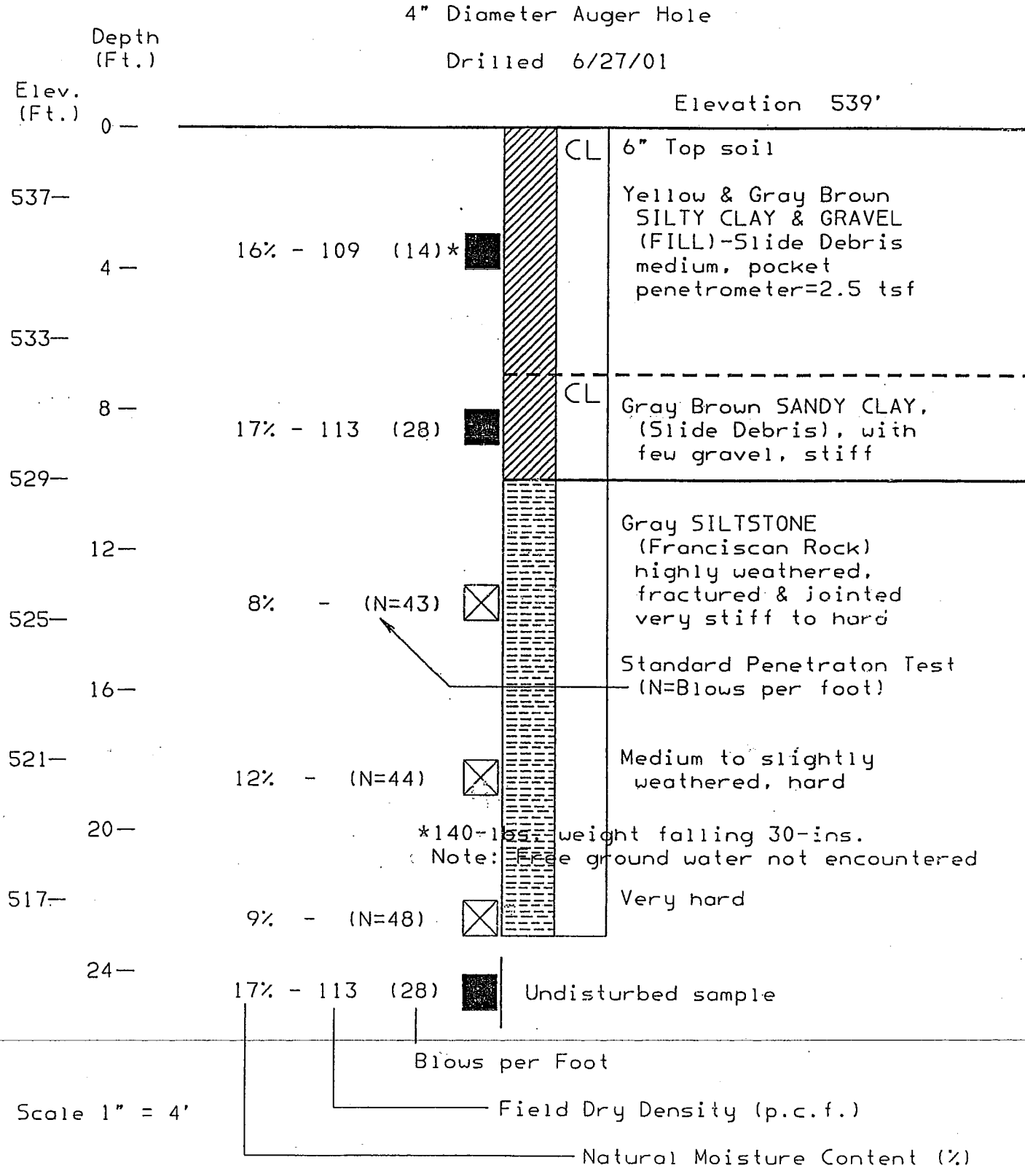
APPENDIX C

DATA FROM SELECTED REPORTS

Logs for Borings 11 through 13 (Geotechnical Engineering, Inc., 2001)
Logs for Test Pits 14 and 15 (Geotechnical Engineering, Inc., 2001)

BORING 11



LOG OF BORING

GEOTECHNICAL ENGINEERING, INC.
PLATE 10

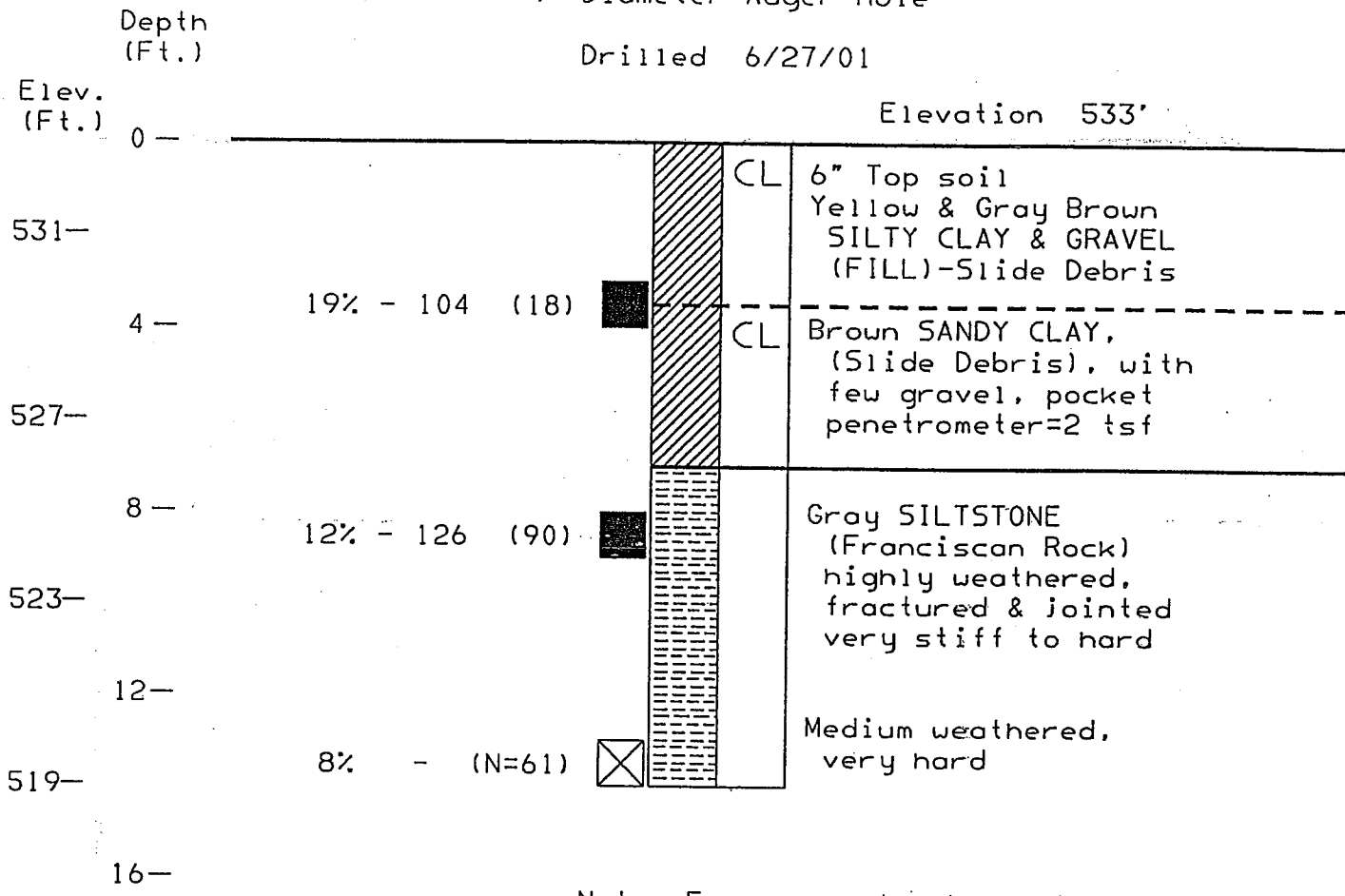
000234

BORING 12

4" Diameter Auger Hole

Drilled 6/27/01

Elevation 533'



Note: Free ground water not encountered

LOG OF BORING

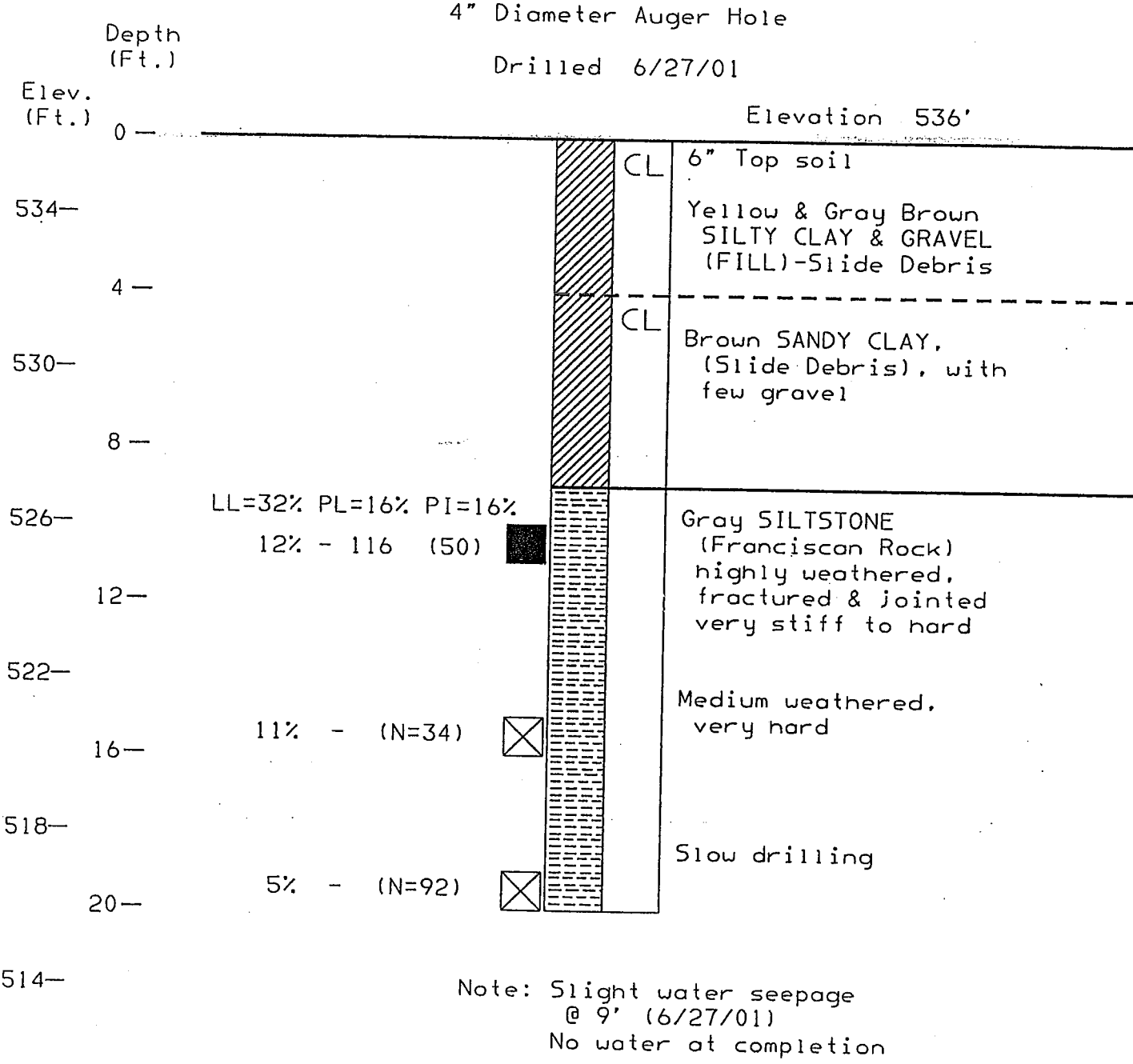
Scale 1" = 4'

GEOTECHNICAL ENGINEERING, INC.
PLATE 11

BORING 13

4" Diameter Auger Hole

Drilled 6/27/01

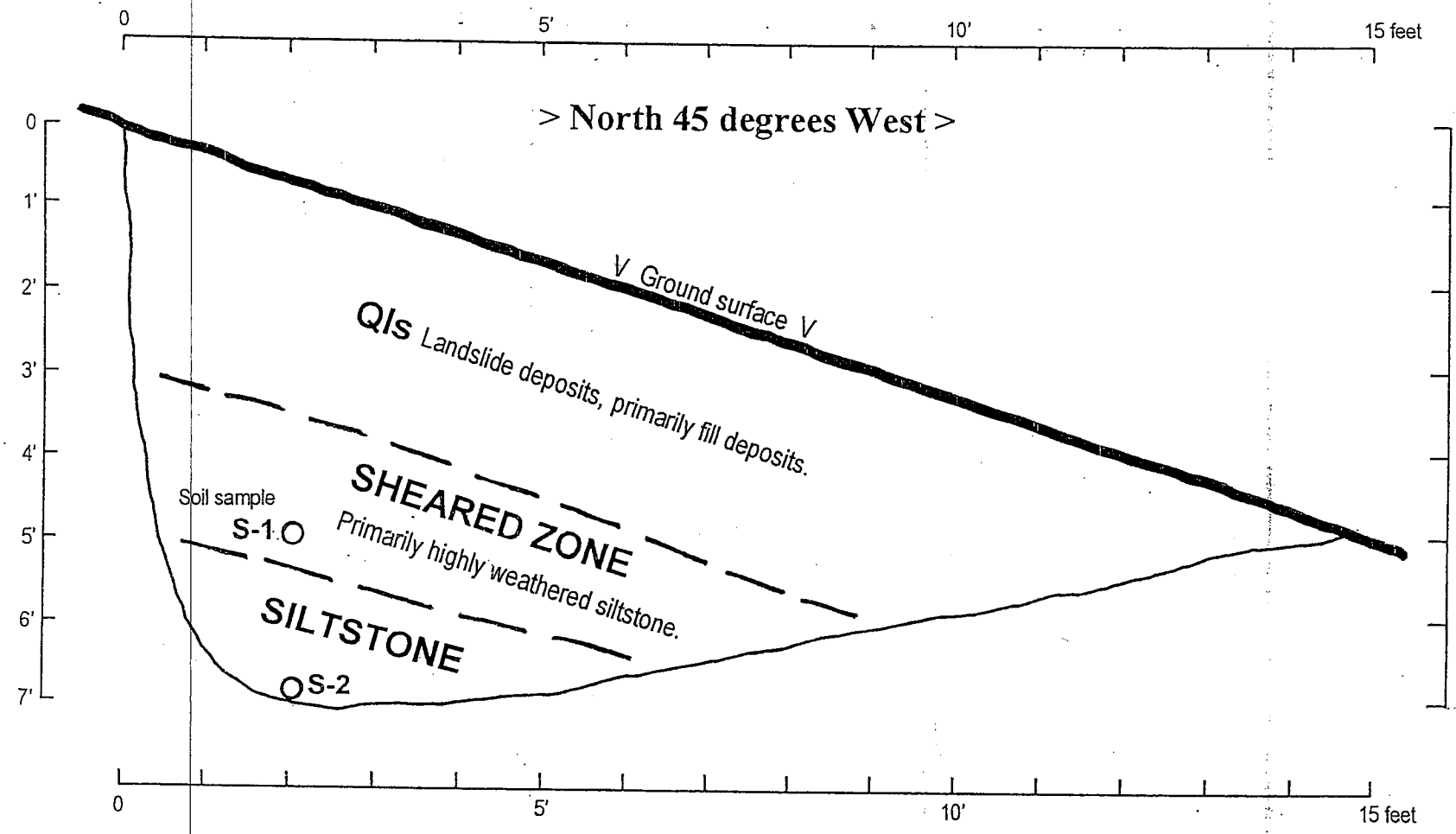


Note: Slight water seepage @ 9' (6/27/01)
No water at completion

LOG OF BORING

Scale 1" = 4'

