 square foot 2-story replacement dwelling to include construction of an attached single car garage, a stitch pier retaining wall, a structural slab foundation, an enhanced septic treatment system and 107 cubic yards of grading, resulting in a 2-bedroom, 3 bathroom house. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall:

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

B. Obtain a Demolition Permit from the Santa Cruz County Building Official.

C. Obtain a Building Permit from the Santa Cruz County Building Official.

D. Obtain a Grading Permit from the Santa Cruz County Building Official.

E. Obtain an Encroachment Permit from the Department of Public Works for all off-site work performed in the County road right-of-way and to allow the continued use of the right-of-way for 2 parking spaces.

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

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

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

1. The building plans must indicate that the replacement house has been relocated approximately 2.75 feet to the south-southeast, or as needed in order to comply with the minimum 5-foot side yard setbacks for the northern side yard.

2. One elevation shall indicate materials and colors as they were approved by this Discretionary Application.

3. Submit engineered grading, drainage, and erosion control plans.

4. Submit a landscape plan showing the planting of drought-resistant landscaping

5. The building plans must include a roof plan and a surveyed contour map of the ground surface, superimposed and extended to allow height measurement of all features. Spot elevations shall be provided at points on the structure that have the greatest difference between ground surface and the highest portion of the structure above. This requirement is in addition to the standard requirement of detailed elevations and cross-sections and the topography of the project site, which clearly depict the total height of the proposed structure. Maximum height is 28-feet.

6. Details showing compliance with fire department requirements, including all requirements of the Urban Wildland Intermix Code, if applicable.

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

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

1. Drainage plans must address surface runoff concerns, including identification of how the new retaining wall will tie into the existing drainage system.

2. Plans must include a cross section of the propose retaining wall demonstrating how subsurface seepage and upslope runoff will be collected and discharged.

E. Obtain an Environmental Health Clearance for this project from the County Department of Environmental Health Services. The following must be satisfied prior to septic approval:

1. Acknowledgment form must be signed and returned to Environmental Health Services.

F. Meet all requirements and pay any applicable plan check fee of the Pajaro Valley Fire Protection District.

G. Submit 3 copies of a soils report prepared and stamped by a licensed Geotechnical Engineer.

H. Submit 3 copies of the Engineering Geology Report prepared and stamped by a licensed Engineering Geologist.

I. Submit plan review letters from the project engineering geologist and geotechnical engineer stating that the final grading, drainage and erosion control plans are in conformance with the recommendations made in the approved technical reports prepared for the project.

J. Submit a Construction Phasing Plan for review and approval by the County Geologist and Senior Civil Engineers. The plan must indicate proposed methods for eliminating the casting of fill or other material down the face of the slope and must show the control of drainage during the construction of the retaining wall and foundation

K. A preconstruction meeting must be held prior to any site disturbance. Attendees must include the project Engineering Geologist, project Geotechnical Engineer, the County Geologist, and the County Senior Civil Engineer.

L. Submit a written statement signed by an authorized representative of the school district in which the project is located confirming payment in full of all applicable developer fees and other requirements lawfully imposed by the school district.

M. Complete and record a Declaration of Geologic Hazard. **You may not alter the wording of this declaration**. Follow the instructions to record and return the form to the Planning Department.

N. Complete and record a Declaration to Maintain the Structure as a Single Family Dwelling. You may not alter the wording of this declaration. Follow the instructions to record and return the form to the Planning Department.

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

A. Property owner and/or applicant must apply for an Amendment to this Coastal Permit, to be processed as a Level V, which addresses the future requirement for structural facing at the stitch pier retaining wall. Application submittal requirements shall include visual simulations depicting the view of the proposed wall facing from the beach

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

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

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

E. The project engineering geologist and geotechnical engineers must submit observation letters stating that grading, drainage and erosion control improvements have been completed in accordance with the recommendations made in their respective approved technical reports.

F. Pursuant to Sections 16.40.040 and 16.42.100 of the County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this development, any artifact or other evidence of an historic archaeological resource or a Native American cultural site is discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100, shall be observed.

IV. Operational Conditions

A. This permit is approved on the basis that it is an "in-kind" replacement of an existing dwelling that has been damaged due to its proximity to an unstable coastal bluff. Therefore, the underfloor area may not be enclosed and/or used as habitable space. Additionally, no future residential additions will be approved on this site.

B. Any increase in the number of bedrooms or reduction in the size of the garage will require approval of an Amendment to this Permit and a public hearing.

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

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

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

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

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

2. COUNTY defends the action in good faith.

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

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

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

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

Approval Date: _____

Effective Date: _____

Expiration Date: _____

Don Bussey	Robin Bolster-Grant
Deputy Zoning Administrator	Project Planner

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

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

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

Application Number: 07-0040
Assessor Parcel Number: 046-173-02
Project Location: 44 Sunset Drive

Project Description: Proposal to construct a 1,673 square foot replacement dwelling to include a 500 square foot addition to the second story and a 560 square foot basement, construction of a stitch pier retaining wall, and 262 cubic yards of grading.

Person or Agency Proposing Project: Stephen Graves & Associates

Contact Phone Number: (831)465-0677

A. _____ The proposed activity is not a project under CEQA Guidelines Section 15378.

B. _____ The proposed activity is not subject to CEQA as specified under CEQA Guidelines Section 15060 (c).

C. _____ **Ministerial Project** involving only the use of fixed standards or objective measurements without personal judgment.

D. _____ **Statutory Exemption** other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).

Specify type:

E. __X__ **Categorical Exemption**

Specify type: 15303(a) New Construction or Conversion of Small Structures

F. Reasons why the project is exempt:

Construction of one single-family dwelling

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

Date: 3-18-08

Robin Bolster-Grant, Project Planner

EXHIBIT D

PROJECT CONTACTS:

OWNER:
JOE MONTALBO
JOANN FERGUSON
745 COTTON STREET
MENLO PARK, CA 94025
650-326-3498

APPLICANT:
STEPHEN GRAVES & ASSOCIATES
2735 PORTER STREET
SOQUEL, CA 95703
831-465-0677

DESIGNER/CIVIL ENGINEER:
NOLAN DESIGNS
KAREN D. PERALTA
1125 HARPER COURT
SANTA CRUZ, CA 95062

CIVIL ENGINEER:
SOIL ENGINEERING CONSTRUCTION
927 ARGUELLO STREET
REDWOOD CITY, CA 94063-1310
650-367-9595

ENGINEERING GEOLOGIST:
NIELSEN AND ASSOCIATES
1070 W. ANTELOPE CREEK WAY
ORO VALLEY, AZ 85737
831-295-2081

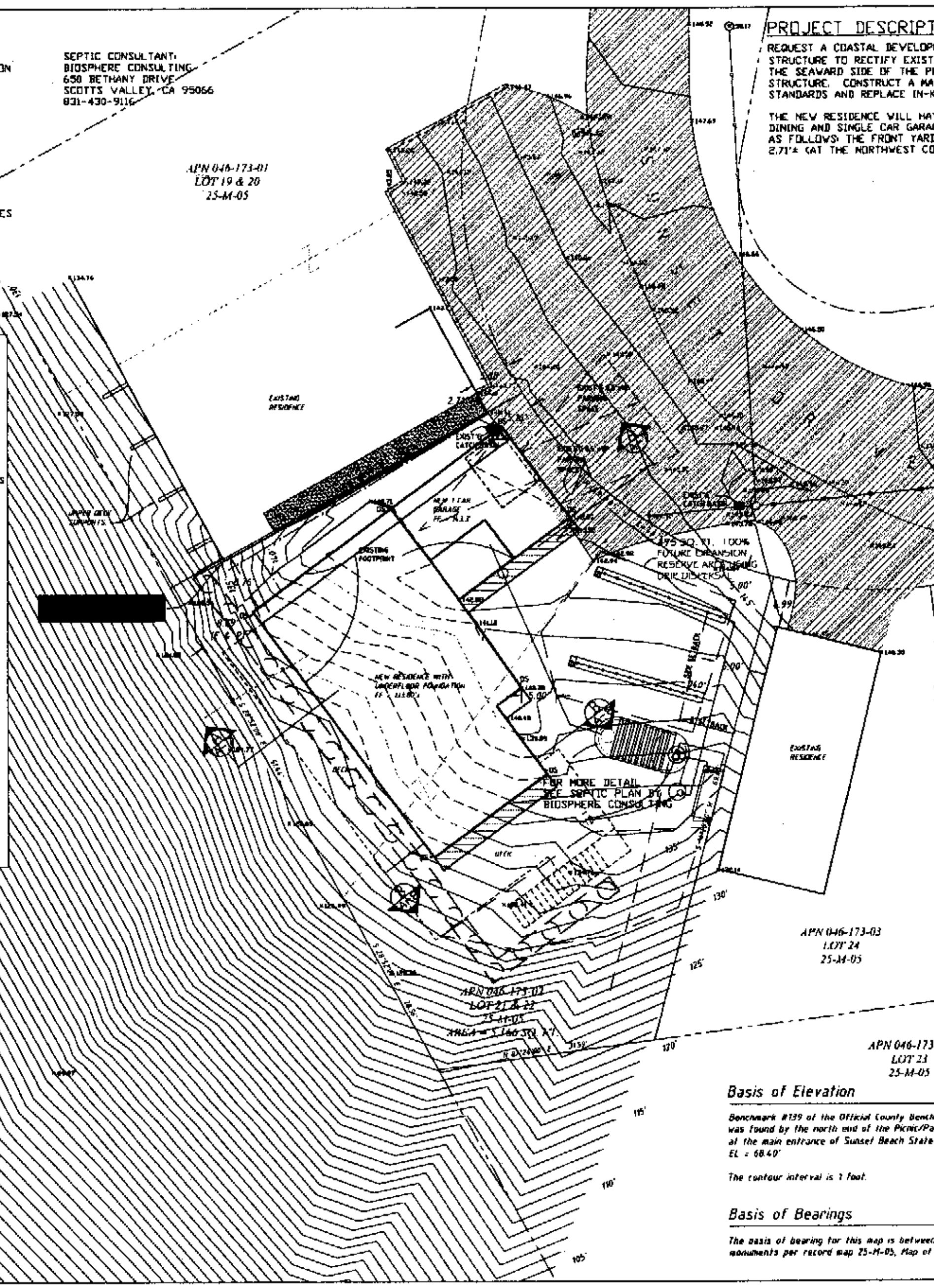
GEOTECHNICAL ENGINEER:
HARO, KASUNICH AND ASSOCIATES
116 EAST LAKE AVENUE
WATSONVILLE, CA 95076
831-722-4175

SEPTIC CONSULTANT:
BIOSPHERE CONSULTING
650 BETHANY DRIVE
SCOTTS VALLEY, CA 95066
831-430-9116

PROJECT DESCRIPTION:

REQUEST A COASTAL DEVELOPMENT PERMIT TO DEMOLISH & REPLACE-IN-KIND THE EXISTING STRUCTURE TO RECTIFY EXISTING RED-TAGS, CONSTRUCT A STITCH PIER RETAINING WALL ON THE SEAWARD SIDE OF THE PROPERTY IN ORDER TO ESTABLISH A 100 YEAR LIFE FOR THE STRUCTURE. CONSTRUCT A MAT SLAB FOUNDATION TO MEET CURRENT GEOLOGIC AND GEOTECHNICAL STANDARDS AND REPLACE IN-KIND, THE EXISTING RESIDENTIAL STRUCTURE.

THE NEW RESIDENCE WILL HAVE 2 BEDROOMS, 2 1/2 BATHS, KITCHEN, FAMILY/GREAT ROOM DINING AND SINGLE CAR GARAGE. REQUEST A VARIANCE TO RECOGNIZE THE EXISTING SETBACKS AS FOLLOWS: THE FRONT YARD SETBACK TO 5.16', REAR YARD TO 8.69' ± AND SIDE YARD TO 2.71'± (AT THE NORTHWEST CORNER).



DRAINAGE & EROSION CONTROL NOTES: (as applicable)

1. ALL DISTURBED SOIL TO BE REVEGETATED AS PER COUNTY OF SANTA CRUZ SANTA CRUZ EROSION CONTROL MIX (1-1/2 LB/1000 SF) STRAW MULCH, 2-3 BAILS/1000 SF FERTILIZER 16-20-0, 21 LB/1000 SF OR EQUIVALENT. BETWEEN OCT. 15 - APRIL 15 EXPOSED SOIL SHALL BE PROTECTED FROM EROSION AT ALL TIMES.
2. ALL RAINWATER RUNOFF FROM NEW ROOF AREAS & RETAIN'G WALLS TO BE COLLECTED W/ G.I. GUTTERS & DOWNSPOUTS AND CONNECTED TO 4" DIA. PVC PIPE AND DISCHARGED TO SUITABLE LOCATION, AS PER SOILS REPORT, THAT WILL NOT EXACERBATE SLOPE EROSION OR SLOPE STABILITY. CONSIDERATION SHOULD BE GIVEN TO EXIST'G CATCH BASINS. BERMS, CONCRETE V-DITCHES OR DRAINAGE SWALES AT THE TOP OF ALL SLOPES, TO INTERCEPT RUNOFF, SHOULD BE CONSIDERED AS WELL. ALL DRAINAGE PATTERNS TO OKAY'D IN FIELD BY PROJECT GEOTECH. SEE GEOTECHNICAL REPORT PREPARED BY HARO, KASUNICH & ASSOC., DATED 4/6/2006.
3. GRADING SHALL BE OVER 100 CUBIC YARDS FOR UNDERFLOOR FOUNDATION/HOUSE PAD CLEARING AND FOOTING EXCAVATIONS. SEE ESTIMATED EARTHWORK CALCULATIONS. SLOPE FINISH GRADE AWAY FROM FOUNDATION.
4. ALL CUT MATERIAL SHALL BE DISPOSED OF OFF-SITE AND DEPOSITED AT A COUNTY APPROVED FILL SITE. AVOID RUNOFF ONTO ADJOINING PROPERTIES.
5. UPON COMPLETION OF CONSTRUCTION, ALL REMAINING EXPOSED AREAS SHALL BE PERMANENTLY REVEGETATED PER THIS PLAN.
6. ANY MATERIAL STOCKPILED DURING CONSTRUCTION SHALL BE COVER WITH PLASTIC.
7. DURING CONSTRUCTION, NO TURBID SITE WATER SHALL BE PERMITTED TO ENTER ADJOINING PROPERTIES. USE OF SILT AND GREASE TRAPS, FILTER BERMS OR HAY BALES MAY BE USED TO PREVENT SUCH DISCHARGE.

GENERAL NOTES:

1. ALL GRADING TO CONFORM TO SANTA CRUZ COUNTY GRADING AND EROSION CONTROL ORDINANCE.
2. ALL ORGANIC MATERIAL SHOULD BE THOROUGHLY STRIPPED AND REMOVED FROM THE PROPOSED BUILDING AREAS.
3. ALL WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF JOE MONTALBO JOANN FERGUSON OR NOLAN DESIGNS PRIOR TO COMMENCING.
4. VERIFY LOCATION OF UTILITIES AND EXISTING CONDITIONS AT SITE PRIOR TO CONSTRUCTION.
5. ALL WORK TO BE IN CONFORMANCE WITH 2001 C.B.C., C.M.C. & C.P.C. AND 2004 EDITION OF C.E.C. AND ALL PERTINENT LOCAL CODES AND ORDINANCES.
6. CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR METHOD AND MANNER OF CONSTRUCTION AND FOR ALL JOB SITE SAFETY DURING CONSTRUCTION.

BUILDING DATA:
A.P.N. 046-173-02

1.	ZONE DISTRICT:	R-1-6
2.	LOT SIZE:	= 5195 SF
3.	COVERAGE BY STRUCTURES: (> 18 INCHES IN HEIGHT)	= 1946 SF
4.	LOT COVERAGE:	= 37.5%
5.	HEATED AREA OF FIRST FLOOR:	= 1149 SF
6.	HEATED AREA OF SECOND FLOOR:	= 396 SF
7.	TOTAL HEATED AREAS:	= 1545 SF
8.	UNHEATED AREA OF FIRST FLOOR:	= 255 SF
9.	UNHEATED AREA OF SECOND FLOOR:	
10.	TOTAL UNHEATED AREAS:	= 255 SF
11.	TOTAL UNHEATED AREA (ZONING):	= 255 SF
	LESS (COVERED PORCH)	= 74 SF
	LESS (GARAGE)	= 225 SF
12.	TOTAL UNHEATED AREAS:	= 0 SF
13.	TOTAL FLOOR AREA: (7 PLUS 10)	= 1800 SF
14.	TOTAL FLOOR AREA (ZONING): (7 PLUS 12)	= 1545 SF
15.	FLOOR AREA RATIO (16 DIVIDED BY 2)	0.50 F.A.R. ALLOWED; 0.30 F.A.R. SHOWN
16.	PARKING PROVIDED (8 1/2 FT x 18 FT) (ONE COVERED ON-SITE, TWO EXIST'G PARTIALLY W/IN ROW)	3 SPACES REQUIRED; 3 SPACES SHOWN
17.	SETBACKS:	FRONT: 20' ALLOWED - 5.16' EXIST'G/PROPOSED; SIDE: 5' AND 8' ALLOWED AND 2.71' & 8' EXIST'G/PROP.; REAR: 15' ALLOWED - 8.69± PROPOSED
18.	BUILDING HEIGHT:	28' ALLOWED AND PROPOSED

ESTIMATED EARTHWORK:

BASEMENT NET CUT/FILL:

CUT:	2898/27 = 107 CU. YDS.
FILL:	N/A
TOTAL:	107 CU. YDS.

APN 046-173-04
LOT 23
25-M-05

Basis of Elevation

Benchmark #139 of the Official County Benchmark Data was found by the north end of the Picnic/Parking area at the main entrance of Sunset Beach State Park. EL = 68.40'

The contour interval is 1 foot.

Basis of Bearings

The basis of bearing for this map is between found monuments per record map 25-M-05, Map of Sunset Beach.

GRAPHIC SCALE
1 INCH = 8 FEET

REVISION	BY
12/12/06	KDP
5/23/07	KDP
7/2/07	KDP
8/28/07	KDP
10/31/07	KDP

4/11/08

NOLAN DESIGNS, KAREN D. PERALTA, P.E.
1125 HARPER COURT
SANTA CRUZ, CALIFORNIA 95062

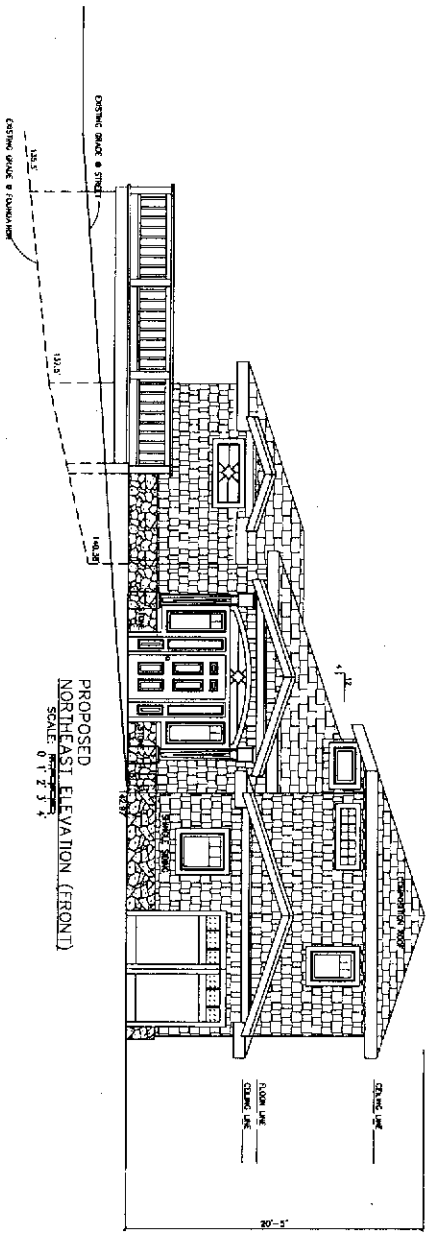
SITE PLAN

A.P.N. 046-173-02

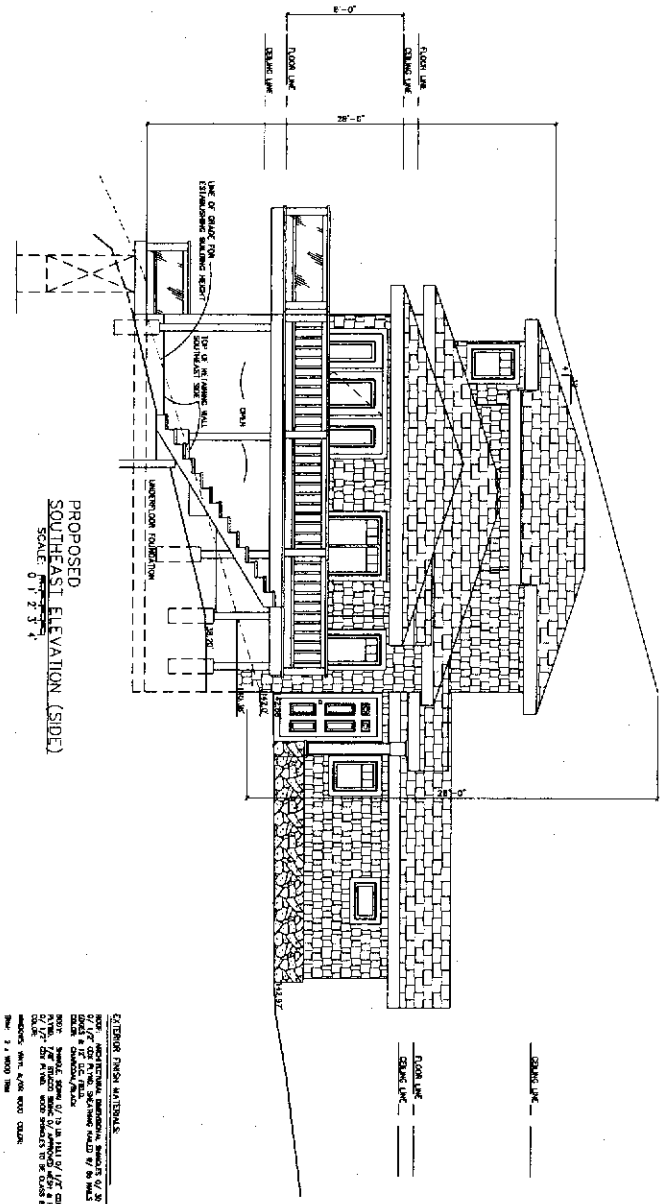
PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND
44 SUNSET DRIVE
WATSONVILLE, CALIFORNIA 95076 (650) 326-3498

DATE: 11/6/06
SCALE: 1"=8'
PROJ. 8007LBA
DRAWN KDP
SHEET NO.
A-1
OF SHEETS

EXHIBIT A



PROPOSED
NORTHEAST ELEVATION (FRONT)
SCALE: 0 1 2 3 4



PROPOSED
SOUTHEAST ELEVATION (SIDE)
SCALE: 0 1 2 3 4

EXTERIOR FINISH MATERIALS

EXHIBIT A

PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND
44 SUNSET DRIVE
WATSONVILLE, CALIFORNIA 95076 (650) 279-1035

A.P.N. 046-

- 21 -

ELEVATIONS

NOLAN DESIGNS, KAREN D. PERALTA, P.E.
1125 HARPER COURT
SANTA CRUZ, CALIFORNIA 95062 (831) 476-4197

REVISION	BY
11/9/06	KDP
12/12/06	KDP
5/21/07	KDP
6/28/07	KDP

DATE: 10/26/06
SCALE: 1/4"=1'-0"
PROJ. 0607186
DRAWN BY: KDP
SHEET NO. A-2
OF SHEETS

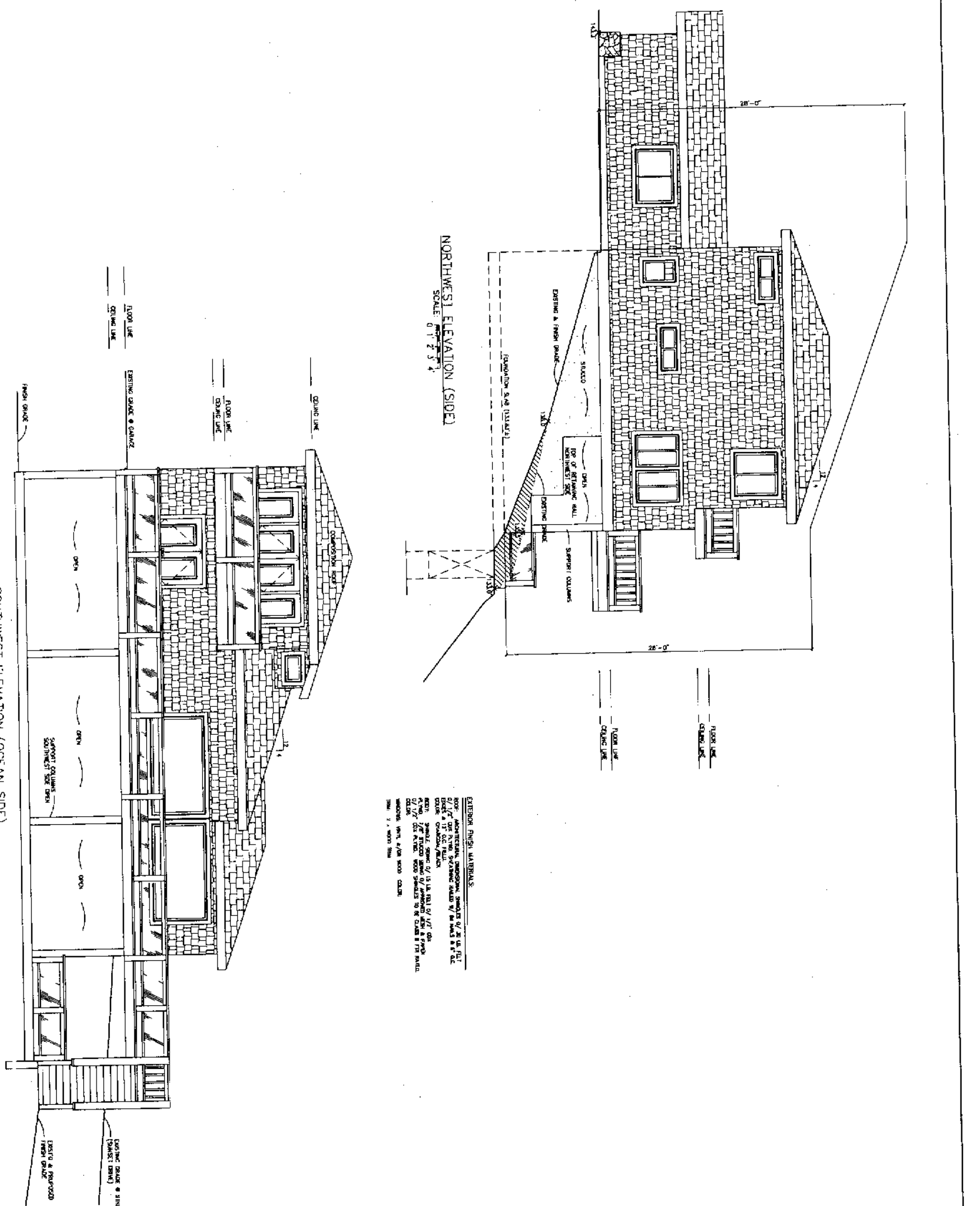


EXHIBIT A

DATE: 10/28/06 SCALE: 1/4"=1'-0" DRWN BY KDP SHEET NO. A-3	PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND 44 SUNSET DRIVE WATSONVILLE, CALIFORNIA 95076 (650) 279-1035	A.P.N. 046- -2 -22-	ELEVATIONS

