E$_2$C INC
ENVIRONMENTAL / ENGINEERING CONSULTANTS
Since 1970

82249 8580 - 03 BA (R1) - 036 (R1)

GEOTECHNICAL AND GEOLOGICAL INVESTIGATION
FOR
PROPOSED RESIDENTIAL DEVELOPMENT

Lands of Bagnas
Ambrose Road
Saratoga, California
February 11, 2005

FOR

MR. MANNY BAGNAS
14005 WILDWOOD WAY
SARATOGA, CA 95070

PREPARED BY

E_2C, INC.
382 MARTIN AVENUE
SANTA CLARA, CALIFORNIA, 95050

E_2C, Inc. Project Number 2171SC01

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COUNTY OF SANTA CLARA
PLANNING OFFICE

February 11, 2005
Project Number 2171SC01

Mr. Manny Bagnas
14005 Wildwood Way
Saratoga, California 95070

SUBJECT: GEOTECHNICAL AND GEOLOGICAL INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT
Ambrose Road
Saratoga, California

517-37-001
+003

Dear Mr. Bagnas:

E_2C, Inc. presents herein the results of our Geotechnical and Geological Investigation for the above-mentioned site (see Figure 1). This report documents the field investigation performed at the subject site, as well as the results of the laboratory testing of the relatively undisturbed soil samples retrieved during the field investigation. Based on these results, we are presenting design criteria for the proposed residential.

Should you have any questions or require supplemental information, please do not hesitate to contact us.

Sincerely,
E_2C, Inc.

REGISTERED PROFESSIONAL ENGINEER
S.K. NORAVIAN
C 2294
EXP. 9/05
CIVIL
CALIFORNIA

Sako K. Noravian, MSSE, PE, REA
Chairman

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Attn: Mr. Terry Szewczyk

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1.0 INTRODUCTION

This report presents the results of a Geotechnical and Geological Investigation performed by E_2C, Inc. for the proposed residential development located east of Sanborn Road at the intersection with Ambrose Road (Figure No. 1 and 2). The building sites are located on relatively steep westerly facing slopes. The proposed development is to include two simple residences as shown on geologic plan Figure No. 1.

This investigation was performed to establish, through the sampling and analysis of the on-site earth materials, the site development recommendations, foundation design criteria, and an evaluation of the existing geologic conditions.

The scope of work included the following tasks:

- Advancement of nine exploratory borings within two potential areas for residential dwellings for the purpose of collecting subsurface soil samples for engineering analysis.
- Analysis of the collected soil samples to determine the physical and engineering properties. Selected samples were analyzed for the following:
  (a) Moisture and Density determination.
  (b) Direct Shear Testing
  (c) Plasticity Index
- Review existing geologic publications for the site and surrounding area.
- Slope Stability Analysis pursuant to California Department of Conservation, Division of Mines and Geology, 1997, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117.
- Preparation of this report presenting the results of our field investigation and laboratory analysis of soil samples. This report includes our recommendations for site development preparation and grading and presents design criteria for foundations and retaining walls as needed.

2.0 SITE DESCRIPTION

The project consists of two irregularly shaped noted as Parcel A and B. These lots are located east of the intersection of Ambrose Road and Sanborn Road in Saratoga, California. The topography and proposed building envelopes are shown on Figure No. 7 and 8. New roads are proposed off of the existing Ambrose Road to access each lot. The slopes in the vicinity of the site slope generally to the west at 40 to 50%.

With the exception of the proposed grading to construct the project roads, only minor grading will be performed within the building envelopes. The landslides as identified within the road alignments will be reconstructed as outlined in the Grading Section of this report.

E_2C prepared a reconnaissance report on March 7, 2003 as a preliminary inspection of the site. On June 11, 2003, Santa Clara County Planning responded to the report with recommendations for further studies. A copy of this letter is presented in Appendix E. They request an in-depth geological report be performed. Due to issues related to site access with drilling equipment, our field investigation could not be performed until November 2004.

3.0 SITE GEOLOGY

The site is located on the northeast side of the San Andreas Fault Zone and outside of the northeasterly limits of the Alquist-Priolo Special Studies Zone. No faults are known to pass through the sites. This area is underlain by Franciscan rocks that have been pervasively sheared by the regional faulting activity. These consist of greywacke sandstone and sheared zones (mélange) and overlain by a medium grained diabase-gabbro (i.e. altered igneous rock). The regional geologic map is presented in Figure No. 4.

The predominant bedrock is diabase at the upper elevations with Franciscan found on the lower elevations. This observation generally correlates with the mapping of Brabb and Dibblee (1979) and with Brabb, Graymer and Jones (2000) who classify the sandstone as a unit of the Franciscan Formation (See Figure 4, a vicinity geologic map). At its outcrops, the diabase appears to be blocky – i.e., originally massive, and jointed by weathering. Trail impairment in the diabase appeared to have resulted from uncontrolled runoff. Elsewhere on Parcel A, the slopes show angular diabasic talus.

The sandstone is highly weathered to decomposing at the road cuts. The significant slope failures have occurred in this unit. Downslope from the trail on the southwest slope, two small historical landslides were inferred from their topographical profiles. The property is situated in an area designated by the County as one of potential landslide hazard. An aerial photograph is reproduced as Figure 5.

The San Andreas Rift Zone lies just to the west of the property. The eastern delineation of the Alquist-Priolo Fault Hazard Zone is less than 200 feet from the western property line. Ground shaking from a major event on the San Andreas would expect to be severe.

4.0 FIELD INVESTIGATION

Our field investigation was performed on October 11, 12 and 18, 2004. Due to the steep terrain and the county requirement for very limited grading during our investigation, the exploration drilling was performed by the use of limited access drilling equipment. As a result, we advanced only nine exploratory borings ranging in depth from 5.5 feet to 15 feet below the existing ground surface. This drilling was performed using portable drilling equipment advancing 4 inch diameter flight augers.

Relatively undisturbed soil samples were collected within the explored column of the earth materials. Soil samples were collected by advancing a 2.5 inch diameter California Modified Split Tube Sampler into the ground at the desired depths. The sampler was driven 18 inches into the undisturbed materials. Blow counts were recorded at each 6 inch increment of the sampled interval. The penetration value (i.e. *n*) as shown on the boring logs is the summation of the blows required to advance the sample the last 12 inches of the sampled interval. Appendix A shows the depths at which the samples were retrieved in each exploratory boring.

5.0 SITE SOILS

The site soils and earth material at the site have been derived from the diabase and the Franciscan complex as discussed in the site geology section of the report. Those materials derived from the diabase form a sandy gravelly soil material with the gravel consisting of angular diabase fragments of up to 2 to 3 inches in diameter. At depth, the diabase is very competent with observed fracturing.

The Franciscan complex at the site is comprised of greywacke sandstone with some shale interbeds. It is generally weathered and sheared, but found to be intact and competent at relatively shallow depths. The overall slope steepness of the project has resulted in a very shallow soil cover at the site.

As noted on Figure No. 6, a landslide exists at the entrance road to the project. Exploratory boring B-4 was located near the head of the slide. In order to obtain access to the slide area, we had to doze an access road through the top of the slide. The encountered soil in the boring log reflects the condition that the slide debris was removed to obtain access to the slide area. Blow counts on the retrieved samples reflect very hard/dense earth materials. Based on our field observations and results of the exploratory boring, it is our opinion that the slide represents the downslope movement of near surface soils at the site. Bedrock is not part of the slide mass. Appropriate landslide repair recommendations will be presented in the Grading Section of this report.

Cross-sections A-A' and B-B' (Figure No. 9) have been constructed through the building envelopes and show the earth material profiles as defined by the exploratory borings.

6.0 LABORATORY TESTING

Soil samples collected from Borings B-1, through B-9 were subsequently analyzed to determine their engineering properties. Direct Shear Testing was performed on numerous samples. The direct shear test provides an index of the available shear strength of foundation materials. Moisture Density tests were performed on the other samples. A Moisture Density test estimates in-place density of the subsurface materials in pounds per cubic foot. Density and compression characteristics can be compared so that foundations for simple structures can be designed. A Plasticity Index test was also performed on a near surface sample to determine the expansion potential. The surface soils exhibit a very low expansion potential. These engineering test results are summarized in the following table.

SUMMARY OF MOISTURE / DENSITY AND DIRECT SHEAR TEST					
Sample Number	Depth In Feet	In-Place Conditions		Direct Shear Testing	
		Moisture Content % Dry Weight	Dry Density p.c.f.	Angle of Internal Friction Degrees	Unit Cohesion k.s.f.
B-1-1	5	4.2	114.2	33	0.5
B-1-2	10	8.4	120.6		
B-1-3	15	6.2	110.4		
B-2-1	3	8.1	108.5		
B-2-2	5	82	121.0	32	0.3
B-2-3	10	7.9	122.0		
B-3-1	5	8.2	102.9	20	1.0
B-4-1	3	7.8	100.6		
B-4-2	5	10.2	121.5		
B-4-3	10	10.2	118.1	27	1.3
B-4-4	15	10.0	118.0		
B-5-1	5	5.4	104.4	30	0.3
B-6-1	3	4.8	123.6	27	0.7
B-7-1	5	4.7	96.1	33	0.2
B-8-1	5	12.8	105.8	26	0.8
B-8-2	10	5.9	124.2		
B-9-1	5	10.0	118.4	30	0.6
B-9-2	9	8.8	115.6		

Plasticity Index = 5, Sample B-2

7.0 GEOLOGIC AND SEISMIC HAZARDS

The evaluation of site-specific geologic and seismic hazards is based upon reviewed references, field investigation and laboratory test results. These hazards include Ground shaking, ground rupture, ground failure, landslides and inundation potential.

7.1 Ground Shaking

This primary seismic phenomenon involves horizontal and vertical vibratory motion of the earth surface. It can be said qualitatively that the amplification of seismic energy is greater in alluvial material than for bedrock, but less than for bay muds (Borcherdt, et al., 1975). Since the subject site lies on bedrock materials, the intensity of ground shaking, as a result of an earthquake, will be less than on the alluvial deposits of Santa Clara Valley. A large magnitude earthquake on the San Andreas Fault could produce maximum ground acceleration in the vicinity of the subject site from 0.5g to 0.75g, and the fundamental period of ground shaking of less than one second (Cooper and Clark, 1974). It is clear that the subject site may experience seismic shaking during the economic lifetime of the residential development.

7.2 Ground Rupture

Rupturing of the earth's surface occurs when subsurface fault displacement extends upward to the ground surface, and is usually confined to rather narrow zones along fault traces. The likelihood of ground rupture at the subject site is low, since no faults are known to pass through the proposed property.

7.3 Seismicity and Landslides

The Bagnas property is located in a seismically active area, situated n close proximity east of the San Andreas Fault (refer to Figure 6). The parcels are marginally located in an earthquake-induced landslide hazard zone as depicted on the State of California Seismic Hazard Zones Castle Rock Quadrangle (California Geological Survey, September 23, 2002). According to the accompanying Seismic Hazard Zone Report (see Appendix B), the site could experience a peak ground acceleration of about 0.84g based on a 10% probability of exceedence in 50 years (corresponding to a return period of 475 years). This ground shaking would be produced from a 7.9 magnitude earthquake on the San Andreas Fault at a distance of about 1 kilometer .6 miles. In 2000, the United States Geological Survey (USGS) undertook to revise earlier California Geological Survey (CGS) and USGS probilistic seismic hazard maps.

A printout of the United States Geological Survey's interactive website for probilistic seismic hazards (PSHA 2002) deaggregation model specific to the site demonstrates that the San Andreas source (a Class A fault) would be the largest contributor to ground shaking. The Class B Shannon Fault, located at a distance of about 2 km from the site, would be the second largest source.

The slope geometry is shown in Figure 9. A circular potential failure surface was used in the static slope stability analysis, and Janbu's simplified method[1] was employed in the WinStabl/STABL slope stability analysis program. This iterative procedure resulted in a "most probable failure circle" having a factor of safety of 1.55 for cross-section A-A', and 1.46 for cross-section B-B'. These failure surfaces are plotted in Appendices C and D. need more

[1] The Janbu method of slices satisfies only horizontal force equilibrium, while the Bishop method satisfies only moment equilibrium. Both methods ignore inter-slice shear forces. In general, the Janbu method produces a slightly more conservative factor of safety than the Bishop method.

7.4 Inundation Potential

According to Limerinos and others, 1973 report, the subject site is not located in an area that has potential for inundation as the result of a 100-year food. Therefore, the potential for the site to be inundated due to flooding is not a hazard.

7.5 UBC Soil Profile Type and Seismic Coefficients

Available information on soil type and seismicity was used for design criteria for the site based on Chapter 16 of the 1997 Uniform Building Code (UBC) 1997 and Map F-20, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, ICBO February 1998. This information is summarized in the following Table.

Categories and Coefficients	Design Value
Soil Profile Type (Table 16-J)	**S_B**
Seismic Zone (Figure 16-2)	**4**
Seismic Zone Factor (Table 16-I)	**0.4**
Seismic Source Name	**San Andreas**
Seismic Source Type (Table 16-U)	**A**
Distance to Seismic Source (kilometers)	**1**
Near Source Factor N_a (Table 16-S)	**0.94**
Near Source Factor N_v (Table 16-T)	**1.25**
Seismic Coefficient C_a (Table 16-Q)	**0.31**
Seismic Coefficient C_v (Table 16-R)	**0.50**

8.0 CONCLUSIONS

8.1 The site covered by this investigation is suitable for the proposed residential construction provided the recommendations set forth in this report are carefully followed.

8.2 The native surface soil at the project site does not have an adverse expansion potential when subjected to fluctuations in moisture.

8.3 On the basis of the engineering reconnaissance and exploratory borings, it is our opinion that trenches to five feet below the existing ground surface will require shoring.

8.4 All earthwork and grading shall be observed and inspected by a representative of E_2C, Inc.

8.5 A pier and grade beam type of foundation may support the proposed dwellings. Recommendations for this type of construction are presented in the following sections of this report.

9.0 GRADING RECOMMENDATIONS

9.1 The placement of fill and control of any grading operations at the site should be performed in accordance with the recommendations of this report. These recommendations set forth the minimum standards to satisfy other requirements of this report.

9.2 All existing surface or subsurface structures, if any that will not be incorporated in the final development shall be removed from the project site prior to any grading operations. These objects should be accurately located on the grading plans to assist the field engineer in establishing proper control over their removal. All utility lines, if any, must be removed prior to any grading at the site.

9.3 The depressions left by the removal of subsurface structures should be cleaned of all debris, backfilled and compacted with clean, native soil. This backfill must be engineered fill and should be conducted under the supervision of the geotechnical engineer.

9.4 All organic surface material and debris, including grass, shall be stripped prior to any other grading operations, and transported away from areas that are to receive structures or structural fills. These organically contaminated soils may be stockpiled for later use in the landscaping area only.

9.5 After removing all the subsurface structures, if any, and after stripping the organically contaminated surficial soil, the building pad area should be scarified by machine to a depth of 6-inches and thoroughly cleaned of vegetation and other deleterious matter. Based on the existing site topography and the relatively steep slopes at the site, we recommend that grading be kept to a minimum. If extensive grading is required, E_2C shall review the grading plans to determine that adequate basekey, benching and subdrains have been implemented in the grading plan. When possible, large fills should be avoided and retaining walls shall be constructed.

9.6 After removing, stripping, scarifying, and cleaning operations, the native soil should be re-compacted to not less than 90% relative compaction using the ASTM D1557-91 test procedure over the entire building pad and 5 feet beyond the perimeter of the building and garage pads.

9.7 All engineered fill or imported soil should be placed in uniform horizontal lifts of not more than 6 to 8 inches in uncompacted thickness, and compacted to not less than 90% relative compaction using the ASTM D1557-91 test procedure. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either; 1) aerating the material if it is too wet, or 2) spraying the material wit water if it is too dry. Each lift shall be thoroughly mixed before compaction to assure a uniform distribution of water content.

9.8 When fill material includes rocks, nesting of rocks will not be allowed and all voids must be filled by proper compaction. Rocks larger than 4-inches in diameter should not be used for the final 2 feet of the building pad.