GEOTECHNICAL ENGINEERING, INC.
PLATE 12



000237

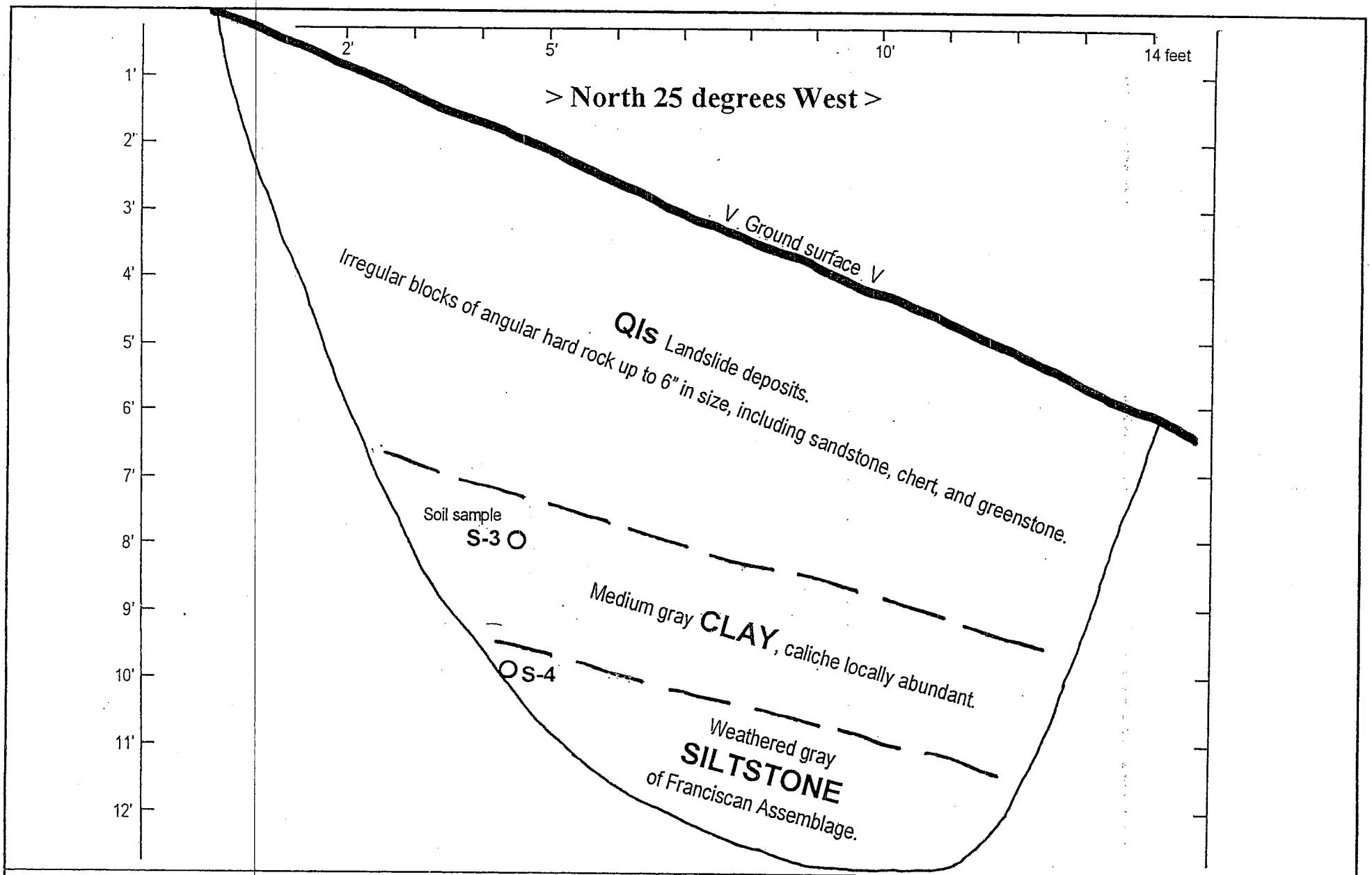
Test pit dug on July 12, 2001
by Geotechnical Engineering, Incorporated,
Fremont, California.

Geotechnical
Engineering, Inc.

EHTESHAMI PROPERTY
21 Estrada Place,
Redwood cCty, San Mateo County, California.

Figure 6

LOG OF TEST PIT 14



Test pit dug on July 12, 2001
by Geotechnical Engineering, Incorporated,
Fremont, California.

Geotechnical
Engineering, Inc.

EHTESHAMI PROPERTY
21 Estrada Place,
Redwood cCty, San Mateo County, California.

Figure 7

LOG OF TEST PIT 15

000238

County of San Mateo

Planning & Building Department

Geotechnical Review Sheet

DEVELOPER/OWNER Babak Ehteshami
SITE LOCATION 25 Estrada Place
APN NO. 051-022-030
GEOLOGIST
SOILS ENGINEER Romig Engineers

FILE NO. 11G-190
SHEET 1 OF 3

REVIEW OF:

( ) BUILDING NO. PLN2005-00603 (Grading)
( ) GEOLOGIC REPORT DATED
(X) SOILS REPORT DATED 3-18-08, No. 2060-1
( ) OTHER

(x) PLANS
(x) DEVELOPER/OWNER
(x) GEOLOGIST
(x) SOILS ENGINEER
(x) BUILDING PERMITS
(x) DPW

ACTION:

( ) REPORTS APPROVED SUBJECT TO CONDITIONS BELOW:
(X) BEFORE APPROVAL THE FOLLOWING INFORMATION IS REQUIRED: (from Geotech Consultant)
( ) PLANS AND REPORTS NOT APPROVED FOR REASONS BELOW:

REVIEW:

1. As requested by the Environmental Health Department, please submit a copy of the Geotechnical drilling permit or the annual Geotechnical notification form for this site.

2. The plans must reflect all recommendations presented in the report, including drainage, stitch pier retaining walls, etc.

3. It is noted that a building permit will be needed for the proposed stitch pier retaining walls. This permit must be issued prior to the issuance of the grading permit. Additional review comments relative to the building permit applications may be made at that time.

4. The report indicates that the factor of safety against sliding after the stitch pier stabilization retaining walls are built will be 1.34. The County policy requires that the static factor of safety must be at least 1.5. Please modify the design to comply with County policy.

000239

5. There is evidence that during the initial grading of this area in the 1950's, vegetation, including large trees, and material from the currently existing cut on Parcel 1 were pushed downhill toward the creek. The report states that this old fill will be removed and reworked as part of the grading of this site, but anecdotal evidence from neighbors puts this debris near the bottom of the slope. Would it not be prudent to investigate the slope at the base of the hill on this site to confirm or deny the presence of deeper, organic-filled fill there? Please discuss and provide additional data as needed.

6. The slope stability analysis and cross-section assume that the existing landslide toes out evenly, without a bulge or deepening of material, in the drainage downhill and off this site. What evidence is there to support this theory? Please discuss.

7. County policy is that leachfields are not allowed to be placed within either fills or landslide deposits. In the event that the County allows the placement of a leachfield in landslide debris between sets of stitch piers, as recommended in the report, what will be the potential for future failure of the slope below the lowest wall? Please take into account that the proposed drainage outfall is located in that area.

8. Please provide a detailed grading plan for this site. This should include cross-sections showing the locations of all proposed retaining and stitch pier walls, keyways, benches, and drains. The proposed location of all elements of the septic system should be included.

9. Please provide a detailed drainage plan of this site. This should include roof gutters, downspouts, surface and subsurface drains (including those associated with retaining walls and keyways), and the location and design of outfalls. This map should also show all elements of the proposed septic system.

10. What is the attitude of the siltstone bedrock on this site? If there are geologic structures, either bedding or pervasive jointing, that lie parallel to the slope, how will this affect the stability of fills or walls placed above it? And how will this affect effluent and moisture from the leach fields and drain outfalls? Please discuss.

Based on the approval of responses to the above, the following will apply:

a.) Approval of the development plans and applicable structural design criteria must be obtained from the geotechnical consultant of record prior to issuance of the building permit as required by Section I of the enclosed "Geotechnical Consultant Approval" form.

b.) Section II must be observed and completed by the Geotechnical Consultant of record prior to acceptance of the completed work by the Geotechnical Section of the Planning and Building Department.

Note: Please include the Geotechnical File Number, 11G-190, in all correspondence with the Geotechnical Section of the Planning and Building Department.

PREPARED BY JLM/JFD DATE May 20, 2008
FMTGEO.REC (2/08)

County of San Mateo

Planning and Building Department

Geotechnical Consultant Approval

County Government Center ▪ 455 County Center, 2nd Floor
Redwood City ▪ CA ▪ 94063 ▪ Mail Drop PLN 122
Phone: 650 ▪ 363 ▪ 4161 Fax: 650 ▪ 363 ▪ 4849

Applicant (Owner): Babek Ehteshami | Geo. File No. 11G-190

Site Address: 25 Estrada Place | APN: 051-022-030

Permit Type: PLN2005-00603 (Grading) | Required by: JLM/JFD Date: 5-20-08

NOTICE TO APPLICANT:
SECTION I of this form must be completed and a copy returned to Geotechnical Section prior to approval of application by the PLanning and Building Department.

SECTION II must be completed and a copy returned to Geotechnical Section prior to final approval of the completed construction by the Planning and Building Department.

IMPORTANT: It is the responsibility of the applicant to ensure that **ALL** geotechnical factors as noted in SECTION 1 have been observed and approved in SECTION II by the applicants' consultant.

FAILURE TO DO SO WILL RESULT IN UNNECESSARY DELAYS PENDING SUCH APPROVAL.

SECTION I Romig Engineers has reviewed the development
(Name of legally qualified geotechnical consultant)

Plans prepared for Ehteshami, 21 Estrada by: MacLeod & Associates

Plan No. 2828-07

Dated: 5-25-07 Revision: _____

and find that such plans are in accordance with the recommendations provided by us or presented in our report(s) No. 2060-1, dated 3-18-08 with respect to geotechnical factors affecting or affected by the proposed site development. These include include but are not limited to: grading (cuts / fills), surface and subsurface water control measures, foundation design criteria, seismic hazard consideration, slope stability, "restricted from building" areas, and _____.

_____
(Geotechnical Consultant)

_____
(Date)

COUNTY APPROVAL

Co. Geol. _____ Date: _____

CC: _____

SECTION II Romig Engineers has observed and approved as
(Name of legally qualified geotechnical consultant)

having been done in accordance with their recommendations all applicable work as noted in SECTION 1.

NOTE:
Grading Report Required: ☑ Yes ☐ No

_____
(Geotechnical Consultant)

_____
(Date)

COUNTY APPROVAL

Co. Geol. _____ Date: _____

CC: _____

000242

TRANSMITTAL SHEET

COUNTY OF SAN MATEO

PLANNING AND BUILDING DEPARTMENT
COUNTY GOVERNMENT CENTER
REDWOOD CITY, CALIFORNIA 94063

TO: Babak Ehteshami
21 Estrada Place
Palomar Park, Ca. 94062

DATE: May 20, 2008

We are forwarding to you via:

ENCLOSURE: X

SEPARATE COVER:
MESSENGER:

DRAWING NUMBER:

RE: Proposed Grading & Retaining Walls
25 Estrada Place

THE FOLLOWING:

Copy of Geotechnical Review Sheet No. 11G-190 for reports for above prepared by Romig Engineers, Job No. 2060-1, dated March 18, 2008.

cc: Romig Engineers
1390 El Camino Real, Second Floor
San Carlos, Ca. 94070

AS REQUESTED BY YOU

FOR YOUR APPROVAL

FOR YOUR INFORMATION X

Very truly yours,

J. L. Mazzetta
J. F. DeMouthe

Geotechnical Section

FRM00031 (2/08)

000243

REPORT

GEOTECHNICAL INVESTIGATION INCLUDING SLOPE STABILITY ANALYSIS AND GEOLOGIC HAZARD ASSESSMENT

Proposed Residence on Parcel 1
21 Estrada Place, Redwood City
San Mateo County, California

Job No. 111490A

October 1, 2001

000244

Attachment J -3

GEI Geotechnical Engineering Inc.

CONSULTANTS IN GEOLOGIC & SOIL ENGINEERING

SUITE B-1 38750 PASEO PADRE PARKWAY FREMONT, CA 94536 TELEPHONE 800-791-SOIL 510-791-0100 FAX 510-791-1705

October 1, 2001
Job No. 111490A

Mr. & Mrs. Babak Ehteshami
21 Estrada Place
Redwood City, CA 94062

Dear Mr. & Mrs. Ehteshami:

Five copies of "**Report – Geotechnical Investigation Including Slope Stability Analysis and Geologic Hazard Assessment, Proposed Residence on Parcel 1, 21 Estrada Place, Redwood City, San Mateo County, California**" are herewith submitted. The work was authorized on June 25, 2001.

Because of the sloping site and presence of a relatively shallow landslide, which extends into the neighboring properties to the north and west, the toe of the landslide should be investigated and delineated prior to any landslide repair. Then, the landslide should be properly repaired, and slope stabilized, in accordance with the recommendations of this report.

Alternately, the landslide may be restrained by construction of a perimeter retaining wall supported on relatively deep, drilled concrete piers, located within 10 feet of the northwest, north, and northeast of the property lines. Once the existing slide is stabilized, the planned residence and any retaining walls should be supported on properly designed and constructed drilled concrete pier and grade beams, as detailed in the text of this report.

Provided that the recommendations contained herein for site preparation, compaction, keyway construction, foundations, retaining walls, drainage (surface and subdrain), slab on grade, inspection and that of the geologic section of this report are properly implemented under the supervision of GEI and continually maintained, the foundations should perform satisfactorily.

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21 Estrada Place, Redwood City
San Mateo County, California

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000246

It has been a pleasure to serve you on this project. Should you have any questions or require additional information, please do not hesitate to call us.

Very truly yours,
Geotechnical Engineering, Inc.

Taghi Manbeian, Ph.D., P.E.
President

Alan S. Boris, GE 155, CE 15796
Geotechnical Engineer

John N. Alt, CEG 1136
Certified Engineering Geologist

REPORT-GEOTECHNICAL INVESTIGATION INCLUDING SLOPE STABILITY ANALYSIS AND GEOLOGIC HAZARD ASSESSMENT

PROPOSED RESIDENCE ON PARCEL 1 21 ESTRATA PLACE, REDWOOD CITY SAN MATEO COUNTY, CALIFORNIA

INTRODUCTION

General

In this report, we present the results of the geotechnical investigation, slope stability analyses, and geologic hazard assessment at the referenced site. The work was authorized by you on June 25, 2001, in accordance with the scope of the Geotechnical Engineering, Inc. (GEI) proposal dated June 22, 2001.

Geotechnical Background

The moderately sloping property, which is located northwest of the Estrada Place cul-de-sac, is a vacant parcel. A site plan showing the locations of the borings and test pits is shown on **figure 2.** A vicinity map is shown on **figure 1.**

Based upon published geologic maps and site observations, an active landslide appears to cross the subject parcel; colluvial soils are underlain by siltstone rocks of the Franciscan formation.

Planned Construction

Based upon the site plans dated 2001 prepared by **Ashrafi Architect,** we understand that a new 2-story residence together with attached garage is planned. The finish floor grades will be 557 and 567 feet; the garage slab will be approximately 548 feet. The overall dimensions of the residence will be about 35 by 85 feet. The overall dimensions of the parcel is approximately 130 by 175 feet.