NOLAN DESIGNS, KAREN D. PERALTA, P.E.
1125 HARPER COURT
SANTA CRUZ, CALIFORNIA 95062 (831) 476-4197

REVISION	BY
11/9/06	KDP
12/12/06	KDP
5/23/07	KDP
8/28/07	KDP

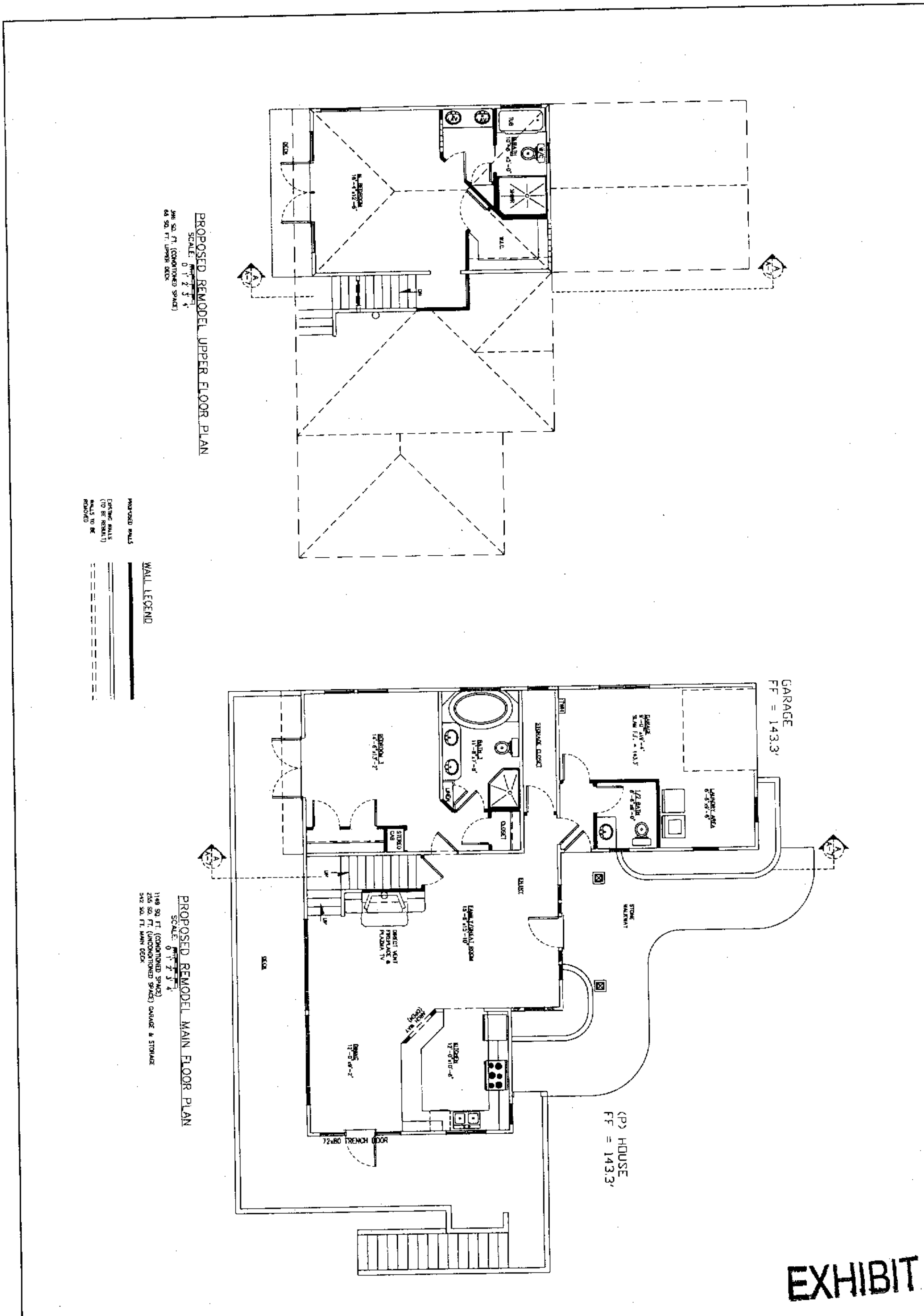
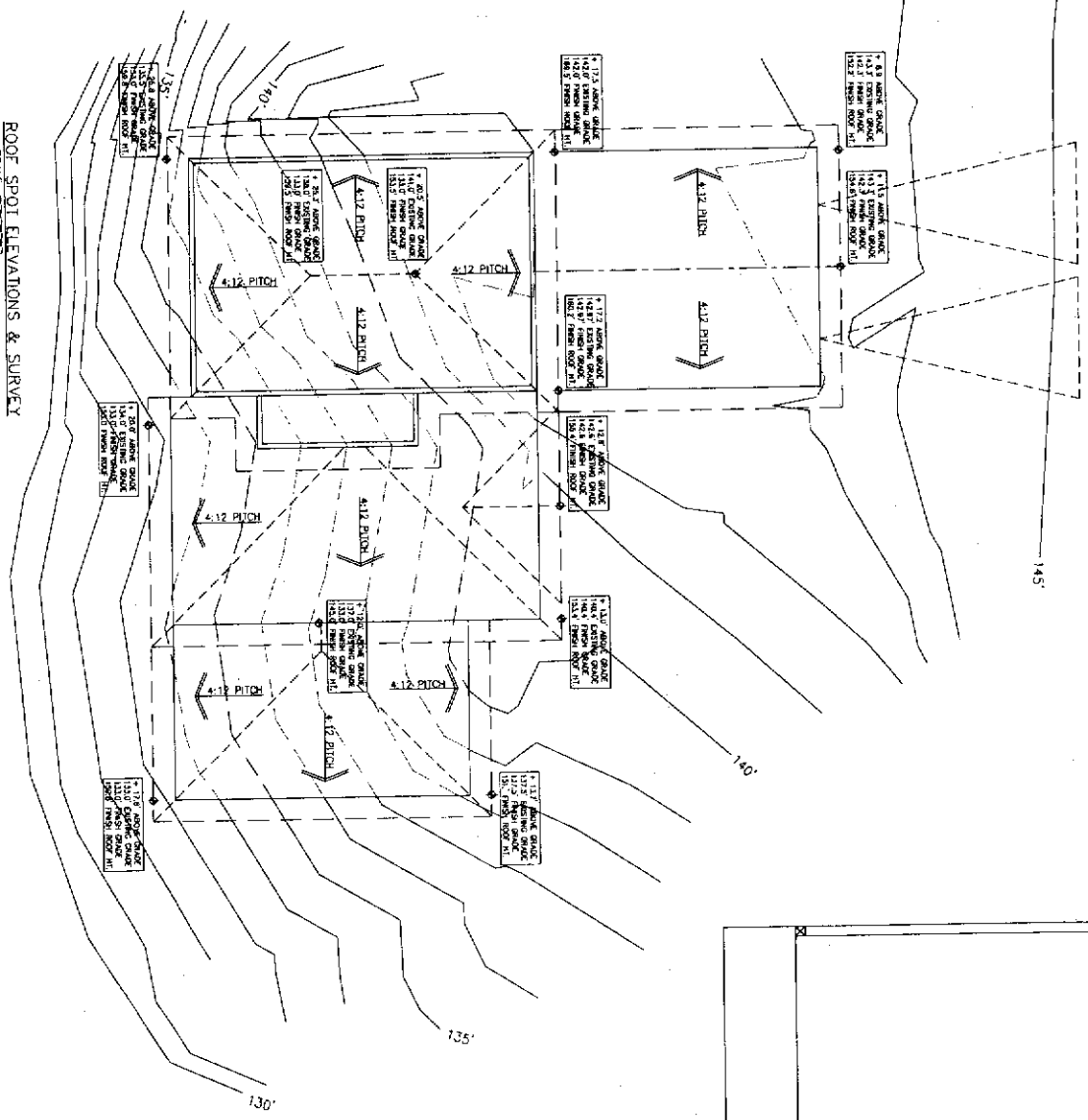


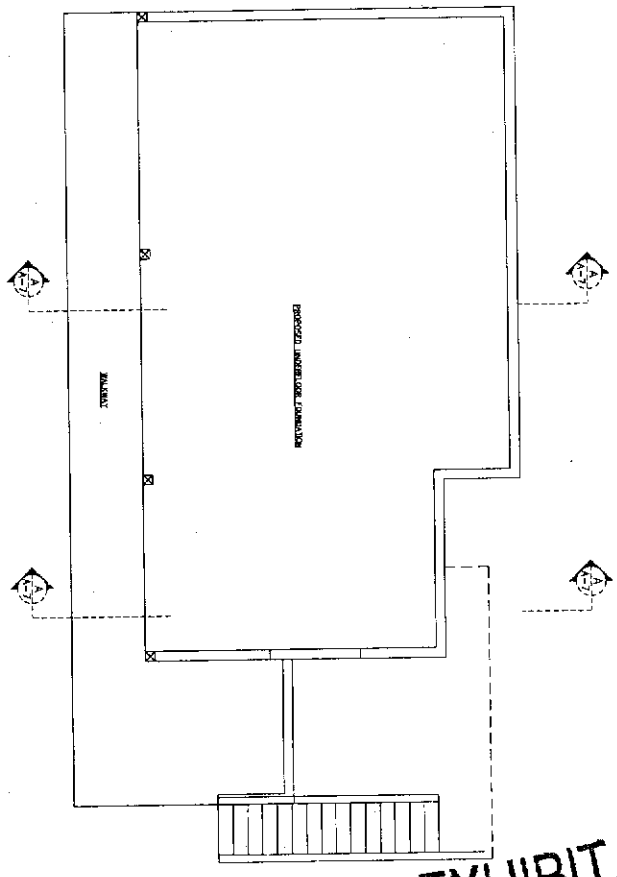
EXHIBIT A

DATE: 8/16/06 SCALE: 1/4"=1'-0" PROJ. D0671RA DRWN BY KDP SHEET NO. A-4 OF SHEETS	PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND 44 SUNSET DRIVE WATSONVILLE, CALIFORNIA 95076 (650) 279-1035	A.P.N. 046-...-2 -23- PROPOSED FLOOR PLANS	NOLAN DESIGNS, KAREN D. PERALTA, P.E. 1125 HARPER COURT SANTA CRUZ, CALIFORNIA 95062 (831) 476-4197

REVISION	BY
11/26/06	KDP
12/12/06	KDP
5/23/07	KDP
8/28/07	KDP



ROOF SPOT ELEVATIONS & SURVEY
SCALE: 0 1' 2' 3' 4'



PROPOSED UNDERFLOOR FOUNDATION
SCALE: 0 1' 2' 3' 4'
CONDITIONED SPACE = 1024 SQ. FT.

EXHIBIT A

PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND
44 SUNSET DRIVE
WATSONVILLE, CALIFORNIA 95076 (650) 279-1035

A.P.N. 046-24-

PROPOSED BASEMENT & ROOF ELEV.

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1125 HARPER COURT
SANTA CRUZ, CALIFORNIA 95062 (831) 476-4197

REVISION	BY
11/9/06	KDP
12/19/06	KDP
3/23/07	KDP
8/28/07	KDP
10/31/07	KDP

DATE: 4/14/06
SCALE: 1/4"=1'-0"
PROJ. 2007.15A
DRN. BY KDP
SHEET NO. A-5
OF SHEETS

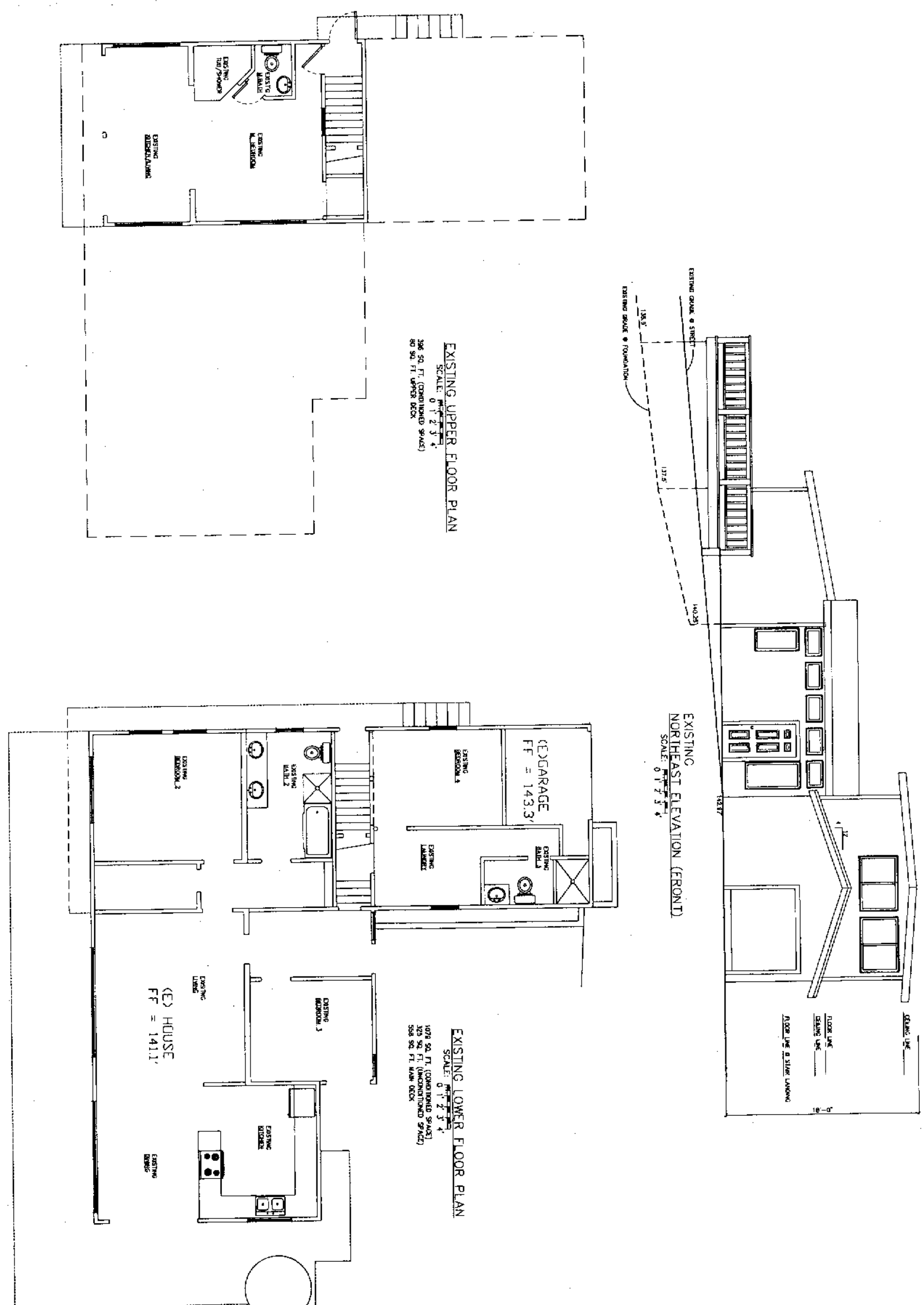
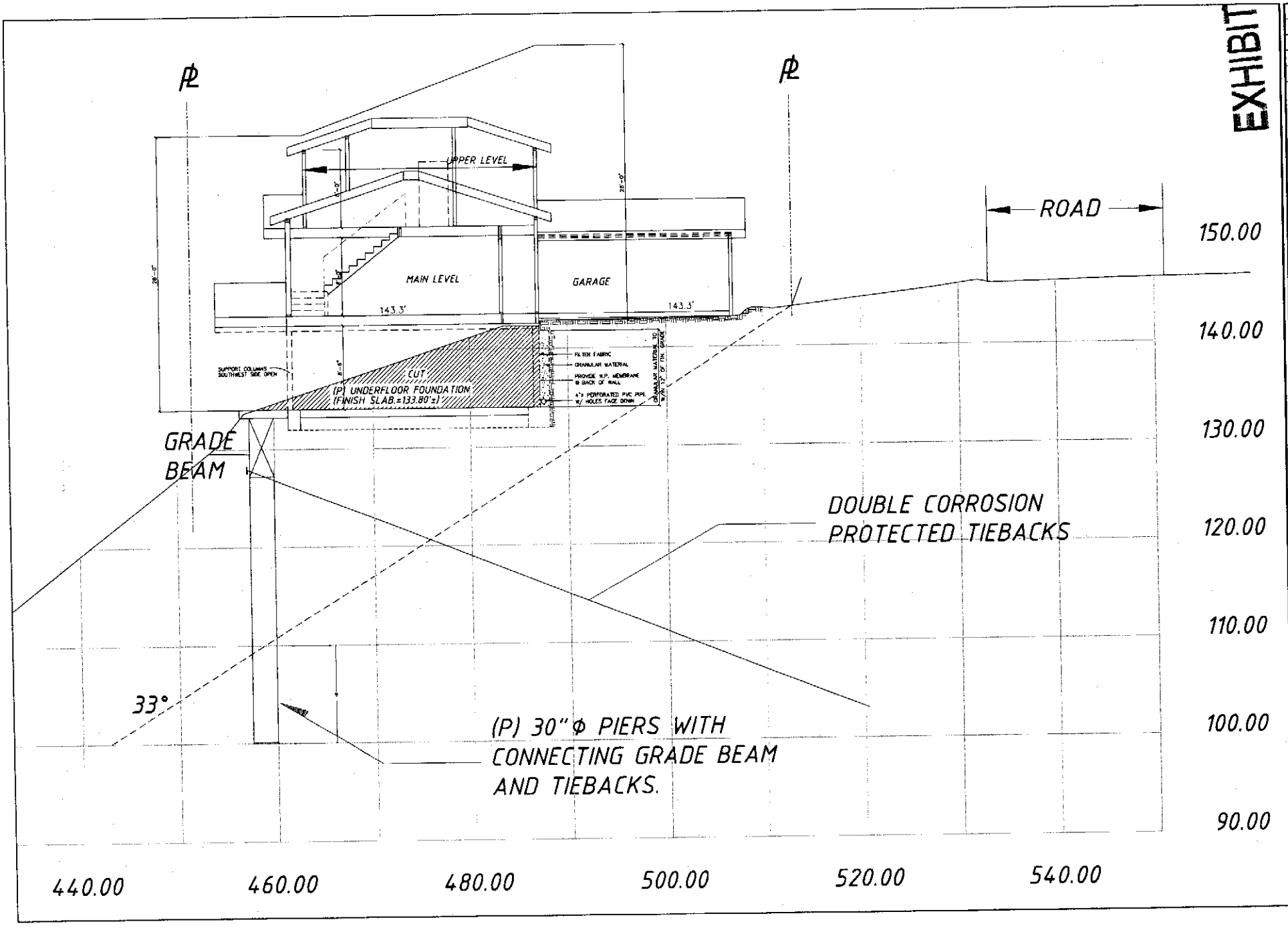


EXHIBIT A

A-6	PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND 44 SUNSET DRIVE WATSONVILLE, CALIFORNIA 95076 (650) 279-1035	EXISTG FLOOR PLANS	NOLAN DESIGNS, KAREN D. PERALTA, P.E. 1125 HARPER COURT SANTA CRUZ, CALIFORNIA 95062

EXHIBIT A



REVISION	BY
8/24/07	KDP

NOLAN DESIGNS, KAREN D. PERALTA, P.E.
1125 HARPER COURT
SANTA CRUZ, CALIFORNIA 95062 (831) 476-4197

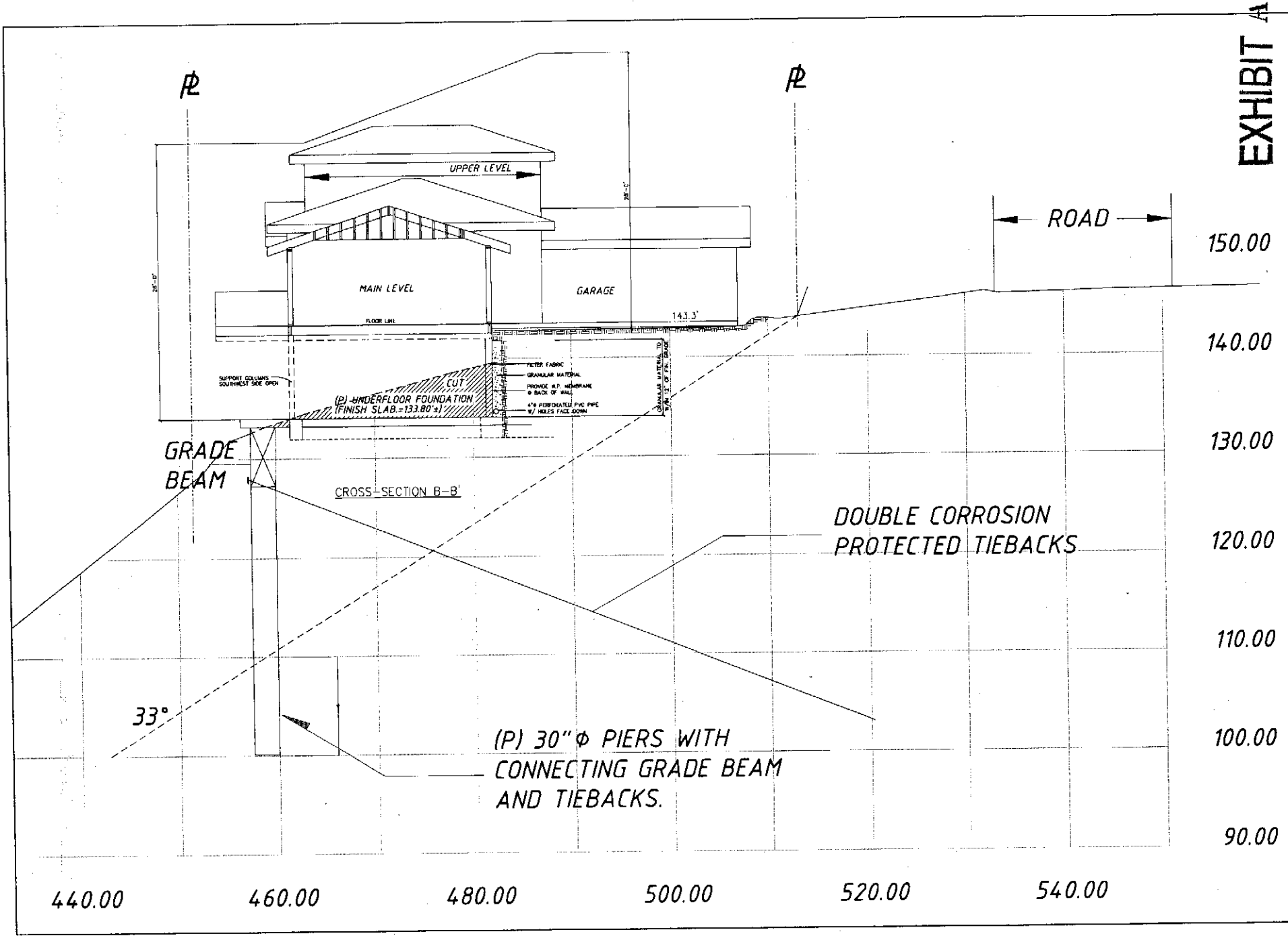
CROSS-SECTION A-A

A.P.N. 046-26-2

PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND
44 SUNSET DRIVE
WATSONVILLE, CALIFORNIA 95076 (650) 279-1035

DATE: 5/25/07
SCALE: 1/4"=1'-0"
PROJ. 2007184
DRN.BY KDP
SHEET NO. A-7
OF SHEETS

EXHIBIT A



REVISION	BY
8/28/07	KDP

NOLAN DESIGNS, KAREN D. PERALTA, P.E.
1125 HARPER COURT
SANTA CRUZ, CALIFORNIA 95062 (831) 476-1497

CROSS-SECTION B-B

A.P.# 046-27-2

PROPOSED FERGUSON/MONTALBO REPLACE-IN-KIND
44 SUNSET DRIVE
WATSONVILLE, CALIFORNIA 95076 (650) 279-1835

DATE: 5/23/07
SCALE: 1/4"=1'-0"
PROJ. 20071BA
DRN.BY KDP
SHEET NO. A-8
OF SHEETS

PROJECT DESCRIPTION

A new onsite wastewater treatment and dispersal system is proposed to replace an existing conventional septic system serving an existing dwelling located at 44 Sunset Drive, Sunset State Beach, California. An extensive remodel of the dwelling is proposed resulting in a 3 bedroom dwelling. Alternative technology that provides enhanced treatment of the effluent discharged to the leachfield is required due to limited space and the high percolation rate of the sandy soils on the property. The proposed system shall consist of a 1,500 gallon, watertight processing tank and an AdvanTex™ AX20 Mode 1b treatment system. Two 20'-long rock-filled dispersal trenches are proposed for dispersal of treated filtrate. The design presented complies with County of Santa Cruz septic system requirements in Chapter 7.38 of the County Code.