9.9 A representative from our office should be notified at least two days prior to commencement of any grading operations, so that he/she may coordinate the work in the field with the contractor. All imported soil must be approved by the geotechnical engineer be fore being brought to the site. Import soil must have a plasticity index no greater than 12 and an R-Value greater than 25.

9.10 All grading work shall be observed and approved by our office. The geotechnical engineer shall prepare a final report upon completion of grading operations.

9.11 E_2C, Inc. shall review all grading and foundation plans prior to construction. At that time, additional recommendations may be made as deemed necessary.

9.12. Where any fill is to be placed on the natural slopes, we recommend that the following procedures be followed. A basekey with a minimum width of 8 feet shall be excavated at the toe of the fill slope. It shall slope at a minimum of 2% into the fill. The key shall be excavated a minimum of 4 feet into the natural ground. The basekey shall be covered with a geotextile material on which a 6-inch thick layer of drain rock shall be placed at the heel of the key. A 4-inch diameter perforated drain pipe shall be placed on this rock (i.e. perforation down). Two feet of drain rock shall be placed on top of the pipe. This pipe and drain rock shall then be wrapped with the geotextile fabric to protect the rock from being in contact with the native soil. The subdrain shall discharge onto an area that is protected from erosion. All subsequent fill shall then be placed in 8 inch lifts and properly compacted as indicated in the previous section above. As fill is placed, consecutive benches shall be cut into competent natural ground to allow for the fill to be placed and compacted on relatively horizontal surfaces. Our office shall inspect all excavations prior to the placement of fill. We recommend that a pre-construction field meeting be held with the contractor to review the field grading protocol.

10.0 CUT AND FILL SLOPES

10.1 The amount of cut and/or fill that can be safely done on this project depends on the steepness of the slopes, stability of the subsurface material on the slopes, and the control of the drainage at the top of the slope. Cut slopes should be kept to a minimum and no steeper than 2:1 with a vertical height not exceeding 8 feet. If steeper slopes are required then retaining walls will be required.

10.2 Cut and fill slopes should be limited to a ratio of 2 horizontal to 1 vertical (i.e. 2:1). The maximum vertical section shall not exceed 8-feet. Surface water control measures shall be constructed at the top of slopes to prevent uncontrolled runoff. E_2C shall review all proposed cut and fill slope construction.

10.3 It is recommended that overflow of water from the developed areas be re-directed away from the proposed improvements via drainage pipes, catch basins and other engineered systems. All storm water runoff shall be directed to appropriate out-fall points west (i.e. down slope) of the residence. Appropriate measures shall be implemented to minimize surface soil erosion.

10.4 The surface of the slopes shall be compacted to provide a surface free of loose material. It is suggested that vegetation be planted on the graded surfaces after completion of the grading operation.

10.5 Our office should review and approve the grading plans prior to the construction operation.

11.0 FOUNDATION DESIGN CRITERIA

11.1 Pier and grade beam type of foundation system is the most suitable design based on the existing terrain and geological conditions. For the purpose of this report, section bedrock materials will be denoted as either Franciscan formation or gabro diabase. The soil engineer shall inspect all foundation piers at the time they are drilled. Modifications to pier depths may be made at that time as deemed necessary by field conditions.

11.2 End bearing piers and grade beams shall have a minimum diameter of 12-inches and penetrate a minimum of 12 feet into component bedrock materials. This depth of penetration shall not include any engineered fill or residual soil. These piers can be designed with an allowable end bearing capacity of 3,000 pounds per square foot (psf). This value is for dead plus live loads and may be increased by $^{1}/_{3}$ for short-term wind and seismic effects. The top three feet of the embedment shall not be included in the calculations.

11.3 All piers should be reinforced with at least four #4 bars, which shall run the entire length of the piers, with these reinforcing members piers tied at least 12 inches into the grade beam's upper reinforcement bar.

11.4 The grade beams should be founded a minimum depth of 6-inches below the adjacent pad grades and should be reinforced with a minimum of two #4 bars, one near the top and one near the bottom. Grade beams should be kept to a minimum width in order to minimize any effect of uplift pressures.

11.5 The structural engineer responsible for foundation design shall determine final design of foundation and reinforcing requirements. The soil engineer shall inspect all foundation excavations and piers.

12.0 GENERAL FOUNDATION RECOMMENDATIONS

12.1 Since the foundation design needs to consider the conditions for the stability of the adjacent earth slope, "fill" areas and specific conditions related to the performance of the foundations, it is suggested that our office prior to construction review the foundation design.

12.2 We highly recommend that a representative from our office be present during the foundation excavation or drilling of piers to make any field adjustments as may be required.

12.3 The design of the structures and foundations shall meet local building code requirements for seismic effects.

12.4 We do not anticipate appreciable settlement. However, slight settlements shall be considered in the design of the foundations and the proposed structure.

13.0 SLABS-ON-GRADE CONSTRUCTION

13.1 Slab-on-grade construction in living areas may not be utilized where pier and grade beam foundations are used. When pier and grade beam foundations are utilized, special consideration will have to be given to the design of moisture cut-off provisions around the perimeters of the foundations.

13.2 Concrete floor slabs-on-grade in the garage shall be underlain by at least four inches of Class II baserock and shall be poured structurally independent of the foundations or any fixed members when possible. The baserock should be compacted to not less than 95% relative maximum compaction according to ASTM D1557-91 test procedure. A vapor barrier (i.e. visqueen, min. of 6mil thickness) shall be placed on top of the sand section of the concrete slab construction. This will minimize moisture intrusion through the slab.

14.0 PRE-SOAKING

14.1 Prior to pouring the foundations or placing the vapor membrane in living areas or concrete slabs in garage areas, the foundation trenches and subgrade soils shall be pre-soaked with water. This pre-soaking operation shall be performed at least 12 hours in advance of concrete placement. The geotechnical engineer shall be contacted for specific recommendations.

15.0 RETAINING WALLS

15.1 Any facilities that will retain a soil mass, such as retaining walls or swimming pool walls, shall be designed for a lateral earth pressure (active) equivalent to 75 pounds equivalent fluid pressure for horizontal backfill. If the retaining walls are restrained from free movement at both ends, they shall be designed for the earth pressure resulting for 85 pounds equivalent fluid pressure, to which shall be added surcharge loads. The structural engineer shall discuss the surcharge loads with the geotechnical engineer prior to designing the retaining walls.

15.2 In designing for allowable resistive lateral earth pressure (passive) of 400 pounds, equivalent fluid pressure may be used with the resultant acting at the third point. The top foot of native soil shall be neglected for computation of passive resistance

15.3 A friction coefficient of 0.3 shall be used for retaining wall design. This value may be increased by 1/3 for short-term seismic loads

15.4 The above values assume a drained condition and moisture content compatible with those encountered during our investigation. To promote proper drainage, a layer of at least 12-inches of gravel or drain rock shall be placed between the retaining wall and the retained material. Perforated pipes (perforations down) shall be included in the design to conduct excess water from behind the retaining structure. Suitable outfall locations for drainage shall be chosen to minimize future erosion. E_2C shall review all retaining wall designs to evaluate the suitability of the drainage system. If retaining walls are proposed as part of an exterior wall of the structure, adequate water-proofing materials and sheeting shall be applied to the walls so that the interior of the walls are free of moisture.

16.0 EXCAVATION

16.1 No difficulties due to soil condition are anticipated in excavating the onsite material. Conventional earth moving equipment will be adequate for this project.

16.2 Any vertical cuts deeper than 5 feet must be properly shored, unless in an unengineered "fill" area where shoring will be required from the ground surface. The minimum cut slope for excavation to the desired elevation is one horizontal to one vertical. The cut slope should be increased to 2:1 if excavating is performed during the rainy season, or when soil is highly saturated with water.

17.0 DRAINAGE

17.1 It is considered essential that positive drainage be provided during construction and be maintained throughout the life of the proposed structures. Groundwater seeps were identified in the area of the cut slope at potential building area No. 1.

17.2 The final exterior grade adjacent to the proposed building should be such that the surface drainage will flow away from the structures. It is recommended that 2% final soil grade slope be incorporated into the site grading. The slope should be sufficient to remove all storm water from the foundations. Rain water discharge at downspouts should be directed on to pavement sections, splash blocks, or other acceptable facilities which will prevent water from collecting in the soil adjacent to the foundations.

17.3 Utility lines that cross under or through perimeter footings should be completely sealed to prevent moisture intrusion into the areas under the slab and/or footings. The utility trench backfill should be of impervious material and this material should be placed at least 4 feet on either side of the exterior footings.

17.4 Consideration should be given to collection and diversion of roof runoff and the elimination of planted areas or other surfaces, which could retain water in areas adjoining the building. In unpaved areas, it is recommended that protective slopes be stabilized adjoining perimeter building walls. These slopes should extend to a minimum of 5 feet horizontally from building wall.

18.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

18.1 The recommendations presented herein are based on the soil conditions revealed by our exploratory borings and evaluated for the proposed construction planned at the present time. If any unusual soil conditions are encountered during the construction, or if the proposed construction will differ from that currently planned, E_2C, Inc. should be notified for supplemental recommendations.

18.2 This report is issued with the express understanding that it is the responsibility of the project Owner, or of their Representative, to ensure that the necessary steps are taken to see that the contractor carries out the recommendations of this report in the field.

18.3 The findings of this report are valid as of the present time. However, changes in the conditions of the property can occur with the passage of time, whether due to natural processes or to the works of man. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may become invalidated wholly or partially by changes outside our control.

18.4 The conclusions and recommendations presented in this report are professional opinions derived from current standards of geotechnical practice and no warranty is intended, expressed, or implied.

18.5 This report has been prepared solely for the purpose of geotechnical investigation and our firm did not perform toxic contamination studies.

REFERENCES

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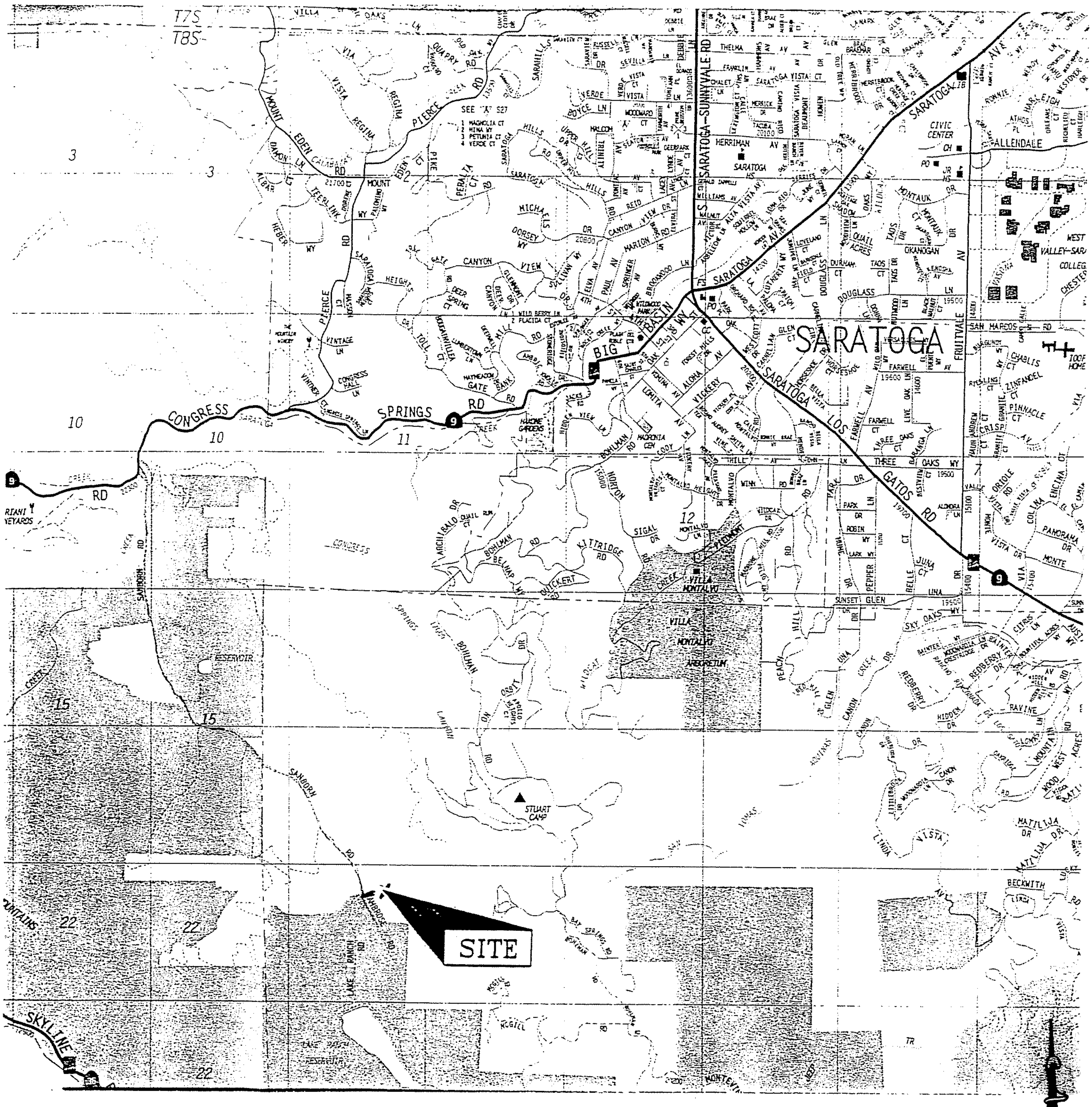
FIGURES



SOURCE:
THOMAS BROS. MAPS - SAN JOSE AND VICINITY

SCALE:

Miles
0 0.5 1
0 0.5 1
Kilometers

FIGURE 1 - SITE LOCATION MAP

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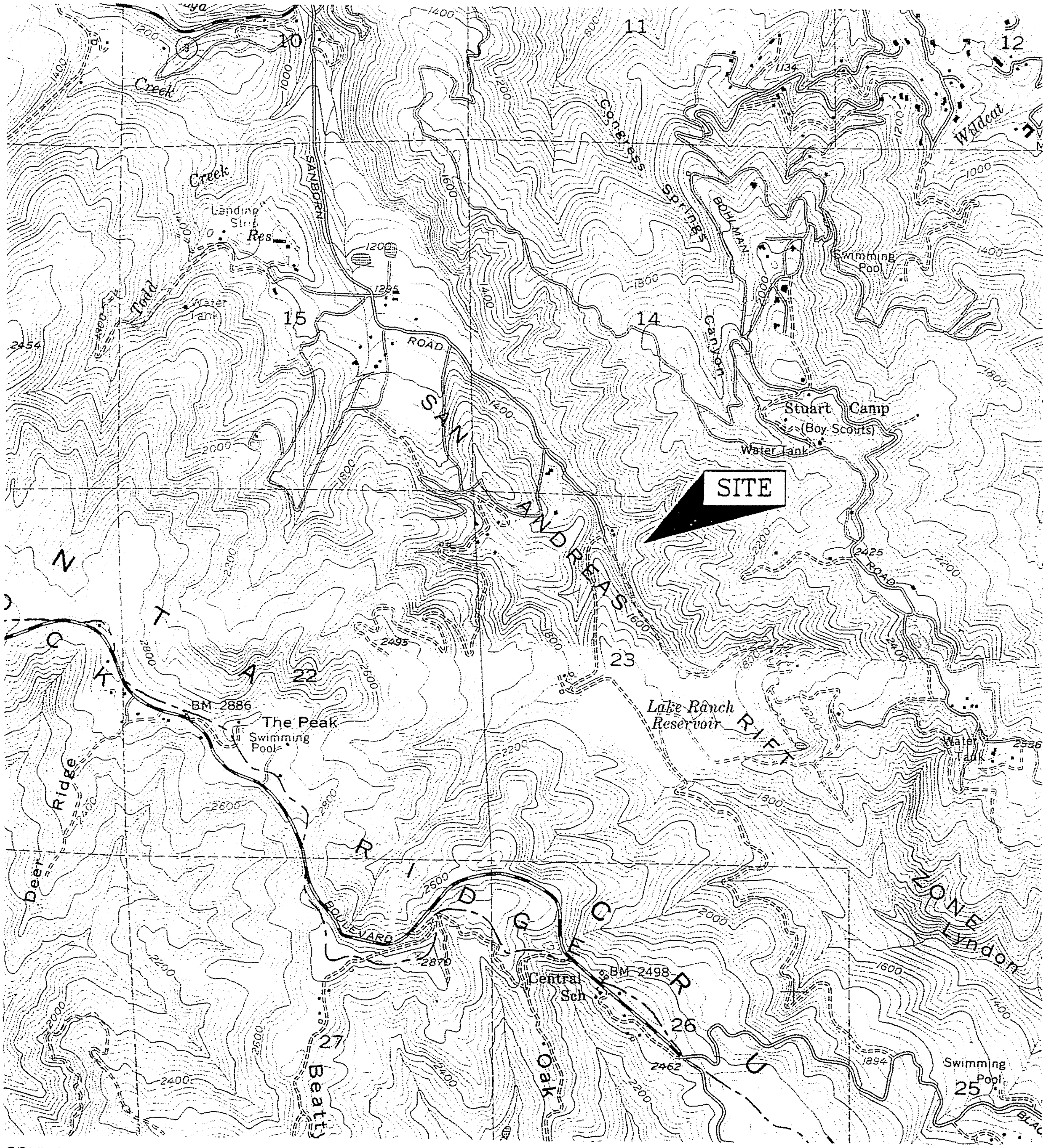
LANDS OF BAGNAS
APN 517-37-001 AND 003
SANTA CLARA COUNTY, CALIFORNIA