Purpose and Scope

As was outlined in our proposal dated June 22, 2001, the purposes of the investigation were to:

(1) Perform geologic reconnaissance and landslide hazard evaluation of the parcel,
(2) Explore and evaluate the surface and general subsurface conditions at the site,
(3) Obtain frequent samples for subsequent laboratory testing,
(4) Perform slope stability evaluations of the hillside,
(5) Perform laboratory testing and soil engineering analyses,
(6) Provide appropriate recommendations for earthwork, site preparation, foundations, retaining walls, slope stability, drainage, slabs, and
(7) Summarize the results of the investigation together with appropriate geotechnical recommendations in a report.

Other engineering services such as environmental assessment, structural evaluations of the existing adjacent buildings, design of septic tank, leach field and or their anticipated performance, etc. were not within the scope of this study.

In order to evaluate the subsurface conditions, a program of field explorations was undertaken including 3 borings & 2 test pits together with a geologic reconnaissance. Laboratory testing was carried out on representative samples to provide the basis for engineering analyses. The results of the investigation together with our recommendations are presented as follows.

Geologic Background

Site Description

The subject parcel is located at the northwest end of Estrada Place in the Palomar Park area of Redwood City. The location of the site is shown on Figure 1 which is compiled from the Woodside and Palo Alto U. S. Geological Survey 7 ½ Min. Quadrangles. Parcel 2 of the property has been developed and includes a house and its appurtenant structures.

The subject parcel is presently undeveloped. A site plan with contours is presented on **Figure 2**. A portion of the site has been graded. The grading appears to have been carried out at the time Parcel 2 was developed. The flat area in the upper (northern) portion of the site is underlain by fill. A relatively new access road was graded into the site from the end of Estrada Place. The topographic contours as shown on **Figure 2** pre-date the recent grading and recent land sliding/fill failures as discussed in more detail in following sections of the report.

The lower portion of the site slopes gently to moderately down toward the northwest. Just below the western property line the ground surface slopes moderately to steeply toward a small, unnamed creek. Vegetation on the site consists primarily of native grass. Several large oak trees are present along the western edge of the site. Photographs showing the site are presented on **Figure 9**.

Geologic Setting

Regional geologic mapping by Brabb and Pampeyan (1983) shows the site area as underlain by sandstone and related rock of the Franciscan Assemblage. A portion of the geologic map by Brabb and Pampeyan (1983) that shows the site area is presented on **Figure 4**. The Franciscan rocks range from Jurassic to Cretaceous in age. The sandstone unit includes interbeds of conglomerate, siltstone and shale. Based on the results of the site investigations, the bedrock below the site is a siltstone unit.

A map of hillside materials and description of their engineering character in San Mateo County was prepared by Wentworth and others (1985). A portion of their map, which shows the site area, is presented on **Figure 5**. They show the site area as underlain by sandstone with sheared shale and gouge present locally. The sheared zone includes large blocks of sandstone, shale, conglomerate and other types of Franciscan Assemblage rocks such as chert and greenstone in some locations. The rock is characterized as hard to firm with fracture spacing close to moderate. The permeability is generally low to very

low. Some of the rock and overlying mantle is expansive, especially in areas underlain by sheared shale and gouge material.

Seismic Hazards

There are no faults mapped through or near the site (see **figures 4 and 5**). The site is not located within a State of California Earthquake Fault Zone (previously called Special Studies Zones) as defined and mapped by the California Division of Mines and Geology (CDMG). Therefore, no site specific fault investigations were required or carried out at the subject site during this investigation. Because of the shallow nature of the underlying siltstone at the site, liquefaction is not considered a hazard.

The closest known active fault to the site is the San Andreas fault zone located approximately 2.1 miles (3.4 km) southwest of the site. The distance is measured to the closest surface trace of the fault zone as mapped by CDMG (1974). Segments of the San Andreas fault zone are presumed to be essentially vertical in this area and the shortest distance between the site and the fault plane is the surface distance. A portion of the Earthquake Fault Zone map prepared by CDMG (1974) for the Woodside Quadrangle showing the site and the San Andreas fault zone is shown on **Figure 3.**

The California Division of Mines and Geology (1998) prepared an atlas and tabulation regarding known active fault near-source zones in California and adjacent portions of Nevada. The maps and data are to be used with the 1997 Uniform Building Code. The data show the northern segment of the San Andreas fault is a TYPE A active fault. The slip rate is estimated at 24 mm/yr and the maximum moment magnitude is estimated at 7.9 at a distance of 3.4 km. The soil profile classification for the site is discussed in another section of this report.

The U. S. Geological Survey Working Group on California Earthquake Probabilities (1999) estimated a 21 percent chance of a magnitude 6.7 or greater earthquake before the year 2030 on the peninsula section of the San Andreas fault zone.

Site Investigations

The geologic investigation of the site included a compilation and review of available geologic maps and reports that pertain to the site. Aerial photographs that cover the site were reviewed and interpreted at the photography library of the United States Geological Survey in Menlo Park. A list of the publications, maps and photographs reviewed for this investigation is presented in the References section at the end of the report.

Three borings (identified as Borings 11, 12 and 13) were drilled on the site on June 27, 2001. The locations are shown on **Figure 2** and the boring logs are presented on **Figures 10, 11 and 12.** The borings ranged from 14 to 23 feet in depth and each of them encountered siltstone of the Franciscan Assemblage. Depth to the siltstone ranged from 7 to 10 feet below the ground surface.

Two backhoe test pits were excavated on the site on June 12, 2001. The backhoe pits are identified as Test Pit 14 and Test Pit 15. The test pit locations are shown on **Figure 2** and the logs are presented on **Figures 6 and 7.** The locations of soil samples collected from the test pits are shown on the logs.

Test pit 14 was excavated at the base of the existing head scarp on the site (see **Figure 2** and photographs on **Figure 9**). The pit extended to a depth of approximately 7 feet. **The upper 3 feet consist of disturbed material, which are referred to as land slide deposits. They consist primarily of fill deposits including angular blocks of various Franciscan Assemblage rocks in a matrix sandy to silty clay that have failed since the grading was carried for Parcel 2.** The slide deposits overly approximately 2 feet of clay and silt that appear to be highly weathered siltstone. The weathered material is characterized by numerous shears that dip sub-parallel to the ground surface and is identified as a sheared zone on **Figure 6. The base of this unit appears to be the**

depth of recent landsliding on the site. Beneath the sheared zone is weathered to relatively fresh siltstone of the Franciscan Assemblage.

Test pit 15 was excavated along the lower edge of the property just above the riparian vegetation that extends down to the bed of the creek (location of backhoe on photograph shown on **Figure 9**). **The units exposed in the test pit are similar to those in test pit 14 except that the thickness of the landslide deposits and highly weathered siltstone extend to a depth of over 9 feet.**

A cross-section A-A' was drawn across the site using the data from the borings and the test pits. The cross-section is presented on **Figure 8** and the location shown on **Figure 2**.

Slope Stability of Site

A regional landslide map by Brabb and Pampeyan (1972) does not show any landslides at or near the site. However, because of the scale of the map, only relatively large slides would be shown. A landslide susceptibility map of the site region by Brabb and others (1978) shows the site in Unit II, which is defined as an area with a low susceptibility to landsliding. Small landslides have formed in this unit. A map showing slope stability during earthquakes by Wieczorek and others (1985) includes the Franciscan Sandstone unit underlying the site as areas with a low susceptibility to earthquake induced landsliding.

Stereo-pair, vertical aerial photographs were interpreted at the U. S. Geological Survey library. The oldest photographs of the site area available were taken in 1930 and are black and white with relatively poor contrast. The photos predate any development in the area. **No evidence of large landslides at the site was observed.** There was a possible small landslide about where the site is, although it was poorly defined and if did represent a landslide, the slide would have been old.

The most detailed photographs available for the site are black and white photos taken on June 7, 1973 at a scale of 1:12,000. Development of Estrada Place had occurred by that time and the grading for Parcel 2 above the site had been carried out. The upper (southeast) portion of the site had been filled and the fill was probably primarily from the large cut behind Parcel 2. There had been some slumping and failure of the fill at that time. Color photographs taken on June 26, 1974 at a scale of 1:20,000 did not show any significant changes at the site.

The ground reconnaissance and subsurface exploration of the site for this investigation indicates that there is a shallow landslide on the site. The approximate extent of the landslide on the site is included within the limits of the heavy dashed line shown on **Figure 2. The toe of the landslide appears to extend onto the adjacent properties north and west of the site. The off-site extent of the landslide has not been delineated.**

The depth of the landslide ranges from approximately 5 feet near the head scarp area to approximately 10 feet in the northwest corner of the site. The base of the slide is at the contact between slightly weathered to weathered siltstone and the overlying highly weathered siltstone. **The landslide deposits are unconsolidated and consist of original colluvial material and fill.**

The existing fill on the site is considered unstable, especially in the open face of the head scarp area. Remediation of this area is required prior to development. This is discussed in another section of the report.

Conclusions & Recommendations of Geologic Investigation

The following is an assessment of possible geologic hazards that could affect the residential site:

- According to the geologic reconnaissance, boring and test pit logs and our experience in the site vicinity, the property appears to be **suitable** for construction of a planned residence, provided that the recommendations of this report with respect to landslide repair, foundations, and retaining walls are properly implemented and continually maintained.
- The site is underlain at a relatively shallow depth by siltstone and the Sandstone Unit of the Franciscan Assemblage.
- There are no faults mapped through or near the site and surface faulting is not considered a hazard at the site.
- Bedrock is within 10 feet of the ground surface at the site and liquefaction is not considered to be a hazard at the site.
- Slight seepage was encountered in boring 13 at a depth of 9 feet below existing grade. Ground water was not encountered in any of the other borings or test pits excavated for this investigation. The deepest boring was drilled to a depth of 23 feet below the ground surface, and depth to groundwater is assumed to be below that depth.
- The site is located 3.4 km from the active San Andreas fault zone. The San Andreas fault is considered a Type A fault with an estimated maximum moment magnitude of 7.9.
- The southeast portion of the site is underlain by at least 10 feet of fill. It is unknown whether or not any of the grading at the site was engineered.
- There is no evidence of large landslides impacting the site.
- There is an existing relatively shallow landslide on the site that has very recent movement. The landslide deposits include unconsolidated fill material and original colluvium. The slide plane is within the very highly weathered siltstone. The depth of the landslide ranges from approximately 5 to 10 feet below the ground surface.
- **The toe of the landslide appears to extend onto adjacent properties located to the north and west of the site. The extent of the landslide was not delineated on the adjacent properties. Prior to slope repair, the extent of the landslide toe must be investigated and identified.**
- The cause of the landslide is probably a combination of poor grading practices during the development of Parcel 2 and saturation of the fill and colluvial materials.
- The existing fill in the southeast portion of the site is considered unstable will continue to fail unless retained and/or re-engineered.
- It is important that no water is introduced into the existing landslide.

Note of Caution

Contractors should employ adequate temporary bracing, shoring and other safety measures as may be appropriate to assure safety during building and utility construction at the site. In view of the frequently moderate to large earthquakes in the San Francisco Bay Region earthquakes this note of caution is believed in order.

SOIL ENGINEERING

The results of the field and laboratory testing are described herein. The recommendations for site preparation, compaction, drainage, foundations, and retaining walls are presented below.

Field Explorations

As was stated, subsurface conditions at the site were explored on June 27, and July 12, 2001 by drilling and sampling 3 borings and digging 2 test pits. The borings were drilled from 14 to 23 feet deep using 4-wheel drive auger equipment. Due to the hillside, the test pits were dug using 4-wheel drive back hoe to depths of from 7 to 8 feet. The borings and test pits were located close to the scarp & toe of the slide. To avoid confusion with initial residence borings, the numbers of new borings and test pits begin with no. 11. The boring and test pit logs are presented on figures 6 & 7 & 10 through 12. The overburden soils are classified according to the Unified Soil Classification System.

The field program was directed by our geotechnical engineer and project geologist who maintained continuous logs of the materials encountered, obtained frequent samples, recorded water level and blow count data.

Laboratory Testing

A series of laboratory tests were performed to evaluate the pertinent physical properties of the materials encountered. The laboratory testing

program included moisture content, dry density, Atterberg limits, direct shear and compaction tests.

The moisture-density results and Atterberg limits (Liquid Limit = LL, Plastic Limit = PL, Plasticity Index = PI), are presented on figures 10 through 12. The direct shear test data are summarized on figure 13. The laboratory compaction test data are presented on figure 14.

The laboratory testing was performed in accordance with the procedures of the American Society for Testing and Materials.

SITE CONDITIONS

Surface Conditions

As was previously stated, the moderately sloping property, which is located northwest of the Estrada Place cul-de-sac, is a vacant parcel adjacent to an existing residence. The ground surface elevations range from 510 to over 570 feet.

Subsurface Conditions

Based upon our review of the boring and test pit logs, examination of the samples, experience in the vicinity, and laboratory test data, the subsurface conditions appear to be relatively uniform. Beneath upper fill soils, intermediate strata of sheared clay are underlain by Franciscan siltstone.

From 3 to 6 feet of loose fill soils were encountered in the borings & test pits. These materials appear to have been placed some time ago during site grading.

Beneath the upper fill soils, strata of medium stiff silty clay were encountered in the borings and test pits. The clay strata, which contain an apparent sheared zone (slide plane) are medium plastic (Plasticity Index = 17

percent), and would be somewhat expansive, swelling with increasing moisture contents. The observed blow counts (modified California sampler) were from 18 to 28 blows per foot. The observed pocket penetrometer values were from 2 to 2.5 tons per square foot.

An underlying stratum of weathered but relatively hard siltstone was encountered below from 6 to 10 feet deep in the borings and test pits. The observed Standard Penetration blow counts were from N=34 to 92 blows per foot.

Detailed descriptions of the materials encountered are presented on the test pit and boring logs figures 6 & 7 and 10 through 12. A cross section through the property is shown on figure 8. The cross section shows the GEI interpretation of subsurface conditions at the locations explored, and is not warranted as subsurface conditions at other locations.

Ground Water

Slight seepage was encountered at about 9 feet deep in boring 13. Free water was not observed at the completion of drilling; ground water was not encountered in the other borings and test pits. The water levels are expected to fluctuate depending upon seasonal and climatic conditions.

Seismic Setting

As was stated, the property is located outside a State of California Special Studies Zone (active San Andreas fault). Because of the proximity of the site to the active San Andreas fault, located about 2.1 miles southwest of the property and other active Bay Area faults, depending upon the intensity and magnitude of earthquakes, the structures will probably experience "very strong" shaking during the project life. Therefore, it is recommended that the structures be appropriately reinforced by a structural engineer and at least in accordance with the applicable Seismic Code to resist earthquakes. This however, does not guarantee or insure

that the residence will not sustain structural damage in the event of future earthquakes. Some residences constructed under the provisions of recent building codes suffered significant damage during the October, 1989 earthquake on the San Andreas fault.

Soil Profile Type	Description	Near Source Factor Na	Near Source Factor Nv
Sc	Soft Rock	1.4	1.9

SLOPE STABILITY

General

Various methods of analysis have been used for investigating the stability of slopes. A surface of rupture is assumed for the mass, which tends to slip. Based upon the borings and test its, the probable failure surfaces has been located as shown on **figure 8**, cross section A-A'.

The slope stability analysis for the hillside was performed using computer code **PC STABL5**. It has been recognized that the general problem of slope stability is statically indeterminate. However, it has also been demonstrated that the results obtained using the simplified Janbu method agree well with values calculated using more sophisticated methods, which satisfy all conditions of equilibrium.

As shown on figure 8 and the computer output (attached), the approximate existing slope ratio is up to 2.7 (horizontal) : 1 (vertical). The stability of a 2.7 : 1 slope was analyzed using nominal strength parameters for clay strata of: c=100 pounds per square foot, φ=17°, and γ=127 pounds per cubic foot. The calculated **factors of safety** for such a hillside are from **1.5 to 1.0** depending upon whether or not **earthquake effects** are not included or are included, respectively. Because of limitation in code **PC STABL5** the effects

of reinforcing using concrete pier foundations and a pier-supported retaining wall at the toe of the slide cannot be included in the model.