DESIGN CRITERIA

- The proposed AdvanTex™ wastewater treatment system is designed to serve up to a 4 bedroom dwelling generating an average of 450 gpd and peak flows of 900 gpd.
- The sandy soils on the site are estimated to percolate in the 1-5 minutes per inch range (see site evaluation).
- Seasonally high groundwater conditions are estimated to occur at greater than 10' below grade or lower for 90% of the year for design purposes based on the site evaluation.

DISPERSAL TRENCH SIZE CALCULATIONS

Design Flow: 375 gpd (3 bedroom dwelling)
Percolation Rate: 1-5 minutes per inch
Square Feet of Trench Bottom and Sidewall Area Required: 875 sq. ft
Trench Design: 5.0' effective flow depth of 1.5' wide dispersal trench, therefore 11.5 sq. ft. of trench bottom and sidewall area per lineal foot
Linear Feet of Trench Required: 76.1 lin. ft.
50% Reduction with Enhanced Treatment System: 76.1 lin. ft. ÷ 2 = 38.0 lin. ft.
Result: Two, 20' long, 6.5' deep, 1.5' wide trenches with a 5.0' effective flow depth (460 sq ft)

SPECIFICATIONS

1. Building Sewer, Existing Septic Tank & Processing Tank

1.1 New 4" ABS building sewer lines shall be installed to convey all raw sewage from dwelling to the processing tank. Existing septic tank shall be destroyed and made so that it cannot hold water or removed from the site. All gravity sewer piping must maintain a minimum 2% continuous gradient. ***All wastewater including graywater shall be discharged to the processing tank.***

1.2. Locate a 2-way, 4" ABS cleanout fitting on the building sewer to facilitate snaking and for line location.

1.3. A 1,500 gallon, watertight, FRP tank, from Orenco Systems®, Inc. (OSI), is specified for use as a processing tank with the proposed AdvanTex™ (Mode 1b) treatment system. The tank shall have 24" diameter OSI access risers. Riser heights will be determined by final tank burial depth (ideally 10" to 22"). Call Bonny Doon Environmental Systems, Inc. to order the tank, AdvanTex™ treatment system and other OSI parts (423-8022).

1.4. The new tank hole shall be excavated so that the tank sits level. The tank must be installed according to the OSI Installation Guide. ***Concrete collar around tank flange is not required for anti-floatation as high groundwater conditions are not likely to occur at this site.*** Install the access risers with a watertight joint using the adhesives supplied by manufacturer.

1.5. Install the tank inlet fitting with a watertight joint. Cap off or use a test plug on this fitting.

1.6. Fill the tank with clean water 2" above the joint between the riser and the tank top. Repair any leaks.

1.7. Obtain a watertight tank inspection by EHS, local distributor and the designer with 24 hours notice to each party.

1.8. Install the recirculating splitter valve (RSV) in the outlet side of the tank.

2. AdvanTex™ Treatment System

2.1. An AdvanTex™ AX20 treatment system includes a Biotube® pump package for recirculation, recirculating splitter valve, split-flow tee, AX20 packed-bed filter pod, and telemetry-enabled VeriComm® control panel.

2.2. Install the AdvanTex™ system according to the Orenco Systems, Inc. Installation Guide and in the location shown on the plan. The filter pod shall be installed partially above grade (2"-24"). ***Anti-floatation flanges are not required.***

2.3. The pressurized transport pipe from the recirc. pump to the filter pod shall be 1.0" schedule 40 PVC.

2.4. The filtrate gravity return pipe from the filter pod to the recirculating splitter valve (RSV) and on to the pump basin shall be 2" schedule 40 PVC. Assure continuous fall on the 2" return piping.

2.5. Test the squirt height on the filter pod. It should be approximately 3'-4' high.

3. Gravity Flow Dispersal Trenches

3.1. Two 18" wide, dispersal trenches with a maximum trench depth of 6.5', shall be installed in locations shown on plan. Both trenches shall be 20' long. Trenches shall be excavated along contour and have a level floor.

3.2. The ***dispersal trench lateral piping shall be 1.0" schedule 40 PVC with factory drilled, 1/8" orifices spaced 2' apart (pointing up).*** Orifice shields shall be placed over each of the 20 orifices.

3.3. The pressure lateral piping shall be installed on a 5' thick, level bed of 3/8" to 3/4" clean drain rock with less than 1% fines. Larger rock sizes may damage lateral pipe.

3.4. An OSI flushing assembly shall be installed at the west end of each lateral. An inspection riser shall be installed adjacent to each flushing assembly in a single large valve box.

3.5. Slotted 2" schedule 40 PVC inspection risers shall be installed at both ends of each trench with female adapter and threaded plug. Risers shall be placed in a valve box for access and line location identification. The inspection risers shall be held plumb in the trench while the drain rock is placed.

3.6. After squirt testing, the orifice shields shall be placed over each orifice. 2"-3" of additional rock shall then be placed over the pipe. Filter fabric shall be placed on top of the rock, then covered with native backfill.

3.7. The filter fabric shall be OSI [model LFF4] or Mirafi.

3.8. Installer shall assure that surface drainage is directed away from the proposed dispersal trenches.

4. Installer Qualifications and Responsibilities

4.1. The system installer shall be licensed by the State of California, Department of Consumer Affairs, to install septic systems. Installer certification is required by the AdvanTex™ dealer. The installer is required to fully read and understand the AdvanTex™ installation manual prior to the commencement of work.

4.2. All piping shall conform to the current edition of the International Plumbing Code.

4.3. The installer shall be responsible for locating any property lines, underground utilities or piping. Any damage to these facilities shall be the responsibility of the installer.

4.4. A pre-construction conference with designer shall be arranged prior to the commencement of work. Construction inspections, watertight tank test inspection, AdvanTex™ installation inspection, and final operation of system shall be made by designer (BioSphere Consulting: 430-9116) and the County of Santa Cruz Environmental Health Service (EHS: 454-2022). The installer shall give at least 24 hours notice to the designer and EHS for all inspections requested.

5. Electrical Work

5.1 The VeriComm® control panel shall be installed on a 4X6 pressure-treated post set in concrete near the processing tank. Do not install control panel on the building frame.

5.2. Two, 20 amp, 120V electrical circuits shall be extended to the VeriComm® panel in a single conduits. Underground circuits in conduit shall be installed from panel to the recirculation pump. A separate underground conduit containing phone line shall be installed to the VeriComm® panel.

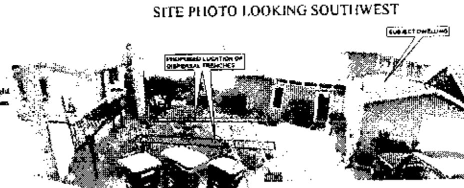
5.3. All work shall conform to the National Electrical Code and the contractor shall obtain an electrical permit and inspection from the County of Santa Cruz Building Department (454-2260).

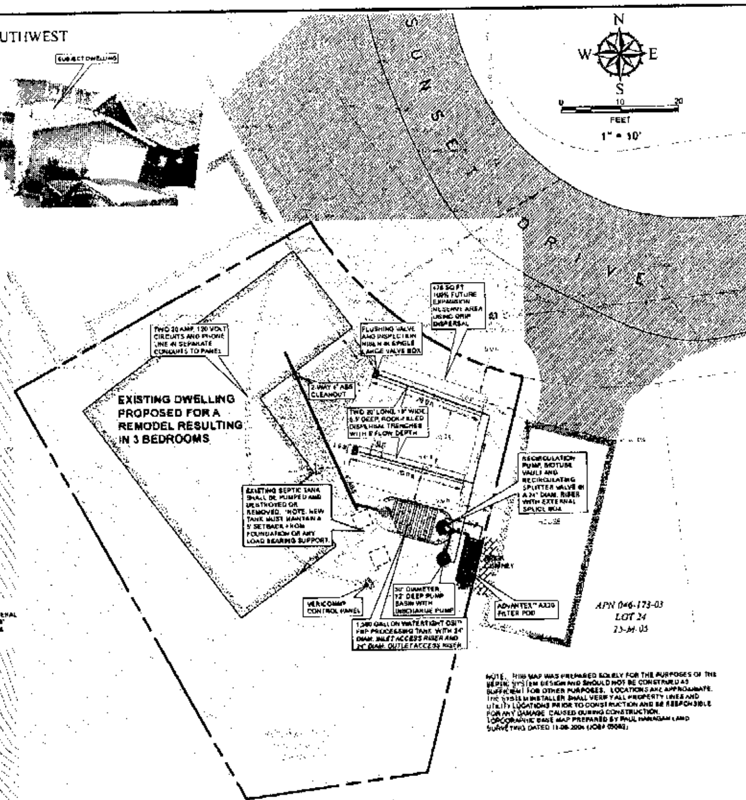
6. Site Clean up and Erosion Control Measures

6.1. All excavated areas shall be smoothed and all construction debris shall be removed from the site.

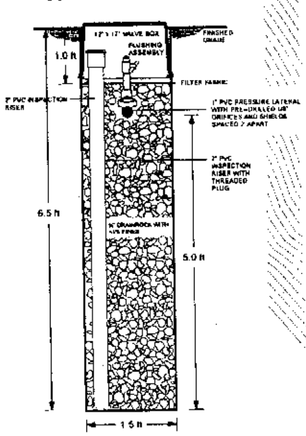
6.2. All disturbed soils shall be seeded and mulched. Santa Cruz Erosion Control Mix seed shall be used at the coverage recommended on the package for all disturbed soil.

SITE PHOTO LOOKING SOUTHWEST

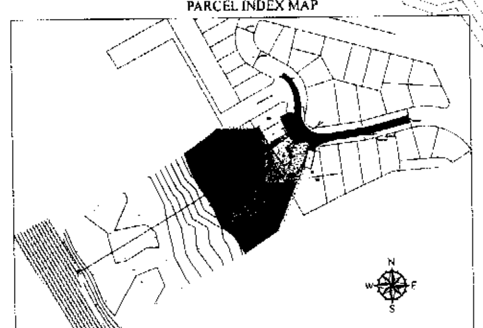




DISPERSAL TRENCH CONSTRUCTION DETAIL

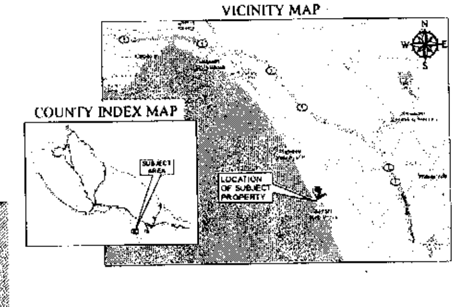


PARCEL INDEX MAP

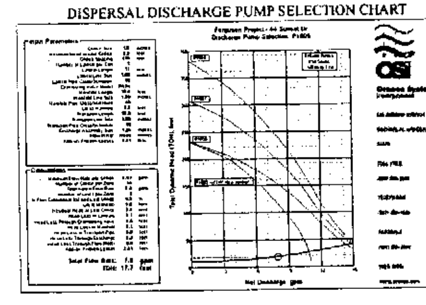


VICINITY MAP

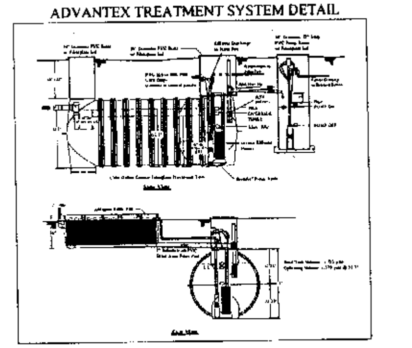
COUNTY INDEX MAP



DISPERSAL DISCHARGE PUMP SELECTION CHART



ADVANTEX TREATMENT SYSTEM DETAIL



OPERATION AND MAINTENANCE

- The owner should read and operate the AdvanTex™ system according to the Orenco Systems®, Inc. operation and maintenance literature.
- Orenco requires annual maintenance servicing of the AdvanTex™ system by a qualified technician each 6 months. Service reports should be sent to EHS.
- The treatment tank is alive with microorganisms performing oxidation and reduction of the contents. Do not add any materials (paint thinner, paint, motor oil, unused medicine, etc.) that may disrupt this process. The septic tank should be pumped when the total of the scum and sludge thickness is greater than 1/3 of the total liquid level depth.
- Repair all plumbing leaks (especially toilet leaks) promptly.

SITE EVALUATION FOR SEPTIC SYSTEM DESIGN

APN 046-173-02, 44 Sunset Drive, Santa Cruz County, California

Introduction

The subject property was analyzed for the purposes of designing an onsite wastewater system to serve a 3 bedroom dwelling proposed to be remodeled on the parcel. The existing septic tank is proposed to be destroyed. A soil profile test hole (T-1) was made with a hand-auger on February 6, 2006. Field soil morphology analysis from the profile is reported below. The general site characteristics are presented along with analysis of soil percolation rate and groundwater activity. Conclusions are drawn regarding wastewater treatment and dispersal design.

General Site Characteristics

The subject dwelling is situated at about 140 feet in elevation on a moderate to steep south facing slope along the bluffs of Sunset Beach. The slopes gradients across the proposed dispersal trench and expansion area are between 5% and 10%. The parcel is mapped as county soil survey soil type 107, Baywood loamy sand which is described as being deep and well drained and having a rapid permeability. The local geologic map of the area shows the site underlain by Eolian (dune) deposits of Sunset Beach (Qes). Material of this type typically provides extremely high hydraulic conductivity.

Discussion of Site Evaluation and Wastewater System Design

Our test hole revealed fine to medium-grained loamy sand to a depth of about 5'. No evidence supporting shallow groundwater was observed in our test hole. Groundwater is estimated to occur far greater than 10' below the ground surface for 90% of the year. Two 18" wide, 6.5' deep and 20' long rock-filled trenches are proposed. The system design is sized to serve a dwelling with up to 4 bedrooms.

PROFESSIONAL GEOLOGIST — ANDREW BROWNSTONE No. 7455 Exp. 12/31/07 — STATE OF CALIFORNIA

BioSphere Consulting — A Limited Liability Company
Alternative Wastewater System Design
- Site Evaluation & Mapping
- Soil Analysis & Percolation Testing
- New Development or Repairs
- Residential or Commercial
1315 King Street
Santa Cruz, CA 95060
Tel: (831) 430-9116
Fax: (831) 430-9405
www.biosphere-consulting.com
andrew@biosphere-consulting.com

ALTERNATIVE ONSITE WASTEWATER SYSTEM DESIGN

FOR ADDITION / UPGRADE OF A SINGLE FAMILY DWELLING
PROPOSED ENHANCED TREATMENT SYSTEM SPECIFYING PRESSURIZED DISPERSAL TO ROCK-FILLED TRENCHES

Project Location:	44 Sunset Drive, Sunset Beach, California (Santa Cruz County)		
Property Owner:	Casa Del Mare, LLC (Joann Ferguson)		
Mailing Address:	745 Cotton Street, Menlo Park, CA 94025-5608		
Owner Phone #:	650-944-5289		
Directions to Site:	Hwy 1 south, take San Andreas Rd exit, take San Andreas Rd toward Seascape, stay straight onto San Andreas Rd, turn right onto Sunset Beach Rd, pass State park booth, go uphill to right		
Date: 12/16/06	By: Andrew Brownstone	Job No.: #5035	APN: 046-173-02

REVISED: 7/2/07

EXHIBIT A

EXHIBIT A

COASTAL BLUFF STABILIZATION - STITCH PIER RETAINING WALL W/ TIEBACKS

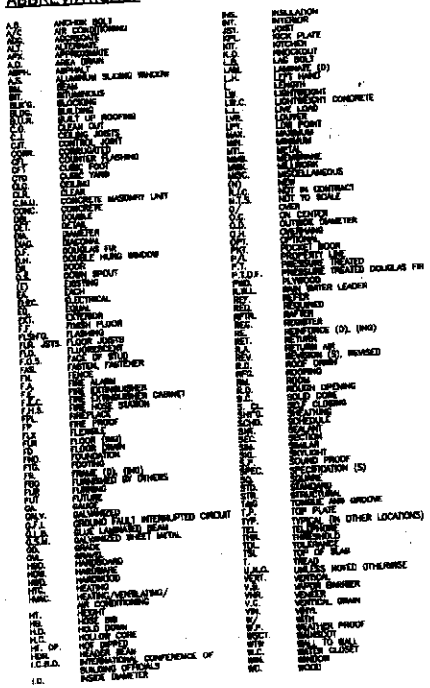
PREPARED FOR:

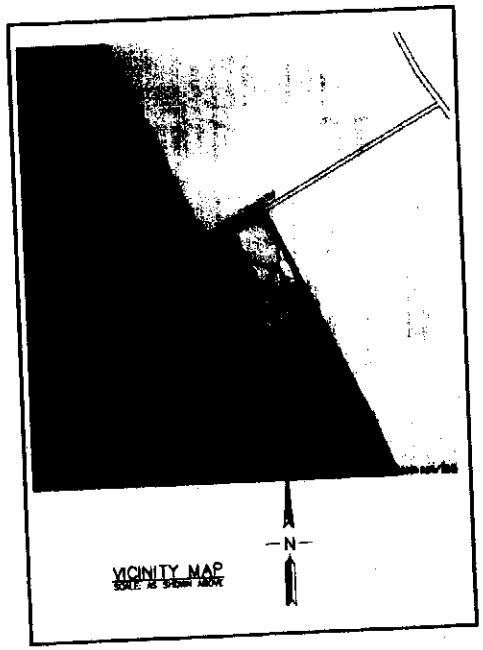
MS. JOANNE FERGUSON, 745 COTTON STREET, MENLO PARK, CALIFORNIA 94025

PROJECT ADDRESS:

44 SUNSET DRIVE, WATSONVILLE, CALIFORNIA 95076
APN NO. 046-173-02

ABBREVIATIONS:





SHEET INDEX:

SOIL ENGINEERING CONSTRUCTION, INC.

SOIL ENGINEERING CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER GEORGE C. DALE CIVIL STATE OF CALIFORNIA

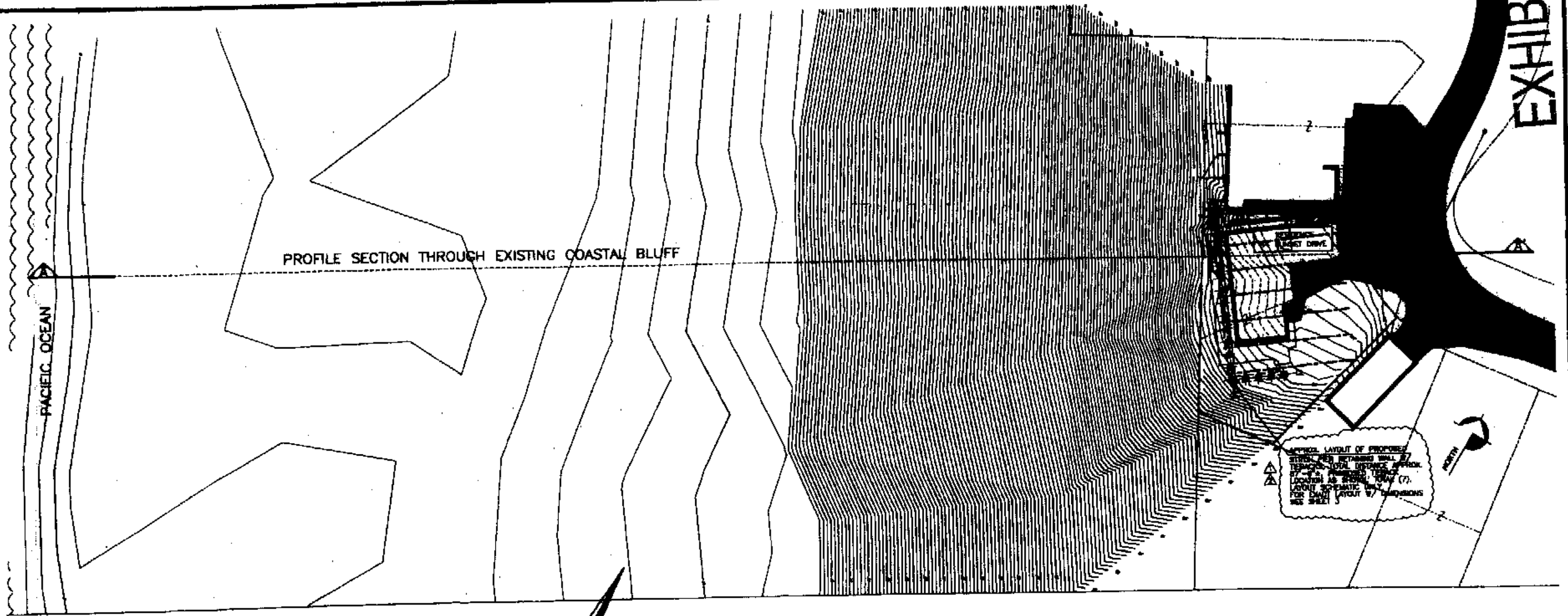
COVER SHEET– STANDARD ABBREVIATIONS & VICINITY MAP

- 29 -

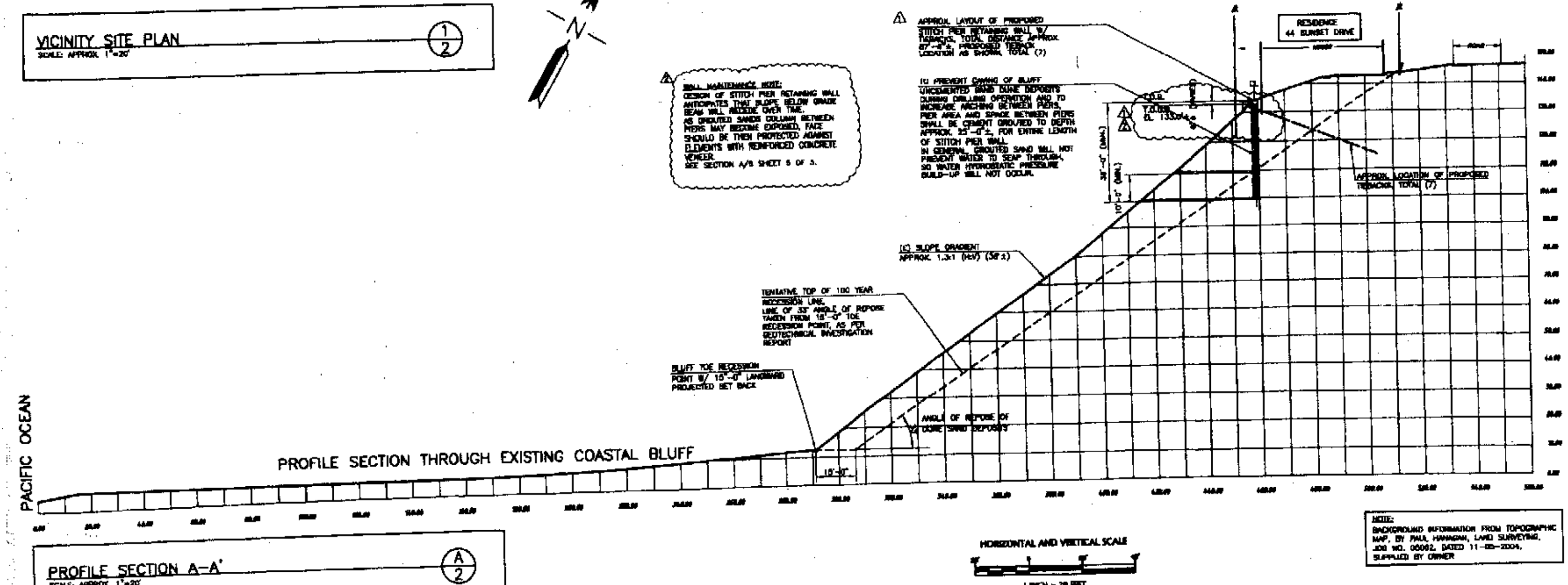
STITCH PIER RETAINING WALL W/ TIEBACKS

44 SUNSET DRIVE, WATSONVILLE, CALIFORNIA 95076

1 OF 5



VICINITY SITE PLAN (1/2)
SCALE: APPROX. 1"=20'



PROFILE SECTION A-A' (A/2)
SCALE: APPROX. 1"=20'

STITCH PIER RETAINING WALL W/ TIEBACKS

44 SUNSET DRIVE, WATSONVILLE, CALIFORNIA 95076

VICINITY SITE PLAN & PROFILE SECTION A-A'

SOIL ENGINEERING CONSTRUCTION

SOIL ENGINEERING CONSTRUCTION, INC

2 OF 5

GENERAL NOTES:

1. All work will conform to 2001 CBC, all applicable federal, state, and Santa Cruz County codes and ordinances.
2. All dimensions, conditions and location of facilities to be verified and determined in field.
3. Exact location of drilled stitched piers for proposed stitch pier retaining wall w/ tiebacks construction may be adjusted as field conditions require.
4. All cast-in-place reinforced concrete shall have compressive strength at 28 days: 4,000 psi stitch pier and grade beam
5. Steel members shall be:
   - all wide flange steel members shall conform to ASTM A572, grade 50.
   - miscellaneous channels, angles, and plates shall conform to ASTM A36.
6. Reinforcing steel shall conform to ASTM A615, grade 60 for #4 bars and above.
7. All exposed steel, if any, shall be galvanized or coated with corrosion inhibiting paint.
8. Special inspection is required for installation of drilled piers, placement of reinforcement, and taking of concrete test specimens for concrete having f'c > 3,000 psi. (UBC 1997 section 1701)
9. Section at construction joint (C.J.) make rough or form key.
10. Reinforcement cover (UBC Sec. 1907.7.1):
    - Concrete cast against and permanently exposed to earth shall have minimum 3" concrete cover
    - Concrete exposed to earth or weather shall have minimum 2" concrete cover for #6 bars and above, 1 1/2" for #5 bars and below.
11. All lumber for lagging, if any, shall be Douglas-Fir, pressure treated for wood-soil contact. Lagging grade to be No. 2, or better (Typ.).
12. All retrofit hardware, if any, to be by Simpson Strong-Tie Co., Inc., or equal. Epoxy, if any, to be SET high strength epoxy, by Simpson Strong-Tie Co., Inc., or equal.
13. Splices of rebar to be class (B) splice. If shotcrete method is going to be utilized, lap splices of reinforcing bars in shotcrete shall be by non-contact lap splice method with at least 2" clearance between bars (UBC Sec. 1924.4).
14. Design parameters and recommendations: Geotechnical Investigation, Proposed Single Family Dwelling, Remodel and Coastal Bluff Stabilization, APN 046-173-02, 44 Sunset Drive, Watsonville, California, by Haro, Kasunich and Associates, Inc., Project No. SC9036, dated April 6, 2006.
15. Project Soil Engineer: Haro, Kasunich and Associates, shall be retained by Client to review construction plans, and to periodically observe all geotechnical aspects of proposed construction. Approval letter shall be submitted to Santa Cruz County Building and Planning department.
16. Cement grouting notes: Chemical grouting to be done by contractor with at least 5 years relevant experience in use of sodium silicate grout. Chemical grout mix less than 35% grade of sodium silicate (PQ Corporation) or equivalent plus stoichiometrically balanced organic ester hardener. Inorganic accelerator may be divalent salt or acid salt. Injection spacing, depth, and quantity to be determined by contractor to permeate 33% of volume of each line grout zone. Injection method may be single point, descending stage, split spaced technique or "tube a manchette" technique. If "tube a manchette" method is used all tubes shall be installed prior to starting grouting process. Mix water shall be clear and free of injurious concentrations of dissolved salts. Potable water is acceptable if reclaimed water is used, contractor shall certify water is safe for contact with all site personnel.
17. Tieback notes: See Tieback Table "A" and relevant notes on sections. Tieback anchors to be DCI Dywidag, or equal. Tiebacks shall be double corrosion protected - DCP. Tiebacks to be installed at alternate mid-span between piers @ approx. 5'-0" C.C.±. Total (7) tiebacks to be installed. Use composite centralizers @ 10'-0" C.C.± (if bar is used). Hole diameter at contractor's option, 6" dia. tieback hole considered in design. Grout to be cement grout w/water-cement ratio (w.c) of 0.4 to 0.5 = 5 gal. per sack. Allow up to 22.5 of sand/yard. Allow cure time before testing. Provide for two stages of grouting. First stage of grouting shall be for testing of tiebacks. Holes to be tremie pipe grouted from bottom of hole for bonded zone. Second stage of grouting shall be accomplished after accepted testing, all way up remaining hole. Pressure grouting may be utilized, at contractor's option, to achieve considerably higher soil-grout bond capacity. Multistrand anchors are factory equiped with grouted PVC sleeves. Tieback depth may be adjusted in field by Project Soil Engineer, based on actual soil condition. Helix screw anchors do not require grouting operation. Helix screw anchors to be galvanized, manufactured by Chance Anchors, or equal.