FILENAME: 2171SC01	PROJECT NO.:
DATE: MARCH 2003	2171SC01
REVISION:	
DRAWN BY: JL	



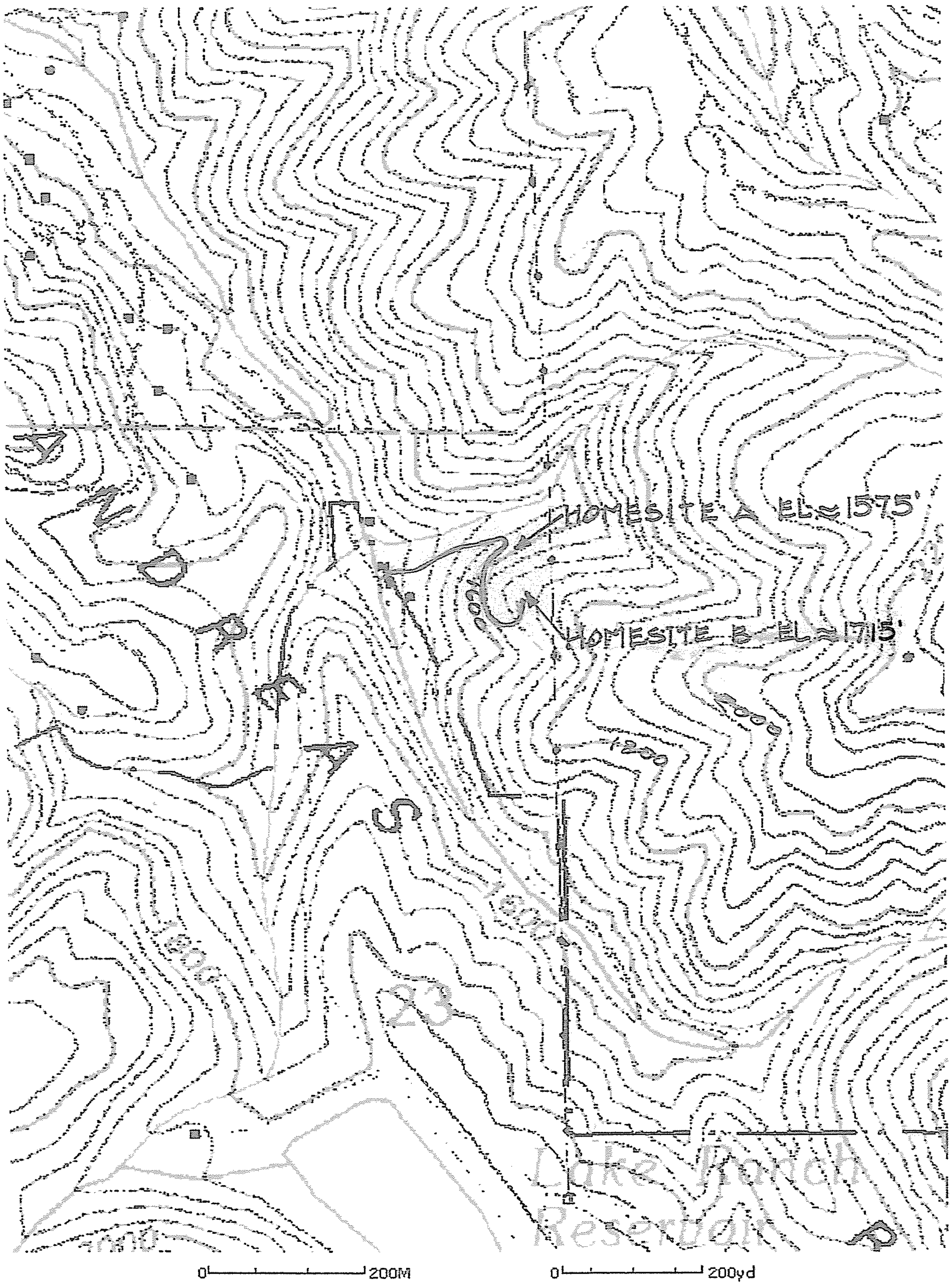
SOURCE:
CASTLE ROCK RIDGE QUADRANGLE, CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

SCALE 1:24 000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

FIGURE 2 - VICINITY TOPOGRAPHIC MAP

ENVIRONMENTAL / ENGINEERING CONSULTANTS **382 MARTIN AVENUE** **SANTA CLARA, CA 95050-3112** **TEL: 408.327.5700 TEL: 408.327.5707**	**LANDS OF BAGNAS** **APN 517-37-001 AND 003** **SANTA CLARA COUNTY, CALIFORNIA**	FILENAME: 2171SC01 DATE: MARCH 2003 REVISION: DRAWN BY: JL	**PROJECT NO.:** **2171SC01**



SOURCE:
CASTLE ROCK RIDGE QUADRANGLE, CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

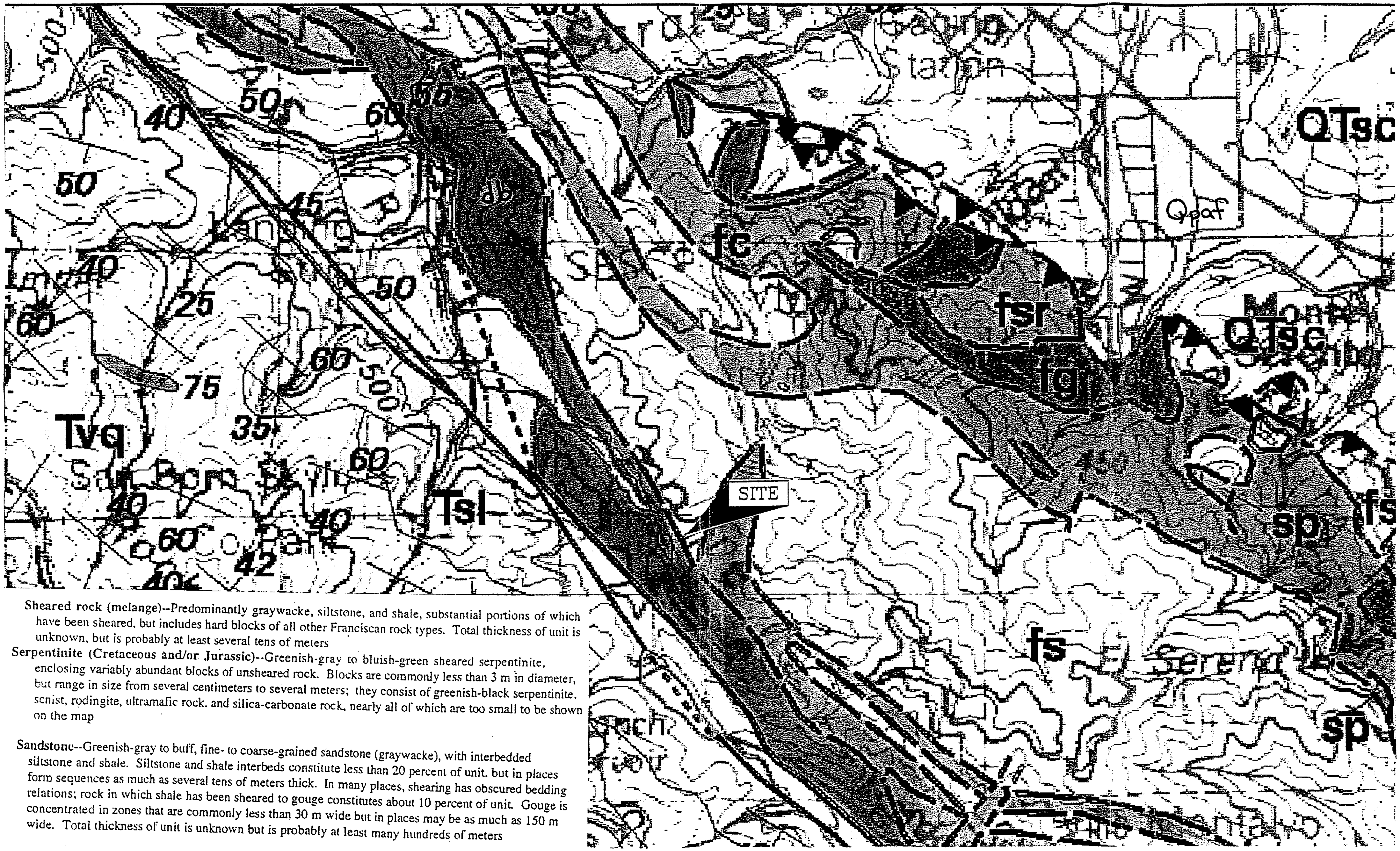
FIGURE 3 - SITE TOPOGRAPHIC MAP

ENVIRONMENTAL / ENGINEERING CONSULTANTS
852 MARTIN AVENUE
SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 TEL: 408.327.5707

LANDS OF BAGNAS
APN 517-37-001 AND 003
SANTA CLARA COUNTY, CALIFORNIA

FILENAME: 2171SC01
DATE: MARCH 2003
REVISION:
DRAWN BY: JL

PROJECT NO.: 2171SC01



fsr Sheared rock (melange)--Predominantly graywacke, siltstone, and shale, substantial portions of which have been sheared, but includes hard blocks of all other Franciscan rock types. Total thickness of unit is unknown, but is probably at least several tens of meters

sp Serpentinite (Cretaceous and/or Jurassic)--Greenish-gray to bluish-green sheared serpentinite, enclosing variably abundant blocks of unsheared rock. Blocks are commonly less than 3 m in diameter, but range in size from several centimeters to several meters; they consist of greenish-black serpentinite, schist, rodingite, ultramafic rock, and silica-carbonate rock, nearly all of which are too small to be shown on the map

fs Sandstone--Greenish-gray to buff, fine- to coarse-grained sandstone (graywacke), with interbedded siltstone and shale. Siltstone and shale interbeds constitute less than 20 percent of unit, but in places form sequences as much as several tens of meters thick. In many places, shearing has obscured bedding relations; rock in which shale has been sheared to gouge constitutes about 10 percent of unit. Gouge is concentrated in zones that are commonly less than 30 m wide but in places may be as much as 150 m wide. Total thickness of unit is unknown but is probably at least many hundreds of meters

db Diabase and gabbro (Jurassic?)

SCALE: 1:25000

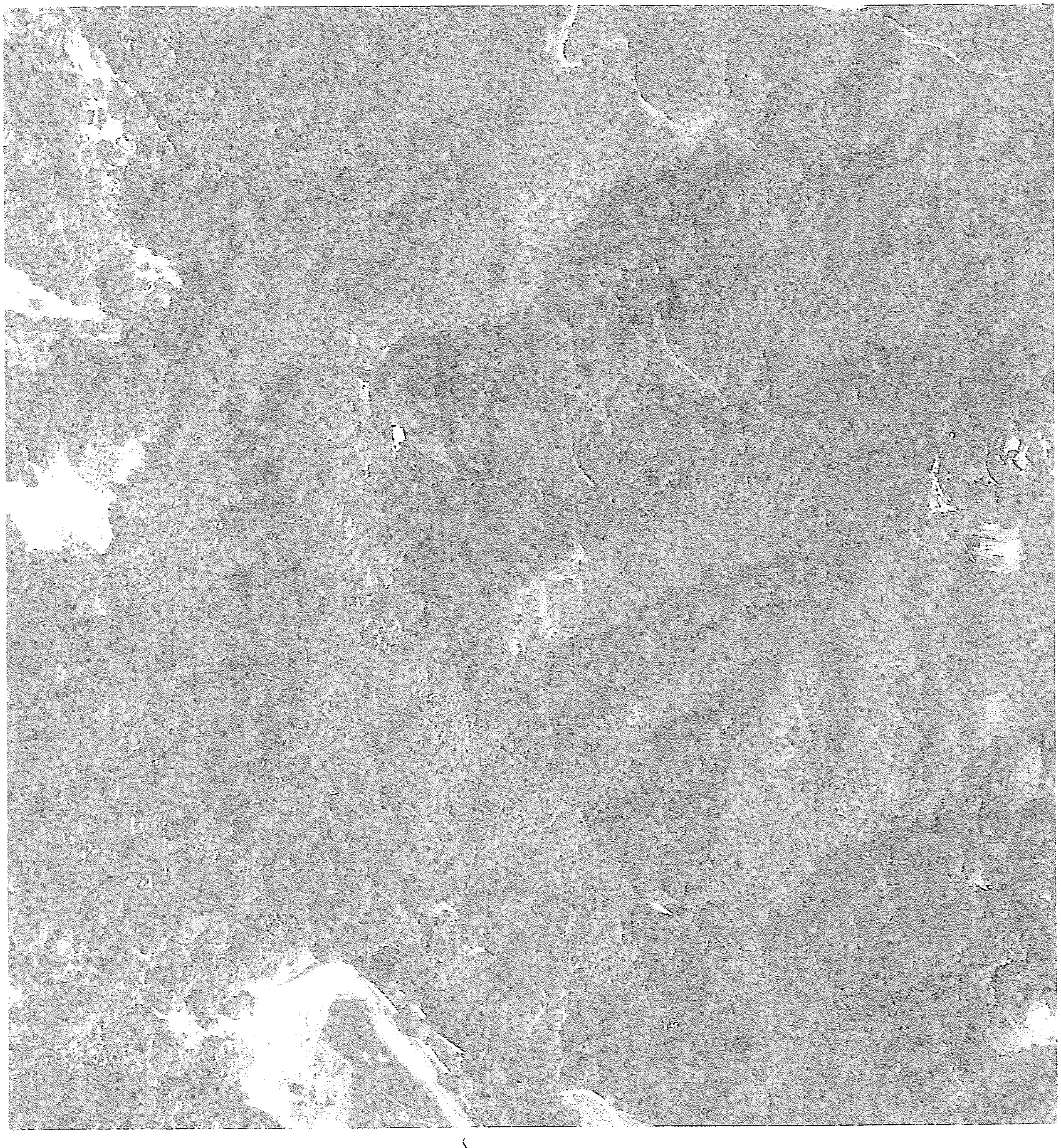
FIGURE 4 - REGIONAL GEOLOGIC MAP

ENVIRONMENTAL / ENGINEERING CONSULTANTS
382 MARTIN AVENUE
SANTA CLARA, CALIFORNIA 95050-3112
TEL: 408.327.5700 FAX: 408.327.5707

LANDS OF BAGNAS
APN 517-37-001 AND 003
SANTA CLARA COUNTY, CALIFORNIA

FILENAME:	2171SC01
DATE:	MARCH 2003
REVISION:	--
DRAWN:	JL

JOB NUMBER:
2171SC01



NDI

SOURCE:
CASTLE ROCK RIDGE QUADRANGLE, CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

SCALE: N.T.S.