RECOMMENDATIONS

General

Based upon the results of the field explorations, geologic hazard assessment, laboratory testing, slope stability analyses and engineering analyses, it is our professional opinion that the site would be **suitable** for construction of the planned residence.

- Because of the sloping site and presence of shallow landslide, it is our recommendation that the new house and garage be supported on drilled concrete pier and grade beam foundations. Relatively deep drilled piers should be used.
- The existing landslide should be mitigated either by excavating the landslide debris, constructing a keyway and extending 5 feet into the underlying bedrock, or by construction of a perimeter retaining wall supported on relatively deep drilled concrete piers located within 10 feet of the northwest, north and northeast property lines. If the latter alternative is adopted, the fill should be excavated and compacted.

Recommendations for grading, excavating, compaction, drainage, foundations and retaining walls are presented herein.

SITE PREPARATION

Stripping

All existing vegetation and any debris should be removed from the area of the planned residence prior to construction. At the time of our field explorations, we estimated that a stripping depth of approximately 6 inches

would be appropriate. The actual stripping depth should be determined in the field by the soil engineer at the time of construction.

Note of Caution

Prior to any excavations, any **existing nearby utility lines and buried structures should be clearly marked for safety** and in order to avoid any mishap.

Excavations

Any **temporary** excavations (less than four feet deep), which are constructed **during the dry season,** may be constructed using vertical slopes. Temporary cuts or any excavation deeper than four feet should be sloped back at 0.5 (horizontal) : 1 (vertical) or be properly **shored** for safety.

All permanent cut and fill slopes should be relatively gentle. Provided the drainage and grading recommendations presented herein are properly implemented, we recommend using a slope ratio of **2 (horizontal) : 1 (vertical)** for all permanent cuts and properly compacted fill slopes.

Any excavations for future utility trenches beneath paving areas should be properly backfilled in accordance with the compaction criteria of this report.

Fill Materials

Because the upper on site soils are somewhat expansive, they may be used for engineered fill. Any required imported fill materials used in backfilling should consist of non-expansive soils with a Plasticity Index of less than 15 percent. The suitability of any imported fill materials should be approved by the project soil engineer prior to placing fill.

Subgrade Preparation & Keyway Construction (Landslide Repair)

After the toe of the landslide has been identified at the adjacent properties and after stripping, the exposed subgrade in any fill areas should be

benched so that any fill can be placed and compacted in horizontal lifts, properly keyed at least 5 feet into the underlying undisturbed rock sloping about one percent into the hillside, and properly compacted. A subdrain consisting of 4-inch plastic perforated pipe wrapped in ¾-inch drain rock and filter fabric should be installed in the keyway.

After stripping, the exposed subgrade in all paved areas should be subexcavated at least 2 feet deep, scarified, moisture conditioned to about optimum moisture, and the subgrade should be compacted to at least 85 percent.

All grading, compaction, key ways, excavations, drainage, etc. should be performed under the supervision of GEI to enable proper construction.

Compaction Criteria

Any required fill and backfill in fill areas should be placed in uniform lifts not exceeding 8 inches in loose thickness, conditioned to approximately optimum moisture, and compacted to a dry density of at least 90 percent of the maximum dry density determined using the American Society for Testing and Materials Designation: D1557-78 (modified Proctor) method. The upper 8 inches of fill as well as all required imported fill and base materials beneath paved areas should be compacted to at least 95 percent relative compaction. All required imported fill and base materials beneath paved areas should be compacted to at least 95 percent relative compaction.

Drainage

We recommend that final grades be selected so that a gentle slope is provided to divert all surface water away from the planned residence, slopes and paved areas. The surface water runoff should be securely connected to closed pipes leading to nearby cobble and boulder energy dissipaters. At no time should water be allowed to pond adjacent to foundations, slabs and slopes.

Surface Drain – A lined surface drain (approximately 18 inches wide) should be constructed upslope (south) of the new residence to minimize runoff from flowing over the slopes and into the landslide.

FOUNDATIONS

Drilled Piers-Perimeter Retaining Wall

Only if the landslide is not repaired, then because of the presence of the existing slide, the northwest, north and northeast perimeter of the parcel should be restrained using a pier-supported retaining wall. Relatively deep, drilled concrete pier foundations should be used for this perimeter retaining wall. The piers, which should be properly designed and reinforced by your structural engineer, should be carried at least 15 feet into the underlying rock (at least 21 to 25 feet below existing grade). The drilling contractor should be alerted to the possibility of encountering slow drilling and possibility of water seepage so that he could plan appropriate contingencies. The piers which should be at least 24 inches in diameter, should be carried to appropriate depths depending upon structural loads, spacing, and pier diameter as can be determined by your structural engineer. The structural engineer is also responsible for determining the amount, size and location of the reinforcing.

Drilled Piers for Residence and Any Retaining Walls Beneath Residence

As was previously stated, relatively deep drilled concrete pier and grade beam foundations should be used for the planned residence. The piers, which should be properly designed and reinforced by your structural engineer, should be carried at least 10 feet into the underlying rock (at least 16 to 20 feet below existing grade). The drilling contractor should be alerted to the possibility of encountering slow drilling and water seepage so

that he could plan appropriate contingencies. The piers which should be at least 18 inches in diameter, should be carried to appropriate depths depending upon structural loads, spacing, and pier diameter as can be determined by your structural engineer. The structural engineer is also responsible for determining the amount, size and location of the reinforcing.

Friction (Adhesion) Values

Concrete piers may be designed using an allowable friction or adhesion values of up to 800 pounds per square foot for underlying siltstone rock. The friction of existing soils should be neglected. The recommended unit friction may be increased by one-third for resistance to wind and earthquake loads. **A creep force of 500 pounds per square foot should be applied to the upper 6 feet of piers. An allowable friction value of 500 pounds per square foot may be used to resist uplift.**

Because of the proximity of the site to the nearby active San Andreas fault, all piers should be tied together with grade beams and/or properly designed and constructed tie beams to act together as a unit in resisting lateral loads (UBC 1997, Section 1807.2). The steel should be bent into the grade beams to achieve transfer of moment stresses. We recommend that all exterior grade beams extend at least 8 inches below the final exterior rough grade.

Group Action

We anticipate that pier spacing will exceed three pier diameters. Because of the relatively wide pier spacing, there will be no reduction in pier capacity due to group action. In the event that pier spacing less than recommended herein is considered, we should be contacted in order to provide appropriate reduction in pier capacity.

Settlements

The estimated total and differential settlements of foundations designed as recommended herein are expected to be moderate. We anticipate that the maximum ultimate settlements of the residence designed and constructed according to the recommendations presented herein will be on the order of 1.0 inch. The estimated differential settlement is about 0.5 inch.

Lateral Loads

Lateral forces resulting from wind, seismic and active earth pressures may be resisted by passive earth pressure and by friction between foundation concrete and the supporting subgrade. An allowable coefficient of friction of 0.3 may be used between the concrete and subgrade. For design purposes, the passive pressure of rock may be taken as equal to the pressure developed by a fluid having a density of 400 pounds per cubic foot. The passive pressure of the existing soils should be ignored. The passive pressure may be doubled for use with a pole formula. A combination of both friction and passive pressure may be used provided that one of the values is reduced by 50 percent.

Walls Below Grade

Depending upon the slope of the backfill materials, the criteria for design of walls below grade should include the following to resist active earth pressures.

Slope of Backfill Materials	Active Earth Pressure (Drained Backfill)
Level Backfill (up to 5:1 slope)	40
3:1 (horizontal: vertical) slope	50
2:1 (horizontal: vertical) slope	65

Where surcharge loads may act above walls below grade, an additional pressure, equal to one-third to one-half of the maximum

anticipated surcharge load, should be applied to the surface behind unrestrained walls and restrained walls, respectively. All walls below grade should be properly waterproofed and provisions for positive drainage (weep holes, subdrain, Miradrain, Amerdrain, etc.) should be provided, as appropriate.

In the subdrain trench, which should be at least one foot wide, a continuous minimum 4-inch diameter perforated plastic pipe "bedded" on a minimum of 6 inches of drain rock or a Hydraway Drain 2000 water collection system should be placed at the bottom of the trench. The balance of the trench should be backfilled using ¾-inch drain rock material up to within approximately 12 inches of final grade.

Slabs On Grade

We recommend that any interior slabs on grade should be properly reinforced by No. 4 rebar 18 inches on center, running both ways by your structural engineer and be underlain by a layer of granular base. The base materials should consist of clean, free draining crushed rock or drain rock. After the subgrade has been prepared in accordance with the site preparation recommendations of this report, at least 6 inches of drain rock or properly compacted crushed rock should be placed beneath any slabs. The membrane should be covered in turn with an 8 mil impermeable barrier to prevent condensation beneath interior slabs. The membrane should be covered, in turn, with at least 2 inches of sand for protection during construction. To minimize heave of the clay, the subgrade should be moistened overnight before placing impermeable membrane and pouring concrete. The garage slab should not be connected to foundations.

Inspection

All earthwork, subgrade preparation, construction of any keyway, as well as any foundations, construction of subdrains and compaction in structural and paving areas should be observed,

controlled and approved by GEI to enable proper construction. It is the responsibility of the owner and/or his agents to implement the recommendations in this report. GEI cannot be held responsible for compliance with design recommendations for grading plans, site preparation, and drainage controlled and approved by others.

The contents of this report should be disclosed to the owners – occupants, lender, insurer and any other interested party in the subject property, in accordance with section 10176(a) of the California Business & Professional Code.

Limitations

The recommendations made in this report are based on the assumption that the soil conditions do not deviate appreciably from those disclosed in the borings and test pits. This report does not reflect any variations, which may occur between these borings. The nature and extent of variations between the borings may not become evident until the course of construction. If during construction subsurface conditions different from those encountered in the borings are observed or appear to be present, we should be advised at once so that we can review these conditions and make appropriate changes to our recommendations. To this end, some contingency fund is recommended to accommodate these required additional expenditures to attain a properly constructed project. This report is therefore not to be construed as a guarantee or warranty, nor is it intended for the purpose of establishing a value, nor as an opinion as to the advisability of construction. No reliance on this report shall be made by anyone other than the client's name, which appears on the cover letter to this report.

The conclusions and opinions presented herein were prepared in accordance with generally accepted engineering principles and practices at the time of the investigation. This warranty is in lieu of all other warranties either expressed or implied. In the event that recommendations are made by others,

these are not the responsibility of Geotechnical Engineering, Inc. unless we have been given the opportunity to review and concur in writing.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the works of man, on this and adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control. This report should therefore be reviewed after a period of one year in the light of changes on the site, future planned construction, and the then current applicable codes.

This report has been prepared in order to assist in the project design. In the event of changes in the proposed residence and/or its planned location, the conclusions and recommendations shall not be considered valid unless we have been given an opportunity to review and approve or modify this report in writing.

Very truly yours,
Geotechnical Engineering, Inc.

Taghi Manbeian, Ph.D., P.E.
President

Alan S. Boris, GE 155, CE 15796
Geotechnical Engineer

John N. Alt, CEG 1136
Certified Engineering Geologist

000268

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California Division of Mines & Geology, 1998, "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada" to be used with the 1997 Uniform Building Code, International Conference of Building Officials, Whittier, California.

U.S. Geological Survey, Working Group on California Earthquake Probabilities, 1999, "Earthquake Probabilities in the San Francisco Bay Region: 2000-2030-A Summary of Findings", Open File Report 99-517

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Wieczorek, Wilson, and Harp, 1985, "Map Showing Slope Stability During Earthquakes in San Mateo County, California"

Aerial Photographs: 1930, c1025, 78, 79, 80, Black & White, scale- 1:15.000.
6/7/73, 3567-4-075 & 076, Black & White, scale- 1:20.000.
6/25/74, 9-12-9 & 9-13-9, Color, scale – 1:20.000.

GEI Geotechnical Engineering Inc.

REPORT
GEOTECHNICAL INVESTIGATION
INCLUDING SLOPE STABILITY ANALYSIS
AND GEOLOGIC HAZARD ASSESSMENT

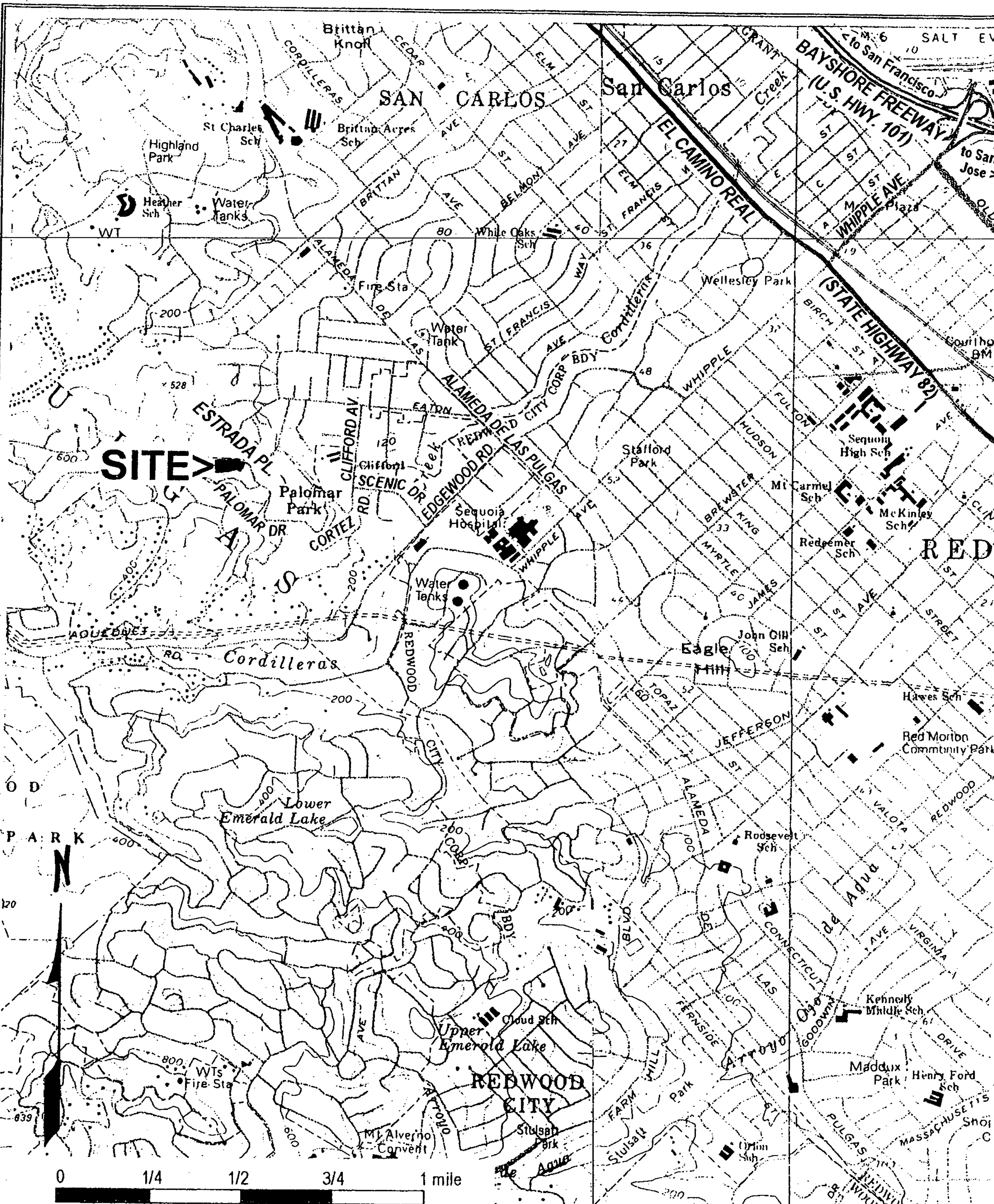
PROPOSED RESIDENCE ON PARCEL 1
21 ESTRADA PLACE, REDWOOD CITY
SAN MATEO COUNTY, CALIFORNIA