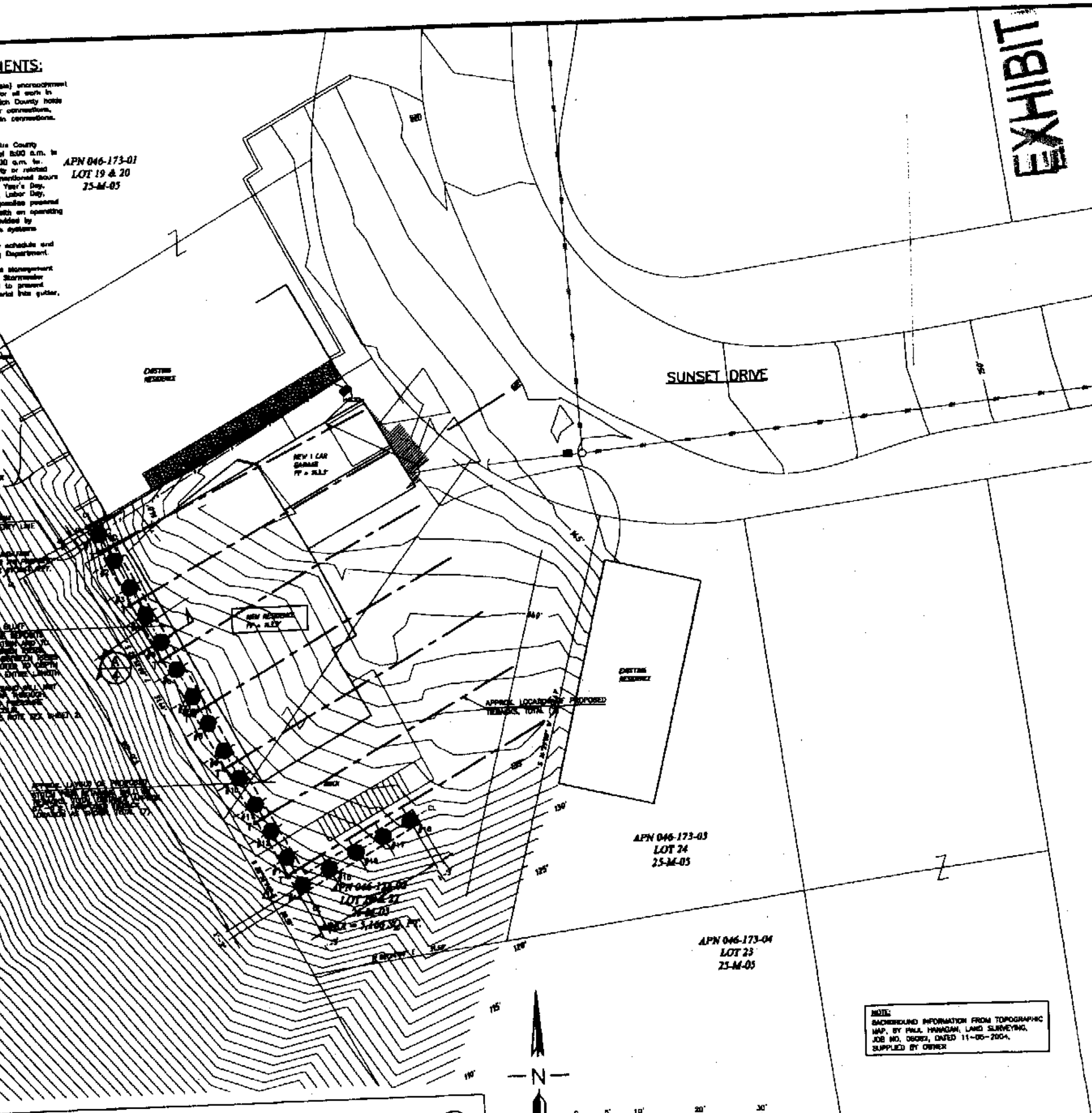
PUBLIC WORKS REQUIREMENTS:

21. Owner shall apply for and obtain (if applicable) encroachment permits from Department of Public Works for all work in Right of Way, easements of property in which County holds interest, including driveway, sidewalks, sewer connections, sewer cleanouts, curb drains, or storm drain connections in field.
22. All construction related activities which require County permit shall be allowed only during hours of 8:00 a.m. to 5:00 p.m., Monday through Friday and 10:00 a.m. to 5:00 p.m. Saturdays. No construction activity or related activities shall be allowed outside of aforementioned hours or on Sundays and following holidays: New Year's Day, President's Day, Memorial Day, 4th of July, Labor Day, Thanksgiving Day, and Christmas Day. All gasoline powered construction equipment shall be equipped with an operating muffler or baffling system as originally provided by manufacturer, and no modification to these systems is permitted. Contractor to verify aforementioned holiday schedule and hours with Santa Cruz County City Building Department.
23. Contractor shall ensure that applicable Best Management Practices (BMPS) from Santa Cruz County Stormwater Pollution Prevention Program (STOPP) are followed to prevent discharge of soil or any construction material into gutter, storm drain, or creek.

ABBREVIATIONS:

For other Standard Abbreviations see Cover Sheet

C.C.	—Center to center
C.O.	—Clean out
E.W.	—Each way
(E), (N)	—Existing, New
N.I.C.	—Not in contract
P.T.D.F.	—Pressure treated douglas fir
T.O.G.B.	—Top of grade beam
T.O.W.	—Top of wall
T. & B.	—Top and bottom
U.N.O.	—Unless noted otherwise
V.I.F.	—Verify in field
T.O.P.W.	—Top of pier wall
B.O.P.W.	—Bottom of pier wall



SITE PLAN–PLAN LAYOUT OF PROPOSED STITCH PIER RETAINING WALL (1/3)
SCALE: APPROX. 1/8"=1'-0"

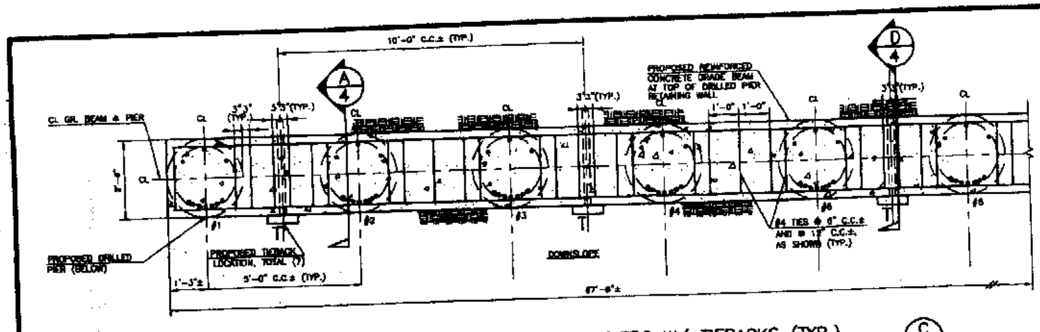
SOIL ENGINEERING CONSTRUCTION, INC.

REGISTERED PROFESSIONAL ENGINEER GEORGE E. DREW No. 20881 Exp. 9-30-07 CIVIL STATE OF CALIFORNIA

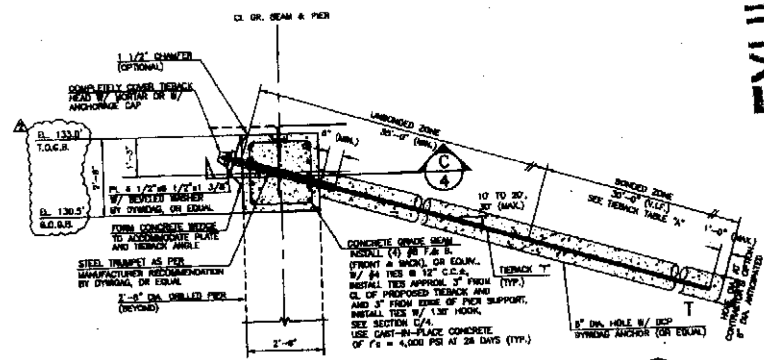
STITCH PIER RETAINING WALL W/ TIEBACKS

44 SUNSET DRIVE, WATSONVILLE, CALIFORNIA 95076

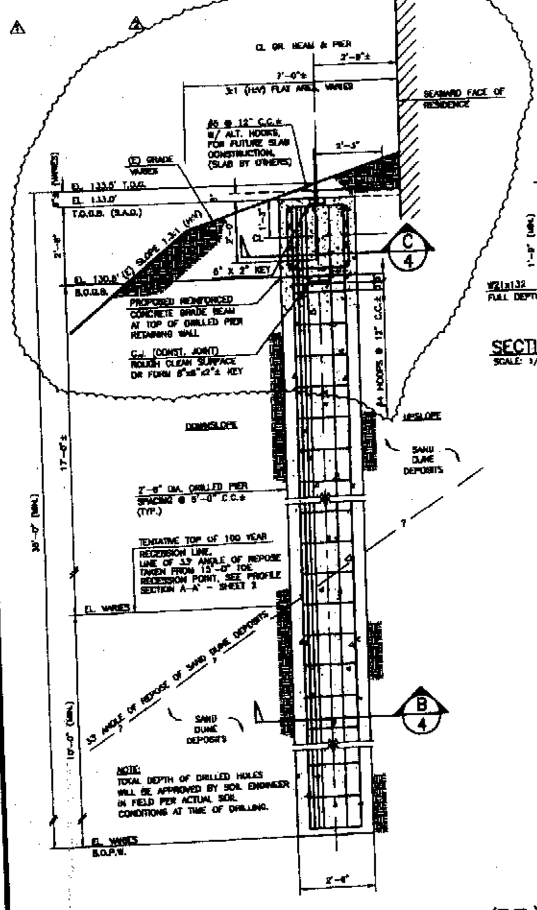
SITE PLAN– PLAN LAYOUT OF PROPOSED STITCH PIER RETAINING WALL AND PR - 31 - NOTES



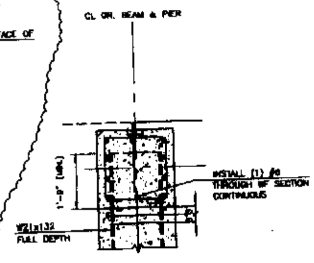
SECTION-GRADE BEAM AT TOP OF DRILLED PIERS W/ TIEBACKS (TYP.) (C/4)
SCALE: 1/2"=1'-0"



SECTION-THROUGH GRADE BEAM AT TIEBACK (TYP.) (D/4)
SCALE: 1/2"=1'-0"



SECTION-THROUGH DRILLED PIER RETAINING WALL (TYP.) (A/4)
SCALE: 1/2"=1'-0"

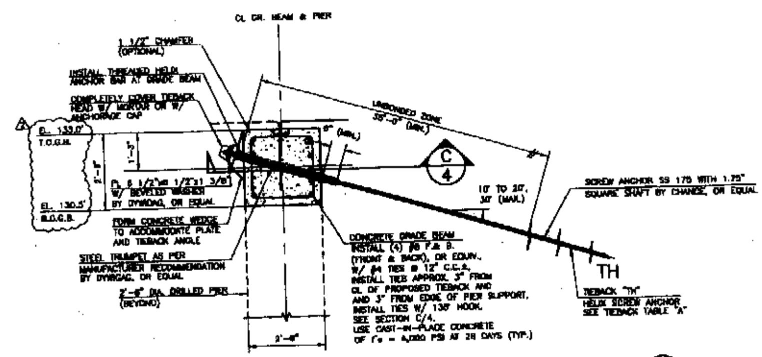


SECTION-ALT. (TYP.) (A/4)
SCALE: 1/2"=1'-0"

ABBREVIATIONS:

For Standard Abbreviations see Cover Sheet.
For General Notes see Sheet 3.

C.C.	-Center to center
C.D.	-Clean out
E.W.	-Each way
(E), (N)	-Existing, New
N.I.C.	-Not in contract
P.T.D.F.	-Pressure treated douglas fir
T.O.G.B.	-Top of grade beam
T.O.W.	-Top of wall
T. & B.	-Top and bottom
U.N.O.	-Unless noted otherwise
V.I.F.	-Verify in field
T.O.P.W.	-Top of pier wall
B.O.P.W.	-Bottom of pier wall
T.O.G.	-Top of grade



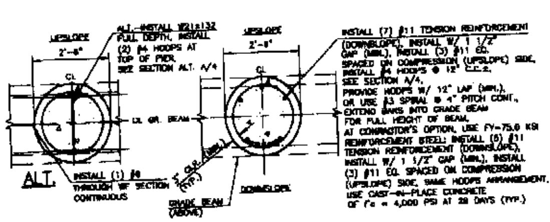
SECTION-ALT. THROUGH GRADE BEAM W/ HELIX ANCHOR (D/4)
SCALE: 1/2"=1'-0"

TIEBACK TABLE "A":

MARK	DESIGN LOAD KIPS	TEST LOAD KIPS	LOCK-OFF LOAD KIPS	UNBONDED ZONE FEET	BONDED ZONE FEET	TOTAL LENGTH FEET	TOTAL NUMBER EACH	TYPE *
T	110.0	132.0	88.0	35	30	65	7	**
TH	56.0	N/A	N/A	35	5.0	40	13	** (ALT. HELIX ANCHOR)

* MULTISTRAND ANCHORS, OR BARS, TO BE DCI DYWIDAG, OR EQUAL. DCP-DOUBLE CORROSION PROTECTED, TOTAL (7)

** - SINGLE BAR ANCHOR: - USE 1 1/4" DIA. GR. 150, DYWIDAG BAR AND HARDWARE, DCP.
- ALT. MULTISTRAND ANCHOR: USE (3) 0.6" DIA., 270 KSI, DYWIDAG ANCHOR AND HARDWARE, DCP.
- ALT. HELIX SCREW ANCHOR: HELIX SCREW ANCHORS TO BE CHANCE ANCHOR, OR EQUAL.
INSTALL HELIX SCREW ANCHORS AT EACH SPAN BETWEEN PIERS, TOTAL (13).
USE SS 175, 1.75" SQ. SHAFT, MAX. INSTALLATION TORQUE: 10,000 FT-LB,
ULTIMATE TENSION STRENGTH: 100,000 LB.
USE GALVANIZED C 110-0235, THREE-HELIX LEAD SECTION (8", 10" AND 12")
AND EXTENSION RODS AS NECESSARY.
HELIX SCREW ANCHORS ARE TYPICALLY INSTALLED TO ULTIMATE CAPACITY (100,000 LB).



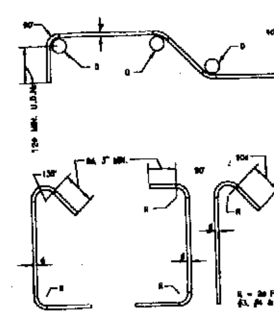
NOTE:
- AT CONTRACTOR'S OPTION ROUND HOOPS OR SPIRAL MAY BE UTILIZED.
- AT CONTRACTOR'S OPTION STEEL REINFORCEMENT CAGE OR STEEL SECTION BEAM MAY BE UTILIZED.

SECTION-THROUGH DRILLED PIER (TYP.) (B/4)
SCALE: 1/2"=1'-0"

MIN. DEVELOPMENT LENGTH IN INCHES (ld):		
	f'c = 3.0 ksi	f'c = 4.0 ksi
#4	12"	12"
#5	15"	15"
#6	19"	18"
#7	26"	23"
#8	33"	30"

LAP LENGTH IN INCHES (1.3ld):		
	f'c = 3.0 ksi	f'c = 4.0 ksi
#4	16"	16"
#5	20"	20"
#6	25"	24"
#7	34"	30"
#8	43"	39"

NOTE:
- FOR LAP SPLICES USE CLASS "B" SPLICES. (LAP OF 1.3ld).
- AT CONTRACTOR'S OPTION, HIGH STRENGTH COUPLERS MAY BE UTILIZED. (COUPLERS TO DEVELOP AT LEAST 125% SPECIFIED YIELD STRENGTH f'y OF BAR)



STANDARD BEND DIAMETER	
BAR SIZE	DIAM. (D)
#3	2-1/4"
#4	3"
#5	3-3/4"
#6	4-1/2"
#7	5-1/4"
#8	6"
#9	9-1/2"
#10	10-3/4"
#11	12"
#14	18-1/4"
#18	24"

STANDARD REINF. HOOKS AND BENDS

NOTES:
1. HOOK LENGTHS ARE MINIMUMS. LONGER HOOKS SHALL BE PROVIDED WHERE DETAILED ON DRAWINGS.
2. BAR STIRRUP AND TIE CONFIGURATION SHALL BE AS SHOWN ON DRAWINGS.

EXHIBIT A

SOIL ENGINEERING CONSTRUCTION, INC.

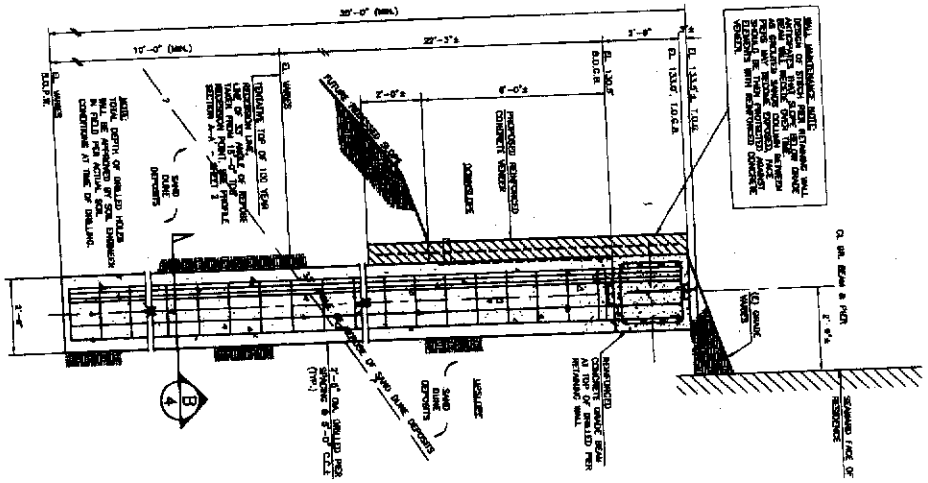
RETAINING WALL CONSTRUCTIN - SECTIONS, DETAILS AND NOTES

STITCH PIER RETAINING WALL W/ TIEBACKS

44 SUNSET DRIVE, WATSONVILLE, CALIFORNIA 95076

WALL MAINTENANCE: SECTION THROUGH DRILLED PIER RETAINING WALL AND PROPOSED WALL MAINTENANCE OF REINFORCED CONCRETE VENEER

SECTION—THROUGH DRILLED PIER RETAINING WALL (TYP.) (A/5)
SCALE 1/2"=1'-0"



STANDARD REINF. HOOKS AND BENDS

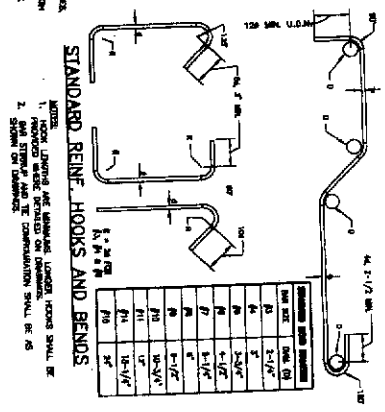


EXHIBIT A

STITCH PIER RETAINING WALL W/ TIEBACKS

44 SUNSET DRIVE, WATSONVILLE, CALIFORNIA 95076

RETAINING WALL MAINTENANCE— SECTIONS, DETAILS AND NOTES

SOIL ENGINEERING CONSTRUCTION

SOIL ENGINEERING CONSTRUCTION, INC.

5 C

EXHIBIT H

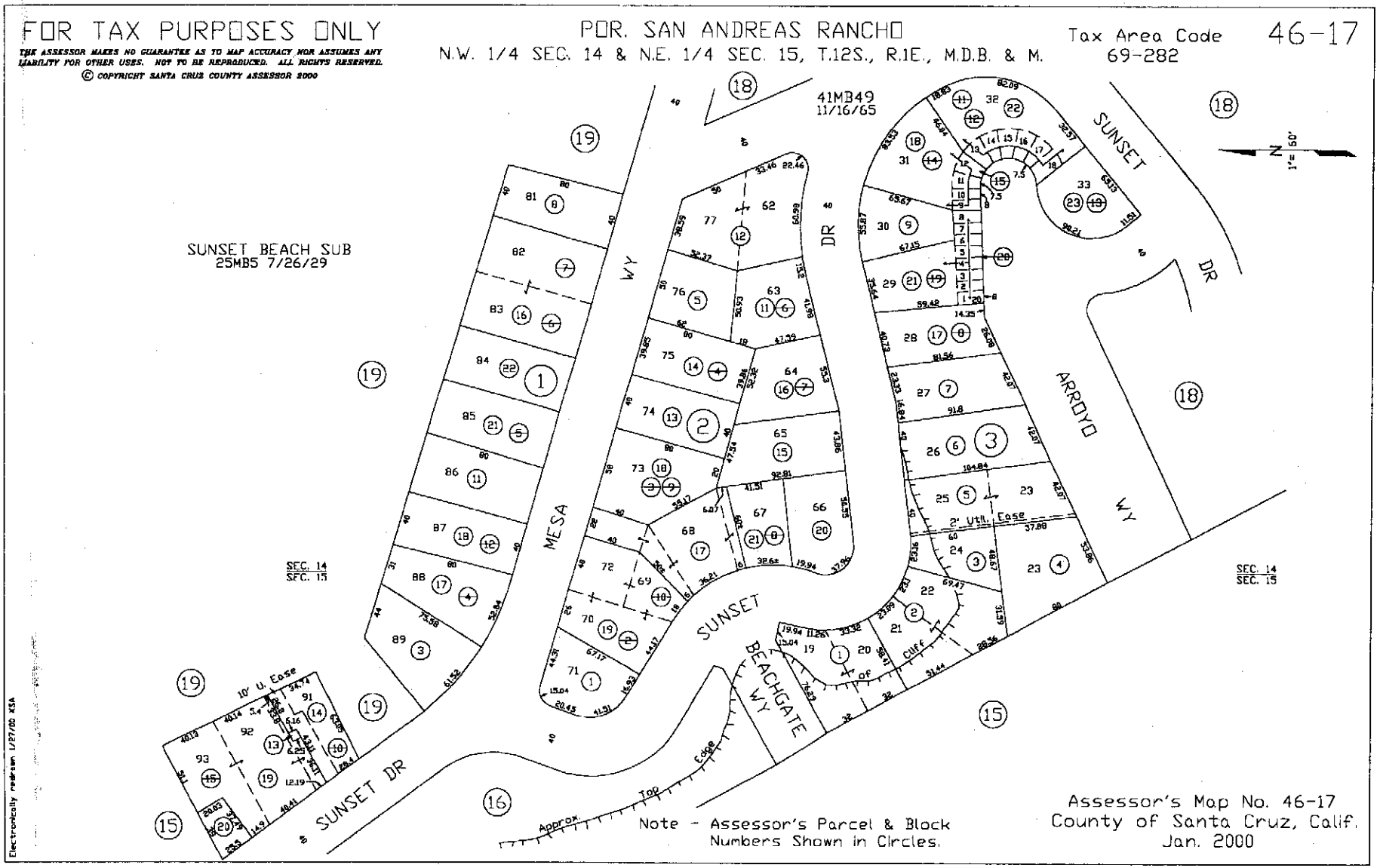
FOR TAX PURPOSES ONLY

POR. SAN ANDREAS RANCHO

N.W. 1/4 SEC. 14 & N.E. 1/4 SEC. 15, T.12S., R.1E., M.D.B. & M.