FIGURE 5 - AERIAL PHOTOGRAPH

ENVIRONMENTAL / ENGINEERING CONSULTANTS
392 MARTIN AVENUE
SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 TEL: 408.327.5707

LANDS OF BAGNAS
APN 517-37-001 AND 003
SANTA CLARA COUNTY, CALIFORNIA

FILENAME: 2171SC01
DATE: MARCH 2003
REVISION:
DRAWN BY: JL

PROJECT NO.
2171SC01

BENCHMARK

THE BENCH MARK FOR THIS SECTION IS EL=X.XX

DESIGNED UNDER THE SUPERVISON OF:

TERENCE J. SZEWCZYK R.C.E. 35527

EXPIRES DATE: 09/30/03

	BY	REVISIONS	DATE
6			
5			
4			
3			
2			
1			

TS CIVIL ENGINEERING, INC.
1776 TECHNOLOGY DRIVE
SAN JOSE, CA 95110
CIVIL ENGINEERING
PH: 408.452.9300 TOLL FREE: 888.327.7070 FAX: 408.452.9301

FIGURE 7: GEOLOGIC MAP

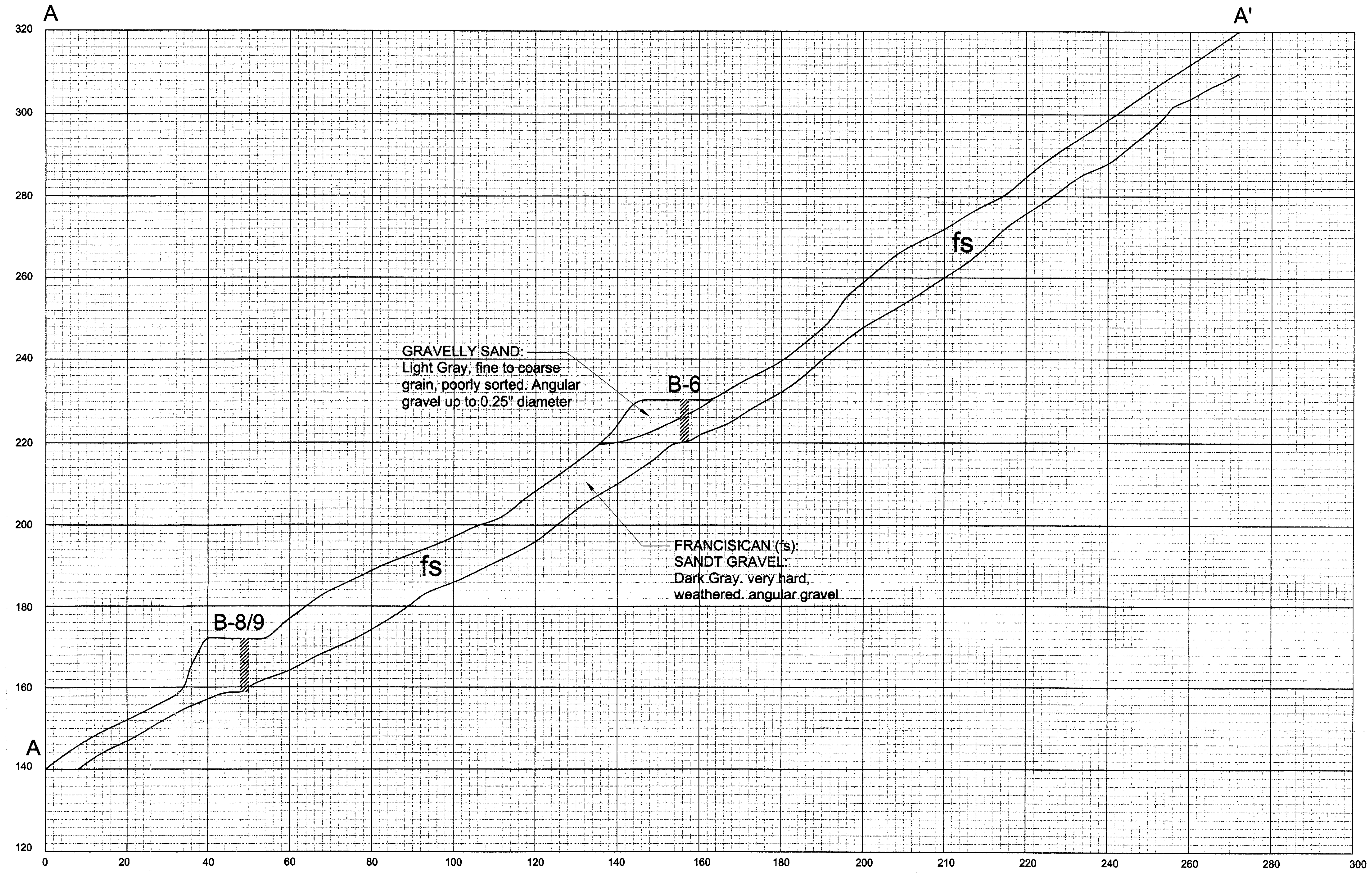
LANDS OF BAGNAS
UNINCORPORATED SARATOGA, CALIFORNIA

DATE:	1-13-04
SCALE:	1"=20'
DRAWN BY:	MF/KP
SURVEYED BY:	SP
PROJ ENGR:	TJS
CHECK BY:	TJS

SHEET NO. 4 OF 8 PAGE

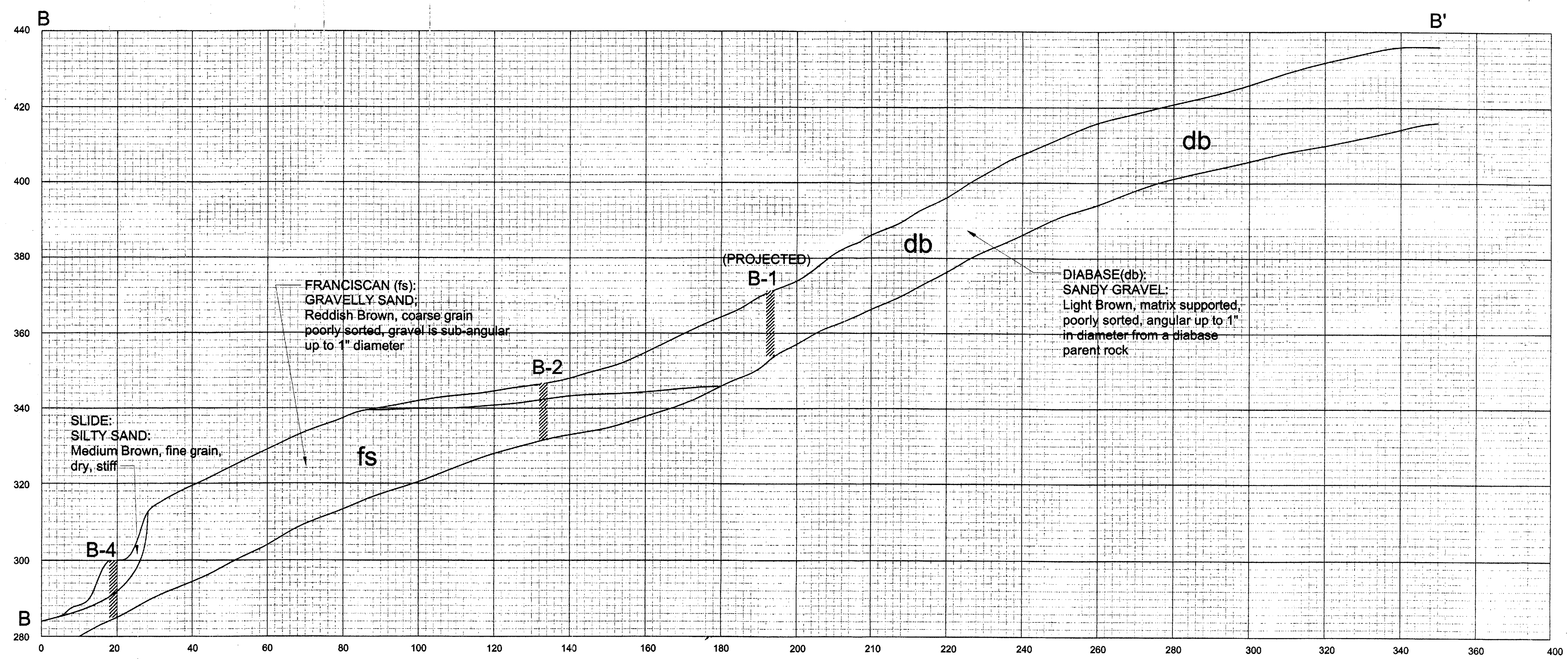
JOB NO. 01-200

FIG



CROSS SECTION A-A'

VERTICAL & HORIZONTAL SCALE: 1"=20'



CROSS SECTION B-B'

VERTICAL & HORIZONTAL SCALE: 1"=20'

E 2C,
ENVIRONMENTAL / ENGIN
CONSU
382 MARTIN
SANTA CLARA,
PHONE: 408.
FAX: 408.
WEB: WWW.E2C

LAND OF BA
SANBORN
SARATO

REVISION:

DRAWN BY:
CHECKED BY:
DESIGNED BY:
SCALE: AS SH

FIGURE 9
CROSS SECTIO

JOB NO. : 2171SC01
DATE: DECEMBER 08,

DISCLAIMER: TS CIVIL ENGINEERING, INC. ONLY ACKNOWLEDGES ORIGINAL SIGNED AND STAMPED PLANS AND DRAWINGS. NO RESPONSIBILITY OR LIABILITY IS EXPRESSED OR IMPLIED FOR ELECTRONIC DATA AND/OR REPRODUCED PLANS AND DRAWINGS.

BENCHMARK
THE BENCH MARK FOR THIS SECTION IS EL=X.XX

DESIGNED UNDER THE SUPERVISON OF:
TERENCE J. SZEWCZYK R.C.E. 35527
EXPIRES DATE: 09/30/03

	BY	REVISIONS	DATE
6			
5			
4			
3			
2			
1			

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SAN JOSE, CA 95110
CIVIL ENGINEERING
PH: 408.452.9300 TOLL FREE: 888.327.7070 FAX: 408.452.9301

FIGURE 8 : GEOLOGIC MAP
LANDS OF BAGNAS
UNINCORPORATED SARATOGA, CALIFORNIA

DATE:	01-13-04	SHEET NO. 3
SCALE:	1"=20'	
DRAWN BY:	MF/KP	
SURVEYED BY:	SP	OF 8 PAGES
PROJ ENGR:	TJS	JOB NO. 01-200
CHECK BY:	TJS	

APPENDIX A

BORING LOGS

ENVIRONMENTAL / ENGINEERING CONSULTANTS
382 MARTIN AVENUE
SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 FAX: 408.327.5707

BORING LOG

BORING / WELL NUMBER: **B-1**

SHEET 1 OF 1

PROJECT	PROJECT NUMBER	START DATE	COMPLETION DATE
LAND OF BAGNAS	2171SC01	10.11.2004	10.11.2004

PROJECT LOCATION	BORING DEPTH	STATIC GROUNDWATER DEPTH
SANBORN ROAD, SARATOGA, CALIFORNIA	15'	——

DRILLING CONTRACTOR	DRILLER
CENOZOIC DRILLING	JEFF
DRILLING EQUIPMENT	**BORING DIAMETER**
SINA 2400	4" FLIGHT AUGER
SAMPLING METHOD	**BACKFILL MATERIAL**
2.5" SPLIT SPOON	NATIVE SOIL
LOGGED BY	**SUPERVISED BY** K. PRICE / **CEG NO.** 1188
F. COOK	

WELL CONSTRUCTION

TYPE AND DIAMETER OF WELL CASING	SANITARY SEAL MATERIAL AND INTERVAL
NA	NA
SLOT SIZE AND INTERVAL	**FILTER MATERIAL AND INTERVAL**
NA	NA
PERFORATED INTERVAL	**WELL DEPTH**
NA	NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
DIABASE: Cutting are angular Sandy Gravel up to 2" in diameter. Derived from a dibasic parent rock			50+	■				50 for 2" (No sample)
Sandy Gravel: Light Brown matrix supported, gravel is angular up to 2.5" diameter	5		37 47 50+	■	B-1 d 5.0			n=50+
Sandy Gravel: Light Brown, poorly sorted, sub-angular up to 1" in diameter, from a dibasic parent rock	10		36 50+	■	B-1 d 10.0			50 for 3"
Sandy Gravel: Light Brown, poorly sorted, sub-angular up to 1" in diameter, from a dibasic parent rock								
BOH=15'	15		44 50	■	B-1 d 15.0			n=50+
	20							
	25							

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382 MARTIN AVENUE
SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 FAX: 408.327.5707

BORING LOG

BORING / WELL NUMBER: **B-2**

SHEET 1 OF 1

PROJECT: LAND OF BAGNAS	PROJECT NUMBER: 2171SC01	START DATE: 10.11.2004	COMPLETION DATE: 10.11.2004
PROJECT LOCATION: SANBORN ROAD, SARATOGA, CALIFORNIA		BORING DEPTH: 15'	STATIC GROUNDWATER DEPTH: ——
DRILLING CONTRACTOR: CENOZOIC DRILLING	DRILLER: JEFF	WELL CONSTRUCTION	
DRILLING EQUIPMENT: SINA 2400	BORING DIAMETER: 4" FLIGHT AUGER	TYPE AND DIAMETER OF WELL CASING: NA	SANITARY SEAL MATERIAL AND INTERVAL: NA
SAMPLING METHOD: 2.5" SPLIT SPOON	BACKFILL MATERIAL: NATIVE SOIL	SLOT SIZE AND INTERVAL: NA	FILTER MATERIAL AND INTERVAL: NA
LOGGED BY: F. COOK	SUPERVISED BY: K. PRICE CEG NO. 1188	PERFORATED INTERVAL: NA	WELL DEPTH: NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
DIABASE:								
Sandy Gravel: Reddish Brown, coarse grain, 50% sand, gravel is angular dibasic parent rock			22 36 37	■	B-2 d 3.0			n=73
FRANCISCAN:								
Gravelly Sand: reddish Brown, coarse grain, poorly sorted, gravel is sub-angular >0.5" diameter	5		34 50+	■	B-2 d 5.0			50 for 5.5"
Gravel Sand: Light Gray, fine grain, 10% gravel, angular, poorly sorted	10		41 50+	■	B-2 d 10.0			50 for 4.5"
* No retrieval, very hard drilling*								
BOH=15'	15		50+	■	B-2 d 15.0			50 for 4" (No sample)
	20							
	25							

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SANTA CLARA, CA 95050-3112
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BORING LOG

BORING / WELL NUMBER: **B-3**

SHEET 1 OF 1

PROJECT	PROJECT NUMBER	START DATE	COMPLETION DATE
LAND OF BAGNAS	2171SC01	10.11.2004	10.11.2004

PROJECT LOCATION	BORING DEPTH	STATIC GROUNDWATER DEPTH
SANBORN ROAD, SARATOGA, CALIFORNIA	15'	——

DRILLING CONTRACTOR	DRILLER
CENOZOIC DRILLING	JEFF
DRILLING EQUIPMENT	**BORING DIAMETER**
SINA 2400	4" FLIGHT AUGER
SAMPLING METHOD	**BACKFILL MATERIAL**
2.5" SPLIT SPOON	NATIVE SOIL
LOGGED BY	**SUPERVISED BY** K. PRICE
F. COOK	CEG NO. 1188

WELL CONSTRUCTION

TYPE AND DIAMETER OF WELL CASING	SANITARY SEAL MATERIAL AND INTERVAL
NA	NA
SLOT SIZE AND INTERVAL	**FILTER MATERIAL AND INTERVAL**
NA	NA
PERFORATED INTERVAL	**WELL DEPTH**
NA	NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
FRANCISCAN:								
Gravel (5%) - Silty (25%) - Clay (70%): Dark Brown, gravel is only 0.25", sub-angular, slightly moist	5		10 23 31	■	B-3 d 5.0			n=54
								Encountered a rock @ ~8.5' that was tough to drill thru
Very hard drilling to 15'. Encountered rock turned to power by the anger. Cutting changed from gray to blue ~13'	10		50 for 3"		No sample			
	15		50 for 1"		No sample			
BOH=15'								
	20							
	25							

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382 MARTIN AVENUE
SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 FAX: 408.327.5707