FIGURES 1 - 14

JOB NO. 111490A

October 1, 2001

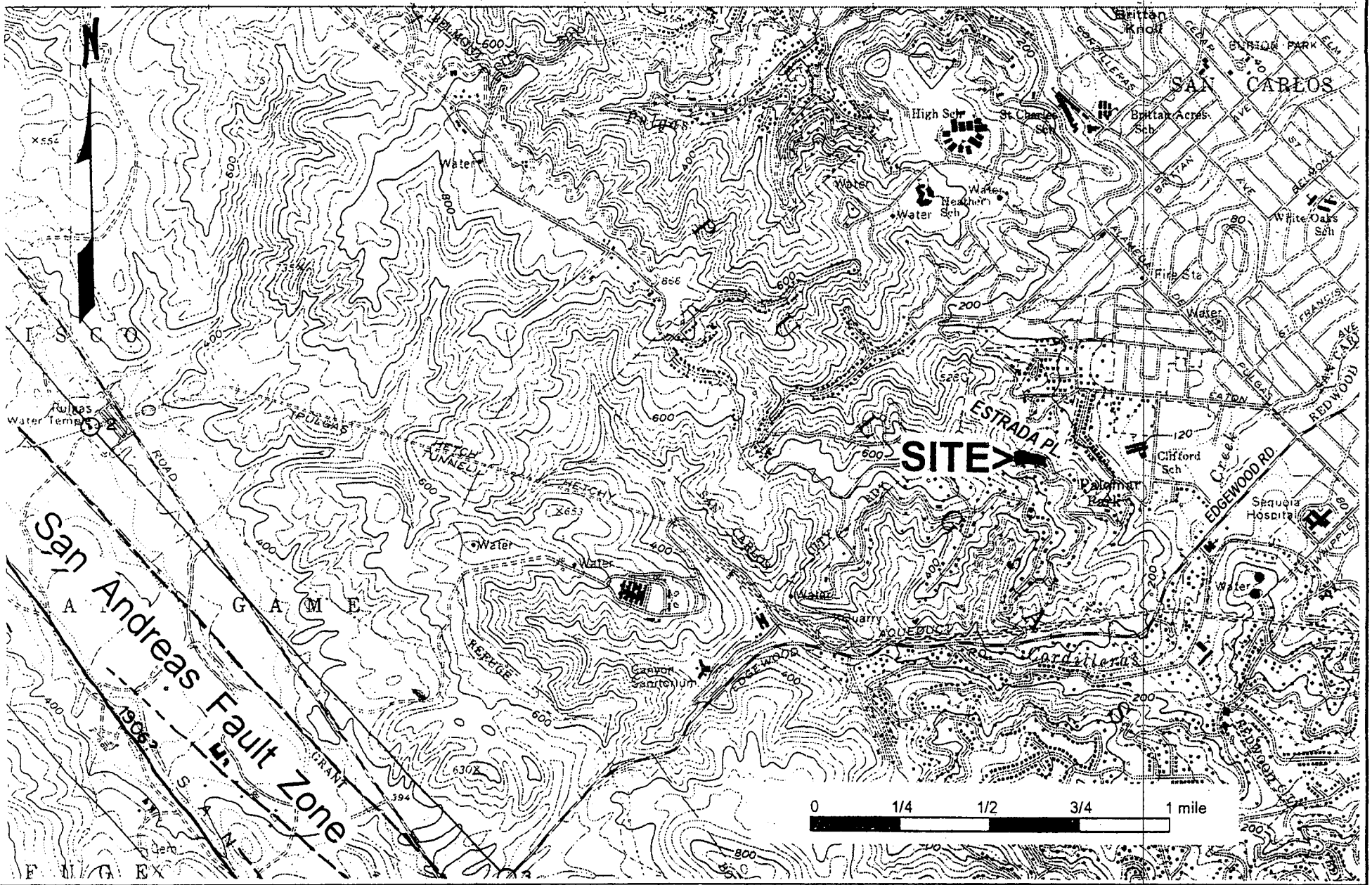
000270



Base map from USGS 7½ minute series Palo Alto and Woodside quadrangles, 1991. Scale: 1 inch = 2,000 feet (1 : 24,000)	Geotechnical Engineering Inc.	**EHTESHAMI PROPERTY,** 21 Estrada Place, Redwood City, San Mateo Co., CA
	Figure 1	

SITE LOCATION MAP

000271



Base map from California Division of Mines and Geology
Special Studies Zones Woodside Quadrangle, 1974.

Scale: 1 inch = 2,000 feet (1 : 24,000)
Contour interval: 40 feet

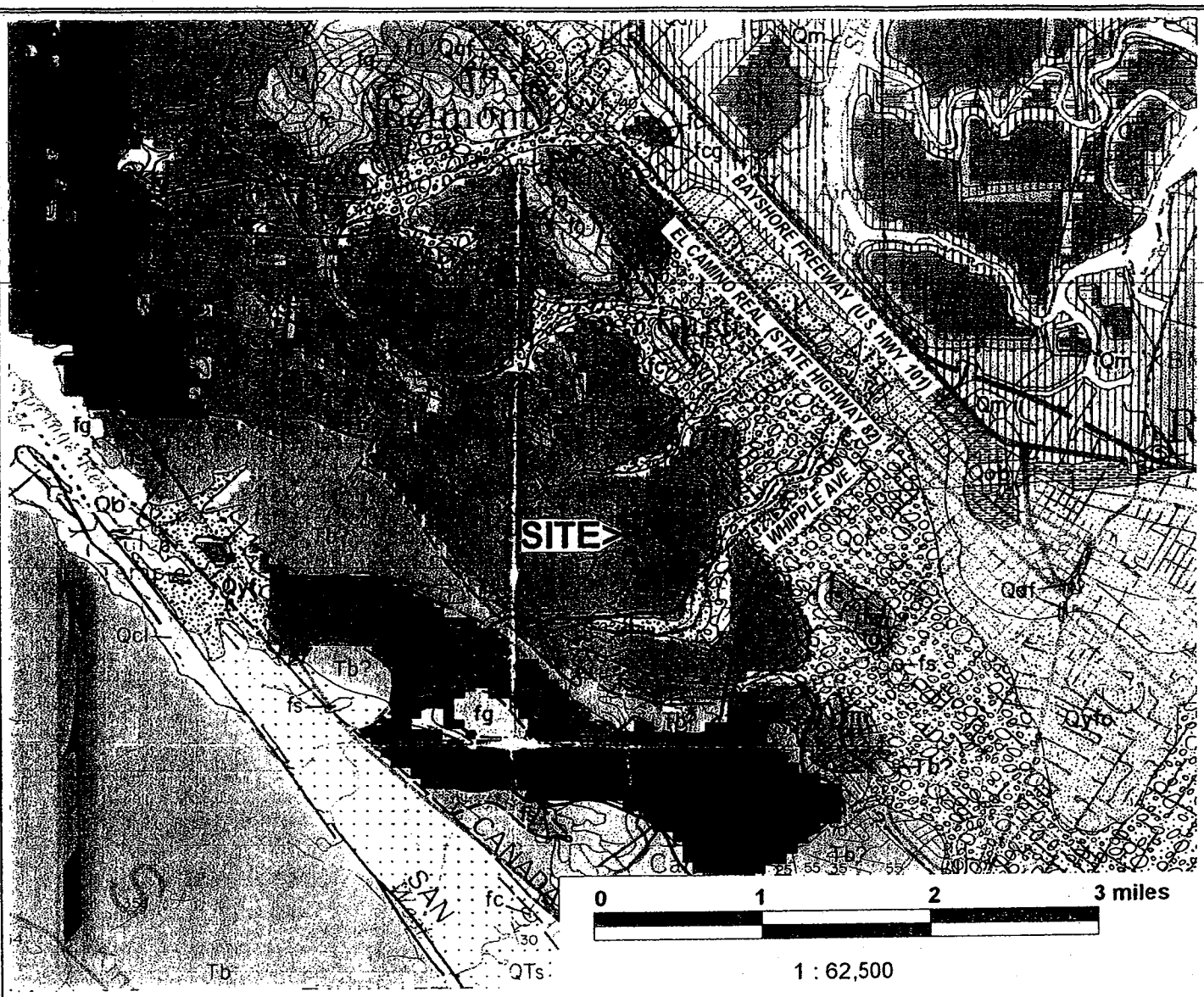
000272

Geotechnical
Engineering, Inc.

EHTESHAMI PROPERTY
21 Estrada Place,
Redwood cCty, San Mateo County, California.

Figure 3

EARTHQUAKE FAULT ZONE MAP



Key to Geologic Units in Site Vicinity

Qyf Younger (inner) alluvial fan deposits – unconsolidated sand, silt, and gravel. (Holocene)

Qof Coarse –grained older alluvial fan and stream terrace deposits. (Pleistocene)

QTs Santa Clara Formation – poorly indurated conglomerate, sandstone, and mudstone. (Pliocene and Pleistocene)

Tb? Butano(?) Sandstone. (middle and lower Eocene)

fs Sandstone – fine- to coarse-grained, with interbedded siltstone and shale. (Jurassic and Cretaceous)

fs Greenstone – altered basaltic rocks. (Jurassic and Cretaceous)

fsr Sheared rock – predominantly graywacke, siltstone, and shale. (Jurassic and Cretaceous)

sp Serpentinite – altered basaltic rocks. (Jurassic and (or) Cretaceous)

—— Fault

– – - dashed where inferred.

····· - dotted where concealed.

000273

Base map from
'Geologic Map of San Mateo County, California',
by Brabb and Pampeyan, 1983.

Scale: 1 inch = ~1 mile (1 : 62,500)

Geotechnical Engineering Inc.

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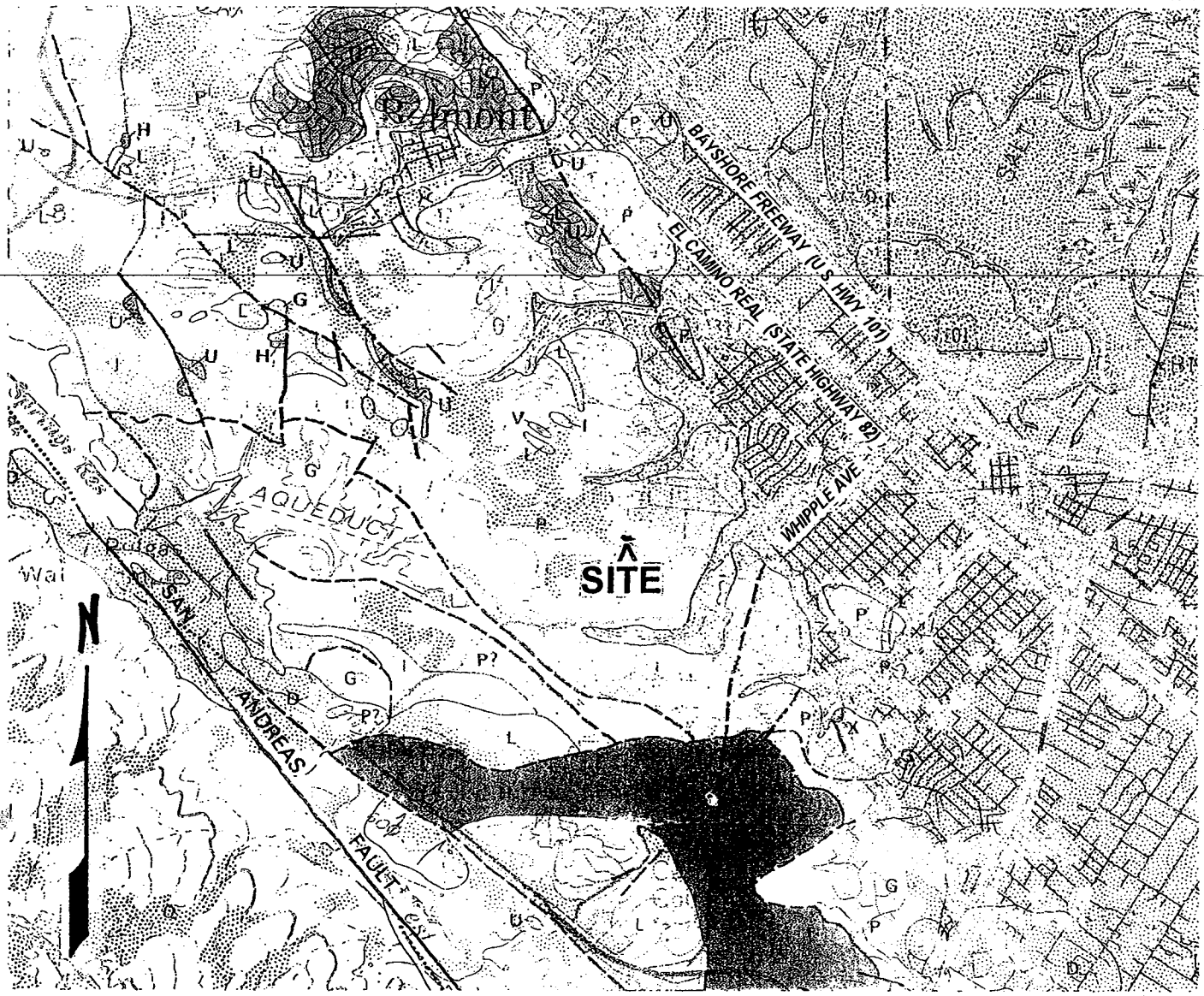
21 Estrada Place,
Redwood City, San Mateo Co., CA

Figure 4

SITE REGION GEOLOGIC MAP



Key to Units in Site Vicinity

0 1 2 3 miles

1 : 62,500

D Conglomerate and sandstone (Santa Clara Formation).

G Sandstone and shale (Butano(?).

H Serpentine with gouge and hard blocks.

I Gouge and sheared shale with hard blocks, and sandstone.

L Basaltic volcanic rock (Greenstone of Franciscan Assemblage).

P Sandstone and some sheared shale and gouge with hard blocks (sandstone and conglomerate of Franciscan Assemblage and undivided Franciscan Assemblage). Hard to firm, fracture spacing close to moderate, permeability largely very low to low, some rock and mantle expansive.

— Fault
– – dashed where approximate
••••• dotted where concealed

000274

Base map from
'Map of Hillside Materials and Description
of Their Engineering Character, San Mateo County, California',
by Wentworth, Ellen, Frizzell, and Schlocker, 1985.