Tax Area Code 69-282

46-17

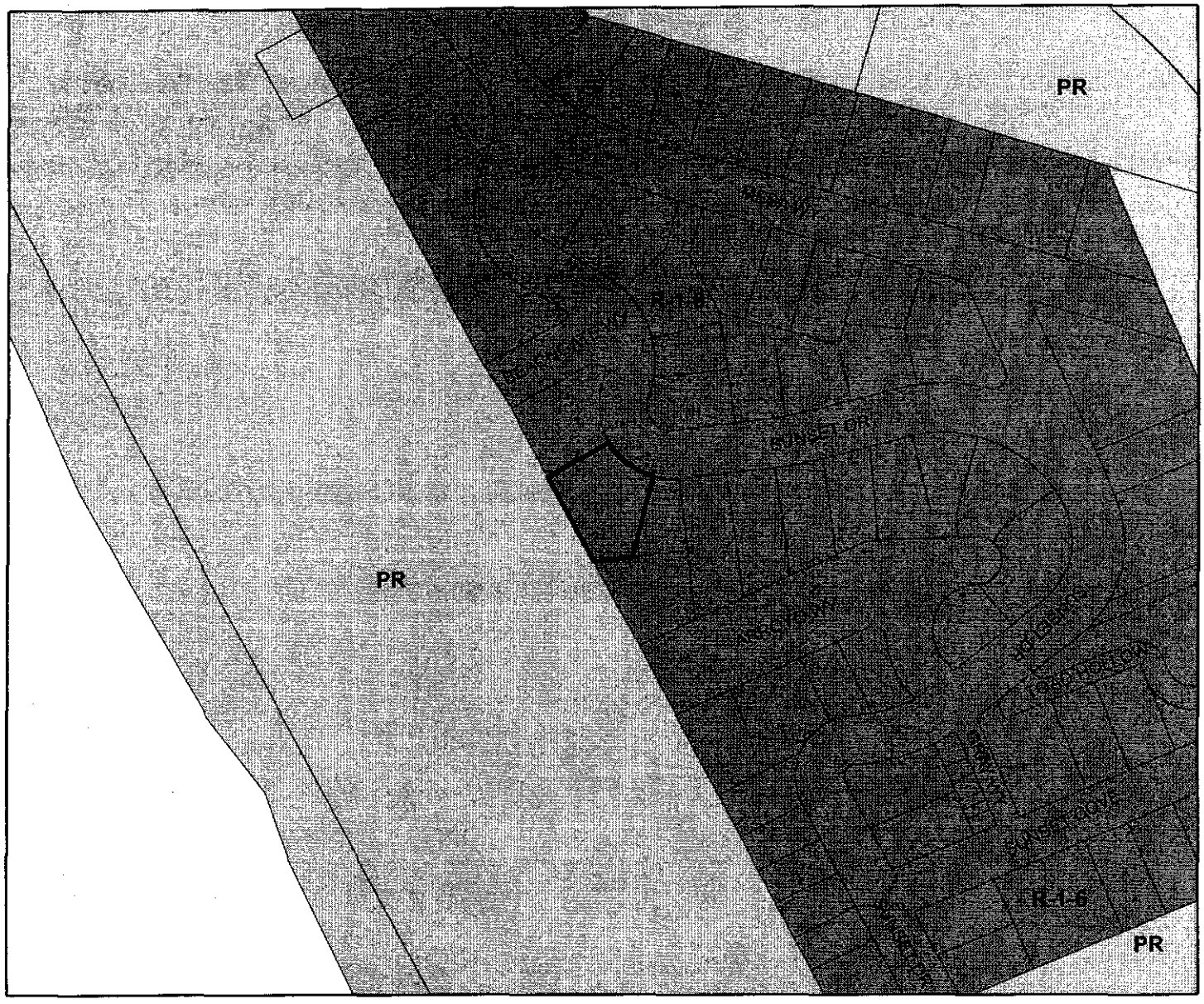


Note - Assessor's Parcel & Block Numbers Shown in Circles.

Assessor's Map No. 46-17
County of Santa Cruz, Calif.
Jan. 2000

Electronically redrawn 1/27/00 KSA

Zoning Map



0 115 230 460 690 920 Feet

Legend

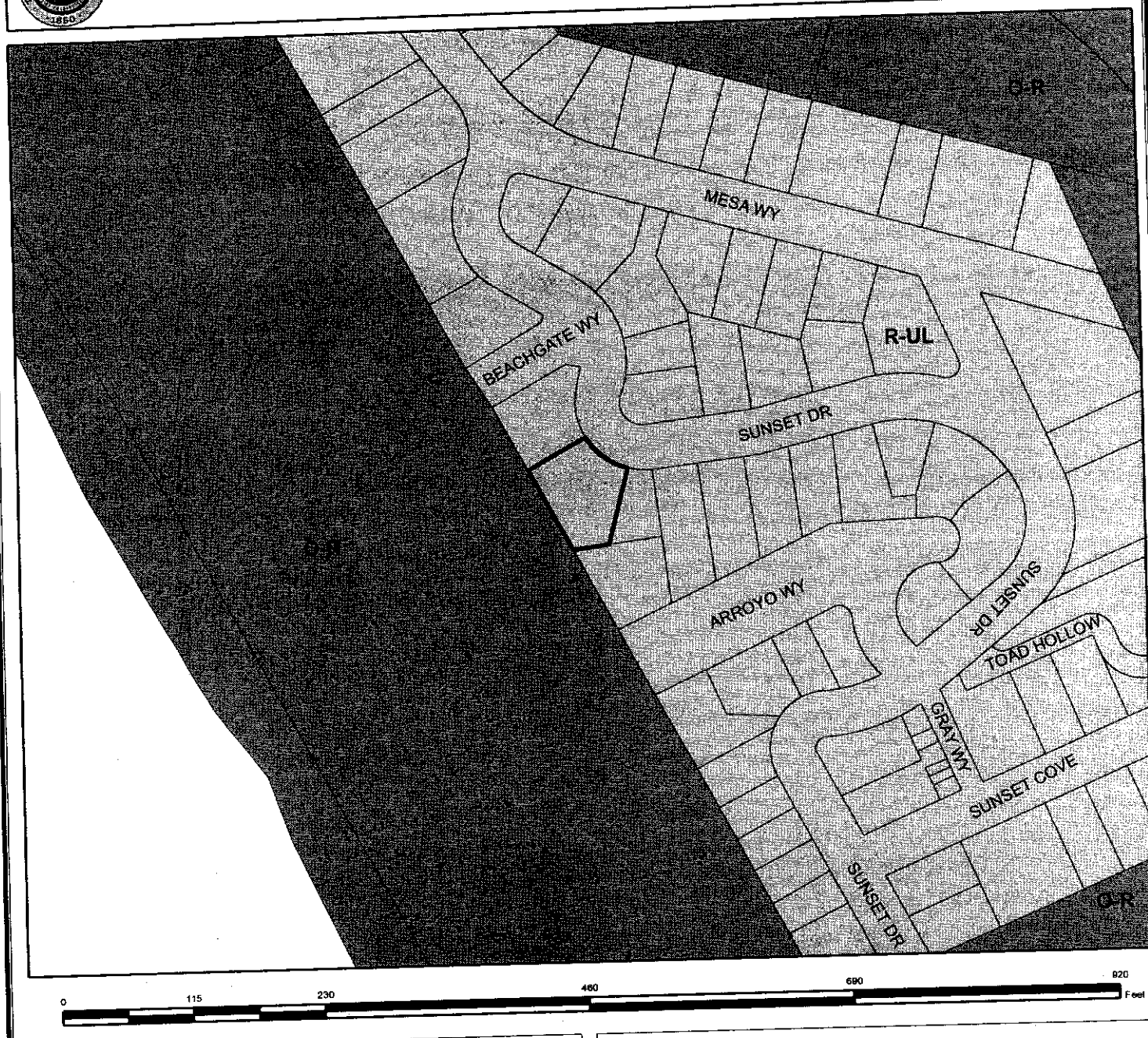
- APN 046-173-02
- Assessors Parcels
- RESIDENTIAL-SINGLE FAMILY (R-1)
- PARK (PR)

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
January 2007

EXHIBIT F

General Plan Designation Map



Legend

- APN 046-173-02
- Assessors Parcels
- Residential - Urban Low Density (R-UL)
- Parks and Recreation (O-R)

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Map Created by
County of Santa Cruz
Planning Department
January 2007

EXHIBIT F

Location Map

Legend

- APN 046-173-02
- Streets
- Assessors Parcels

N
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Map Created by
County of Santa Cruz
Planning Department
January 2007

EXHIBIT F

Project Planner: Robin Bolster
Application No.: 07-0040
APN: 046-173-02

Date: March 20, 2008
Time: 11:27:23
Page: 1

Environmental Planning Completeness Comments

========= REVIEW ON FEBRUARY 16, 2007 BY ROBERT S LOVELAND =========

1. Application 06-0241 (Geological/Geotechnical Report Review) is currently in process. Application 06-0241 will need to be approved prior to formal review of this application. NOTE: Recommendations made by the County Geologist under application 06-0241 will need to be incorporated into 07-0040 plans.

2. Provide proposed contours for the basement (Sheet A-1).

3. Provide a grading cross-section through the basement area (show max. cut).

4. Provide septic design and location approval letters from both the project geologist and geotechnical engineer.

5. Place a note on "Sheet A1" stating that all cut material from the earthwork completed will be removed off-site and deposited at a county approved fill site.
========= UPDATED ON FEBRUARY 22, 2007 BY JOSEPH L HANNA =========

The current home is not damaged. Therefore, the home's replacement under Code woulod require that the new project meet all of the setback requirementsincluding the 25 footseback and the 100-year stabiliyt in it current predevelopment condition. This appears impossible given the location of theproperty below the crest of the bluff.

If the home is damage, the new work must meet the repair or replace in kind requirements of County Code Section 16.10.70-h-4 (see hcart), which allows the repair or replace in kind. This would result in a home that is the same as the legal home.

County Code does not support the expansion of the home.

If the home is considered for the granting of a variance to either the zoning or other Code sections, the home's footprint should be pulled as far forward within the lots as possible. This should include moving the location of the garage or the garage's elimination.

========= UPDATED ON JULY 30, 2007 BY JOSEPH L HANNA =========

The proposed habitable (or if modified non-habitable) addition does not comply with Code as follows: 1. The proposed habitable basement (or if modified non-habitable basement) additions must be setback 25 from the coastal bluff (see 16.10 (ii) and (v)) and the structure cannot be set back 25 feet since the home site is located on the bluff below the 25 foot setback. 2. The proposed Habitable basement (or if modified non-habitable basement) addition can not meet the 100 year setback based upon existing site conditions(see10 (ii), (iii) and (v)), and therefore even with the proposed improvements home the proposed addition is not allowed.

The project must be redesigned to eliminate the basement addition.

Environmental Planning Miscellaneous Comments

EXHIBIT G

========= REVIEW ON FEBRUARY 16, 2007 BY ROBERT S LOVELAND =========

Conditions of Approval:

1. Submit a grading & drainage plan completed by a licensed civil engineer for review and approval.

2. Submit "Plan Review" letters from the project geologist and geotechnical engineer for review and approval prior to building permit issuance.

3. Submit a "Construction Phasing Plan" for review and approval. The plan must indicate methods to eliminate the casting of fill or other material down the face of the slope, and must show the control of drainage during the construction of the retaining wall and other site improvements.

4. A "Declaration of Geologic Hazards" must be recorded prior to building permit issuance. The owner shall complete and execute the document and provide a copy to Environmental Planning Department.

5. If the house is considered for the granting of a variance to either the zoning or other Code sections, the house footprint should be pulled as far forward within the lot as possible. This should include moving the locationof the garage or the garage's elimination.

6. Any variation in site conditions must be immediately brought to the attention of the County Geologist & Engineer. If modifications to the plans are required, the modificationsmust receive County approval prior to construc tion.

Dpw Drainage Completeness Comments

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

========= REVIEW ON FEBRUARY 12, 2007 BY ANWARBEG MIRZA ========= See Miscellaneous items for the building plans.

Dpw Drainage Miscellaneous Comments

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

========= REVIEW ON FEBRUARY 12, 2007 BY ANWARBEG MIRZA ========= 1. Plans must address surface runoff concerns prior to building permit approval Identify how the new retaining wall will tie into the existing drainage system. Show on plans a cross section of the proposed retaining wall demonstrating how subsurface seepage and upslope surface runoff will be collected and discharged.

2. Besides recognizing the conversion of an existing structure are there other structures built without permits specifically drainage in nature to be recognize?(i.e. changing drainage patterns, blocking, etc.)

3. Please submit a final geotechnical review letter referring to dated plans and ap-

EXHIBIT G

proving of the final drainage plan. This letter should state that the post project runoff rate will be held to pre project levels and describe how this will be accomplished.

For questions regarding this review the Public Works drainage staff is available 8:00-12:00 Monday through Friday.

Dpw Road Engineering Completeness Comments

========= REVIEW ON JANUARY 30, 2007 BY TIM N NYUGEN =========
NO COMMENT

Dpw Road Engineering Miscellaneous Comments

========= REVIEW ON JANUARY 30, 2007 BY TIM N NYUGEN =========
NO COMMENT

Environmental Health Completeness Comments

========= REVIEW ON FEBRUARY 13, 2007 BY JIM G SAFRANEK ========= No enhanced onsite sewage treatment permit application has been submitted to EHS for this application, which is required. EHS review for this Coastal Dev Permit on septic is $512, not $256. Remainder to be paid to Planning.
========= UPDATED ON JULY 24, 2007 BY JIM G SAFRANEK ========= Septic appl. still showing up as not approved in ALUS. Submitted 2/07.
========= UPDATED ON OCTOBER 11, 2007 BY JIM G SAFRANEK ========= The EH specialist reported that there are still outstanding issues with the septic appl. that have not been resolved by the sewage disposal consultant. For more info: R. Sanchez 454-2751.
========= UPDATED ON OCTOBER 11, 2007 BY JIM G SAFRANEK =========
========= UPDATED ON DECEMBER 18, 2007 BY JIM G SAFRANEK ========= The owner of this parcel has not returned an acknowledgement form to EHS that must be signed prior to septic permit appl approval. The discr is approved w/ condition that this doc is submitted and the septic appl. is approved prior to issuance of the BP.

Environmental Health Miscellaneous Comments

========= REVIEW ON FEBRUARY 13, 2007 BY JIM G SAFRANEK =========
NO COMMENT
========= UPDATED ON JULY 24, 2007 BY JIM G SAFRANEK =========
NO COMMENT
========= UPDATED ON DECEMBER 18, 2007 BY JIM G SAFRANEK =========
NO COMMENT

Cal Dept of Forestry/County Fire Completeness Comm

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

========= REVIEW ON FEBRUARY 1, 2007 BY COLLEEN L BAXTER =========
DEPARTMENT NAME:CDF/COUNTY FIRE
Add the appropriate NOTES and DETAILS showing this information on your plans and RESUBMIT, with an annotated copy of this letter:

EXHIBIT G

NOTE on the plans that these plans are in compliance with California Building and Fire Codes (2001) and District Amendment.
Each APN (lot) shall have separate submittals for building and sprinkler system plans.
The job copies of the building and fire systems plans and permits must be onsite during inspections.
SHOW on the plans a public fire hydrant within 250 feet of any portion of the property, along the fire department access route, meeting the minimum required fire flow for the building. This information can be obtained from the water company.
Building numbers shall be provided. Numbers shall be a minimum of 4 inches in height on a contrasting background and visible from the street, additional numbers shall be installed on a directional sign at the property driveway and street.
NOTE on the plans the installation of an approved spark arrester on the top of the chimney. The wire mesh shall be 1/2 inch.
NOTE on the plans that the roof covering shall be no less than Class "B" rated roof.
NOTE on the plans that a 100 foot clearance will be maintained with non-combustible vegetation around all structures or to the property line (whichever is a shorter distance). Single specimens of trees, ornamental shrubbery or similar plants used as ground covers, provided they do not form a means of rapidly transmitting fire from native growth to any structure are exempt.
The access road shall be 12 feet minimum width and maximum twenty percent slope.
The access road shall be in place to the following standards prior to any framing construction, or construction will be stopped:
- The access road surface shall be "all weather", a minimum 6" of compacted aggregate base rock, Class 2 or equivalent, certified by a licensed engineer to 95% compaction and shall be maintained. - ALL WEATHER SURFACE: shall be minimum of 6" of compacted Class II base rock for grades up to and including 5%, oil and screened for grades up to and including 15% and asphaltic concrete for grades exceeding 15%, but in no case exceeding 20%. The maximum grade of the access road shall not exceed 20%, with grades greater than 15% not permitted for distances of more than 200 feet at a time. The access road shall have a vertical clearance of 14 feet for its entire width and length, including turnouts. A turn-around area which meets the requirements of the fire department shall be provided for access roads and driveways in excess of 150 feet in length. Drainage details for the road or driveway shall conform to current engineering practices, including erosion control measures. All private access roads, driveways, turn-around and bridges are the responsibility of the owner(s) of record and shall be maintained to ensure the fire department safe and expedient passage at all times.
SHOW on the plans, DETAILS of compliance with the driveway requirements. The driveway shall be 12 feet minimum width and maximum twenty percent slope.
The driveway shall be in place to the following standards prior to any framing construction, or construction will be stopped:
- The driveway surface shall be "all weather", a minimum 6" of compacted aggregate base rock, Class 2 or equivalent certified by a licensed engineer to 95% compaction and shall be maintained. - ALL WEATHER SURFACE: shall be a minimum of 6" of compacted Class II base rock for grades up to and including 5%, oil and screened for grades up to and including 15% and asphaltic concrete for grades exceeding 15%, but in no case exceeding 20%. - The maximum grade of the driveway shall not exceed 20%, with grades of 15% not permitted for distances of more than 200 feet at a time. - The driveway shall have an overhead clearance of 14 feet vertical distance for its entire width. - A turn-around area which meets the requirements of the fire depart-

EXHIBIT G

ment shall be provided for access roads and driveways in excess of 150 feet in length. - Drainage details for the road or driveway shall conform to current engineering practices, including erosion control measures. - All private access roads, driveways, turn-arounds and bridges are the responsibility of the owner(s) of record and shall be maintained to ensure the fire department safe and expedient passage at all times. - The driveway shall be thereafter maintained to these standards at all times.
All Fire Department building requirements and fees will be addressed in the Building Permit phase.
Plan check is based upon plans submitted to this office. Any changes or alterations shall be re-submitted for review prior to construction.
72 hour minimum notice is required prior to any inspection and/or test.
========= UPDATED ON JULY 17, 2007 BY COLLEEN L BAXTER =========
DEPARTMENT NAME:CALFIRE
Add the appropriate NOTES and DETAILS showing this information on your plans and RESUBMIT, with an annotated copy of this letter:
Note on the plans that these plans are in compliance with California Building and Fire Codes (2001) as amended by the authority having jurisdiction.
Each APN (lot) shall have separate submittals for building and sprinkler system plans.
The job copies of the building and fire systems plans and permits must be onsite during inspections.
SHOW on the plans a public fire hydrant within 250feet of any portion of the property, along the fire department access route, meeting the minimum required fire flow for the building. This information can be obtained from the water company.
If the existing building is equipped with an automatic fire sprinkler system....
NOTE on the plans that all buildings shall be protected by an approved automatic fire sprinkler system complying with the currently adopted edition of NFPA 13D and Chapter 35 of the California Building Code and adopted standards of the authority having jurisdiction.
Building numbers shall be provided. Numbers shall be a minimum of 4inches in height on a contrasting background and visible from the street, additional numbers shall be installed on a directional sign at the property driveway and street.
NOTE on the plans the installation of an approved spark arrester on the top of the chimney. The wire mesh shall be 1/2 inch.
NOTE on the plans that the roof covering shall be no less than Class "B"rated roof.
The access road shall be 18 feet minimum width and maximum twenty percent slope.
The driveway shall be in place to the following standards prior to any framing construction, or construction will be stopped:
- The driveway surface shall be "all weather", a minimum 6" of compacted aggregate base rock, Class 2 or equivalent certified by a licensed engineer to 95% compaction and shall be maintained. - ALL WEATHER SURFACE: shall be a minimum of 6" of compacted Class II base rock for grades up to and including 5%, oil and screened for grades up to and including 15% and asphaltic concrete for grades exceeding 15%, but in no case exceeding 20%. - The maximum grade of the driveway shall not exceed 20%, with grades of 15% not permitted for distances of more than 200 feet at a time. - The driveway shall have an overhead clearance of 14 feet vertical distance for its entire width. - A turn-around area which meets the requirements of the fire department shall be provided for access roads and driveways in excess of 150 feet in length. - Drainage details for the road or driveway shall conform to current engineering practices, including erosion control measures. - All private access roads,

driveways, turn-arounds and bridges are the responsibility of the owner(s) of record and shall be maintained to ensure the fire department safe and expedient passage at all times. - The driveway shall be thereafter maintained to these standards at all times.
All Fire Department building requirements and fees will be addressed in the Building Permit phase.
Plan check is based upon plans submitted to this office. Any changes or alterations shall be re-submitted for review prior to construction.
72 hour minimum notice is required prior to any inspection and/or test.
Note: As a condition of submittal of these plans, the submitter, designer and installer certify that these plans and details comply with the applicable Specifications, Standards, Codes and Ordinances, agree that they are solely responsible for compliance with applicable Specifications, Standards, Codes and Ordinances, and further agree to correct any deficiencies noted by this review, subsequent review, inspection or other source, and, to hold harmless and without prejudice, the reviewing agency.
When a fire alarm system is proposed in lieu of 110V/battery backup smoke detectors a separate fire alarm permit and fee is required by the fire department having jurisdiction. Fire Alarm plans (3 sets) shall be submitted and approved prior to commencing work.

Cal Dept of Forestry/County Fire Miscellaneous Com

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

========= REVIEW ON FEBRUARY 1, 2007 BY COLLEEN L BAXTER =========
========= UPDATED ON JULY 17, 2007 BY COLLEEN L BAXTER =========

EXHIBIT G

COUNTY OF SANTA CRUZ | Planning Department

INTEROFFICE MEMO

APPLICATION NO: 07-0040 (fourth routing)

Date: ~~July 12, 2007~~ January 2, 2008

To: Steve Guiney, Project Planner

From: Larry Kasparowitz, Urban Designer

Re: Review of a remodel to an existing residence at 44 Sunset Drive, Watsonville

GENERAL PLAN / ZONING REVIEW COMMENTS:

Design Review Authority

13.20.130 *The Coastal Zone Design Criteria are applicable to any development requiring a Coastal Zone* Approval.

Design Review Standards

13.20.130 Design criteria for coastal zone developments

Evaluation riteria	Meets criteria In code (✔)	Does not meet criteria (✔)	Urban Designer's Evaluation
Visual Compatibility			
All new development shall be sited, designed and landscaped to be visually compatible and integrated with the character of surrounding neighborhoods or areas	✔		
Minimum Site Disturbance			
Grading, earth moving, and removal of major vegetation shall be minimized.	✔		
Developers shall be encouraged to maintain all mature trees over 6 inches in diameter except where circumstances require their removal, such as obstruction of the building site, dead or diseased trees, or nuisance species.	✔		
Special landscape features (rock outcroppings, prominent natural landforms, tree groupings) shall be retained.	✔		
Ridgeline Development			
Structures located near ridges shall be sited and designed not to project			N/A

EXHIBIT G

above the ridgeline or tree canopy at the ridgeline			
Land divisions which would create parcels whose only building site would be exposed on a ridgetop shall not be permitted			N/A
Landscaping			
New or replacement vegetation shall be compatible with surrounding vegetation and shall be suitable to the climate, soil, and ecological characteristics of the area			N/A

Rural Scenic Resources			
Location of development			
Development shall be located, if possible, on parts of the site not visible or least visible from the public view.			N/A
Development shall not block views of the shoreline from scenic road turnouts, rest stops or vista points			N/A
Site Planning			
Development shall be sited and designed to fit the physical setting carefully so that its presence is subordinate to the natural character of the site, maintaining the natural features (streams, major drainage, mature trees, dominant vegetative communities)			N/A
Screening and landscaping suitable to the site shall be used to soften the visual impact of development in the viewshed			N/A

Building design			
Structures shall be designed to fit the topography of the site with minimal cutting, grading, or filling for construction			N/A
Pitched, rather than flat roofs, which are surfaced with non-reflective materials except for solar energy devices shall be encouraged			N/A
Natural materials and colors which blend with the vegetative cover of the site shall be used, or if the structure is located in an existing cluster of buildings, colors and materials shall repeat or harmonize with those in the cluster			N/A
Large agricultural structures			

EXHIBIT G

The visual impact of large agricultural structures shall be minimized by locating the structure within or near an existing group of buildings			N/A
The visual impact of large agricultural structures shall be minimized by using materials and colors which blend with the building cluster or the natural vegetative cover of the site (except for greenhouses).			N/A
The visual impact of large agricultural structures shall be minimized by using landscaping to screen or soften the appearance of the structure			N/A
Restoration			
Feasible elimination or mitigation of unsightly, visually disruptive or degrading elements such as junk heaps, unnatural obstructions, grading scars, or structures incompatible with the area shall be included in site development			N/A
The requirement for restoration of visually blighted areas shall be in scale with the size of the proposed project			N/A
Signs			
Materials, scale, location and orientation of signs shall harmonize with surrounding elements			N/A
Directly lighted, brightly colored, rotating, reflective, blinking, flashing or moving signs are prohibited			N/A
Illumination of signs shall be permitted only for state and county directional and informational signs, except in designated commercial and visitor serving zone districts			N/A
In the Highway 1 viewshed, except within the Davenport commercial area, only CALTRANS standard signs and public parks, or parking lot identification signs, shall be permitted to be visible from the highway. These signs shall be of natural unobtrusive materials and colors			N/A
Beach Viewsheds			
Blufftop development and landscaping (e.g., decks, patios, structures, trees, shrubs, etc.) in rural areas shall be set back from the bluff edge a sufficient distance to be out of sight from the shoreline, or if infeasible, not visually	✔		

intrusive			
No new permanent structures on open beaches shall be allowed, except where permitted pursuant to Chapter 16.10 (Geologic Hazards) or Chapter 16.20 (Grading Regulations)			N/A
The design of permitted structures shall minimize visual intrusion, and shall incorporate materials and finishes which harmonize with the character of the area. Natural materials are preferred.	✔		

Design Review Authority

13.11.040 Projects requiring design review.

(a) Single home construction, and associated additions involving 500 square feet or more, within coastal special communities and sensitive sites as defined in this Chapter.