BORING LOG

BORING / WELL NUMBER: **B-4**

SHEET 1 OF 1

PROJECT: LAND OF BAGNAS	PROJECT NUMBER: 2171SC01	START DATE: 10.11.2004	COMPLETION DATE: 10.11.2004
PROJECT LOCATION: SANBORN ROAD, SARATOGA, CALIFORNIA		BORING DEPTH: 15'	STATIC GROUNDWATER DEPTH: ——
DRILLING CONTRACTOR: CENOZOIC DRILLING	DRILLER: JEFF	WELL CONSTRUCTION	
DRILLING EQUIPMENT: SINA 2400	BORING DIAMETER: 4" FLIGHT AUGER	TYPE AND DIAMETER OF WELL CASING: NA	SANITARY SEAL MATERIAL AND INTERVAL: NA
SAMPLING METHOD: 2.5" SPLIT SPOON	BACKFILL MATERIAL: NATIVE SOIL	SLOT SIZE AND INTERVAL: NA	FILTER MATERIAL AND INTERVAL: NA
LOGGED BY: F. COOK	SUPERVISED BY: K. PRICE; CEG NO. 1188	PERFORATED INTERVAL: NA	WELL DEPTH: NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
Slide:								
Silty Sand: Medium Brown, fine to coarse grain, stiff	3		27 26 29	■	B-4 d 3.0			n=55
Same as above	5		19 26 34	■	B-4 d 5.0			n=60
Gravelly Sand: Light Brown / Gray, mottled, coarse grain only 5% gravel	10		21 26 40	■	B-4 d 10.0			n=66
FRANCISCAN SHALE: Black hard bedrock								Faces change black
	15		34 + 50	■	B-4 d 15.0			50 for 5"
BOH=15'								

Depth scale: 5, 10, 15, 20, 25

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SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 FAX: 408.327.5707

BORING LOG

BORING / WELL NUMBER: **B-5**

SHEET 1 OF 1

PROJECT: LAND OF BAGNAS	PROJECT NUMBER: 2171SC01	START DATE: 10.11.2004	COMPLETION DATE: 10.11.2004
PROJECT LOCATION: SANBORN ROAD, SARATOGA, CALIFORNIA		BORING DEPTH: 10'	STATIC GROUNDWATER DEPTH: ——
DRILLING CONTRACTOR: CENOZOIC DRILLING	DRILLER: JEFF	WELL CONSTRUCTION	
DRILLING EQUIPMENT: SINA 2400	BORING DIAMETER: 4" FLIGHT AUGER	TYPE AND DIAMETER OF WELL CASING: NA	SANITARY SEAL MATERIAL AND INTERVAL: NA
SAMPLING METHOD: 2.5" SPLIT SPOON	BACKFILL MATERIAL: NATIVE SOIL	SLOT SIZE AND INTERVAL: NA	FILTER MATERIAL AND INTERVAL: NA
LOGGED BY: F. COOK	SUPERVISED BY: K. PRICE CEG NO. 1188	PERFORATED INTERVAL: NA	WELL DEPTH: NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
FRANCISCAN								
Sandstone: Light Brown, fine to coarse grain	5		29 50	■	B-5 d 5.0			50 for 6"
Very hard drilling No sample	10							50 for 1.5"
BOH=10'								
	15							
	20							
	25							

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SANTA CLARA, CA 95050-3112
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BORING LOG

BORING / WELL NUMBER: **B-6**

SHEET 1 OF 1

PROJECT: LAND OF BAGNAS	PROJECT NUMBER: 2171SC01	START DATE: 10.12.2004	COMPLETION DATE: 10.12.2004
PROJECT LOCATION: SANBORN ROAD, SARATOGA, CALIFORNIA		BORING DEPTH: 9'	STATIC GROUNDWATER DEPTH: ——
DRILLING CONTRACTOR: CENOZOIC DRILLING	DRILLER: JEFF	WELL CONSTRUCTION	
DRILLING EQUIPMENT: SINA 2400	BORING DIAMETER: 4" FLIGHT AUGER	TYPE AND DIAMETER OF WELL CASING: NA	SANITARY SEAL MATERIAL AND INTERVAL: NA
SAMPLING METHOD: 2.5" SPLIT SPOON	BACKFILL MATERIAL: NATIVE SOIL	SLOT SIZE AND INTERVAL: NA	FILTER MATERIAL AND INTERVAL: NA
LOGGED BY: F. COOK	SUPERVISED BY: K. PRICE CEG NO. 1188	PERFORATED INTERVAL: NA	WELL DEPTH: NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
Gravelly Sand: Light Gray, fine to coarse grain, poorly sorted, angular gravel up to 0.25" diameter								
	3		24 / 50+	■	B-6 d 3.0			24 50 for 4"
FRANCISCAN : SHALE Sandy Gravel: Dark Gray, very hard, weathered angular gravel	5		50+	■	B-6 d 5.0			50 for 5" (No sample)
BOH=9' (Rig broke @ 9')	10							
	15							
	20							
	25							

ENVIRONMENTAL / ENGINEERING CONSULTANTS
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SANTA CLARA, CA 95050-3112
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BORING LOG

BORING / WELL NUMBER: **B-7**

SHEET 1 OF 1

PROJECT	PROJECT NUMBER	START DATE	COMPLETION DATE
LAND OF BAGNAS	2171SC01	10.18.2004	10.18.2004

PROJECT LOCATION	BORING DEPTH	STATIC GROUNDWATER DEPTH
SANBORN ROAD, SARATOGA, CALIFORNIA	5.5'	——

DRILLING CONTRACTOR	DRILLER
CENOZOIC DRILLING	JEFF
DRILLING EQUIPMENT	**BORING DIAMETER**
SINA 2400	4" FLIGHT AUGER
SAMPLING METHOD	**BACKFILL MATERIAL**
2.5" SPLIT SPOON	NATIVE SOIL
LOGGED BY	**SUPERVISED BY** K. PRICE
F. COOK	**CEG NO.** 1188

WELL CONSTRUCTION

TYPE AND DIAMETER OF WELL CASING	SANITARY SEAL MATERIAL AND INTERVAL
NA	NA
SLOT SIZE AND INTERVAL	**FILTER MATERIAL AND INTERVAL**
NA	NA
PERFORATED INTERVAL	**WELL DEPTH**
NA	NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
From cuttings: soft until 4.5' looks like a Light Brown Silty Sand, then @ 4.5' turned to hard gravel (Franciscan Complex)								
	5		45 + 50	■	B-7 d 5.0			45 50 for 5"
BOH=5.5' (Boring aborted at 5.5'. Too Hard to drill.)								
	10							
	15							
	20							
	25							

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SANTA CLARA, CA 95050-3112
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BORING LOG

BORING / WELL NUMBER: **B-8**

SHEET 1 OF 1

PROJECT	PROJECT NUMBER	START DATE	COMPLETION DATE
LAND OF BAGNAS	2171SC01	10.18.2004	10.18.2004

PROJECT LOCATION	BORING DEPTH	STATIC GROUNDWATER DEPTH
SANBORN ROAD, SARATOGA, CALIFORNIA	13'	——

DRILLING CONTRACTOR	DRILLER
CENOZOIC DRILLING	JEFF
DRILLING EQUIPMENT	**BORING DIAMETER**
SINA 2400	4" FLIGHT AUGER
SAMPLING METHOD	**BACKFILL MATERIAL**
2.5" SPLIT SPOON	NATIVE SOIL
LOGGED BY	**SUPERVISED BY** K. PRICE
F. COOK	CEG NO. 1188

WELL CONSTRUCTION

TYPE AND DIAMETER OF WELL CASING	SANITARY SEAL MATERIAL AND INTERVAL
NA	NA
SLOT SIZE AND INTERVAL	**FILTER MATERIAL AND INTERVAL**
NA	NA
PERFORATED INTERVAL	**WELL DEPTH**
NA	NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
FRANCISCAN: SHALE Sandy Gravel: Light Brown to Gray, angular, clasts supported, very few fines								
	5		36 50	■	B-8 d 5.0			36 50 for 6"
SHALE: very hard to drill	10		36 50	■	B-8 d 10.0			36 50 for 6"
BOH=13'								
	15							
	20							
	25							

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SANTA CLARA, CA 95050-3112
TEL: 408.327.5700 FAX: 408.327.5707

BORING LOG

BORING / WELL NUMBER: **B-9**

SHEET 1 OF 1

PROJECT	PROJECT NUMBER	START DATE	COMPLETION DATE
LAND OF BAGNAS	2171SC01	10.18.2004	10.18.2004

PROJECT LOCATION	BORING DEPTH	STATIC GROUNDWATER DEPTH
SANBORN ROAD, SARATOGA, CALIFORNIA	9'	——

DRILLING CONTRACTOR	DRILLER	
CENOZOIC DRILLING	JEFF	

WELL CONSTRUCTION

DRILLING EQUIPMENT: SINA 2400	BORING DIAMETER: 4" FLIGHT AUGER	TYPE AND DIAMETER OF WELL CASING: NA	SANITARY SEAL MATERIAL AND INTERVAL: NA
SAMPLING METHOD: 2.5" SPLIT SPOON	BACKFILL MATERIAL: NATIVE SOIL	SLOT SIZE AND INTERVAL: NA	FILTER MATERIAL AND INTERVAL: NA
LOGGED BY: F. COOK	SUPERVISED BY: K. PRICE CEG NO.: 1188	PERFORATED INTERVAL: NA	WELL DEPTH: NA

DESCRIPTION	DEPTH (FEET)	UCSC SOIL TYPE	BLOW COUNTS	SAMPLE INTERVAL	SAMPLE I.D.	PID/FID READINGS OVA (ppm)	WELL	REMARK
FRANCISCAN: Sandy Gravel Sandy(50%) Gravel (50%): light Brown angular clasts, matrix supported	5		33 + 50	■	B-9 d 5.0			33 50 for 5"
	9		46 + 50	■	B-9 d 9.0			46 50 for 3"
BOH=9'	10							
	15							
	20							
	25							