Scale: 1 inch = ~1 mile (1 : 62,500)

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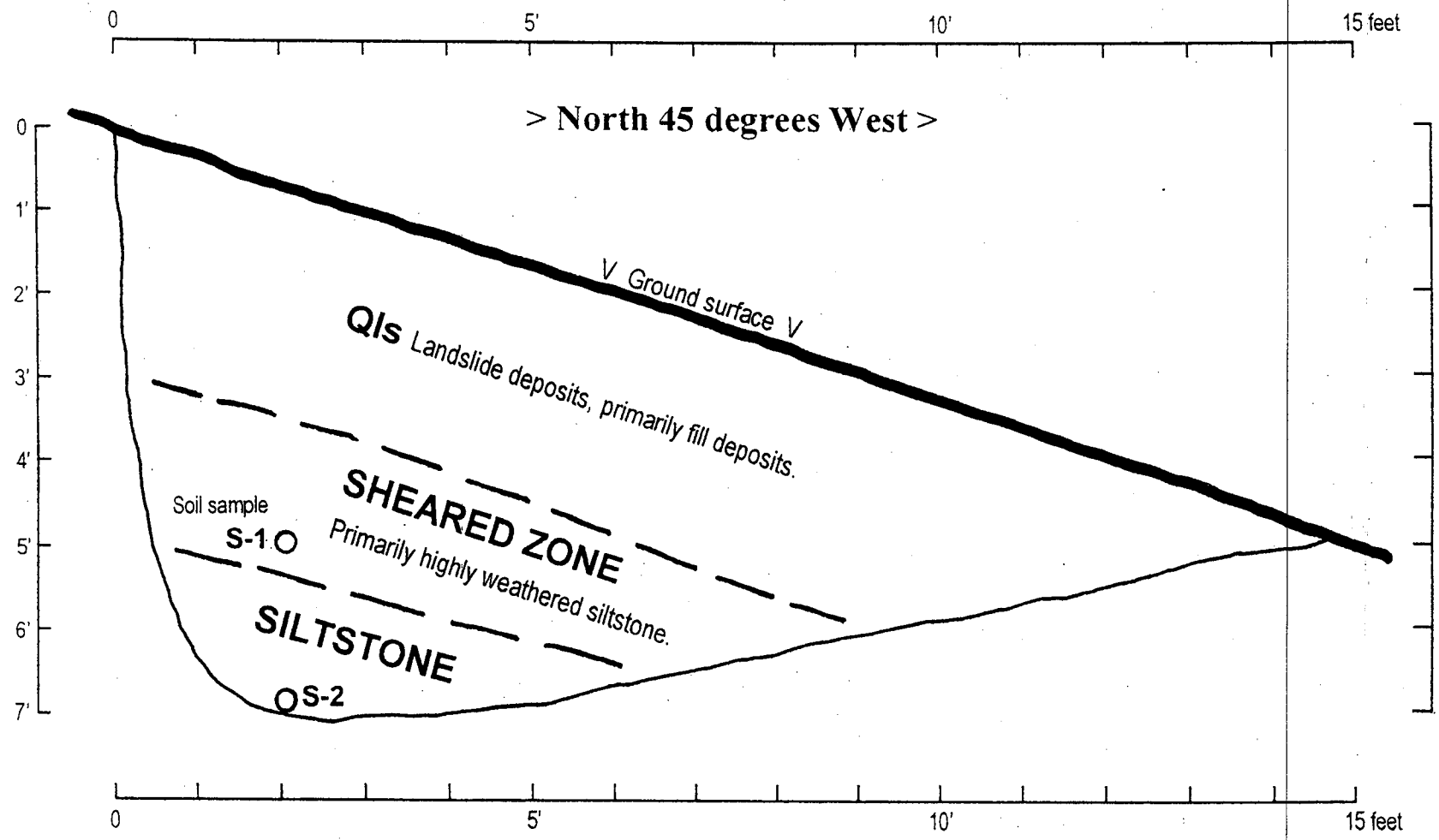
Figure 5

SITE REGION ENGINEERING GEOLOGY MAP



000275

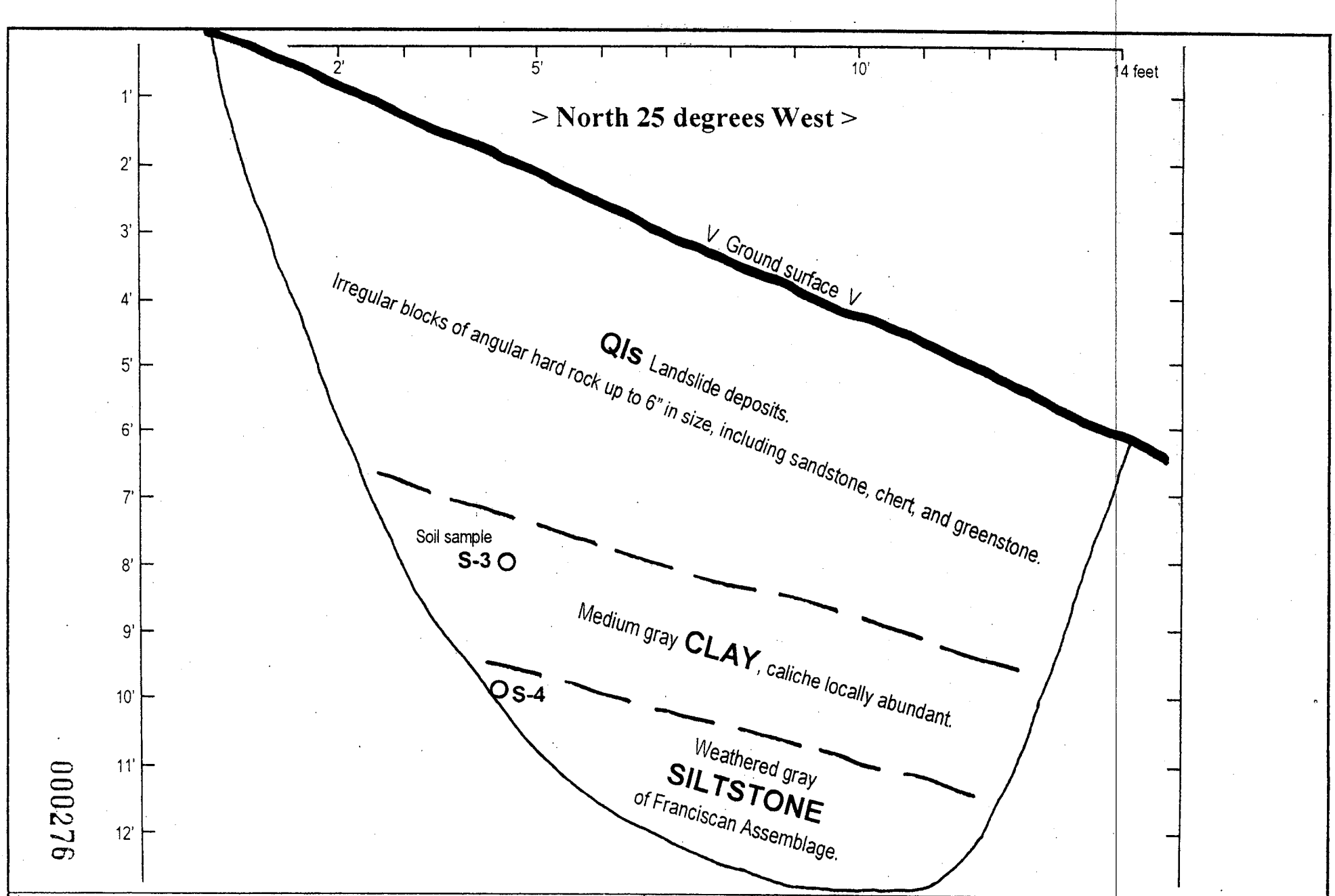
Test pit dug on July 12, 2001
by Geotechnical Engineering, Incorporated,
Fremont, California.

Geotechnical
Engineering, Inc.

EHTESHAMI PROPERTY
21 Estrada Place,
Redwood cCty, San Mateo County, California.

Figure 6

LOG OF TEST PIT 14



000276

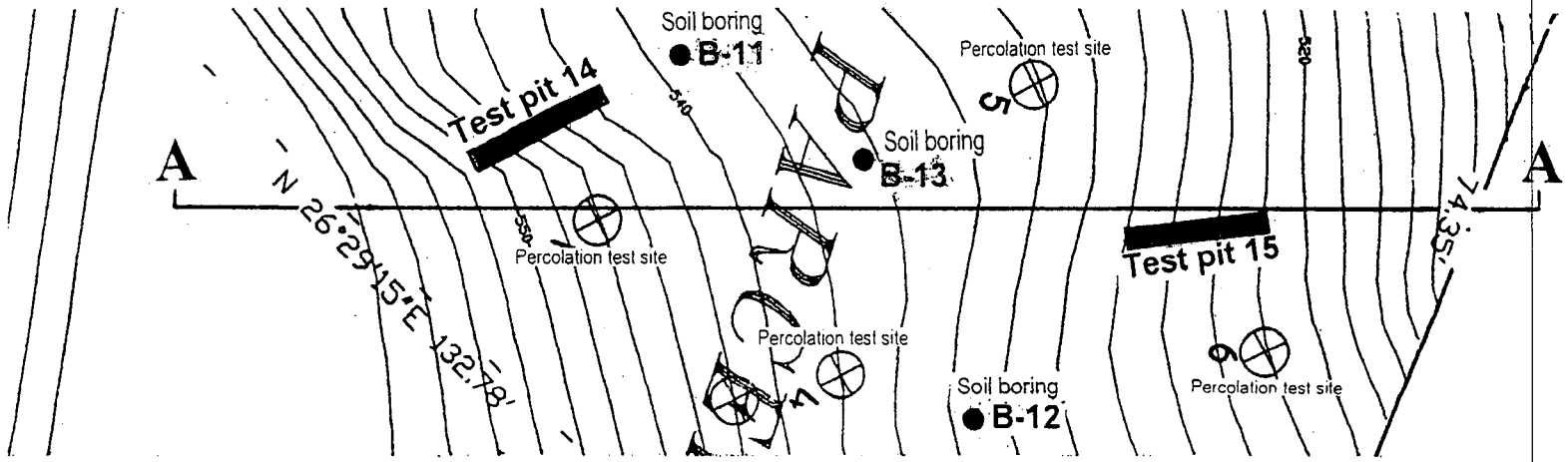
Test pit dug on July 12, 2001
by Geotechnical Engineering, Incorporated,
Fremont, California.

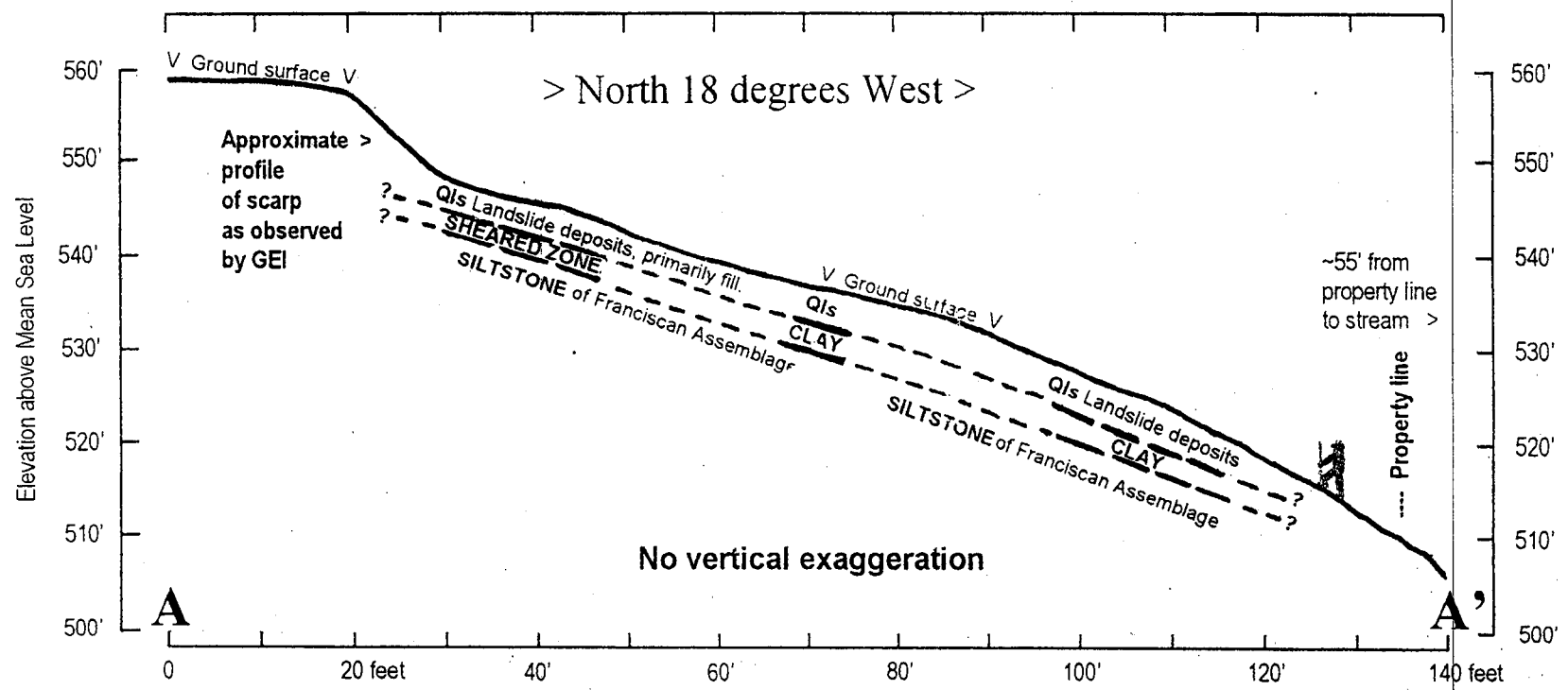
Geotechnical
Engineering, Inc.

EHTESHAMI PROPERTY
21 Estrada Place,
Redwood cCty, San Mateo County, California.

Figure 7

LOG OF TEST PIT 15





000277

Cross-section based on topography of Lot Line Adjustment Plan by Lee Engineers, Incorporated, San Jose, California, February 2001, and from field data by Geotechnical Engineering, Incorporated, Fremont, California, July 2001.

Geotechnical Engineering, Inc.

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21 Estrada Place,
Redwood City, San Mateo County, California.

Figure 8

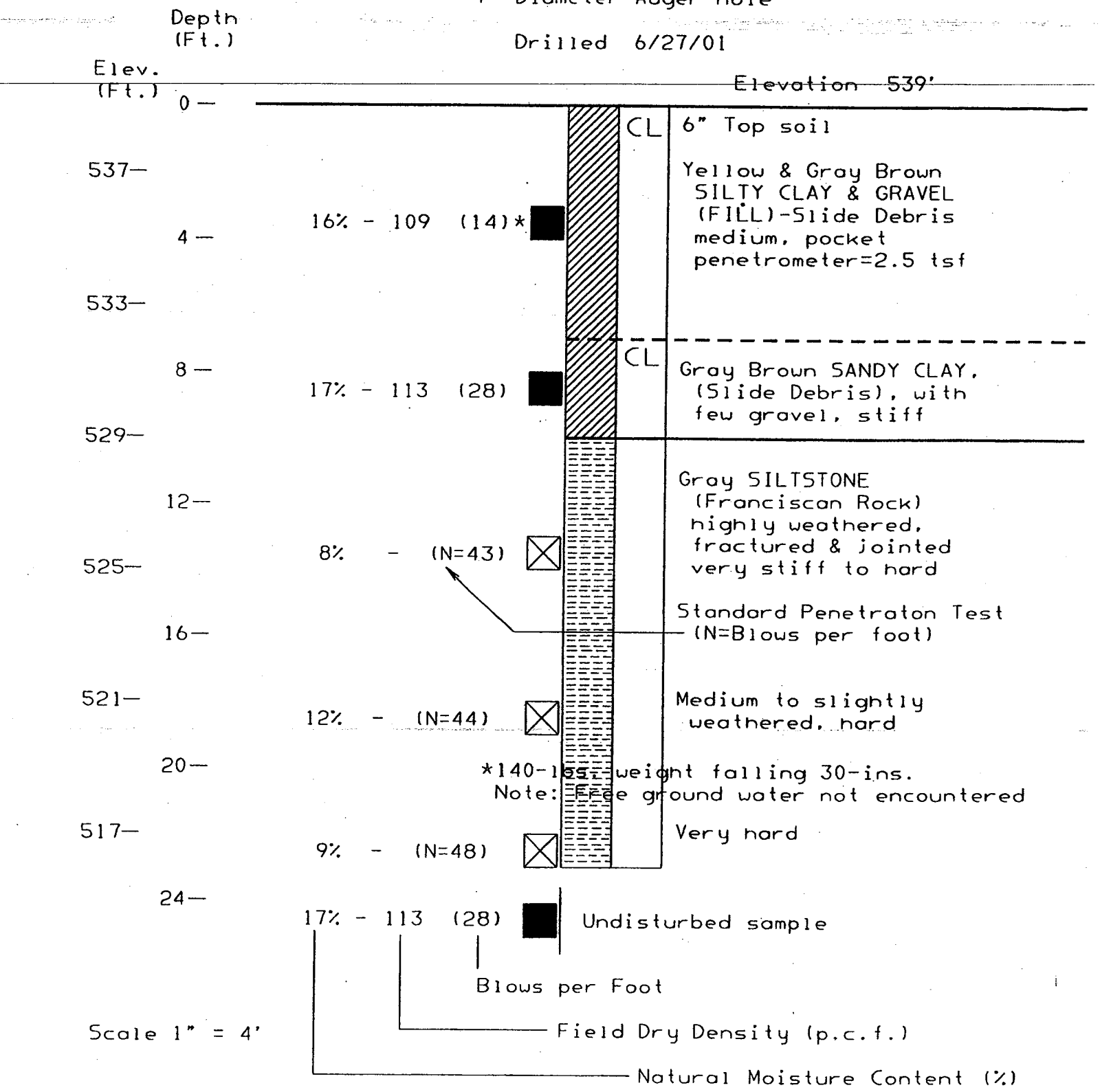
CROSS-SECTION A – A'

View south of headscarp of recent slip. Total height of scarp is approximately 10 feet.