13.11.030 Definitions

(u) 'Sensitive Site" shall mean any property located adjacent to a scenic road or within the viewshed of a scenic road as recognized in the General Plan; or ***located on a coastal bluff,*** or on a ridgeline.

Design Review Standards

13.11.072 Site design.

Evaluation Criteria	Meets criteria In code (✔)	Does not meet criteria(✔)	Urban Designer's Evaluation
Compatible Site Design			
Location and type of access to the site	✔		
Building siting in terms of its location and orientation	✔		
Building bulk, massing and scale	✔		
Parking location and layout	✔		*Parking is located partially in the right-of-way.*
Relationship to natural site features and environmental influences	✔		
Landscaping	✔		
Streetscape relationship			**N/A**
Street design and transit facilities			**N/A**
Relationship to existing structures	✔		
Natural Site Amenities and Features			
Relate to surrounding topography	✔		
Retention of natural amenities	✔		
Siting and orientation which takes advantage of natural amenities	✔		
Ridgeline protection			**N/A**
Views			
Protection of public viewshed	✔		
Minimize impact on private views	✔		

EXHIBIT G

Safe and Functional Circulation			
Accessible to the disabled, pedestrians, bicycles and vehicles			N/A
Solar Design and Access			
Reasonable protection for adjacent properties	✔		
Reasonable protection for currently occupied buildings using a solar energy system	✔		
Noise			
Reasonable protection for adjacent properties	✔		

13.11.073 Building design.

Evaluation Criteria	Meets criteria In code (✔)	Does not meet criteria (✔)	Urban Designer's Evaluation
Compatible Building Design			
Massing of building form	✔		
Building silhouette	✔		
Spacing between buildings	✔		
Street face setbacks	✔		
Character of architecture	✔		
Building scale	✔		
Proportion and composition of projections and recesses, doors and windows, and other features	✔		
Location and treatment of entryways	✔		
Finish material, texture and color	✔		
Scale			
Scale is addressed on appropriate levels	✔		
Design elements create a sense of human scale and pedestrian interest	✔		
Building Articulation			
Variation in wall plane, roof line, detailing, materials and siting	✔		
Solar Design			
Building design provides solar access that is reasonably protected for adjacent properties	✔		

EXHIBIT G

Building walls and major window areas are oriented for passive solar and natural lighting	✔		

EXHIBIT G

April 4, 2008

Robin Bolster Grant
Planning Department
701 Ocean Street, 4th Floor
Santa Cruz, CA 95060

RE: Application # 07-0040 Remodel of 44 Sunset Drive APN 046-173-02

Dear Ms. Grant,
My wife and I are the owners of the house at 40 Sunset Drive, next door to the proposed remodel.

There are two very important issues that we are concerned with in this proposed remodel as stated on the sign posted at the site.

1) The sign states "same footprint" and we will want assurances that this will be complied with. Any closer construction to our house would endanger both houses in case of fire, as well as loss of privacy.

May we view the plans prior to final ?

2) The "Stitched Pier Retaining Wall" being planned would entail fierce pounding of piers into the already fragile sand dune, shaking and damaging the foundations of our home.

We would rather have the builder of #44 design the footings/ retaining wall to avoid such a serious threat to our house.
There are gentler ways of accomplishing the construction of the necessary support of a house on a sand dune without violently shaking the sand loose around the neighboring foundations.

Will the planning department stipulate that the owner and contractor be adequately insured against this easily avoidable damage to our home?

Please let me hear from you soon.

Sincerely,

Tony R. Lufrano

Email: tonylufrano@sbcglobal.net

CC Stephen Graves & Assoc. CC Maldenado/ Ferguson

LUFRANO / ~~ZENGEN~~
6 DORIS PLACE
BERKELEY, CA 94705-1611
(510) 843-5969
FAX 843-5970

EXHIBIT G

NIELSEN and ASSOCIATES
ENGINEERING GEOLOGY AND COASTAL CONSULTING

UPDATED GEOLOGIC REPORT for an EXISTING SINGLE FAMILY HOME

44 Sunset Beach Drive
Santa Cruz County, California
APN 046-173-02

Job No. SCr-1179-G

September 2005

EXHIBIT H

1070 W. Antelope Creek Way • Oro Valley, Arizona 85737 • (831) 295-2081

NIELSEN and ASSOCIATES

ENGINEERING GEOLOGY AND COASTAL CONSULTING

September 26, 2005

Job No. SCr-1079-G

Joann Ferguson
745 Cotton Street
Menlo Park, CA 94025

SUBJECT: Update Geologic Report for an existing single family home for the purpose of constructing a new foundation system.

REFERENCE: 44 Sunset Beach Drive, Santa Cruz County, California, APN 046-173-02.

Dear Ms. Ferguson:

This report presents the results of our update of a geologic report which addressed geologic conditions at the property, slope failures resulting from the 1989 Loma Prieta Earthquake on the steep coastal bluff behind the home, potential geologic hazards associated with the property and homesite, and means of mitigating the potential hazards.

During the 1989 Loma Prieta earthquake a large portion of the coastal bluff below the homesite failed as a shallow (3 to 7 foot deep) translational sand slide that reached to within about three feet of the residence. This landslide complex showed continued activity during March 1991 and January 1993 rainstorms. Although the dwelling itself does not appear to have been damaged by the slide, the mere existence of the landslide in close proximity to the home has compromised the long-term stability of the site.

In our opinion there is a clear and significant risk of structural damage, if not complete destruction, to the dwelling when additional slope failure occurs. We are of the opinion that the risk can be mitigated by construction of a new foundation designed to support the home. Future slope failures will still occur on the steep coastal bluff even if the home is supported on a new foundation, and such failures will probably place active forces on the new foundation elements, so this should be taken into account in the design of the foundation system.

Sincerely,

REGISTERED GEOLOGIST
HANS NIELSEN
No. 1390
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Hans Nielsen
Certified Engineering Geologist 1390

EXHIBIT H

1070 W. Antelope Creek Way•Oro Valley, Arizona 85737•(831) 295-2081

TABLE OF CONTENTS

INTRODUCTION

This report presents the results of our update of a previous geologic investigation of the property in 1993 by the firm of Foxx Nielsen, Nielsen and Associates. It is our understanding that the current owners desire to improve the stability of the home through construction of a new foundation system. It is also our understanding that the geotechnical engineering firm of Haro Kasunich and Associates and the structural engineering/construction firm of Soil Engineering Construction will also be working on the project.

Our investigation was conducted as an update of the 1993 geologic study. Our work consisted of: 1) a review of selected pertinent published and unpublished geologic information including the 1993 report and a geologic report for a nearby property at 36 Sunset Beach Drive, 2) an examination of two sets of stereoscopic aerial photographs, 3) a field inspection of the property, 4) discussions with the project geotechnical engineer, project structural engineer and project planner, and 5) preparation of this report.

SITE CONDITIONS

The subject property is located along the coastal bluffs of Sunset State Beach approximately 3 miles northwest of the mouth of the Pajaro River (Figure 1). The existing residence is located at the crest of a steep coastal bluff that leads down to the beach. The house is a wood-frame structure that is two stories high on the west side and one story high on the east side. The rear floor level of the house sits about five feet off the ground, and a wood-frame wall extends to the ground surface.

The home is located on moderately sloping ground of less than 10% gradient at the top of the coastal bluff. The slope face is on the order of 200 feet long, and the rear of the home is about 130 feet vertically above the beach (see Cross Sections, Appendix B). Slope gradients on the steep coastal bluff leading down to the beach range between 60% and 75% but are predominantly in the 65% range (see Plate 1). A wide beach is situated at the base of the bluff, but the toe of the bluff suffers periodic erosion, most recently during the severe coastal storms of 1983. Southeast of the property is a small valley or ravine whose side slope is inclined at 55% gradient for a distance of about 120 feet.

During the 17 October 1989 Loma Prieta Earthquake (Magnitude 7.1), major portions of the coastal bluff fronting Sunset Beach failed as shallow (3 to 7 foot thick) translational sand slides. The upper headscarp of one of these landslide complexes came within three feet of the home (see Plate 1). Many smaller scarps were dispersed throughout the complex landslide mass. Additionally, smaller failures occurred within the slide complex during the winters of 1991 and 1993 when rainfall saturated the hillside (Foxx Nielsen and Associates, 1993).

There was no evidence of recent landslide activity on the hillside during our field inspection in late September 2005, nor was there evidence of active or recently active erosion.

EXHIBIT H

However, the hillside is in a very fragile state of stability. As evidence of this, we saw a recent landslide that probably occurred this past wet winter on the hillside about 150 to 200 feet south of the property in a very similar setting that which exists below the home.

To improve the long term stability of the existing residence, it is our professional engineering geologic opinion that the home should be supported with an engineered foundation system designed for movement of the earth materials beneath the entire home. Experience from a nearby property strongly suggests that earth materials on the order of 20 feet deep beneath the rear of the home could be involved in a worst-case landslide (Foxx Nielsen and Associates, 2000).

The property is probably served by an on-site sewage disposal system consisting of a septic tank and leachfield. We have no information as to the location of these items. But their locations should be determined prior to design of a new foundation system because they present obstacles to construction which is something that happened on an adjacent property.

SITE GEOLOGY

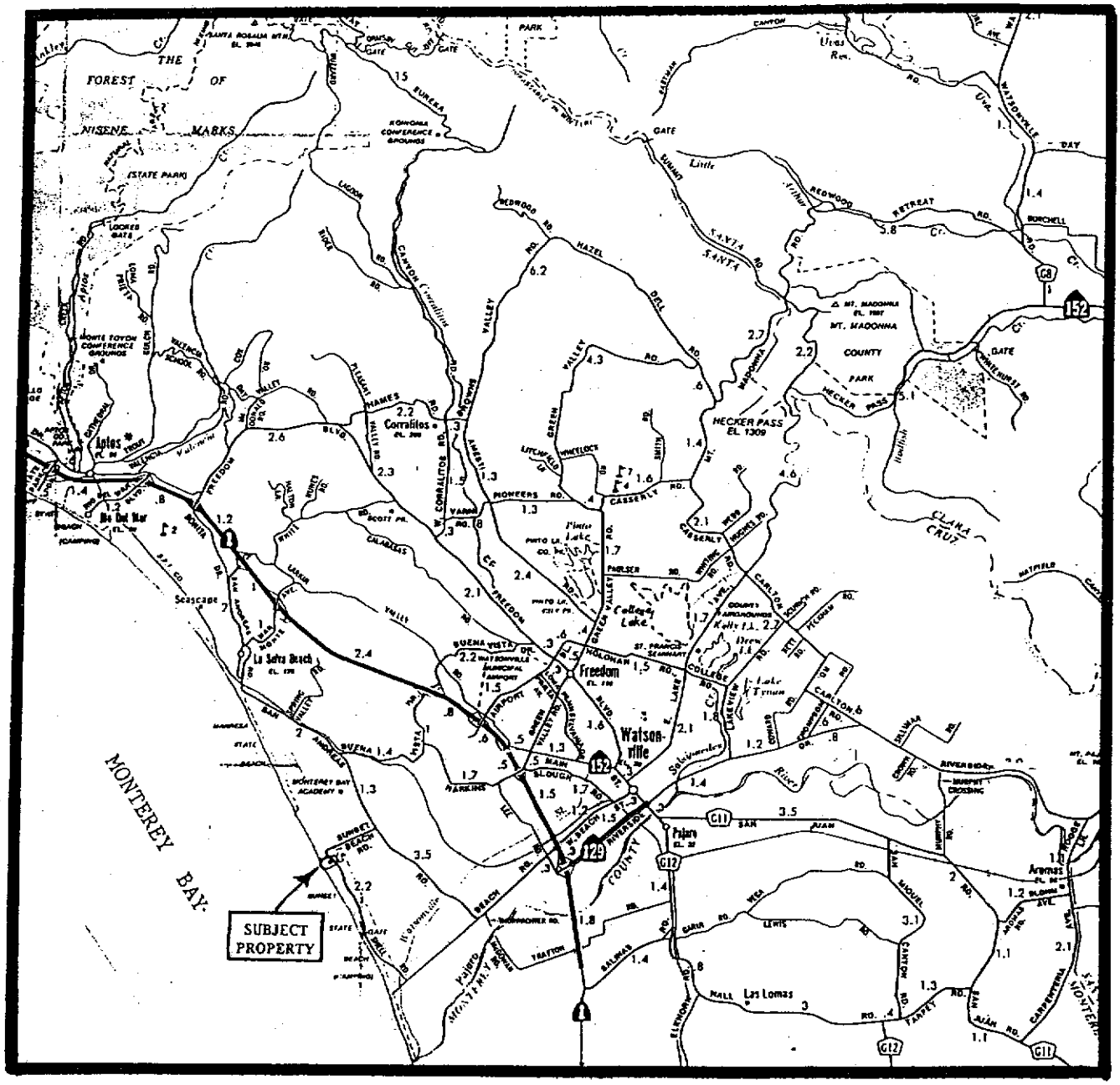
The subject site is underlain by a series of Pleistocene Age coastal sand dune deposits (Figure 2). They consist of Flandrian (recent) Dune Sand, which directly underlies the property, and the Eolian Deposits of Sunset Beach (see Plates 3 and 4). These deposits consist of weakly to semi-consolidated, near cohesionless, fine- to medium-grained sand with traces of silt. We were unable to identify any of the contacts between individual dune deposits due to the close similarity in lithology between the two units. We approximated the location of the contacts shown on Plates 3 and 4 based on regional mapping by Tinsley and Dupré (1980).

In terms of strength, the coastal dune deposits are relatively weak due to their lack of substantial cementation. The virtually cohesionless materials rely primarily on grain-to-grain friction for strength, and therefore, generally do not stand at an angle much steeper than their angle of repose, which for sand in general is about 33 degrees or 65% gradient, the latter of which happens to be the general gradient of the coastal bluff below the home. However, the angle of repose is controlled by the angle of internal friction of the material which according to laboratory data derived from a nearby property at 36 Sunset Beach Drive by the project geotechnical engineer is on the order of 40 degrees (Foxx Nielsen and Associates, 2000).

The strength of the earth materials is also affected by local weathering near the ground surface. Mechanical and chemical weathering will tend to break down what little cohesion exists between sand particles as well as loosen the soil packing. This would tend to lower both the cohesion and internal friction of the deposit. Based on observations and data from exploratory drilling at 36 Sunset Beach Drive (Foxx Nielsen and Assoc., 2000), local weathering may extend about ten feet below the ground surface. Blow count data collected in a boring there indicate that the earth materials are in a loose state of relative density in the upper ten feet compared to those deeper in the ground (see Appendix A). It is our opinion that very similar conditions exist beneath the subject property based on the proximity to the boring, a distance of about 150 feet,

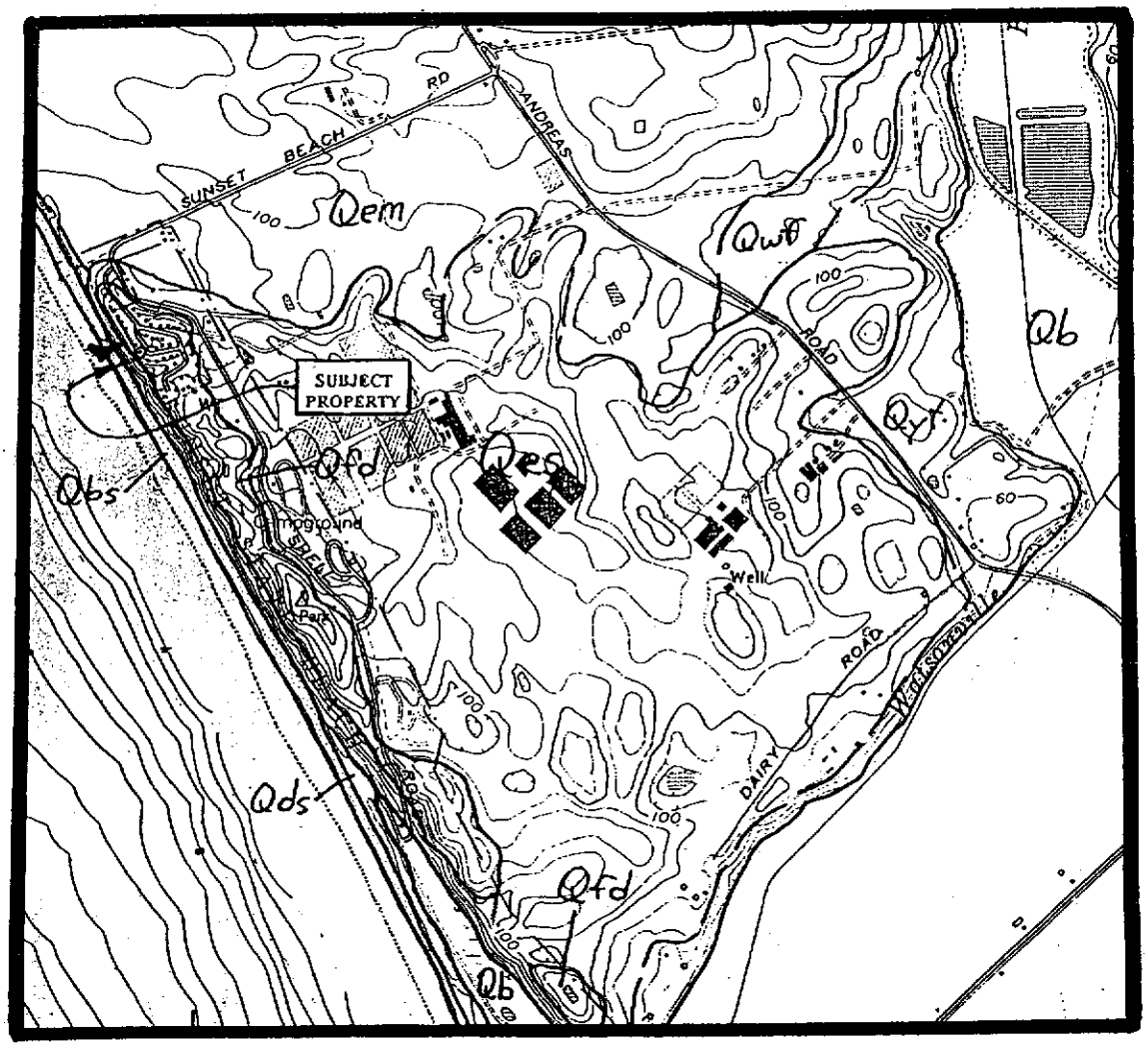
LOCATION MAP

Figure 1.



GEOLOGIC MAP

Figure 2.



EARTH MATERIALS

Qbs	Beach Sand
Qfd	Flandrian Dune Deposits
Qes	Eolian Deposits of Sunset Beach
Qds	Dune Sand
Qb	Basin Deposits
Qem	Eolian Deposits of Manresa Beach
Qwf	Watsonville Fluvial Deposits
Qyt	Younger Terrace Deposits

SYMBOLS

GEOLOGIC CONTACT: dashed where approx. located

Portion of the Watsonville West 7.5 minute quadrangle

Geology from: Dupré and Tinsley, 1980

and on the similarity of earth materials based on the geologic map and our site observations. The geotechnical and structural engineers should be aware of the lower strength values near the ground surface and make appropriate adjustments in any of their analysis. In fact, we highly encourage the project geotechnical engineers to conduct on-site drilling at the property rather than rely solely on the nearby data.

The uncemented and sandy composition of the earth materials composing the hillside lead to creep and landsliding. Creep is imperceptible movement of near-surface earth materials on a hillside whereas landsliding is typically rapid, sometimes catastrophic movement. As evidence of creep, we observed several large rectangular concrete blocks beneath the rear of the home that were tilted and twisted and appeared to be associated with the existing foundation. Occasional attack by ocean waves and resulting erosion at the toe of the bluff contributes to instability on the bluff. This is a relatively rare occurrence according to data presented by Foxx Nielsen and Assoc. (2000) based on their examination of several sets of historic stereo aerial photographs taken between 1939 and 1997 because a wide sand beach provides a significant barrier to ocean waves reaching the base of the bluff. They only reach the toe of the bluff during extreme winter storms, typically associated with El Niño episodes in the Pacific Ocean. Landslides are also caused by severe ground shaking from earthquakes as occurred in 1989. We discuss landsliding on the bluff face in greater detail in the following section of this report.

LANDSLIDES and SLOPE STABILITY

Slope instability of the coastal bluff is a natural and on-going process. Landslides and imperceptible creep are common and on-going processes on the steep coastal bluff at the property. Slope instability is the result of several factors, foremost of which are saturation and hydrostatic loading of the slope during rainstorms and strong ground shaking generated by large magnitude earthquakes. Longer term affects are over steepening of the slope due to coastal erosion at the toe and weathering of the near surface earth materials. During the 17 October 1989 Loma Prieta earthquake (Magnitude 7.1), major portions of the coastal bluff fronting Sunset Beach failed as shallow (3 to 7 foot thick) translational sand slides. The principal of our firm, Hans Nielsen, studied several of these slides following the earthquake (Foxx Nielsen and Associates - 1990,1991, 1993). He also has been involved in a recent project where a nearby home was stabilized with a new foundation system involving the same team of professional engineers as we understand will be working on this project (Foxx Nielsen and Associates, 2000).

The evaluation of landsliding on the bluff has involved: 1) a review of a Map of Landslide Deposits in Santa Cruz County (Cooper-Clark, 1974), 2) examination of historical stereo aerial photographs taken between 1939 and 2001, 3) traverses and mapping of the bluff face downslope of the home, 4) drilling of exploratory borings to evaluate physical characteristics of the earth materials composing the hillside, and 5) slope stability analyses of several sections of the hillside for previous studies. These studies were conducted by Foxx Nielsen and Associates (1990, 1991, 1993, 2000) in conjunction with the geotechnical engineering firm of Haro, Kasunich and Associates.

The Map of Landslide Deposits in Santa Cruz County (Cooper-Clark and Associates, 1974) was published in 1974 as a planning document. It was constructed from analysis of stereo aerial photographs and is considered a good "first" tool when evaluating landslides. This map shows no landslides on the property, an interesting fact since we can see evidence of several landslides on the coastal bluff below the home in the 1970 aerial photos.

The historic conditions at the site have been well documented through aerial photographs dating back to the late 1920's, but the earliest decent aerial photographs that we are aware of were taken in 1939. The 1939 photos show some homes present in the Sunset Beach community, but the area is in the early stages of development. The photos reveal a relatively linear bluff top. Below the property there is evidence of small scale sand flows originating near the crest of the bluff and flowing about half way down the slope. These features are characterized by arcuate heads scarps and lobate toes that appear to be revegetating. These slides probably occurred several years before the 1939 photos, probably in response to heavy rainfall but possibly as a result of the 1906 San Francisco Earthquake. Although there are no clear signs of active erosion or large-scale slope instability, the lower third of the coastal bluff is visibly steeper than the upper portion. This may suggest that severe coastal erosion undercut the toe of the bluff sometime prior to 1939.

The 1948 through 1956 aerial photographs do not show a significant change in the bluff morphology although additional scattered sand flows have occurred on the coastal bluff. The 1939 sand flows below the property are no longer discernable.

The 1968 photos show a large-translational sand slide on the bluffs several hundred yards northwest of the property. The arcuate headscarp is located about mid-slope and the slide mass extends to the toe of the slope at the beach. Over the ensuing years this slide encroached upslope to the bluff top indicating continued activity. Although the remainder of the bluff is slightly hummocky, there is no clear evidence of any other major slope instability. The slope was well vegetated, and very few bare spots were noted.

The 1970 photos show several large landslides all located northwest of the property. All of these coincide with landslides that we identified following the 1989 Loma Prieta Earthquake. The slides are recognized by bright arcuate shaped features on the aerial photos. These bright areas represent bare sand where vegetation was pulled apart by the landslides. There is also a linear bare feature running down the approximate center of the swale north of the subject home. This scar could be a narrow sand flow, could be related to erosion from concentrated surface runoff, or it could be an old trail to the beach. The exact nature of this scar was not evident from the aerial photographs. In any event, it is minor and does not affect the homesite. The clarity of landsliding evident in the 1970 photos indicates that the slides occurred very recently before the photos were taken since vegetation on the bluff obscures landslide evidence fairly rapidly. These landslides probably occurred during the winter of 1969-70 during which there was intense rainfall. These slides illustrate the fragility of the bluff to saturation from rainfall.

The 1976 (color) photos show little change in the bluff morphology. A few small-scale translational sand slides are evident on the lower portion of the slope both northwest and southeast of the property.

The 1984 color photographs were taken after the high rainfall years of 1982 and 1983 which were combined with severe coastal erosion when intense winter storms coincided with high tides in January 1983 and March 1983. It is very probable that ocean waves reached the toe of the bluff in early 1983 and caused 5 to 15 feet of coastal erosion occurred at the toe of the bluff during this period. The erosion at the toe of the bluff caused oversteepening that initiated numerous shallow translational sand slides along the base of the bluff that have continued to grow upslope. The 1983 coastal storms occurred during an El Niño event and were a significant event with regards to slope instability below and near the subject property.

On October 17, 1989 a magnitude 7.1 earthquake occurred on the San Andreas fault in the vicinity of the study area. Intense ground shaking during this earthquake initiated or reactivated numerous sizable landslides along the coastal bluffs in the Quaternary deposits south of Aptos Creek (Plant and Griggs, 1990). Much of the bluff face fronting Sunset Beach failed during this earthquake as shallow translational sand slides. The failed portions of the bluff face experienced limited downslope displacement on the order of about 5 to 30 feet.