APPENDIX B

SEISMIC HAZARD ZONE REPORT

USGS
Earthquake Hazards Program

```
The ground motion values for the requested point:
LOCATION                  37.227 Lat.  -122.050 Long.
DISTANCE TO
  NEAREST GRID POINT      5.35489302657559 kms
NEAREST GRID POINT         37.20000 Lat.
-122.1000 Long.
Probabilistic ground motion values, in %g, at the Nearest Grid point are:
            10%PE in 50 yr   5%PE in 50 yr   2%PE in 50 yr
   PGA          74.12923       93.94752       111.3903
0.2 sec SA      164.7209       194.6617       265.2517
0.3 sec SA      166.8386       204.0257       271.5139
1.0 sec SA      87.76377       118.1606       161.1769
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

The program has detected a zero latitude and has assumed the end of valid input data.

PROJECT INFO: Home Page
SEISMIC HAZARD: Hazard by Lat/Lon

*** Deaggregation of Seismic Hazard for PGA & 3 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 1996 version ***
PSHA Deaggregation. %contributions. site: Bagnas long: 122.0500 W., lat: 37.2270 N.
Return period: 475yrs. Exceedance PGA=0.8387450g. Computed annual rate=.21072E-02

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.5	5.20	0.304	0.304	0.000	0.000	0.000	0.000	0.000
7.5	5.60	0.283	0.283	0.000	0.000	0.000	0.000	0.000
6.7	6.25	0.885	0.489	0.396	0.000	0.000	0.000	0.000
13.6	6.27	0.076	0.076	0.000	0.000	0.000	0.000	0.000
5.8	6.72	4.205	0.746	3.063	0.397	0.000	0.000	0.000
14.8	6.76	0.079	0.079	0.000	0.000	0.000	0.000	0.000
3.0	7.08	28.555	4.915	16.490	7.151	0.000	0.000	0.000
1.7	7.90	65.574	4.834	30.711	30.029	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 2.3 km; M= 7.58; e0= 0.67; e= 1.28 for all sources.
Modal src-site R= 1.7 km; M= 7.90; e0= 0.52 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 2.2km; M*= 7.90; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 30.711

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
San Andreas-1906	65.57	1.7	7.90	0.52
San Andreas-Peninsula	23.39	1.9	7.10	0.71

*************CONTERMINOUS USA SITE HAZARD DEAGGREGATION***********************
PSHA Deaggregation. %contributions. site: Bagnas long: 122.0500 W., lat: 37.2270 N.
Return period: 475yrs. 1.00 s. PSA =1.1778009g. Computed annual rate=.21104E-02

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
6.5	6.34	0.074	0.074	0.000	0.000	0.000	0.000	0.000
2.5	6.74	1.401	0.644	0.757	0.000	0.000	0.000	0.000
1.4	7.09	14.722	3.893	10.830	0.000	0.000	0.000	0.000
0.7	7.90	83.776	4.833	30.696	41.350	6.896	0.000	0.000

Summary statistics for above 1.0s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 0.8 km; M= 7.76; e0= 0.30; e= 1.03 for all sources.
Modal src-site R= 0.7 km; M= 7.90; e0= 0.11 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 0.7km; M*= 7.90; EPS.INTERVAL: 0 to 1 sigma % CONTRIB.= 41.350

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
San Andreas-1906	83.78	0.7	7.90	0.11
San Andreas-Peninsula	13.37	0.8	7.10	1.18

*************CONTERMINOUS USA SITE HAZARD DEAGGREGATION***********************
PSHA Deaggregation. %contributions. site: Bagnas long: 122.0500 W., lat: 37.2270 N.
Return period: 475yrs. 0.20 s. PSA =1.9106345g. Computed annual rate=.21080E-02

DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.8	5.19	0.326	0.326	0.000	0.000	0.000	0.000	0.000
7.8	5.60	0.276	0.276	0.000	0.000	0.000	0.000	0.000
6.9	6.27	0.913	0.530	0.383	0.000	0.000	0.000	0.000
13.9	6.26	0.148	0.148	0.000	0.000	0.000	0.000	0.000
4.6	6.72	4.106	0.758	3.348	0.000	0.000	0.000	0.000
15.1	6.74	0.217	0.217	0.000	0.000	0.000	0.000	0.000
2.0	7.08	34.317	5.082	17.193	12.042	0.000	0.000	0.000
0.7	7.90	59.606	4.839	27.984	26.783	0.000	0.000	0.000

Summary statistics for above 0.2s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 1.5 km; M= 7.53; e0= 0.63; e= 1.25 for all sources.
Modal src-site R= 0.7 km; M= 7.90; e0= 0.48 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 0.7km; M*= 7.90; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 27.984

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
San Andreas-1906	59.61	0.7	7.90	0.48
San Andreas-Peninsula	27.59	0.8	7.10	0.56

*************CONTERMINOUS USA SITE HAZARD DEAGGREGATION***********************

PSHA Deaggregation. %contributions. site: Bagnas long: 122.0500 W., lat: 37.2270 N.
Return period: 475yrs. 0.30 s. PSA =1.9648271g. Computed annual rate=.21085E-02

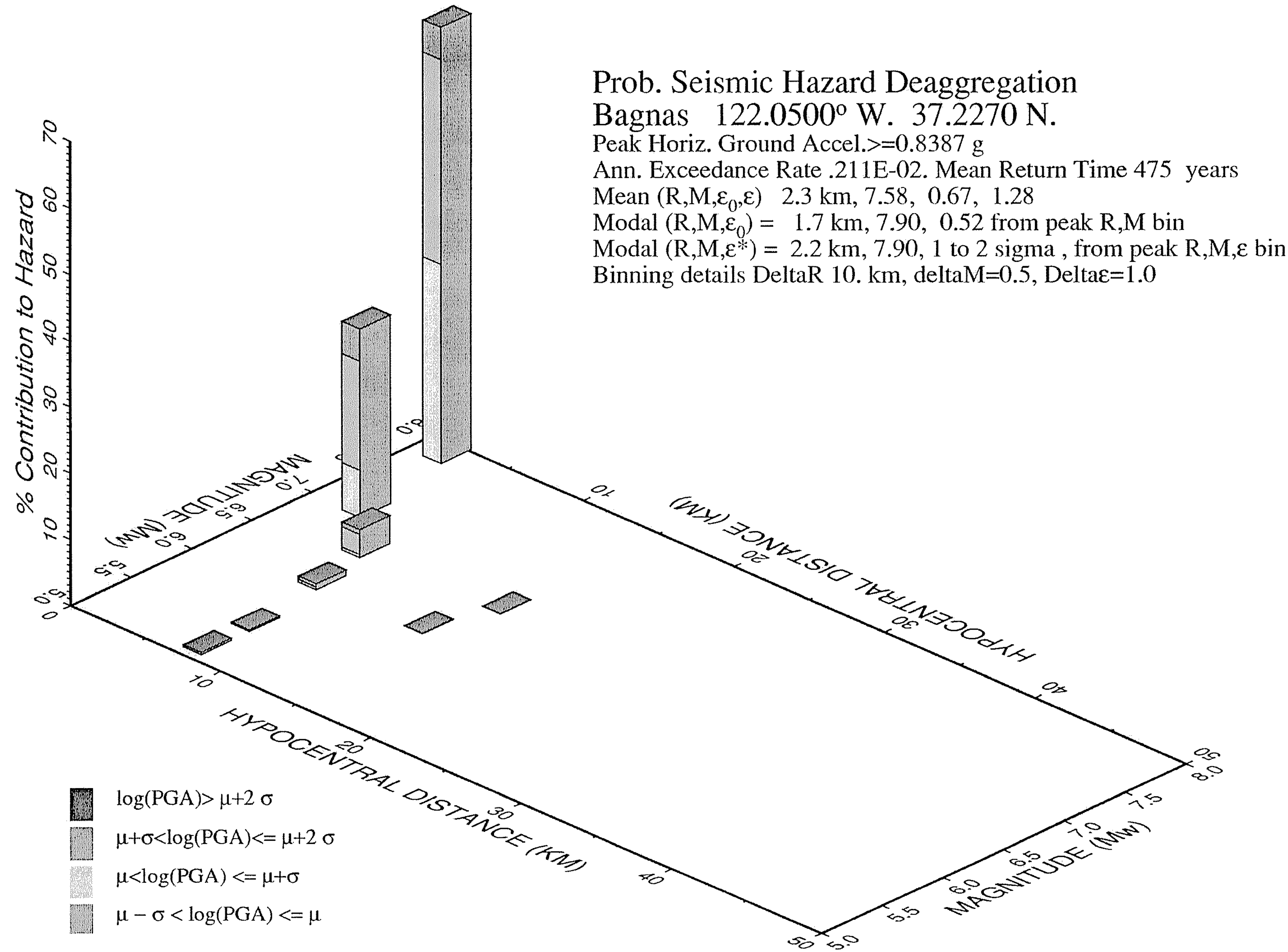
DIST(KM)	MAG(MW)	ALL-EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
7.7	5.20	0.100	0.100	0.000	0.000	0.000	0.000	0.000
7.7	5.60	0.115	0.115	0.000	0.000	0.000	0.000	0.000
6.8	6.29	0.577	0.413	0.164	0.000	0.000	0.000	0.000
13.9	6.29	0.084	0.084	0.000	0.000	0.000	0.000	0.000
4.0	6.72	3.539	0.751	2.788	0.000	0.000	0.000	0.000
15.1	6.75	0.146	0.146	0.000	0.000	0.000	0.000	0.000
1.9	7.08	29.424	5.082	16.549	7.793	0.000	0.000	0.000
0.7	7.90	65.981	4.838	30.722	30.422	0.000	0.000	0.000

Summary statistics for above 0.3s PSA deaggregation, R=distance, e=epsilon:
Mean src-site R= 1.3 km; M= 7.60; e0= 0.67; e= 1.28 for all sources.
Modal src-site R= 0.7 km; M= 7.90; e0= 0.51 from peak (R,M) bin
Primary distance metric: HYPOCENTRAL
MODE R*= 0.7km; M*= 7.90; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 30.722

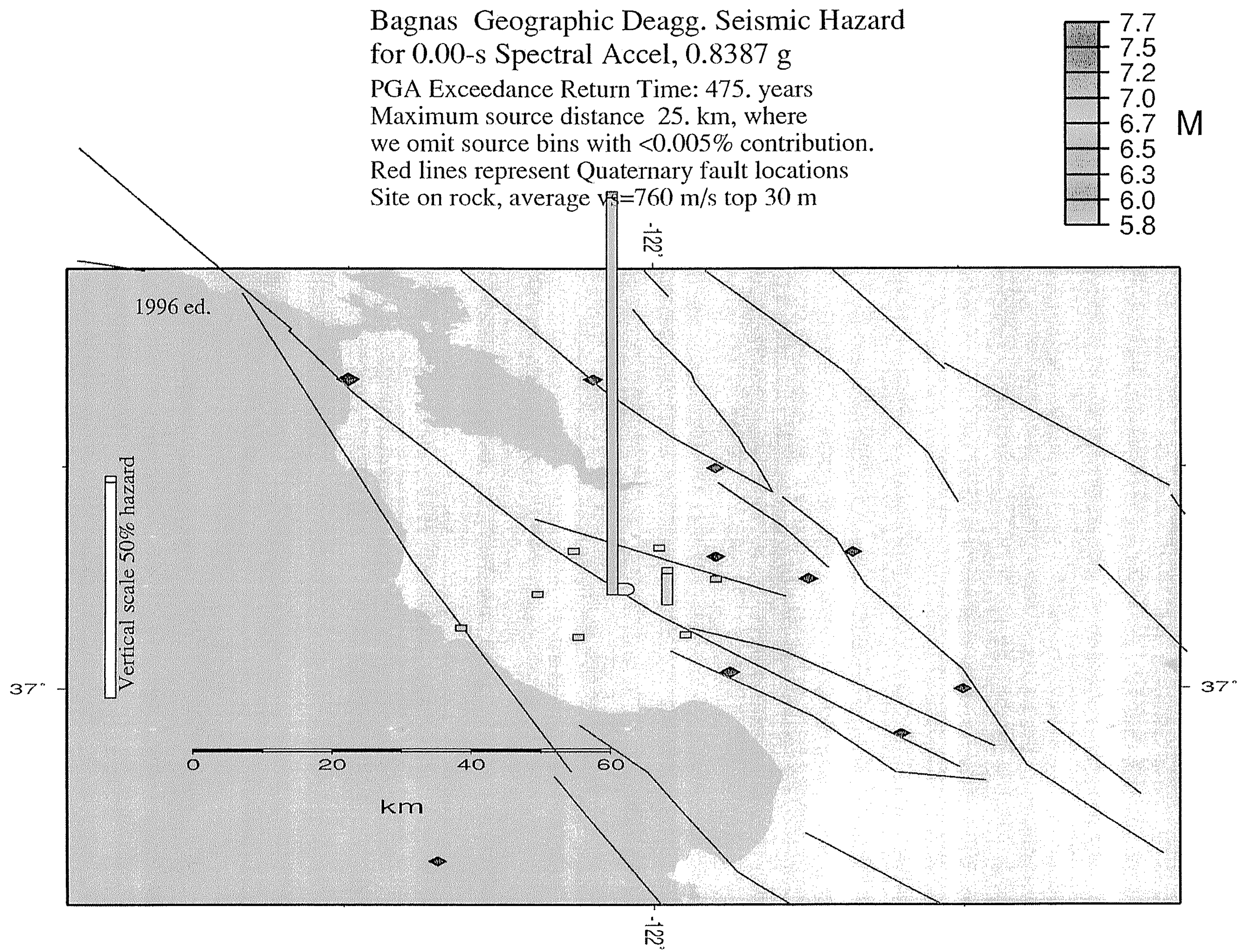
Principal sources (faults, subduction, random seismicity having >10% contribution)

Source:	% contr.	R(km)	M	epsilon0 (mean values)
San Andreas-1906	65.98	0.7	7.90	0.51
San Andreas-Peninsula	24.15	0.8	7.10	0.73

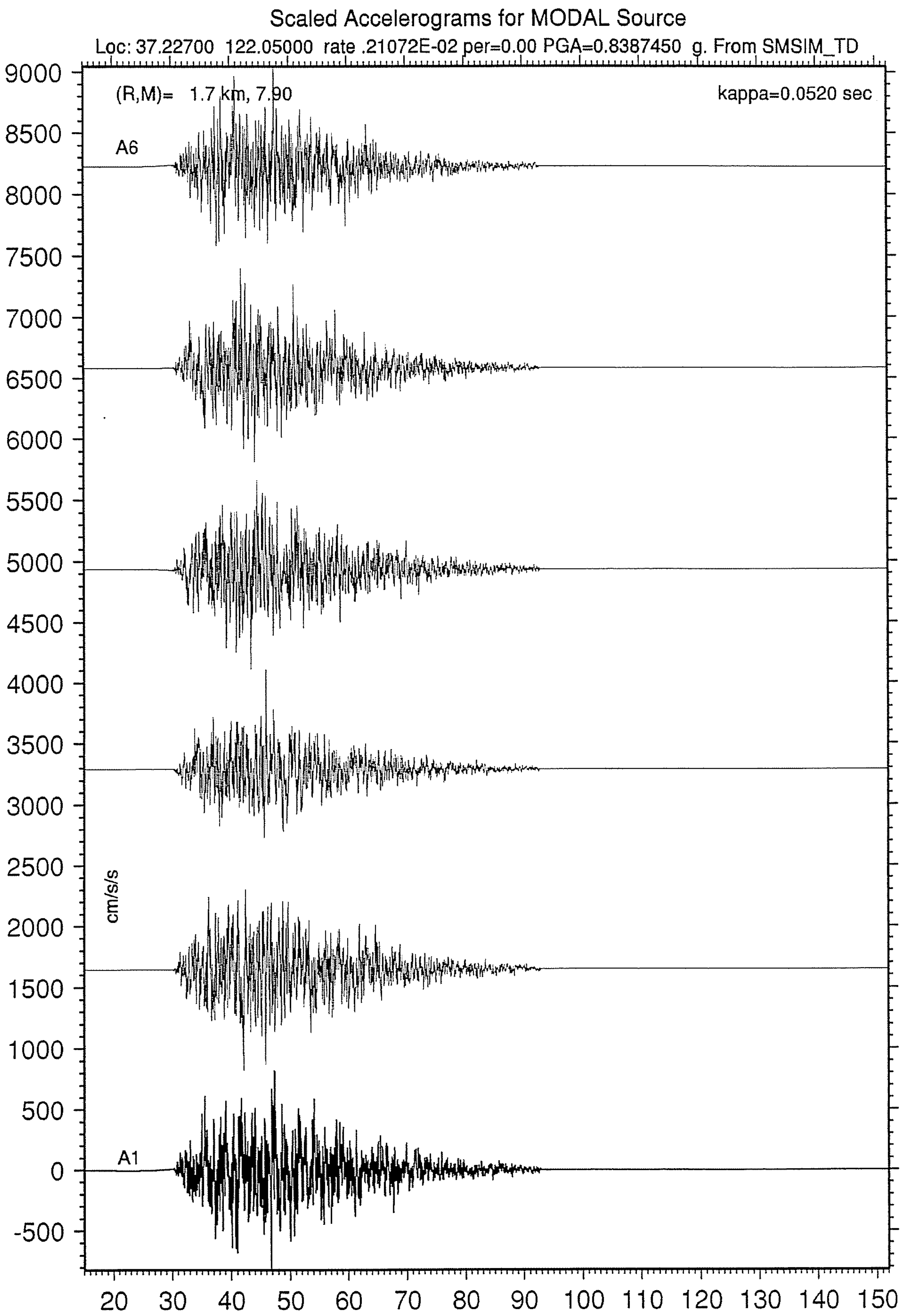
*************CONTERMINOUS USA SITE HAZARD DEAGGREGATION***********************



GMT Aug 6 14:16 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs=760m/s top 30 m. USGS CGHT PSHA 1996 edition. Bins with lt 0.05% contrib. omitted



GMT Aug 6 14:16 Site Coords:-122.0500 37.22700 (yellow disk). Max annual rate .1956E-02. Column height prop. to rate. Red diamonds: historical earthquakes, M>6



Scaled Accelerograms for MODAL Source
Loc: 37.22700 122.05000 rate .21072E-02 per=0.00 PGA=0.8387450 g. From SMSIM_TD
(R,M)= 1.7 km, 7.90
kappa=0.0520 sec
A6
A1
cm/s/s
9000
8500
8000
7500
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
20
30
40
50
60
70
80
90
100
110
120
130
140
150

INTERACTIVE DEAGGREGATIONS OUTPUT

BEFORE YOU LEAVE THIS PAGE FOR ANY REASON
either print the page or make a note of the filename(s). Otherwise the page may disappear and you will be required to rerun the data from the form to recreate it!

The files listed below may be downloaded from this page or accessed from the Anonymous FTP area (if the page does disappear.)

The files will remain available for only four (4) hours before deletion !!!

The hazard matrix data file contains several frequencies, including the one requested.
Hazard Matrices (20210.txt)

Deaggregated Seismic Hazard Graph
GIF (20210pga.gif),
PDF (20210pga.pdf),
PS (20210pga.ps)

Geographic Deaggregated Seismic Hazard Map
GIF (20210pgag.gif),
PDF (20210pgag.pdf),
PS (20210pgag.ps)

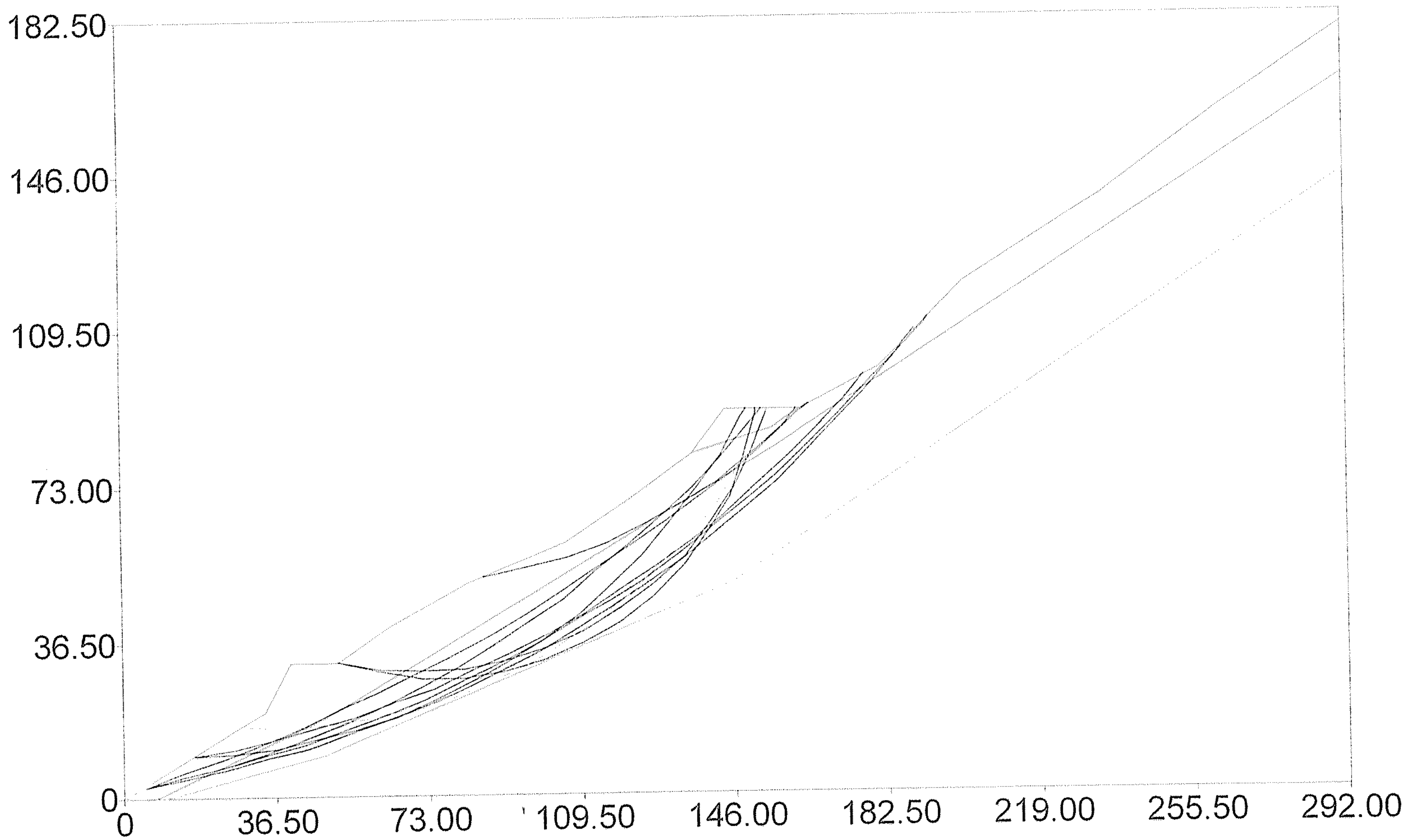
Seismograms for modal or mean event,
Ascii (smsim.acc.20210),
GIF (20210pgag.gif),
PDF (20210pgag.pdf),
PS (20210pgag.ps)

PROJECT INFO: Home Page
SEISMIC HAZARD: Interactive Deaggregation

APPENDIX C

SLOPE STABILITY ANALYSIS FOR CROSS-SECTION A – A'

Slope Stability A-A'



Safety Factor

1.55
1.57
1.60
1.62
1.63
1.63
1.63
1.65
1.65
1.66

Profile.out
** PCSTABL6 **

by
Purdue University

modified by
Peter J. Bosscher
University of Wisconsin-Madison

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

PROBLEM DESCRIPTION   Slope Stability A-A'

BOUNDARY COORDINATES

18 Top Boundaries
23 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	0.00	20.00	12.00	2
2	20.00	12.00	34.00	20.00	2
3	34.00	20.00	40.00	32.00	2
4	40.00	32.00	48.00	32.00	2
5	48.00	32.00	52.00	32.00	2
6	52.00	32.00	64.00	40.00	2
7	64.00	40.00	82.00	50.00	2
8	82.00	50.00	106.00	60.00	2
9	106.00	60.00	122.00	70.00	2
10	122.00	70.00	136.00	80.00	2
11	136.00	80.00	144.00	90.00	2
12	144.00	90.00	156.00	90.00	2
13	156.00	90.00	162.00	90.00	2
14	162.00	90.00	181.00	100.00	2
15	181.00	100.00	201.00	120.00	2
16	201.00	120.00	234.00	140.00	2
17	234.00	140.00	262.00	160.00	2
18	262.00	160.00	292.00	180.00	2
19	136.00	80.00	156.00	86.00	1
20	156.00	86.00	162.00	90.00	1
21	8.00	0.00	48.00	19.00	2
22	48.00	19.00	156.00	81.00	2
23	156.00	81.00	292.00	168.00	2

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	123.6	129.5	0.0	27.0	0.00	0.0	1
2	118.0	129.8	400.0	30.0	0.00	0.0	1

Searching Routine Will Be Limited To An Area Defined By 3 Boundaries Of Which The First 2 Boundaries Will Deflect Surfaces Upward

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)
1	10.00	0.00	48.00	10.00
2	48.00	10.00	146.00	50.00
3	146.00	50.00	292.00	145.00

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

10 Surfaces Initiate From Each Of 10 Points Equally Spaced Along The Ground Surface Between X = 5.00 ft.
and X = 110.00 ft.

Each Surface Terminates Between X = 110.00 ft.
and X = 220.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	28.33	16.76
2	38.33	16.51
3	48.32	17.02
4	58.24	18.28
5	68.03	20.28
6	77.65	23.03
7	87.03	26.49
8	96.12	30.65
9	104.87	35.49
10	113.23	40.98
11	121.15	47.09
12	128.59	53.78
13	135.50	61.01
14	141.84	68.74
15	147.57	76.93
16	152.67	85.53
17	154.88	90.00

*** 1.554 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	16.67	10.00
2	26.65	10.57
3	36.58	11.78
4	46.41	13.62
5	56.10	16.08
6	65.61	19.16
7	74.91	22.83
8	83.96	27.10
9	92.72	31.93
10	101.15	37.31
11	109.21	43.21
12	116.89	49.62
13	124.14	56.51
14	130.94	63.84
15	137.26	71.60
16	143.06	79.74
17	148.34	88.23
18	149.29	90.00

*** 1.567 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	5.00	3.00
2	14.86	4.65
3	24.66	6.64
4	34.39	8.96
5	44.03	11.61
6	53.58	14.58
7	63.02	17.88
8	72.34	21.50
9	81.54	25.43
10	90.59	29.67
11	99.50	34.22
12	108.24	39.07
13	116.82	44.22
14	125.22	49.65
15	133.42	55.36
16	141.43	61.36
17	149.23	67.62
18	156.81	74.14
19	164.16	80.92
20	171.28	87.94
21	178.15	95.20
22	184.78	102.69
23	189.93	108.93

*** 1.595 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	51.67	32.00
2	61.52	30.32
3	71.51	29.76
4	81.49	30.35
5	91.34	32.06
6	100.94	34.89
7	110.14	38.79
8	118.85	43.71
9	126.94	49.59
10	134.31	56.35
11	140.86	63.90
12	146.51	72.15
13	151.19	80.99
14	154.71	90.00

*** 1.621 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	16.67	10.00

2	26.52	11.72
3	36.30	13.80
4	46.00	16.24
5	55.60	19.04
6	65.09	22.19
7	74.45	25.70
8	83.69	29.54
9	92.77	33.72
10	101.69	38.24
11	110.44	43.08
12	119.00	48.25
13	127.37	53.73
14	135.53	59.51
15	143.47	65.59
16	151.17	71.96
17	158.64	78.61
18	165.86	85.53
19	172.81	92.72
20	177.89	98.36

*** 1.630 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	3.00
2	14.76	5.18
3	24.43	7.73
4	33.99	10.65
5	43.44	13.92
6	52.76	17.55
7	61.94	21.53
8	70.96	25.85
9	79.80	30.51
10	88.47	35.50
11	96.94	40.81
12	105.21	46.44
13	113.25	52.38
14	121.07	58.62
15	128.64	65.14
16	135.97	71.95
17	143.03	79.04
18	149.81	86.38
19	152.92	90.00

*** 1.634 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	3.00

2	14.81	4.95
3	24.55	7.21
4	34.22	9.77
5	43.80	12.63
6	53.29	15.79
7	62.67	19.24
8	71.95	22.97
9	81.10	27.00
10	90.13	31.30
11	99.02	35.89
12	107.76	40.75
13	116.34	45.88
14	124.76	51.27
15	133.01	56.92
16	141.08	62.82
17	148.97	68.98
18	156.66	75.37
19	164.14	82.00
20	171.42	88.86
21	178.48	95.94
22	185.32	103.24
23	191.92	110.75
24	192.77	111.77

*** 1.635 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	86.67	51.94
2	96.51	53.73
3	106.18	56.27
4	115.63	59.55
5	124.79	63.54
6	133.63	68.23
7	142.08	73.58
8	150.09	79.56
9	157.62	86.15
10	161.39	90.00

*** 1.652 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	51.67	32.00
2	61.33	29.42
3	71.24	28.10
4	81.24	28.09
5	91.16	29.36
6	100.83	31.91

7	110.09	35.70
8	118.78	40.64
9	126.75	46.68
10	133.88	53.69
11	140.04	61.57
12	145.13	70.18
13	149.06	79.37
14	151.77	89.00
15	151.91	90.00

*** 1.653 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	5.00	3.00
2	14.52	6.06
3	23.97	9.33
4	33.34	12.82
5	42.64	16.51
6	51.84	20.41
7	60.96	24.52
8	69.99	28.83
9	78.91	33.34
10	87.73	38.05
11	96.44	42.96
12	105.04	48.06
13	113.53	53.35
14	121.89	58.84
15	130.13	64.51
16	138.24	70.36
17	146.21	76.39
18	154.05	82.60
19	161.74	88.99
20	164.30	91.21

*** 1.659 ***