View of northwestern portion of site. Excavating Test Pit 15.

FIGURE 9

BORING 11



LOG OF BORING

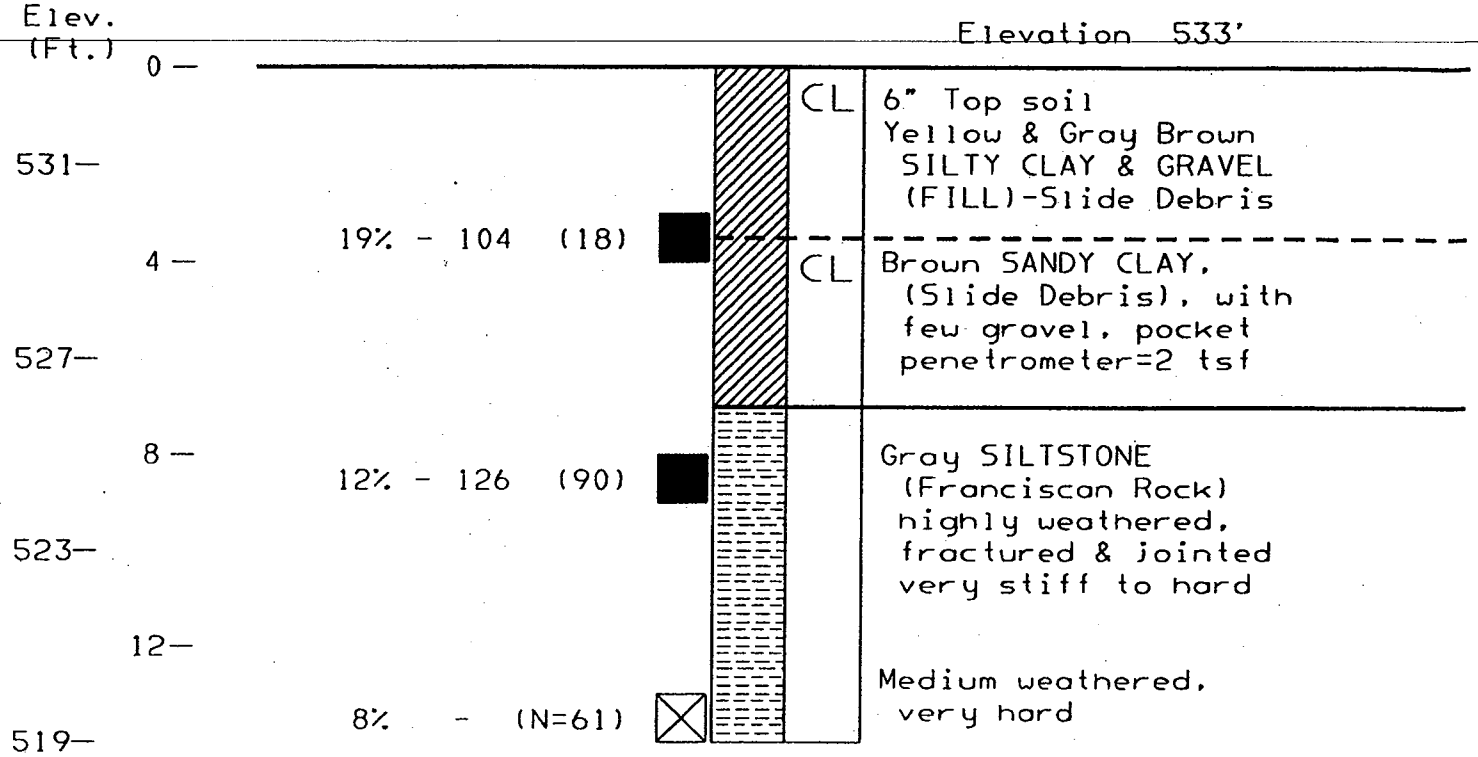
GEOTECHNICAL ENGINEERING, INC.
PLATE 10

BORING 12

4" Diameter Auger Hole

Drilled 6/27/01

Elevation 533'



Note: Free ground water not encountered

LOG OF BORING

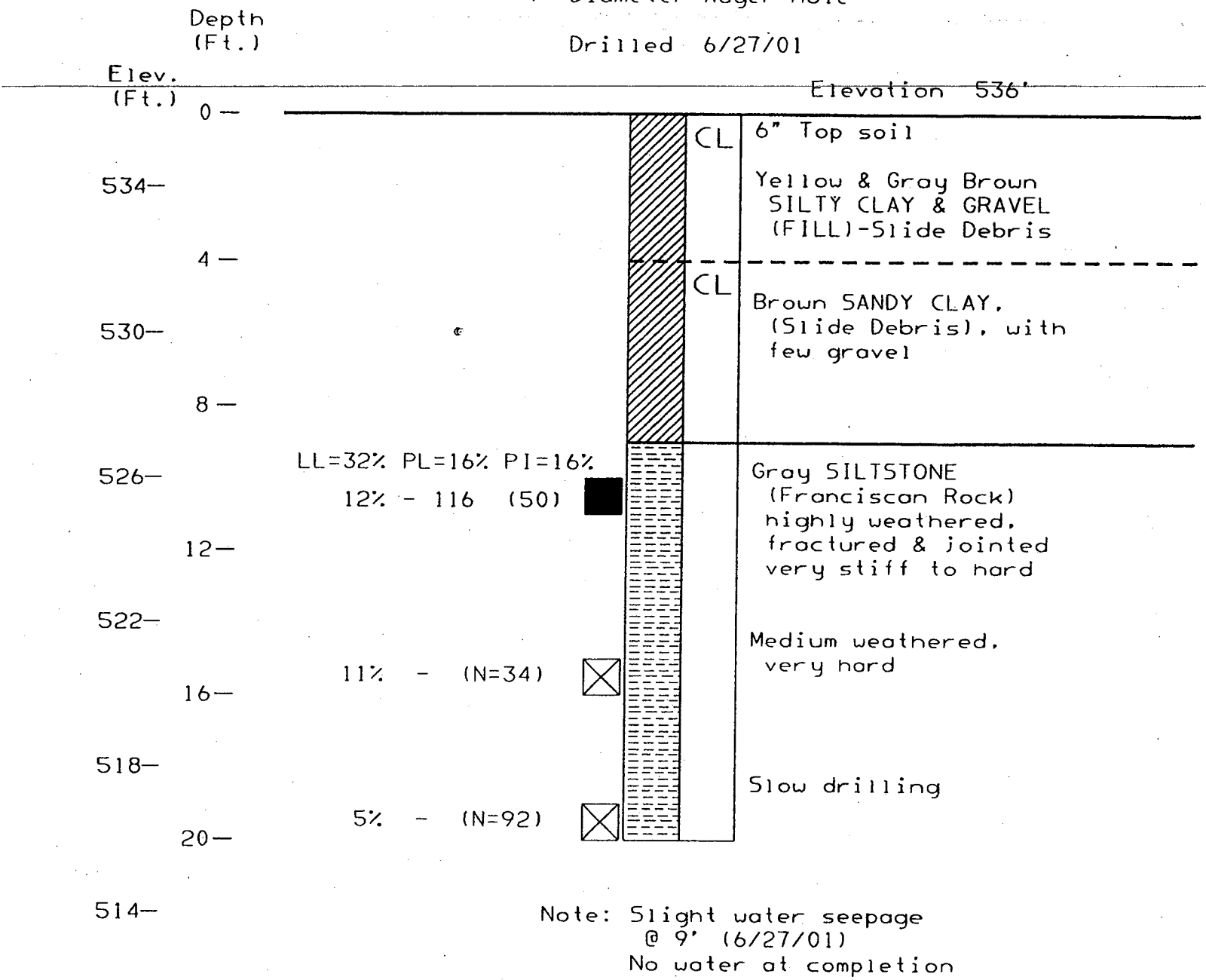
Scale 1" = 4'

GEOTECHNICAL ENGINEERING, INC.
PLATE 11

BORING 13

4" Diameter Auger Hole

Drilled 6/27/01



Note: Slight water seepage @ 9' (6/27/01)
No water at completion

LOG OF BORING

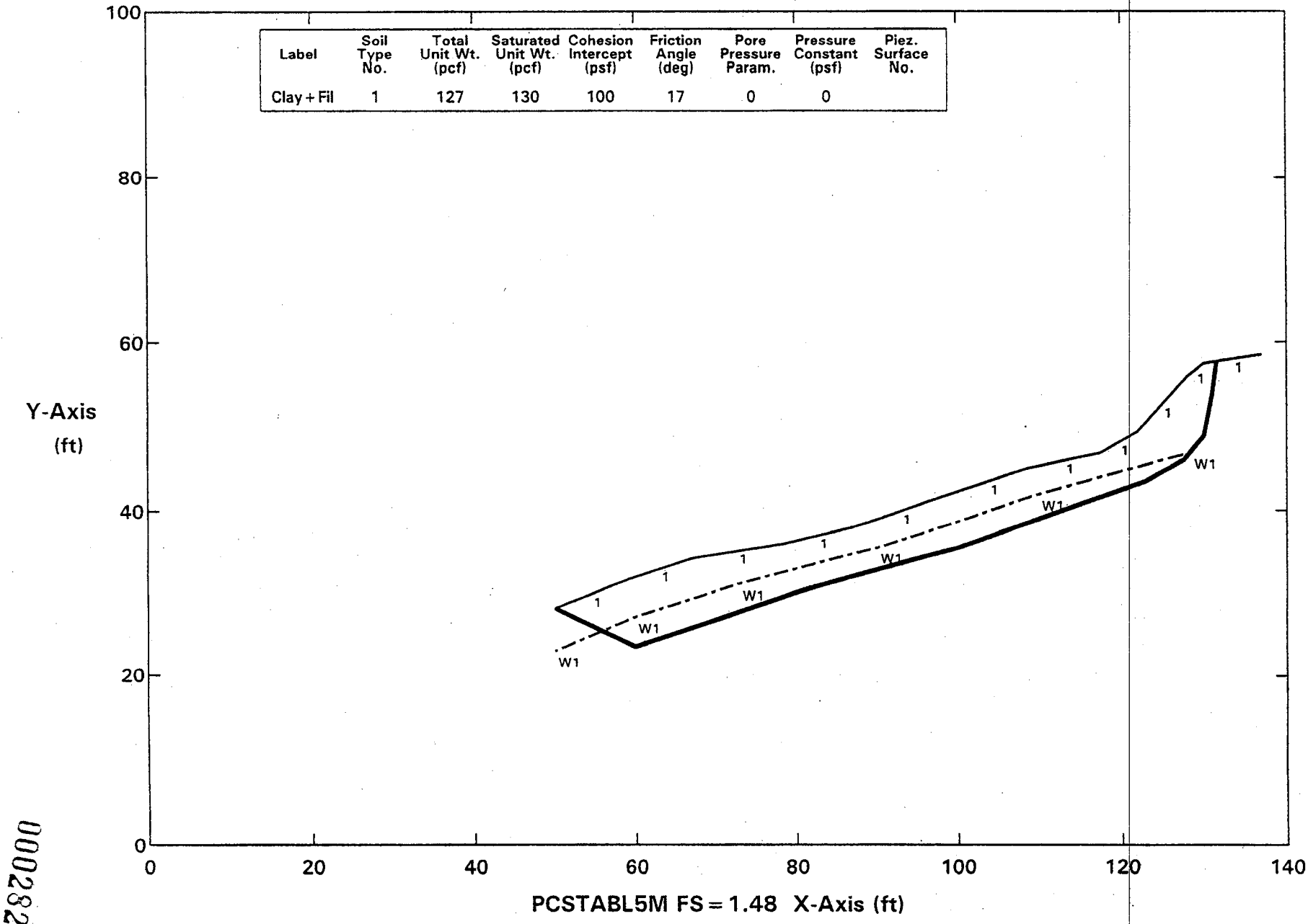
Scale 1" = 4'

GEOTECHNICAL ENGINEERING, INC.
PLATE 12

Redwood City slope with retain wall Estrada Pl - Palomar Park - no EQ

Specified Surface. C:RDWDCTY.PLT By: boris 07-27-01 7:28am

Label	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.
Clay + Fil	1	127	130	100	17	0	0	

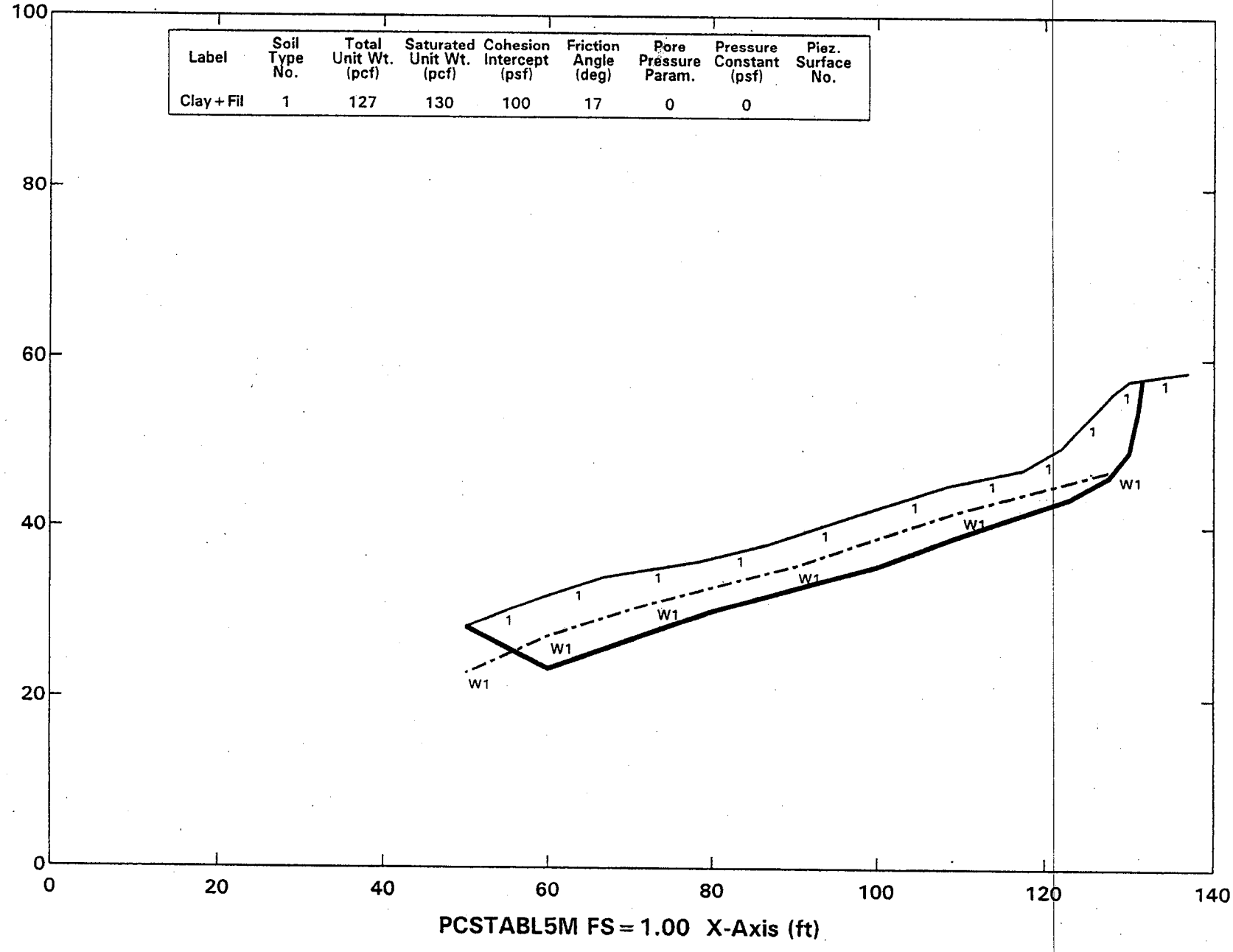


000282

Redwood City slope with retain wall Estrada Pl - Palomar Park - with EQ

Specified Surface. C:RDWDCTY.PLT By: boris 07-27-01 7:26am

Label	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.
Clay + Fil	1	127	130	100	17	0	0	



000283

Geotechnical Review Sheet

Department of Public Works
Soils/Engineering Geology Section

DEVELOPER/OWNER Babak Ehteshami
SITE LOCATION 25 Estrada Place
APN NO.
GEOLOGIST
SOILS ENGINEER Geotechnical Engineering Inc.