Below the residence at 30 Sunset Beach Drive, several hundred feet northwest of the property, a failure extended the entire length of the bluff face. This 1989 failure resulted in the collapse of several retaining walls behind that house and undermined portions of the existing residence. Many of the landslides that developed on the bluff face showed continued activity following 1989. Limited displacement of the slide mass below the subject house was reported following the intense rainstorms of March 1991, December 1992 and January 1993 (Foxx Nielsen and Associates, 2000). In our opinion, wetting of the slide mass during significant rainfall caused additional movement of the already failed slope. However, there was no evidence of landslide activity below the home as a result of the intense rainstorms of 1997 and 1998.

Foxx Nielsen and Associates (1993) identified several landslides on the slope below the subject home when they studied this property (see Plates 1, 2 and 3). One of the slides came within three feet of the foundation. These landslides and the numerous landslides that have occurred historically, particularly as a result of the 1989 earthquake on the coastal bluff at Sunset Beach, indicate that slope instability is a very real serious at the property. We are of the opinion that the slopes below the existing structure are unstable, and there is a high potential for future landsliding at the subject property. We also believe that imperceptible creep of the near surface earth materials is occurring at the property. We believe that a future landslide could involve the land under the homesite.

Our recent inspection of the home revealed a recent landslide below a property on the south side of the ravine southeast of the subject property. A relatively small section of the hillside showed evidence of a debris slump near the middle of the hillside in an area where no such

evidence is visible in the 2001 aerial photographs. We suspect that this area broke loose this past winter during which there were periods of high rainfall, so the slide was saturation driven. This is another indication of the fragile nature of the stability of the hillside.

We recommend that the project geotechnical engineers conduct a slope stability analysis of the hillside at the property. They should analyze not only the steep bluff leading to the beach but also the shorter hillside leading to the ravine southeast of the home. We recommended that the analysis incorporate estimated ground motions from a Moment Magnitude 7.9 earthquake on the San Andreas fault which we provide in the following section of this report. We also recommend that the analysis incorporate 15 feet of erosion at the toe of the slope. In other words, the toe of the slope should be analyzed with its position shifted 15 feet landward to account for possible recession of the toe due to erosion from ocean waves. We believe this is reasonable given the semi-protected nature of the toe of the coastal bluff and the aerial photo evidence that suggests such erosion occurs on a very occasional basis. We also recommend that the project engineers obtain on-site samples of earth materials by drilling an exploratory boring behind the home. It is possible that the condition of the earth materials beneath the property may vary from those encountered in the boring at 36 Sunset Beach Drive, the log of which is presented in Appendix A of this report.

EROSION HAZARDS

An unprotected beach is situated at the base of the slope and the toe of the bluff is subject to coastal erosion. Coastal erosion of the bluff face is highly episodic, in part, due to the infrequent occurrence of winter coastal storms and high tides. During the winter storms of January 1983 and March 1983 we estimate that about 5 to 15 feet of coastal erosion occurred at the toe of the bluff. It is reasonable to assume that other smaller erosion events have occurred periodically in the past. Based on our review of aerial photographs dating back to 1939, no appreciable bluff top recession was apparent at the site from 1939 to 1992. Based upon the limits of this investigation, we were unable to evaluate the long term or average erosion rate for the site. Coastal erosion, however, is a natural an on-going process that will undoubtedly continue to occur in the future.

Erosion on the slope face is also a significant concern given the highly erodible character of the sand composing the hillside. Concentrated runoff should not be allowed to flow down the hillside.

FAULTS and EARTHQUAKE HAZARDS

Discussion of Faults

The subject property lies in a highly seismically active region of California. A broad system of inter-related northwest-southeast trending strike-slip faults represent a segment of the boundary between the Pacific and North American crustal plates. For approximately the past 15

million years (mid-Miocene) the Pacific plate has been slipping northwestward with respect to the North American plate (Atwater, 1970; Graham, 1978). The majority of movement has been taken up by the San Andreas fault itself; however, there are many faults within this broad system that have also experienced movement at one time or another. The faults of significance to the subject property include the San Andreas, Zayante, the offshore San Gregorio, and Hayward faults. The active San Andreas fault lies about 8.5 miles north of the property. The potentially active Zayante fault lies about 5.7 miles northeast. The active San Gregorio fault lies about 18 miles to the southwest offshore, and the active Hayward fault lies about 29 miles to the north in the East San Francisco Bay Area (Figure 3).

The San Andreas, San Gregorio and Hayward faults are all considered active and capable of generating 7+ magnitude earthquakes. The San Andreas and Hayward faults are currently considered to be the faults with the highest potential of generating the next large earthquake in the area. The San Gregorio fault is also considered a significant seismic threat but to a lesser extent than the San Andreas fault. The Zayante fault is a potential threat, but its history is much less understood than that of these other active faults. The recurrence interval for the Zayante is currently estimated to be on the order of 8800 years (Frankel and others, 1996) whereas the recurrence interval of large magnitude earthquakes on the known active faults are measured in hundreds of years. However, it is unknown when the last major earthquake occurred on the Zayante, so this fault can not be ignored relative to earthquake concerns.

The San Andreas fault is considered to have a high probability of generating a large magnitude earthquake in the next 30 years. The most recent assessment of seismic hazards in California was published jointly by the U.S. Geological Survey and the California Division of Mines and Geology in December 1996 (Frankel and others, 1996). This document is the result of a combined effort by many geologists and seismologists and is considered the most up to date compilation of fault parameters in California. The report indicates that the San Andreas fault in the vicinity of the property is capable of generating a Moment Magnitude 7.9 earthquake. This report also suggests the Zayante is capable of generating a Magnitude 6.8 earthquake, the San Gregorio a 7.3 earthquake, and the Hayward a 6.9 magnitude earthquakes.

Ground Motion Parameters

Strong ground shaking is associated with large magnitude earthquakes, and ground shaking affects structures and the stability of landslide masses and hillsides. A number of different parameters may be used to characterize ground motion for the purpose of seismic design. Typically, these include (but are not limited to) peak horizontal acceleration, peak horizontal velocity, and duration of motion. Most emphasis in engineering practice has been placed on peak horizontal ground acceleration. Empirically derived attenuation relationships for average peak horizontal ground acceleration (PHGA) have been developed over the past decade by numerous researchers. Typically, these relationships relate PHGA in terms of a percentage of the force of gravity (g) to the distance from the causative fault for a specified magnitude earthquake. It has

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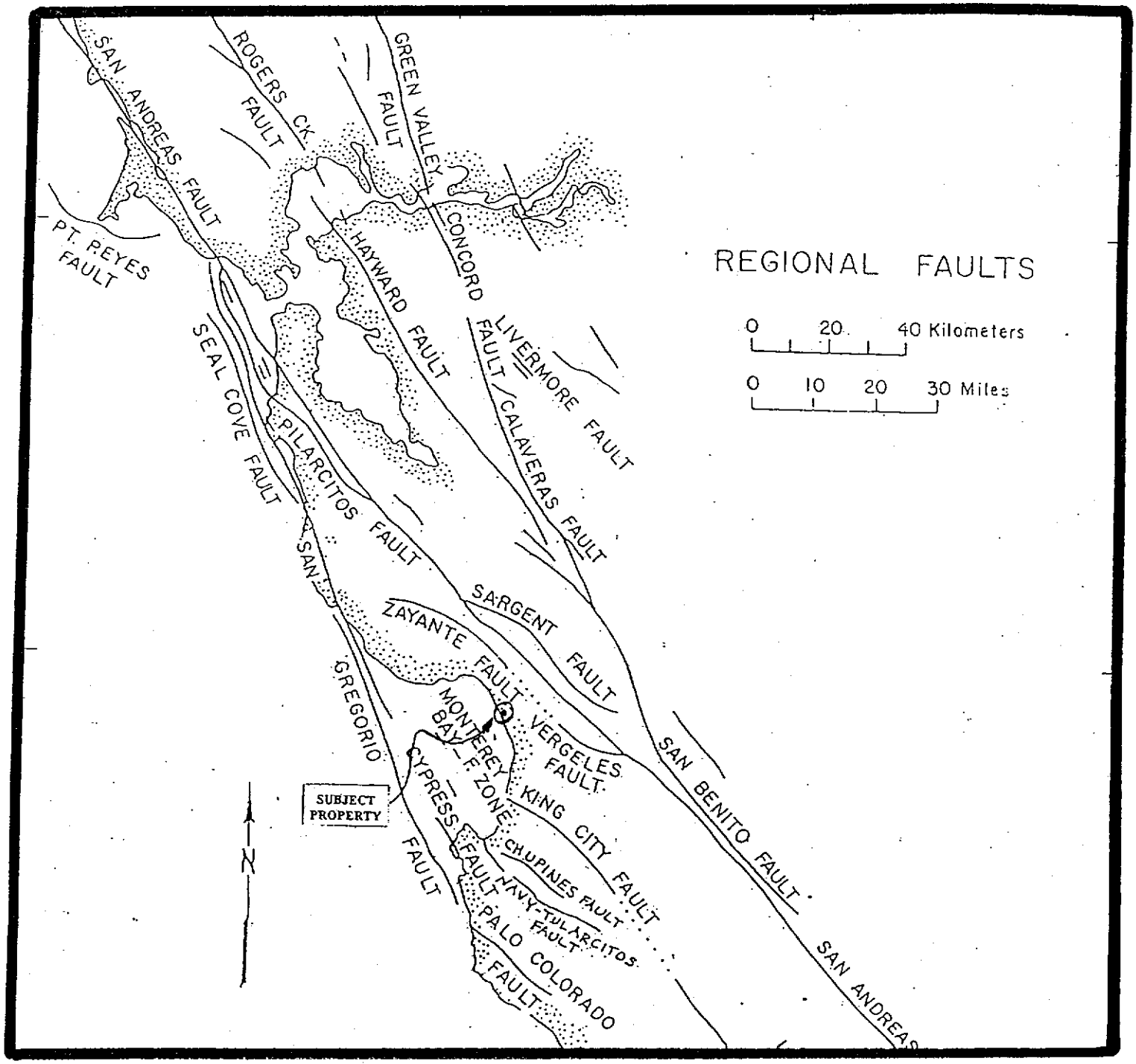
REGIONAL FAULT TRACE MAP

Figure 3.



From: McCrory and others (1977).

EXHIBIT H

also been recognized that the attenuation relationships differ depending upon the soil conditions underlying the site.

We used ground motion attenuation equations developed by Abrahamson and Silva (1997) to develop estimates of strong ground shaking at the property in the event of a large magnitude earthquake with an epicenter near the property. The attenuation equations are relative to the type of bedrock or thickness of recent sediments covering bedrock. The sand that underlies the property is considered a soil or soft rock type of earth material according to the classification of earth materials used by Abrahamson and Silva. The San Andreas fault is located about 8.5 miles (13.8 km) from the homesite. At this distance and for soil or soft rock type earth materials, the estimated mean peak horizontal ground acceleration (EMPHGA) for a Moment Magnitude 7.9 earthquake on the San Andreas fault is 0.30g where 'g' is the force of gravity. However due to uncertainties in estimating ground motions associated with earthquakes, we recommend that at least one standard deviation also be considered which increases the EMPHGA to 0.47g. For informational purposes, we also include values for sites underlain by rock which are 0.38g and 0.58g respectively for peak horizontal ground acceleration and PHGA plus one standard deviation.

These values are based on existing data and presently accepted models. We did not quantitatively consider near field effects in our estimates of ground acceleration. It is possible that the subject site may experience accelerations higher or lower than those estimated by the available attenuation curves. The project geotechnical, structural and other engineers should independently decide which values to use in any analysis, and we encourage them to contact us to discuss the values if they have any questions about how to apply them.

CONCLUSIONS

1. The existing home is located at the top of a steep coastal bluff whose face is over 200 feet long. Slope gradients on the bluff face average about 65% gradient towards the ocean. There is also a slope off the southeast side of the house that is inclined at about a 55% gradient some 120 feet to the axis of a ravine.

2. At the time of this study, there was no continuous foundation around and under the home. The foundation consisted of isolated pier blocks in a post-and-pier type structure. Several large concrete pier blocks along the rear of the house had shifted and tilted downslope.

3. The earth materials under the home consist of uncemented sand. The earth materials within about ten feet of the ground surface are most likely in a loose state of relative density based on findings nearby.

4. There have been numerous landslides on the coastal bluff along the Sunset Beach community including the area directly below the home. They have been activated by both saturation from rainfall and strong ground shaking from earthquakes. A major section of

the hillside failed as a result of the 1989 Loma Prieta Earthquake, and the headscarp of this landslide complex came within three feet of the house foundation.

5. The property is located in a highly seismically active area. It is located about 8.5 miles from the active San Andreas fault, about 5.75 from the potentially active Zayante fault, about 18 miles from the active San Gregorio fault. It is highly likely that the property will experience strong ground shaking from an earthquake in the next 30 years. Ground motion parameters at the site in the event of a large magnitude earthquake on the San Andreas fault are presented in this report.

6. There was no evidence of active erosion on the hillside below the home at the time our study. The slope to the southeast leading into the ravine is densely vegetated with iceplant over its entire length.

7. We suspect that the property is served by an on-site sewage disposal system consisting of a septic tank and leachfield, but we have no information as to where these are on the property. They may present obstacles to construction of a new foundation system, so their locations should be determined prior to design of the new foundation system.

RECOMMENDATIONS

1. We recommend that the project geotechnical engineers conduct a slope stability analysis of the hillside at the property. They should analyze not only the steep bluff leading to the beach but also the shorter hillside leading to the ravine southeast of the home. We recommended that the analysis incorporate estimated ground motions from a Moment Magnitude 7.9 earthquake on the San Andreas fault which are provided in this report. Although saturated units weights should be used in the analysis, the geologic conditions do not appear conducive to the development of a groundwater table. We also recommend that the analysis incorporate 15 feet of erosion at the toe of the slope. In other words, the toe of the slope should be analyzed with its position shifted 15 feet landward to account for possible recession of the toe due to erosion from ocean waves. We believe this is reasonable given the semi-protected nature of the toe of the coastal bluff and the aerial photo evidence that suggests such erosion occurs on a very occasional basis. We also recommend that the project engineers obtain on-site samples of earth materials by drilling an exploratory boring behind the home. It is possible that the condition of the earth materials beneath the property may vary from those encountered in the boring at 36 Sunset Beach Drive, the log of which is presented in Appendix A of this report.

2. A new foundation system shall be developed by the project geotechnical and structural engineers based on the results of the slope stability analysis. The foundation system shall be designed to support the home in the event of ground movement, in the form of landsliding, occurs on the hillside and reaches up into the foundation zone. We

recommend that the southeastern side of the home closest to the ravine also be supported against ground movement unless recommended otherwise by the project engineers.

Due to probable low relative density earth materials within ten feet of the ground surface, we also recommend underpinning the entire home against settlement and ground movement unless otherwise recommended by the project geotechnical engineer. It appears the existing "foundation" supporting the home consists of isolated pier blocks in a post-and-pier type structure.

3. We recommend that any structural improvements to the dwelling consider the potential for severe ground shaking generated by a large magnitude earthquake.

4. Drainage around the home shall be well controlled. No concentrated runoff from impermeable surfaces shall be allowed to discharge on the hillside below the home because this will probably result in erosion that may rapidly become severe.

5. We recommend that the property owners carry earthquake insurance.

6. All areas where vegetation is stripped during construction should be revegetated with an appropriate erosion resistant vegetation prior to the following rainy season.

7. We recommend that we be provided the opportunity for a general review of final design specifications. If we are not accorded the privilege of making the recommended reviews we can assume no responsibility for misinterpretation of our recommendations.

8. If any unexpected variations in soil conditions, or if any unanticipated geologic conditions are encountered during construction, or if the proposed project will differ from that discussed or illustrated in this report, we require to be notified so supplemental recommendations can be given.

NIELSEN and ASSOCIATES

ENGINEERING GEOLOGY AND COASTAL CONSULTING

RECD JUN 29 2006

June 26, 2006

Job No. SCr-1079-G

Mr. Joe Hanna, County Geologist
County Government Center
701 Ocean Street, 4th Floor
Santa Cruz, CA 95060

SUBJECT: Response to questions regarding a geologic report.

REFERENCE: 44 Sunset Beach Drive, Santa Cruz County, California, APN 046-173-02.

Dear Mr. Hanna:

Following are our responses to your questions regarding our geologic report in a letter dated 24 May 2006.

In regards to groundwater or surface moisture conditions present on the site, there were no indications of either at the time of our study. The earth materials underlying the property consist entirely of uncemented dune sands. This is apparent from exposures along the bluff face all the way to the beach and was further supported by a deep boring drilled by the project geotechnical engineer for this study. In our numerous studies in the Sunset Beach community, we have never found any evidence of earth materials that may lead to perching of groundwater between the top of the bluff and the beach. Surface moisture is another issue altogether. Surface moisture can come from irrigation but more importantly rainfall. There was no indication of significant surface moisture at the time of our study. We saw no indications of excessive irrigation at the time of our study, and the nature of the landscaping at the property did not appear to lend itself to excessive irrigation. In regards to rainfall, the near-surface earth materials certainly become very moist during the winter months when rainfall wets the land. Under extreme rainfall conditions, the near-surface earth materials probably become saturated. But it is our opinion that the very well drained nature of the dune sands underlying the property produce a condition that confines excessive saturation to the very near-surface earth materials, and it is unlikely that significant pore pressures develop, even in the near-surface, due to this very well drained character. Extreme rainfall has lead to many very shallow landslides along the bluff at Sunset Beach, and these types of slides can be expected in the future. There was no evidence of recent such slides on the slope below the home; the most recent instability having been caused by strong ground shaking from the 1989 Loma Prieta Earthquake. It is our opinion, based on our extensive personal experience with the Sunset Beach coastal bluff and based on our analysis of stereo aerial photographs, that such slides will be relatively rare at any one local along the bluff over the next 100 years. And the design for underpinning the foundation of the home takes into

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account the potential for such shallow slides to occur on the bluff face.

In regards to the septic system, it is to be located in the front yard just south of the driveway or to the left as one is looking at the house from the street. It is our opinion that moisture from the system will not have any affect on slope stability due to the very permeable nature of the earth materials under the property. Every home in the Sunset Beach community is on a septic system, and many of these are located as near to the bluff as the one proposed for the property. To our knowledge, no landsliding or slope instability in the community has every been attributed to septic systems or the moisture that they produce.

In regards to your suggestion that we compare the stability of various slope gradients around the area, we assume that you meant to refer to slope angles, not gradients in your letter which states that the slope below the home as "33%" and that to the slope south of the home as "25%", values that are closer to the angles of these hillsides which are 67% and 55% gradients, respectively. We should point out that while our site map shows a gradient of 77% immediately below the home towards the beach, the dominant gradient of this hillside is 67%; it is only the uppermost portion of the hillside that is 77% gradient. While we would certainly agree that a lesser slope gradient is generally a more stable condition than a steeper gradient, we are not inclined to infer that a gradient of 25% is a stable gradient in the earth materials underlying the property or on the various slopes around the area. As you are undoubtedly aware, the angle of repose for uncemented sand is 33°, a value which is very close to the gradient of the hillside towards the beach. This hillside has experienced historical shallow slope instability, most recently during the 1989 Loma Prieta Earthquake. While the slope to the south of the home leading into the side canyon has not experienced such instability nor does it exhibit geomorphic evidence of shallow landsliding, we did not preclude instability on this hillside in our assessment of the property. We recommended that the project geotechnical engineers assess the stability of this hillside, and we further recommended that strong consideration be given to extending the foundation piers around the south side of the home as was done on the repair at a house a short distance north at 36 Sunset Beach Drive a few years ago.

In regards to the stability of the various slope gradients around the property, one thing is clear. The steeper bluff leading to the beach does not appear to have been reducing gradient over time. This bluff is composed of dune sands which most likely took on the gradient of their current state when they formed. The sand source was certainly from the direction of the ocean with the sand blowing in during a low stand of sea level. Therefore, the bluff facing the ocean would tend to be the steepest face in the dune field since the forces of wind would be greatest on this face. In contrast, the dune slopes facing away from this direction would tend to take on slightly lesser gradients. The persistent geomorphic conditions strongly suggest that it is reasonable to assume that the bluff facing the ocean will maintain a slightly steeper gradient than surrounding bluff faces over time. And in our opinion, any of the slopes around the area are susceptible to instability due to the uncemented character of the dune sands composing them. Therefore, it remains our opinion that our suggestion in our report that a 33° slope angle, based on about 15 feet of erosion

at the toe of the bluff, is a reasonable stable angle to work from in assessing the stability of the homesite over the next 100 years. We assume that this was the gist of your question in this regard.

And this leads us into the final issue, your request that we elaborate on our assessment of coastal wave erosion at the property. We examined 10 sets of stereo aerial photographs dating back to 1939 to analyze the property for evidence of coastal erosion and slope instability. In fact, none of these photographs showed good evidence of erosion at the toe of the bluff. Although we stated in our report that we estimated that 5 to 15 feet of erosion occurred at the toe of the bluff during the winter of 1982-83, a strong El Niño period, this was a very conservative estimate based on weak evidence at best. Due to the severity of those storms and our experience with coastal erosion along the shores of Monterey Bay to that date, we chose to err on the side of caution and conservancy. We remain convinced that our estimate of 15 feet of erosion at the toe of the bluff over the next 100 years is a reasonable estimate.

One of our recent studies provides supporting evidence that there is a very low potential for erosion by ocean waves at the toe of the bluff below the home due to the extreme width of the beach. In the City of Santa Cruz, a very wide beach some 300 feet wide has artificially formed as a result of construction of the breakwater for the harbor in 1963, that beach being Seabright Beach. Prior to the existence of the wide beach, the coastal bluff was regularly attacked by ocean waves, and the coastal bluff was retreating at an estimated rate of 2.2 feet/year (Griggs and Savoy, 1985). Subsequent to development of the wide beach, bluff erosion has been reduced to nil since ocean waves no longer reach the bluff with sufficient force to generate erosion. This was proven by photographs taken by Dr. Gary Griggs during the 1982-83 winter at Seabright Beach and further supported by a recent analysis of bluff erosion by the U.S. Geological Survey (Hapke and others, 2002) who reached the same conclusion and stated that "the sea cliff at Seabright Beach is completely protected from wave attack by a wide sand beach".

The beach width at the property is very similar to that at Seabright Beach. Waves do not reach any where near the back of the beach during typical winters. And the beach width provides a formidable barrier to wave attack even during extreme storm periods such as occurred in 1982-83. Although there will most certainly be extreme storm periods in the future, it is our opinion that it is unlikely that the toe of the bluff at the property will be affected by wave erosion to a extreme degree. Our analysis of stereo aerial photographs provided excellent evidence that the bluff top has not receded appreciably in the last 77 years. These photographs also provided compelling evidence that the toe of the bluff has not been eroded by ocean waves more than once during period. And the one period of possible erosion coincided with a very strong El Niño period. Therefore, it remains our opinion that an estimate of 15 feet of erosion at the toe of the bluff over the next 100 years is reasonable and takes into account historical evidence from this area as well as similar sites along the Monterey Bay Coastline.

While we trust that the foregoing has provided clarification of the issues, please do not

hesitate to contact us if we can provide further information. The best and quickest method of contact is email - hans@surfnetusa.com .

Sincerely,

Hans Nielsen
C.E.G. 1390

REFERENCES

Griggs, G.G. and Savoy, L., editors: Living with the California Coast, Duke University Press, Durham, North Carolina.

Hapke, C.J., Richmond, B.M., and D'Iorio, M.M., 2002, Map showing seacliff response to climatic and seismic events, Seabright Beach, Santa Cruz County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2400, scale 1:7,500

EXHIBIT H

NIELSEN and ASSOCIATES

ENGINEERING GEOLOGY AND COASTAL CONSULTING

July 8, 2006

Job No. SCr-1079-G

Joann Ferguson
745 Cotton Street
Menlo Park, CA 94025

SUBJECT: Review of plans for a Stitch-Pier Tied-Back Retaining Wall along the rear of a single family home.

REFERENCE: 44 Sunset Beach Drive, Santa Cruz County, California, APN 046-173-02.

Dear Ms. Ferguson:

At the request of your planner, Stephen Graves and Associates, we have reviewed a set of plans for a Stitch Pier Tied-Back Retaining wall along the rear of your home at 44 Sunset Beach Drive. The plans were prepared by Soil Engineering Construction and dated 20 June 2006. They consist of four sheets. The purpose of our review was to assess whether the plans were in accordance with the geologic conditions described in our report for this property dated September 2005.

The plans show that the homesite will be supported with a row of concrete cast-in-place piers that extend along the rear or seaward side of the home and along the southern side of the home for a distance of about 20 feet. The piers are spaced such that there will be 2'-6" between the pier faces upon completion of the wall. The piers are to be a minimum of 35 feet deep which will place the base of the piers about 10 feet below the potential zone of instability suggested by our study and supported by a slope stability analysis by the project geotechnical engineers. The pier tops are to be connected by a grade beam which is tied-back into the hillside. This plan appears adequate to support the homesite against potential instability in the hillsides below the home for the design lifetime of the home which we understand to be on the order of 100 years.

It is probable that a portion of the piers will be exposed over time due to slope instability. The plans note this on Sheet 2. The earth materials underlying the property are composed of highly erodible, uncemented sand that has the potential to fail from between the piers. We do note that the piers will be very closely spaced, and the sand in the pier zone is to be grouted prior to drilling of the piers to reduce the potential for caving of sand during pier drilling. While these conditions will reduce the potential for failure of sand from between and behind the piers should the pier faces become exposed, they will not prevent such failure. Therefore, a plan must be developed for construction of an engineered reinforced structural face to be constructed between pier faces when they become exposed. In our opinion, this face should be designed as an art-rock face constructed to visually mimic the coastal bluff sand so as not to become a visual impairment to the coastal bluff. If the pier faces become exposed, it is very important that the engineered reinforced structural face be constructed as soon as possible after any exposure of the piers

EXHIBIT H

occurs. As soon as possible means days to weeks, not months. It is very important that the owners of the property understand and acknowledge this requirement and accept the responsibility to have the work completed in a timely manner.