```
                 Y           A     X     I     S          F     T

                0.00      36.50     73.00     109.50    146.00    182.50

X      0.00 *---------+---------+---------+---------+---------+
            *3
            L30
            -  *
            -.32.
            -   01
    36.50 + 325*
            -  360.  *
            -  L2*...*
```

```
             -  .250. *
             -   .1604  .
             -    21..  *
 A     73.00 +     254.....
             -     1340.  .*
             -      15.0...8
             -       326....
             -       13760..8.
             -        91..6.8*
 X    109.50 +         932.....
             -          137208..
             -          941.26..*.
             -           .931.86...
             -           ...351.86.*
             -             ...3412....
 I    146.00 +             L...57412 2*
             -              ... 35.4161
             -               ... 37*.**
             -                 ... 350*
             -                   ....35.
             -                  ..  ...35
 S    182.50 +                     . ...*3
             -                          ...3
             -                            .77
             -                              ..*
             -                                ..
             -                                   .
      219.00 +                                    .
             -
             -                                      *
             -
             -
             -
 F    255.50 +
             -                                            *
             -
             -
             -
             -
 T    292.00 +                                        L     *  *
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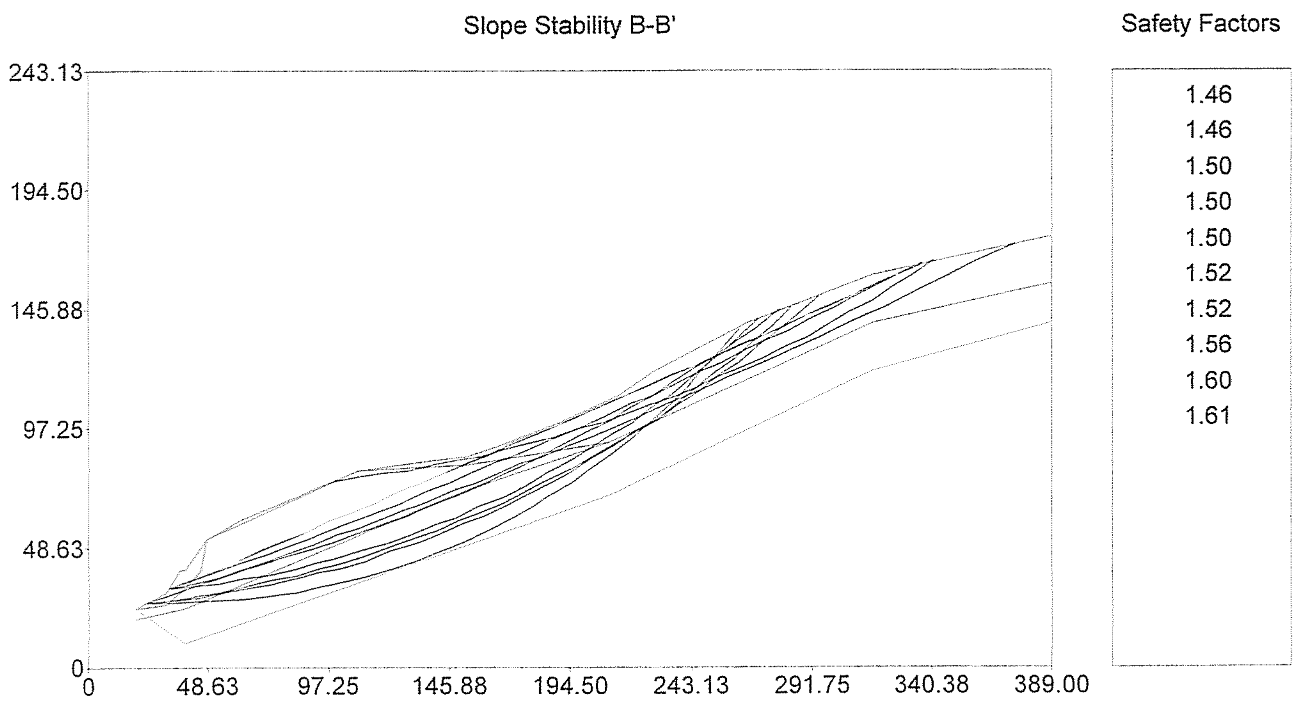
APPENDIX D

SLOPE STABILITY ANALYSIS FOR CROSS-SECTION B – B'



Slope Stability B-B'
243.13
194.50
145.88
97.25
48.63
0
0
48.63
97.25
145.88
194.50
243.13
291.75
340.38
389.00
Safety Factors
1.46
1.46
1.50
1.50
1.50
1.52
1.52
1.56
1.60
1.61

** PCSTABL6 **

by
Purdue University

modified by
Peter J. Bosscher
University of Wisconsin-Madison

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

PROBLEM DESCRIPTION   Slope Stability B-B'

BOUNDARY COORDINATES

15 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	20.00	24.00	32.00	30.00	2
2	32.00	30.00	38.00	40.00	2
3	38.00	40.00	40.00	40.00	2
4	40.00	40.00	48.00	52.00	2
5	48.00	52.00	62.00	60.00	2
6	62.00	60.00	110.00	80.00	2
7	110.00	80.00	140.00	84.00	2
8	140.00	84.00	153.00	86.00	2
9	153.00	86.00	166.00	90.00	2
10	166.00	90.00	191.00	100.00	2
11	191.00	100.00	214.00	111.00	2
12	214.00	111.00	228.00	120.00	2
13	228.00	120.00	266.00	140.00	2
14	266.00	140.00	316.00	160.00	2
15	316.00	160.00	389.00	176.00	2
16	20.00	24.00	32.00	26.00	1
17	32.00	26.00	40.00	32.00	1
18	40.00	32.00	46.00	40.00	1
19	46.00	40.00	48.00	52.00	1
20	110.00	80.00	153.00	82.00	3
21	153.00	82.00	210.00	92.00	3
22	20.00	20.00	40.00	24.00	3
23	40.00	24.00	153.00	72.00	3
24	153.00	72.00	210.00	92.00	3
25	210.00	92.00	316.00	140.00	2

26	316.00	140.00	389.00	156.00	2

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	100.6	108.4	0.0	0.0	0.00	0.0	1
2	120.6	130.7	0.0	33.0	0.00	0.0	1
3	121.0	130.9	0.0	32.0	0.00	0.0	1

Searching Routine Will Be Limited To An Area Defined By 5 Boundaries
Of Which The First 4 Boundaries Will Deflect Surfaces Upward

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)
1	20.00	24.00	40.00	10.00
2	40.00	10.00	153.00	50.00
3	153.00	50.00	210.00	70.00
4	210.00	70.00	316.00	120.00
5	316.00	120.00	389.00	140.00

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

10 Surfaces Initiate From Each Of 10 Points Equally Spaced
Along The Ground Surface Between X = 25.00 ft.
and X = 100.00 ft.

Each Surface Terminates Between X = 200.00 ft.
and X = 380.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00 ft.

10.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 35 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	33.33	32.22
2	42.56	36.07
3	51.79	39.93
4	61.01	43.80
5	70.23	47.68
6	79.44	51.57
7	88.65	55.47
8	97.85	59.37
9	107.05	63.29
10	116.25	67.22
11	125.45	71.15
12	134.64	75.09
13	143.82	79.05
14	153.00	83.01
15	162.18	86.98
16	171.35	90.96
17	180.52	94.95
18	189.69	98.95
19	198.85	102.96
20	208.01	106.97
21	217.16	111.00
22	226.31	115.03
23	235.46	119.08
24	244.60	123.13
25	253.74	127.20
26	262.87	131.27
27	272.00	135.35
28	281.12	139.44
29	290.25	143.54
30	299.36	147.65
31	308.48	151.76
32	317.58	155.89
33	326.69	160.03
34	335.79	164.17
35	336.48	164.49

*** 1.455 ***

Failure Surface Specified By 35 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	33.33	32.22
2	42.58	36.03
3	51.82	39.85
4	61.06	43.69
5	70.29	47.53

6	79.52	51.39
7	88.74	55.26
8	97.95	59.13
9	107.17	63.03
10	116.37	66.93
11	125.57	70.84
12	134.77	74.77
13	143.96	78.71
14	153.15	82.66
15	162.33	86.62
16	171.51	90.59
17	180.68	94.57
18	189.85	98.57
19	199.01	102.58
20	208.17	106.60
21	217.32	110.63
22	226.47	114.67
23	235.61	118.72
24	244.74	122.79
25	253.88	126.87
26	263.00	130.95
27	272.12	135.05
28	281.24	139.16
29	290.35	143.29
30	299.45	147.42
31	308.55	151.57
32	317.65	155.73
33	326.74	159.89
34	335.82	164.08
35	336.93	164.59

*** 1.461 ***

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	33.33	32.22
2	42.77	35.53
3	52.19	38.88
4	61.60	42.27
5	70.99	45.71
6	80.36	49.19
7	89.72	52.72
8	99.06	56.29
9	108.38	59.91
10	117.69	63.57
11	126.98	67.28
12	136.25	71.03
13	145.50	74.82
14	154.73	78.66
15	163.95	82.55
16	173.15	86.47
17	182.32	90.44
18	191.48	94.46
19	200.62	98.52
20	209.74	102.62
21	218.84	106.76

22	227.92	110.95
23	236.98	115.18
24	246.02	119.46
25	255.04	123.78
26	264.04	128.14
27	273.02	132.54
28	281.98	136.99
29	290.91	141.48
30	299.83	146.01
31	308.72	150.58
32	317.59	155.20
33	326.44	159.86
34	334.19	163.99

*** 1.499 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.00	75.83
2	109.92	77.10
3	119.82	78.54
4	129.68	80.17
5	139.52	81.98
6	149.32	83.97
7	159.08	86.14
8	168.80	88.48
9	178.48	91.01
10	188.10	93.71
11	197.68	96.59
12	207.20	99.64
13	216.67	102.87
14	226.07	106.27
15	235.41	109.84
16	244.69	113.58
17	253.89	117.49
18	263.02	121.57
19	272.07	125.82
20	281.05	130.23
21	289.94	134.81
22	298.74	139.55
23	307.46	144.44
24	316.09	149.50
25	324.62	154.72
26	333.06	160.09
27	341.28	165.54

*** 1.503 ***

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	25.00	26.50
2	34.91	27.85
3	44.79	29.40
4	54.63	31.16
5	64.44	33.12
6	74.20	35.27
7	83.92	37.63
8	93.59	40.18
9	103.20	42.93
10	112.76	45.88
11	122.25	49.02
12	131.68	52.36
13	141.04	55.89
14	150.32	59.60
15	159.53	63.51
16	168.65	67.61
17	177.69	71.89
18	186.63	76.35
19	195.49	81.00
20	204.25	85.83
21	212.90	90.83
22	221.46	96.01
23	229.90	101.37
24	238.24	106.90
25	246.46	112.59
26	254.56	118.46
27	262.54	124.48
28	270.39	130.67
29	278.12	137.02
30	285.71	143.53
31	293.17	150.19
32	294.45	151.38

*** 1.505 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	25.00	26.50
2	34.95	27.49
3	44.88	28.72
4	54.77	30.19
5	64.62	31.90
6	74.43	33.84
7	84.19	36.01
8	93.90	38.42
9	103.54	41.06
10	113.12	43.93
11	122.63	47.02
12	132.06	50.35
13	141.41	53.90
14	150.67	57.67
15	159.84	61.67
16	168.91	65.88
17	177.87	70.31
18	186.73	74.95

19	195.48	79.80
20	204.10	84.86
21	212.60	90.13
22	220.97	95.59
23	229.21	101.26
24	237.32	107.12
25	245.27	113.18
26	253.09	119.42
27	260.75	125.85
28	268.25	132.46
29	275.59	139.25
30	282.77	146.21
31	283.57	147.03

*** 1.523 ***

Failure Surface Specified By 39 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	25.00	26.50
2	34.46	29.74
3	43.91	33.02
4	53.34	36.33
5	62.77	39.68
6	72.18	43.06
7	81.58	46.47
8	90.96	49.92
9	100.34	53.40
10	109.70	56.92
11	119.05	60.47
12	128.39	64.05
13	137.71	67.67
14	147.02	71.32
15	156.32	75.00
16	165.60	78.72
17	174.87	82.47
18	184.13	86.25
19	193.37	90.07
20	202.60	93.92
21	211.81	97.80
22	221.01	101.72
23	230.20	105.67
24	239.37	109.65
25	248.53	113.67
26	257.67	117.72
27	266.80	121.80
28	275.92	125.91
29	285.02	130.06
30	294.10	134.24
31	303.17	138.46
32	312.22	142.70
33	321.26	146.98
34	330.29	151.29
35	339.29	155.63
36	348.28	160.01
37	357.26	164.42
38	366.22	168.86

39	373.86	172.68

*** 1.525 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	33.33	32.22
2	43.07	34.52
3	52.76	36.96
4	62.42	39.55
5	72.04	42.28
6	81.62	45.16
7	91.15	48.19
8	100.63	51.36
9	110.07	54.67
10	119.45	58.13
11	128.78	61.73
12	138.06	65.47
13	147.27	69.35
14	156.43	73.37
15	165.52	77.53
16	174.55	81.83
17	183.51	86.26
18	192.41	90.83
19	201.23	95.54
20	209.99	100.38
21	218.66	105.35
22	227.26	110.45
23	235.79	115.68
24	244.23	121.04
25	252.59	126.53
26	260.86	132.14
27	269.05	137.88
28	277.15	143.74
29	279.22	145.29

*** 1.561 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	25.00	26.50
2	35.00	26.35
3	45.00	26.54
4	54.98	27.08
5	64.94	27.96
6	74.87	29.19
7	84.74	30.76
8	94.56	32.67
9	104.30	34.93

10	113.96	37.51
11	123.53	40.43
12	132.98	43.69
13	142.32	47.26
14	151.53	51.16
15	160.60	55.38
16	169.51	59.90
17	178.27	64.73
18	186.85	69.87
19	195.25	75.30
20	203.46	81.01
21	211.46	87.01
22	219.25	93.28
23	226.82	99.81
24	234.16	106.61
25	241.25	113.65
26	248.10	120.94
27	254.69	128.46
28	261.02	136.20
29	262.52	138.17

*** 1.604 ***

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	33.33	32.22
2	43.28	33.29
3	53.19	34.60
4	63.07	36.17
5	72.90	37.99
6	82.68	40.06
7	92.41	42.37
8	102.08	44.94
9	111.67	47.75
10	121.20	50.80
11	130.64	54.10
12	139.99	57.63
13	149.25	61.40
14	158.42	65.41
15	167.47	69.65
16	176.42	74.11
17	185.25	78.81
18	193.96	83.73
19	202.54	88.86
20	210.98	94.22
21	219.29	99.79
22	227.45	105.56
23	235.46	111.55
24	243.32	117.73
25	251.02	124.12
26	258.55	130.70
27	265.91	137.47
28	270.31	141.72

*** 1.612 ***

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           Y            A     X     I     S            F     T

           0.00     48.63     97.25    145.88    194.50    243.13
X      0.00 +---------+---------+---------+---------+---------+
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            -   **
            -    5
            -    **1
            - L  *.**.
      48.63 +    95 *. *
            -    .578 ...
            -    .9571..*.
            -     95031...
            -     965831...
            -      ..071....
A     97.25 +     .95..71.. 4
            -      965..31..
            -      .95087.1.*
            -       9.5.73.14
            -        965.73.4
            -        ..50871.*
X    145.88 +         9..08314
            -         L95..*3**
            -          9.5..731*
            -          .9.5...31
            -           .965.7.21
            -            .965.741
I    194.50 +             .965.34*
            -             ...65731.
            -             L...9*431*
            -              ....95431.
            -               .. ..5431*
            -                .....541..
S    243.13 +                 .....401..
            -                  ....7431.
            -                   ....74519
            -                    ....7358*
            -                     ....43168
            -                     . ...4315.
     291.75 +                      . ...4215
            -                       ....741..
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            -                        L...*.41*
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F    340.38 +                             ..7.1
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T    389.00 +                            L  *   *
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APPENDIX E

SANTA CLARA COUNTY PLANING LETTER

JUNE 11, 2003

County of Santa Clara

Environmental Resources Agency
Planning Office

County Government Center, East Wing, 7th Floor
70 West Hedding Street
San Jose, California 95110-1705
(408) 299-5770 FAX (408) 288-9198
www.sccplanning.org

June 11, 2003

Mr. Manny Bagnas
10692 Carver Drive
Cupertino, CA 95014

FILE NUMBER:	8224 - 20 - 52 - 03BA - 03G & 8580 - 20 - 52 - 03BA -)3G
SUBJECT:	Building Site Approvals with Architectural Review & Grading
SITE LOCATION:	Ambrose Road
DATE RECEIVED:	5/12/2003

Dear Mr. Bagnas:

This letter is written to inform you that your application as submitted on the above referenced date, is incomplete. In order to complete this application, you must submit the following information and an application for the re-submittal to the County Planning Office counter:

Planning Office
The proposed grading does not conform with the grading findings outlined in Section C12-427 of the County Grading Ordinance. Specifically, staff cannot find that the design, scope and location of the grading is appropriate for the use and causes minimum disturbance to the terrain and natural features of the land based on the submitted grading plan. As detailed on the submitted site plan, the average slope of the "developable area" of Parcel A is 63.7% and Parcel B is 54%. As stated in the submitted environmental information form, the project includes grading for an access road that is within 50 feet of a stream and includes installation of retaining walls up to 21.5 ft. The submitted plans detail the proposed access in nonconformance with Fire Marshal and Land Development Engineering standards. The submitted grading plan details a 15% grade for more than 300 feet for the proposed access road through the adjacent APN 517-37-003 (i.e. Parcel 1). Submitted correspondence from your applicant details that "there is simply no other feasible roadway alignment through Parcel 1." The submitted plans also detail a 40 X 48 turnaround; in lieu of providing a turn with an inside turning radius of at least 42 ft. The on-site access, as proposed, will result in delayed emergency response times and is a significant impact with respect to Health & Safety.

1. Submit 10 copies of a revised plan set which shows the relocation of the proposed residences closer to Ambrose Road which will reduce the length of the driveway, amount of grading and length of retaining walls.

2. Revised plan set must detail cut and fill quantities and maximum depths. Note: The submitted environmental information form and preliminary grading plans either show "n/a" or "xxxxx" where this information should be detailed.

3. Submit 2 copies of revised elevations clearly depicting final grade to determine conformance with height requirement of 35 ft.

4. Submit 3 copies of a tree removal plan detailing the species and size of trees to be removed.

Planning Office/Development Review
Contact Amber Grady at (408) 299-5779 for information regarding the following item(s)

5. Revised plan set must clearly show the location of the creek that is transvered by the access road, including delineation of top of the bank. Clearly note type of work occurring along the road. Please provide a description of the work that is proposed on the existing road and bridge.

6. Submit 3 copies of a biological assessment that includes a) the existing habitat and wildlife species on the project site and within the vicinity; b) location and nature of the riparian corridor and any on-site wetlands under US Army Corp of Engineers jurisdiction; c) expected impacts to any special status species or habitat, the riparian corridor and wetlands, and d) recommended mitigation measures to reduce possible significant impact to a less than significant level. A Biological consultant list in enclosed for our review.

7. The proposed project has the possibility of containing unrecorded archaeological sites. Submit 3 copies of an archaeological study. A consultant list is enclosed for your review.

Land Development Engineering
Contact Jim Sirr at (408) 299-5736 for information regarding the following item(s).

8. Revised plan set (as requested in resubmittal item #1) must show the following:
   a) Proposed access revised to limit grades in excess of 15% for more than 300 feet.
   b) On-site access that is drive-able in a forward direction and is in conformance with the inside turning radius requirement of 42-ft. Note: A 40 X 48 turnaround in lieu of satisfying the 42 ft. inside turning radius requirement is unacceptable.
   c) Height of retaining walls reduced while at the same time satisfying minimum access requirements (see 5a & 5b above).

9. In correspondence received from your representative, TS Civil, dated May 9, 2003, there is a request to grade the property to allow access to perform required studies and tests (percolation testing, etc.) prior to obtaining a grading permit. There is no exemption in the grading ordinance that would allow for this type of grading. The proposed grading does not meet the basic requirements which must be met before any exemptions can apply.

Department of Environmental Health
Contact Gwen Sax at (408) 299-5748 for information regarding the following item(s).

9. Revised plan set must include a site plan to scale (1" = 20') and show house, driveway, accessory structures, septic tank and required drainlines to contour. In order to prepare the plans the following must be included/completed:

For APN 517-37-003 (i.e. File 8580)
a) Test borings/excavations and percolation studies are necessary to provide reasonable assurance of satisfactory septic system operation, to determine depth to bedrock and/or groundwater and to determine the length of drainfield required. Contact Ross Kakinami at 918-3479. The size of the required septic system will be based upon the results of the soil analyses and the size of the proposed house. *Note: Proposed leachfield area is above the proposed area to be graded. Area to be used as a leachfield must be determined prior to the approval of a grading permit.*
b) Provide topographic lines for the entire parcel. No topographic lines included in the proposed leachfield area
c) Provide three copies of a geotechnical report prepared by a state registered civil engineer, state certified engineering geologist or state registered environmental health specialist WHICH DEMONSTRATES that use of a subsurface sewage disposal system will not permit sewage effluent to surface, will not degrade water quality, create a nuisance or affect soil stability. The report must address the specific engineered septic system plan. This report is required where drainfields are proposed to be installed on slopes exceeding 20%. Note: One copy will be designated for referral to the Santa Clara Valley Water District.
Note: Slope appears to be in excess of 40%. Maximum slope on which a septic system can be developed is 50% or less.

For APN 517-37-001 (i.e. File 8224)
a) Test borings/excavations and percolation studies are necessary to provide reasonable assurance of satisfactory septic system operation, to determine depth to bedrock and/or groundwater and to determine the length of drainfield required. Contact Ross Kakinami at 918-3479. Note: The size of the required septic system will be based upon the results of the soil analyses and the size of the proposed house. *Portions of the proposed leachfield appear to be on slopes exceeding 50%. Maximum slope approved is 50% or less.*
b) Provide topographic lines for all the parcel. A portion of the proposed leachfield area does not contain topographic lines.
c) Provide three copies of a geotechnical report prepared by a state registered civil engineer, state certified engineering geologist or state registered environmental health specialist WHICH DEMONSTRATES that use of a subsurface sewage disposal system will not permit sewage effluent to surface, will not degrade water quality, create a nuisance or affect soil stability. The report must address the specific engineered septic system plan. This report is required where drainfields are proposed to be installed on slopes exceeding 20%. Note: One copy will be designated for referral to the Santa Clara Valley Water District.

10. Please note that the siting of the well is dependent upon the ultimate location of the septic system.

Fire Marshal
Contact Vincent Fung at (408) 299-5763 for information regarding the following item(s).
9. Contact the Fire Marshal's Office directly for their comments.

Geology
Contact Jim Baker at (408) 299-5774 for information regarding the following item(s).
10. E2C's report is letter-type reconnaissance (even though the "in-depth" review fee was charged) and does not provide sufficient geologic data to deem the application complete. Specifically, the report describes several "slump type failures" but does not provide a site geologic map or cross-sections. The report states that "slope stability requires an in-depth investigation, which can be part of the site geotechnical investigation, including earthquake-induced potential." However, such information is fundamental to evaluating the appropriateness of the proposed site improvements (particularly grading and walls for driveway access) and must be provided prior to deeming the application complete.

If the requested information is not submitted within 180 days, you will be required to pay a fee of 10 percent of the current application fee at the time the requested information is submitted. Any resubmittal after 1 year will be processed as a new application, subject to new fees and requirements. PARTIAL RESUBMITTALS WILL NOT BE PROCESSED. The fees required at the time of resubmittal will be in accordance with the most recently adopted Board of Supervisors fee schedule. Please note that the following types of applications have been charged a minimum fee and will be charged additional fees to continue processing when the initial payment is exhausted - Architecture and Site Approval, Environmental Assessment, Environmental Impact Report, General Plan Amendment, Subdivision, Cluster Subdivision, Use Permit, and Zone Change.

Based on these comments and the complexity of the project, I suggest we meet before you revise your plans, so that the issues and concerns can be fully discussed with you. Please call me and I will schedule a meeting between you and other staff to provide you with some direction about the project.

If you have any additional questions regarding this matter, please feel free to call me at (408) 299- 5781 to discuss by telephone or to schedule an appointment to do so. YOU MUST MAKE AN APPOINTMENT TO RESUBMIT THIS APPLICATION

Sincerely,

Carmela Campbell, ASA Secretary

Enclosure(s)

cc: Jim Baker, County Geologist; Gwen Sax, DEH; Vincent Fung, FMO; Amber Grady, Development Review; Jim Sirr, LDE; TS Civil

2-11-2005

8580-03BA-03G