Additionally, our report recommended that the entire home be supported on a new foundation unless proven otherwise by the project foundation engineers. We understand that a new foundation is to be constructed beneath the home. We have not received plans showing this as of yet. We require that we be afforded an opportunity to review these plans when they become available.

Sincerely,

Hans Nielsen
C.E.G. 1390

EXHIBIT H

Project No. SC9039
6 April 2006

JOANNE FERGUSON
745 Cotton Street
Menlo Park, California 94025

Subject: Geotechnical Investigation

Reference: Proposed Single Family Dwelling Remodel
and Coastal Bluff Stabilization
APN 046-173-02
44 Sunset Drive
Watsonville, California

Dear Ms. Ferguson:

In accordance with your authorization, we have performed a Geotechnical Investigation for the referenced project located at 44 Sunset Beach Drive in Watsonville, California. The residence is on the top of a coastal bluff where landsliding occurred in the recent past. The west side of the dwelling is close to the top of the landslide and future landsliding will undermine the residence.

The accompanying report presents the results and conclusions of our investigation and presents geotechnical design criteria for the remodel of the existing residence and coastal bluff stabilization.

If you have any questions concerning the data or conclusions presented in this report, please call our office.

Very truly yours,

HARO, KASUNICH & ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER A. GEORGE
No. 50871
Exp 9/30/07
CIVIL
STATE OF CALIFORNIA

Christopher A. George
C.E. 50871

William E. St. Clair
Staff Engineer

BSC/jm
Copies: 1 to Addressee
5 to Steven Graves and Associates
1 to George Drew

EXHIBIT 1

116 EAST LAKE AVENUE • WATSONVILLE, CALIFORNIA 95076 • (831) 722-4175 • FAX (831) 722-3202

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Project No. SC9039
6 April 2006

GEOTECHNICAL INVESTIGATION

Introduction

This report presents the results of our Geotechnical Investigation for the remodel of an existing single family dwelling located at 44 Sunset Drive in Watsonville, California. The dwelling at 44 Sunset Drive is situated on the ocean side of a coastal bluff composed of old sand dune deposits. During the 1989 Loma Prieta earthquake, landsliding occurred on the bluff, leaving the west side of the dwelling about 3 feet from the top edge of a landslide scarp. The landslide, which was 3 to 7 feet deep, reactivated during heavy rainfall in March 1991 and January 1993, resulting in additional shallower landsliding. Without protection, future landslides will undermine the dwelling and result in structural damage.

A retaining wall is proposed to stabilize the top of the coastal bluff. This report focuses on providing geotechnical design criteria for the retaining wall and foundation plans for remodel of the dwelling. Since the retaining wall and foundation plans have not been finalized, some of the recommendations presented in this report are general in nature. Haro, Kasunich and Associates should be provided the opportunity for a geotechnical review of the project plans prior to construction to evaluate if our recommendations have been properly interpreted and implemented and to determine if this report is adequate and complete for the final planned grading and construction. It is not intended that the geotechnical engineer approve or disapprove the plans, but to provide an opportunity to update the preliminary report and include additions or qualifications as necessary.

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This investigation was performed to evaluate soil conditions and provide geotechnical engineering information to be used in the design and construction of the proposed project. As recommendations presented in this report were developed from a preliminary design standpoint, they may not contain sufficient detail to address specific construction issues or other needs required by the contractor. Therefore, it is recommended prospective bidders obtain additional subsurface information as they deem necessary.

Purpose and Scope

The purpose of our investigation was to explore and evaluate subsurface conditions at the site and determine the soil-structure interaction from a static (dead plus live) loading condition and develop geotechnical criteria and recommendations for design of retaining walls, foundations, slabs-on grade, site drainage and erosion control. It is presumed the latest UBC (1997) edition design considerations, specifically the seismic factors and coefficients from Chapter 16, Volume 2, will be followed in the design of retaining walls and foundations for the residential structure.

The scope of our services included the following:

1. Site reconnaissance and review of available data in our files regarding the site and region. Literature reviewed consisted of the following:

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DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Based on our findings from a geotechnical-related study and engineering analysis, it is our opinion the proposed blufftop retaining wall will greatly reduce the potential for land sliding on the slope by stabilizing the upper portion size of the potential slide mass. It will also increase the long term stability of the dwelling and improvements by reducing the potential for undermining by placement of the wall. Our analysis considered a potential 100 year bluff toe recession of 15 feet and potential failure of soil above a 33 degree line (angle of repose) taken from the toe of the 100 year recession line. Therefore, if the wall and residence are constructed and maintained in conformance with our recommendations, we estimate a 100 year life for the wall and dwelling.

Geotechnical considerations for the project include strong seismic shaking, slope instability under seismic conditions, the loose and uncemented condition of the underlying sand on the bluff, providing adequate bearing support for the retaining wall and residential foundation, proper drainage control and adequate erosion control. Provided our recommendations are closely followed during the design and construction phases of the project, it is feasible to lower (not eliminate) the level of risk to "ordinary" (as defined in the Scale of Acceptable Risks in Appendix B), by taking into consideration the risks and implementing mitigating measures. If an "ordinary" risk is unacceptable,

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the constraints in question should be further mitigated to the level of risk the Client is willing to accept.

We recommend the bluff top be stabilized using a pin pile structure with a steel reinforced blufftop retaining wall. Pin piles should be founded below the projected failure surface, into medium dense golden red brown poorly grade sand (SP). The sandy soil at the site is uncemented and susceptible to caving during drilling of pier holes. Temporary cuts steeper than 1.5:1 are potentially unstable and should have temporary shoring. Casing the pier holes In addition we recommend tieback anchors be used to provide additional restraint for the blufftop wall and be founded beyond the projected failure surface and into the loose golden brown poorly graded sand (SP). The height of the blufftop retaining wall is dependent on final pad elevation however we anticipate this height be roughly 6 to 12 feet high. As a minimum, we recommend the bottom 6 feet of wall face be buried below existing grade.

It must be made clear this type of retainment structure requires periodic maintenance and inspection. Initially, this type of structure will retain the top 6 to 12 feet of the bluff and will prevent soil from falling below the building pad. However, soil below the retaining wall will depend on soil arching to be retained. For long term stability, it is our experience that soil arching is less efficient in retaining soil than a full retaining wall. It should be expected that in the event landsliding in the future, soil falling away from the

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lower portion of the retaining wall may expose the pin piles. In this case, the pin piles will retain the soil from falling out from under the building pad, but for only a short period of time. When the piles are exposed, the current property owners must understand the bottom of the retaining wall must be extended down to meet the additional retainment requirements to ensure long term stability of the building pad.

Due to the compressibility of the native soil, we recommend the remodeled residence be supported by a structural concrete slab foundation.

We recommend surface runoff be strictly controlled and not allowed to pond on top or allowed to discharge onto the slope below the proposed wall. Drainage control should be planned accordingly. The drainage provisions should be closely monitored during the first winter after completion of the project to determine if the system is functioning adequately and, if necessary, to rectify malfunctions.

Construction Considerations

Based on our subsurface information, the top 37 feet of the sand dune deposits were loose and compressible. We anticipate any temporary excavation (foundation excavations or construction cuts) made in this upper zone inclined greater than 1.5:1 (horizontal to vertical) should be considered unstable and unsafe to work without temporary shoring or soil strengthening such as chemical grouting prior to excavation.

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The geotechnical-related aspects of construction performed by the contractor should be observed and, as appropriate, tested by the geotechnical engineer. This allows us to evaluate contractor compliance during construction with the geotechnical aspects of project plans and specifications. It will also allow us to determine conformance as to the intent of recommendations rendered in this geotechnical report and/or any updates that may follow. This service allows the geotechnical engineer an opportunity to correlate actual field conditions to those inferred from field investigations.

The following recommendations should be used as guidelines for preparing project plans and specifications, and assume that **Haro, Kasunich & Associates** will be commissioned to observe, test and advise during earthwork and foundation construction. This additional opportunity to examine the site will allow us to compare subsurface conditions exposed during construction with those inferred from this investigation. Unusual or unforeseen soil conditions may require supplemental evaluation by the geotechnical engineer.

Site Grading

1. The geotechnical engineer should be notified **at least four (4) working days prior to any grading or foundation earthwork** so the work in the field can be coordinated with the grading contractor and arrangements for testing and observation can be made. The recommendations of this report are based on the assumption that

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the geotechnical engineer will perform the required testing and observation during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.

2. Where referenced in this report, Percent Relative Compaction and Optimum Moisture Content shall be based on ASTM Test Designation D1557-01.

3. Areas to receive foundations and improvements should be cleared of all obstructions, including existing landslide debris, fill and other unsuitable material. The building pad should be redensified as engineered fill prior to construction of foundations. Existing depressions or voids created during site clearing should be backfilled with engineered fill. Any surface or subsurface obstructions, or questionable material encountered during grading, should be brought immediately to our attention for proper exposure, removal and processing as directed.

4. Engineered fill should be placed in thin lifts not exceeding 8 inches in loose thickness, water conditioned to a moisture content about 2 percent above optimum, and compacted to at least 90 percent relative compaction. The upper 8 inches of slab and pavement subgrades and aggregate base should be compacted to at least 95 percent relative compaction.

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5. Engineered fill should consist of a predominantly granular soil. Subject to field approval during construction, we anticipate that the on-site soils may be suitable for use as engineered fill. Imported material used for engineered fill should be free of organic and deleterious material, contain no rocks or clods over 4 inches in dimension, and should contain no more than 15 percent by weight of rocks larger than 2½ inches. Imported fill should also be granular, have a Plasticity Index of less than 15, and should have sufficient binder to allow excavations to stand without caving. Prior to delivery to the site, a representative sample of proposed import should be sent to our laboratory for evaluation.

6. If grading is performed during or shortly after the rainy season, the grading contractor may encounter compaction difficulty with wet soil. If compaction of the native soil cannot be achieved after adjusting the soil moisture content, it may be necessary to stabilize the bottom of the excavation with stabilization fabric. The need for ground stabilization measures to complete grading effectively should be determined in the field at the time of grading, based on exposed soil conditions.

7. We estimate shrinkage factors of about 15 to 25 percent for reusable on-site soil.

8. Placement of engineered fill should be done under the observation of a **Haro, Kasunich and Associates** representative to verify the intent of our recommendations have been met and followed.

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9. Following completion of the work, exposed areas disturbed by construction should be planted as soon as practicable with erosion-resistant vegetation and covered with erosion control fabric.

10. After the earthwork operations have been completed and the soil engineer has finished his or her observation of the work, no further earthwork operations shall be performed except with the approval of the owner and under the observation of the geotechnical engineer.

Structural Slab Foundation

11. Provided the building site is protected with a tied back pin/pile retaining wall designed and constructed in conformance with the recommendations in this report, we recommend the new remodeled residence have a structural concrete-slab-on grade foundation deriving structural support from redensified native soil.

12. For structural slabs founded on engineered fill, an allowable bearing pressure of 1500 psf may be used. This value may be increased by 1/3 for short term seismic and wind loads.

13. The structural slab should have a minimum thickness of 10 inches and at least two layers of rebar grid steel reinforcement be considered by the structural designer.

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The project design professional should determine the appropriate slab reinforcing and thickness, in accordance with the anticipated use and loading of the slab. As a guideline, the structural slab should be designed to span a 10 feet void in both directions. The steel reinforcement should be held firmly in the vertical center of the slab during placement and finishing of the concrete with pre-cast concrete dobies.

14. Passive resistance may be assumed to develop between the slab and supporting subgrade. A coefficient of friction of 0.35 may be used.

15. Where floor dampness must be minimized or where floor coverings will be installed, concrete slabs-on-grade should be constructed on a capillary break layer at least 6 inches thick, covered with a membrane vapor retarder. The capillary break material should be free-draining, clean gravel or rock, such as 3/4-inch gravel. The gravel should be washed to remove fines and dust prior to placement on the slab subgrade. The vapor retarder should be a high quality membrane, at least 10 mil thick. A layer of sand about 2 inches thick should be placed between the vapor barrier and the floor slab to protect the membrane and to aid in curing concrete. The sand should be lightly moistened prior to placing concrete.

16. Floor coverings to be installed over concrete slabs should be installed in accordance with the recommendations of the manufacturer, including appropriate waterproofing applications.

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Tieback Pin Pile Retaining Wall

Bluff Top Retaining Wall

17. Retaining walls should be designed to resist both lateral earth pressures and any additional surcharge loads. For design of retaining walls up to 12 feet high and fully drained, the following design criteria may be used:

A. Active earth pressure for walls unrestrained at the top, an equivalent fluid weighing 35 pcf for level back slope and 44 pcf for 2:1 back slope and a fully drained condition.

B. Where walls are restrained from moving at the top (as in the case of basement or tie-back walls), design for a uniform rectangular distribution equivalent to 22H psf per foot for level back slope and 27H psf per foot for 2:1 back slope and a fully drained condition, where (H) is height of the wall.

C. In addition, the walls should be designed for any adjacent live or dead loads which will exert a force on the wall (structures and/or auto traffic).

D. For seismic design of retaining walls a dynamic surcharge load of 16H psf per foot, where H is the height of the wall, should be added to the above active lateral earth pressures.

E. The above lateral pressure values assume that the walls are fully drained to prevent hydrostatic pressure behind the walls. Drainage materials behind the wall should consist of Class 1, Type A permeable material

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complying with Section 68 of Caltrans Standard Specifications, latest edition.

F. The drainage material should be at least twelve inches (12") thick. The drain material should extend from the base of the walls to within twelve inches (12") of the top of the backfill. A perforated pipe should be placed (holes down) about four inches (4") above the bottom of the wall and be tied to a suitable drain outlet. Wall backdrains should be capped at the surface with clayey material to prevent infiltration of surface runoff into the backdrains. A layer of filter fabric (Mirafi 140N or equivalent) should separate the subdrain material from the overlying soil cap.

G. Retaining walls should be backfilled with engineered fill.

18. Pin/Pile piers should be a minimum of 30 inches in diameter and spaced a maximum of 2 pier diameters. The native sands at the site are loose, uncemented and highly susceptible to caving. We recommend pier holes be cased prior to pouring concrete or chemical grouting (or equivalent form of stabilization approved by the geotechnical engineer) of the soil adjacent to the pier holes prior to drilling pier holes.

19. Pin/Pile piers should support the portion of the blufftop above a 33° angle of repose taken from a 15 foot toe recession point (see Figure 3 in Appendix A). The Pin/Pile piers should also be embedded a minimum of 10 feet below the 33° angle of

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repose. We estimate the minimum depth of the outboard Pin/Pile piers to be about 35 feet deep.

20. The Pin/Pile piers between the bottom of the wall and the 33° angle of repose should be designed to resist an active earth pressure equivalent to a fluid weight of 60 pcf acting against a plane 2 times the diameter of the pier hole. The 30 inch diameter Pin/Pile piers should be spaced no more than 5 feet on center.

21. Passive restraining earth pressures may be assumed to be equivalent to fluids weighing 300 pcf for those portions of the Pin/Pile piers embedded below the 33° angle of repose. Neglect the soil above the 33° angle of repose when computing passive resistance for the pin/pile pier system. The passive resistance can be assumed to act on a plane 2 times the diameter of the piers.

Tieback Anchors

22. Vertical piers in conjunction with tieback anchors will be required to achieve resistance to the design lateral loads. Tiebacks will need to be either grouted anchors and/or helix anchors. The following criteria should be used when designing tieback anchors:

- Tieback anchors should be bonded in native soil.

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- Lateral anchors should be angled between 10 to 20 degrees from the horizontal.
- Minimum unbonded length should be 35 feet is recommended.
- Minimum overburden cover should be 15 feet, as measured from the center of the bonded section to the ground surface.
- Use a working shaft bond friction of 2,000 psf
- A minimum spacing of 8 feet should be assumed
- A minimum helix size of 12 inch diameter is recommended
- A minimum 50 year corrosion protection should be applied to the anchors.
- Anchor capacity is dependent upon tendon strength and bonded length.

23. All anchors should be pull-tested to 120% of design capacity and locked off at 60% of the static design load.

24. A representative from **Haro, Kasunich & Associates** should be present during anchor installation and pier drilling to verify subsurface soil conditions are consistent with the anticipated soil conditions and to ensure the intent of our geotechnical recommendations have been met. Prior to placing steel and concrete, pier excavations should be thoroughly cleaned and approved by the geotechnical engineer.

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Exterior Concrete Slabs-on-Grade

25. Exterior slabs should be constructed upon at least 2 feet of redenseified native soil, as measured below slab subgrade elevation, and compacted subgrade that has been processed in accordance with the recommendations under the General Site Grading Section of this report.

26. The project design professional should determine the appropriate slab reinforcing and thickness, in accordance with the anticipated use and loading of the slab. However, we recommend that consideration be given to a minimum slab thickness of 5 inches and steel reinforcement necessary to address temperature and shrinkage considerations. It is recommended that rebar in lieu of wire mesh be used for slab reinforcement. The steel reinforcement should be held firmly in the vertical center of the slab during placement and finishing of the concrete with pre-cast concrete dobies.

27. Exterior concrete slabs-on-grade should be founded on firm, well-compacted ground as delineated above. The reinforcement should not be tied to the building foundations. These exterior slabs can be expected to suffer some cracking and movement. However, thickened exterior edges, a well-prepared subgrade including pre-moistening prior to pouring concrete, adequately spaced expansion joints, and good workmanship should minimize cracking and movement.

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Pavement Design

28. The design of structural pavement sections was beyond our scope of services for this project, however to have the selected pavement sections perform to their greatest efficiency, it is very important that the following items be considered:

a. We recommend pavement sections be support by at least two feet of redensified native soil ,as measure below pavement subgrade elevation, and compacted subgrade that has been processed in accordance with the recommendations under the "General Site Grading" Section of this report.

b. Scarify and moisture condition the top eight inches (8") of subgrade and compact to a minimum relative compaction of 95 percent, at a moisture content which is within 2 to 4 percent above laboratory optimum value.

c. Provide sufficient gradient to prevent ponding of water.

d. Use only quality materials of the type and thickness (minimum) specified. All baserock (R=78 minimum) must meet CALTRANS Standard Specifications for Class 2 Untreated Aggregate Base (Section 26). All subbase (R=50 minimum) must meet CALTRANS Standard Specifications for Class 2 Untreated Aggregate Subbase, (Section 25).

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e. Compact the baserock and subbase uniformly to a minimum relative compaction of 95 percent.

f. Place the asphaltic concrete only during periods of fair weather when the free air temperature is within prescribed limits.

g. Maintenance should be undertaken on a routine basis.

Surface Drainage

29. Surface drainage should be strictly controlled on the property and not allowed to pond on top or allowed to discharge onto the slope below the proposed wall during and after construction. Surface runoff should **not** be allowed to flow onto graded or natural slopes. Consideration should be given to catch basins, berms, concrete v-ditches, or drainage swales at the top of all slopes to intercept runoff and direct it to a suitable discharge point that will not exacerbate slope erosion or slope instability.

30. After backfilling is completed the building pad should be graded to promote positive runoff towards an approved discharge point away from existing structures residence.

31. We recommend the gutters and downspouts on the existing residence be checked for leaks and if needed repaired and rerouted through a closed rigid conduit to a discharge point that will not exacerbate slope erosion or slope instability.

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32. All exposed soil during and after construction should be temporarily protected from erosion by planting and covering with erosion resistant plants and erosion control blankets.

33. Irrigation activities at the site should be done in a controlled and reasonable manner. Planter or landscape areas should not be sited adjacent to walls; otherwise, measures should be implemented to contain irrigation water and prevent it from seeping into walls and under foundations.

34. The migration of water or spread of extensive root systems below foundations, slabs, or pavements may cause undesirable differential movements and subsequent damage to these structures. Landscaping should be planned accordingly.

35. Drainage patterns approved at the time of fine grading should be maintained throughout the life of proposed structures.

36. The storm drainage system should be closely monitored during the first winter after completion of the project to determine if the system is functioning adequately and, if necessary, to rectify malfunctions.

EXHIBIT I.

Plan Review, Construction Observation and Testing

37. Haro, Kasunich and Associates should be provided the opportunity for a general review of the project plans prior to construction to evaluate if our geotechnical recommendations have been properly interpreted and implemented and to determine if this report is adequate and complete for the final planned grading and construction. It is not intended that the geotechnical engineer approve or disapprove the plans, but to provide an opportunity to update the report and include additions or qualifications as necessary. If we are not accorded the opportunity of making the recommended review, we can assume no responsibility for misinterpretation of our recommendations.

38. We recommend that Haro, Kasunich and Associates review the project plans prior to submittal to public agencies, to expedite project review. The recommendations presented in this report require our review of final plans and specifications prior to construction and our observation and testing of Pin/Pile wall construction, grading and foundation excavations. Observation of wall construction, grading, and foundation excavations allows anticipated soil conditions to be correlated to those inferred from our investigation and to verify our recommendations have been followed.

EXHIBIT J

COUNTY OF SANTA CRUZ

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

February 22, 2007

Steve Graves and Associates
2735 Porter Street
Soquel, CA 95073

Subject: **Review of Geotechnical Investigation and Update by Haro, Kasunich and Associates, Dated April 2006, and September 11, 2006, Project No. SC 9039, and Engineering Geology Report and Update by Nielsen and Associates, Dated September 2005, and June 26, 2006, Project No. 1079-G**

Reference: **APN: 046-173-02; Application No.: 06-0241 & 07-0040; Preliminary Building Plans for a Stitch Pier Retaining Wall Soils Engineering Construction, Last Revision of 11-29-06**

Dear Applicant:

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

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

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

3. A civil engineered grading and drainage plan is required for all construction on this property.

4. Before final inspection, the geotechnical engineer must confirm in writing that all of the construction complies with the recommendations of the geotechnical engineer.

5. Before building permit issuance a *plan review letter* shall be submitted to Environmental Planning. The author of the report shall write the *plan review letter*. The letter shall state that the project plans conform to the report's recommendations.

6. Haro, Kasunich, and Associates, the project geotechnical engineer, or a similar qualified testing laboratory, must be employed to inspect and test all the fill material placed on the site. The relative compaction tests' location must be noted on a copy of the approved

(over)

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

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

Please call the undersigned at (831) 454-3175 if we can be of any further assistance.

Sincerely,

Joe Hanna
County Geologist

Kevin Crawford
Civil Engineer

Cc: Casa de Mare, LLC, Owner
Nielsen and Associates
Haro, Kasunich, and Associates, Inc.
Steve Guiney, Project Planner
Bob Loveland, Resource Planner

EXHIBIT J 1

RECORDED AT REQUEST OF:
County of Santa Cruz

WHEN RECORDED MAIL TO:

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

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

Note to County Recorder:

Please return to the staff geologist in the Planning Department when completed.

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

The undersigned _____ (names of property owners) (does) (do) hereby certify to be the owner(s) of the real property located in the County of Santa Cruz, State of California, commonly known as_____ (street address); legally described in that certain deed recorded in Book _____ on Page _____ of the official records of the Santa Cruz County Recorder on _____ (deed recordation date); **Assessor's Parcel Number 046-173-02.** And, acknowledge that records and reports, filed with the Santa Cruz County Planning Department, indicates that the above described property is located within an area that is subject to geologic hazards, to wit:

The subject property and home are located on the face of an unstable sand dune. The site has been investigated by in a **Geotechnical Investigation** by Haro, Kasunich and Associates, Dated April 2006, and September 11, 2006, Project No. SC 9039, and, **Engineering Geology Report** by Nielsen and Associates Dated September 2005, and June 26, 2006, Project No. 1079-G . These reports indicate that home site is located above an unstable slope. To protect the home from future slope instability the reports indicate that retaining wall must be constructed to protect the home from future slope instability. For further information about the site geologic and engineering characteristics please see County file number 06-0241 and 07-0040, APN 046-173-02. **And, having full understanding of said hazards, (I) (We) elect to pursue development activities in an area subject to geologic hazards and do hereby agree to release the County from any liability and consequences arising from the issuance of the development permit.** This declaration shall run with the land and shall be binding upon the undersigned, any future owners, encumbrancers, their successors, heirs, or assignees. This document should be disclosed to the forgoing individuals. This declaration may not be altered or removed from the records of the County Recorder without the prior consent of the Planning Director of the County of Santa Cruz.

OWNER: _____ OWNER: _____
Signature Signature

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

EXHIBIT J

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

OWNER: _____ OWNER: _____
Signature Signature

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

State of California County of Santa Cruz

On _____, before me, _____, Notary Public, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

(Seal)

_____
Signature

EXHIBIT J

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

Project No. SC9039
26 March 2008

JOANNE FERGUSON
745 Cotton Street
Menlo Park, California 94025

Subject: Foundation Damage

Reference: Ferguson/Montalbo Residence
APN 046-173-02
44 Sunset Drive
Watsonville, California

Dear Ms. Ferguson:

We have visited the referenced site on several occasions as part of our field investigation and preparation of a Geotechnical Investigation for repair of the existing dwelling and stabilization of the coastal sand dune bluff slope on the property. During our site visits we examined the condition of the foundation and lower floor of the dwelling. The front and side walls are supported by continuous spread footings and the seaward perimeter wall is supported by substandard isolated pier and post footings, as is the interior lower floor. The residence has suffered damage at the seaward perimeter, which has settled due to the substandard foundation, loose condition of the underlying sand, and seaward creep of the bluff.

In our report we recommend stabilization of the bluff slope and construction of a structural slab foundation for the repaired dwelling. The existing substandard isolated pier and post footings and continuous spread footings are inadequate. If not replaced, the dwelling will likely experience additional settlement and further structural damage in the future.

If you have any questions concerning this letter, please contact our office.

Very truly yours,

HARO, KASUNICH & ASSOCIATES, INC.

Christopher A. George
C.E. 50871

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER A. GEORGE
No. 50871
Exp. 9/30/09
CIVIL
STATE OF CALIFORNIA

CAG/sq
Copies: 1 to Addressee
1 to Stephen Graves

116 EAST LAKE AVENUE • WATSONVILLE, CALIFORNIA 95076 • (831) 722-4175 • FAX (831) 722-3202

EXHIBIT K