FILE NO. 11G-190
SHEET 1 OF 3

REVIEW OF:

( ) BUILDING NO. PLN2005-00603 (grading)
( ) GEOLOGIC REPORT DATED
(X) SOILS REPORT DATED 10/1/2001, #111490A
( ) OTHER

(x) PLANS
(x) DEVELOPER/OWNER
(x) GEOLOGIST
(x) SOILS ENGINEER
(x) BUILDING PERMITS
(x) DPW

ACTION:

( ) REPORTS APPROVED SUBJECT TO CONDITIONS BELOW:
(X) BEFORE APPROVAL THE FOLLOWING INFORMATION IS REQUIRED:
(from Geotech Consultant)
( ) PLANS AND REPORTS NOT APPROVED FOR REASONS BELOW:

REVIEW:

1. The report submitted for this project is dated 2001, making it six years old. Are the conclusions and recommendations presented in this report applicable to the currently proposed project? Please discuss.

2. There is evidence that during the initial grading of this area in the 1950's, vegetation (including large trees) and material from the currently existing cut on Parcel 1 was pushed downhill toward the creek. Has all of this unengineered fill been involved in subsequent slope failures? Please discuss.

3. There is evidence of distress in several structures uphill of the site that may be the result of slope failure. Is it possible that these failures are related to the existing landslide on this site? Please discuss.

4. There is evidence of recent failures on the slopes on and adjacent to this property. Some of these failures may have taken place since the issuance of the submitted report. Please provide an up-to-date map of the site showing all topographic features that may be associated with slope failure, including closed depressions and scarps, and the locations of distressed structures.

000284

Attachment J – 4

5. Please provide a detailed grading plan for this site. This should include cross-sections showing the locations of all proposed retaining walls, keyways, benches, and drains. The proposed location of all elements of the septic system should be included.

6. What measures will be taken to insure the stability of the slopes uphill and adjacent to this property during grading and construction? Please discuss in specific detail and provide additional recommendations as needed.

7. Please provide a detailed drainage plan of this site. This should include roof gutters, downspouts, surface and subsurface drains (including those associated with retaining walls and keyways), and the location and design of outfalls. This map should also show all elements of the proposed septic system.

8. What is the attitude of the siltstone bedrock on this site? If there are geologic structures, either bedding or pervasive jointing, that lie parallel to the slope, how will this affect the stability of fills placed above it? And how will this affect effluent and moisture from the leach fields and drain outfalls? Please discuss.

9. Since both proposed plans for development (replacement of landslide material or construction of large retaining wall) of this site will result in a portion of the landslide toe remaining in place, off site downhill, what effect will the placement of drainage outfalls and/or the proposed leach field uphill of it have on the stability of that material? Please discuss.

10. There is no subsurface data available for the area proposed for the large retaining wall proposed as a stabilizing structure on the south edge of the site. Would it not be appropriate to obtain data at least at the depths proposed for the footings of this wall? Please discuss and provide additional data as necessary.

11. It is noted that the 2001 report and the 2003 letter are cosigned by John Alt, a Certified Engineering Geologist. The 2007 letter does not include the signature of a geologist. Due to the slope stability issues on this site, it is suggested that an RG or CEG be involved in all phases of investigation and communication on this site.

12. Note that a building permit will be required for any retaining walls that are to be constructed concurrent with the grading on this site.

Based on the approval of responses to the above, the following will apply:

a.) Approval of the development plans and applicable structural design criteria must be obtained from the geotechnical consultant of record prior to issuance of the building permit as required by Section I of the enclosed "Geotechnical Consultant Approval" form.

b.) Section II must be observed and completed by the Geotechnical Consultant of record prior to acceptance of the completed work by the Geotechnical Section of the Department of Public Works.

Note: Please include the Geotechnical File Number, 11G-190, in all correspondence with the Geotechnical Section of the Department of Public Works.

PREPARED BY JLM DATE October 29, 2007
FMTGEO.REC (3/93)

ROMIG ENGINEERS, INC.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

May 12, 2009
2060-1

Mr. Babak Ehteshami
21 Estrada Place
Palomar Park, California 94062

RE: GEOTECHNICAL REVIEW
EHTESHAMI RESIDENCE
25 ESTRADA PLACE,
PALOMAR PARK, CALIFORNIA

Dear Mr. Ehteshami:

As requested, we have reviewed the appeal letter authored by Mr. James M. Goodrich dated February 28, 2009, regarding your proposed residence located at 25 Estrada Place in Palomar Park, California. As you know, we performed a geologic and geotechnical investigation for the residence proposed on the property and presented the results in our report dated March 18, 2008.

In a previous letter, Mr. Goodrich stated that in the 1950's trees had been buried and fill placed above the drainage below the leach field site. San Mateo County Planning staff requested an additional exploratory boring be advanced at the site following the geotechnical investigation; our review of these comments and the results of supplemental exploration were presented in our letters dated July 21 and September 28, 2008 and confirmed that no fill or trees had been buried as alleged.

Mr. Goodrich's latest appeal letter identifies widely spaced spring and geologic structure notations made on large scale geologic maps of the county, and attempts to relate them to building suitability, spring activity, slope instability and bedding of your Estrada Place property and 50 other locations in the area and the county. Mr. Goodrich hypothesizes that the "roughly parallel strike symbols which had dips facing each other" were a "primary element in judging the suitability of a site for development". Mr. Goodrich also mentions that a home was built at 724 Loma Court in the early 1950's where a slump was observed and reportedly caused the residence to move downslope. A new home has reportedly since been built following stabilizing the landslide.

We offer the following responses to Mr. Goodrich's concluding summary and other aspects of his letter:

- The nearby bedding orientations in the geologic references cited indicate bedding orientations dipping into the hill or a cross-slope dip. These bedrock orientations are not adverse from a slope stability viewpoint.

- The presence of landslide and spring activity in the site area has been considered by us and our recommendations were developed to address these conditions.

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- The bedrock underlying the site and site area is stable and not prone to deep seated landslides. Landslides in the area and at the site involve fill, colluvial soil and the upper 2 to 4 feet of the severely weathered rock. The unstable materials at the site will be removed or stabilized during construction.

- Numerous properties with landslides have been developed in the county following their stabilization. The presence of fill and landslide deposits does not preclude development, but does require prudent geotechnical design recommendations, as presented in our referenced report, to address the conditions present.

- In summary, Mr. Goodrich has noted some published information regarding the geology of the county and vicinity. However, in a complex geologic environment, site specific data and observations are required to proficiently evaluate on-site geologic hazards. Our referenced geotechnical report addresses issues regarding hillside stability, ground and perched water conditions, leach field and site drainage systems, based on the site specific geologic and geotechnical investigation performed. From a geologic and geotechnical viewpoint, the site is suitable for the proposed residence and site improvements provided the recommendations in our referenced report are followed during design and construction.

We make no warranty, expressed or implied, except that our services are performed in accordance with the geologic and geotechnical engineering principles generally accepted at this time and location.

Please call if you have any questions or comments about site conditions or the results of our previous geotechnical report for your proposed residence.

Very truly yours,

ROMIG ENGINEERS, INC.

Glenn A. Romig, P.E., G.E

Copies: Addressee (2)
Fred A. Moezzi Architectural Design and Planning (1)
Attn: Mr. Fred Moezzi
MacLeod and Associates (1)
Attn: Mr. Vergel P. Galura

GAR:cms

ATTACHMENT K

Arborist reports:

1. Arborist report dated April 12, 2007
2. Arborist report dated April 26, 2007
3. Arborist report dated May 7, 2007
4. Arborist report dated May 25, 2007

THE GREEN JEANNIE

PLN 5-603

April 12, 2007

Babak Ehteshami
21 Estrada Place
Redwood City, CA 94062

Re: impact of proposed construction to site trees, 25 Estrada Place

April 12, 2007, requested to inspect site trees by Mr. Ehteshami for new construction proposal. On site 48 trees, 17 Trees in question for new construction proposal, these are my findings;

Tree #1 Eucalyptus (Eucalyptus caesia), 24" trunk diameter, 19'drip line, moderate vigor, poor health, poor structure, growing from northeast slope boundary line, having signs of branch die back, fungus present, weak branch attachment, topped, tree in decline removal recommended regardless of construction.

Tree #2 Eucalyptus (Eucalyptus caesia), 22" trunk diameter, 19'drip line, moderate vigor, poor health, poor structure, growing from northeast slope boundary line, having signs of branch die back, fungus present, weak branch attachment, topped, tree in decline removal recommended regardless of construction.

Tree #3 Eucalyptus (Eucalyptus caesia), 13" trunk diameter, 12'drip line, moderate vigor, poor health, poor structure, growing from northeast slope boundary line, having signs of branch die back, fungus present, weak branch attachment, topped, tree in decline removal recommended regardless of construction.

Tree # 4 Eucalyptus (Eucalyptus caesia) 18" trunk diameter, 14'drip line, moderate vigor, poor health, poor structure, growing from northeast slope boundary line, having signs of branch die back, fungus present, weak branch attachment, topped, trees in decline removal recommended regardless of construction.

Tree # 5 California Buckeye (Aesculus californica) 21" multi-trunk diameter, 10' drip line, moderate vigor, fair health, fair structure, growing from northeast boundary line, pruning of branches recommended. For the

Attachment K –1

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protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 10′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #6 California Bay (Umbellularia californica) 15" trunk diameter, 12′ drip line, strong vigor, fair health, fair structure, growing from northeast boundary line, having signs of branch die back, fungus present, weak branch attachment, pruning of branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 10′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree#7 California Coast Live Oak (Quercus agrifolia), 17" trunk diameter 15′ drip line, moderate vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, growing18' from northwest boundary line, tree in decline, For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 15′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #8 California Coast Live Oak (Quercus agrifolia) 17" trunk diameter 10′ drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline removal recommended.

Tree #9 California Bay (Umbellularia californica), 14" trunk diameter 8′ drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline removal recommended.

Tree #10 California Coast Live Oak (Quercus agrifolia), 15" trunk diameter 10′ drip line, slow vigor, poor health, fair structure, growing 1' west boundary line, pruning of dead branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 5′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree. Tree in decline, future removal recommended.

Tree #11 California Coast Live Oak (Quercus agrifolia), 16" trunk, diameter 10′ drip line, moderate vigor, fair health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, growing13' from northwest boundary line, tree in decline removal recommended.

Tree #12 California Coast Live Oak (Quercus agrifolia), 14" trunk diameter 10′ drip line, slow vigor, poor health, fair structure, growing 4'south of west boundary line, pruning of invasive branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 5′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree. Tree in decline, future removal recommended.

Tree #13 California Bay (Umbellularia californica), 12" trunk diameter, 8′ drip line, moderate vigor, fair health, fair structure, branch die back, Fungus present, insects present, tree in decline, removal recommended.

Tree #14 California Bay (Umbellularia californica), 18" trunk diameter, 12′ drip line, slow vigor, poor health, poor structure, branch die back, Fungus present, insects present, tree in decline removal recommended, regardless of construction.

Tree #15 California Coast Live Oak (Quercus agrifolia) 14" trunk diameter 8′ drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline removal recommended.

Tree #16 California Bay (Umbellularia californica), 13" trunk diameter 8′ drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline removal recommended, regardless of construction.

Tree #17 California Coast Live Oak (Quercus agrifolia) 12" trunk diameter 9′ drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline removal recommended.

Tree #18 California Coast Live Oak (Quercus agrifolia), 18" multi-trunk diameter 10′ drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline removal recommended.

Tree #19 California Bay (Umbellularia californica), 6" trunk diameter, 8′ drip line, moderate vigor, fair health, fair structure. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 5′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #20 California Bay (Umbellularia californica), 9" trunk diameter, 10′ drip line, moderate vigor, fair health, fair structure. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 5′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #21 California Bay (Umbellularia californica), 12" trunk diameter, 10′ drip line, moderate vigor, fair health, fair structure. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 5′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #22 California Coast Live Oak (Quercus agrifolia), 12" trunk diameter 18′ drip line, moderate vigor, fair health, fair structure, growing 20' northeast of south boundary line, Tree in decline, removal recommended.

Tree #23 California Coast Live Oak (Quercus agrifolia), 12" trunk diameter 10′ drip line, moderate vigor, fair health, fair structure, growing 3' northeast of south boundary line boundary line, pruning of branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 5′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree. Tree in decline

Tree #24 California Coast Live Oak (Quercus agrifolia), 7" trunk diameter 5′ drip line, strong vigor, good health, fair structure, growing 5' south boundary line, pruning of dead branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 3′ from tree trunk and remain in place

during construction. Proposed construction shall not adversely affect this tree.

Tree #24 California Coast Live Oak (Quercus agrifolia), 7" trunk diameter 5′ drip line, strong vigor, good health, fair structure, growing 5' south boundary line, pruning of dead branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 3′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #26 California Coast Live Oak (Quercus agrifolia), 18" multi-trunk diameter 10′ drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline removal recommended

Tree #27 California Coast Live Oak (Quercus agrifolia), 12" trunk diameter 8′ drip line, slow vigor, poor health, fair structure, growing 1'south boundary line, pruning of branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 3′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree. Tree in decline, future removal recommended.

Tree #28 California Coast Live Oak (Quercus agrifolia), 9" trunk diameter 5′ drip line, moderate vigor, fair health, fair structure, growing 5' south boundary line, fungus present, tree in decline removal recommended.

Tree #29 California Coast Live Oak (Quercus agrifolia), 6" trunk diameter 5′ drip line, strong vigor, good health, fair structure, growing 1' south boundary line, pruning of dead branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 3′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #30 California Coast Live Oak (Quercus agrifolia), 7" trunk diameter 5′ drip line, strong vigor, good health, fair structure, growing at south boundary line, pruning of dead branches recommended. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 3′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

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Tree #31 California Coast Live Oak (Quercus agrifolia), 6" trunk diameter 4′ drip line, strong vigor, good health, fair structure, growing at southeast boundary line. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 3′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Tree #33 Acacia (Acacia melanoxylon), 9" trunk diameter, 8′ drip line, moderate vigor, fair health, poor structure, growing on slope for proposed construction, removal recommended regardless; Invasive species.

Tree #33 California Bay (Umbellularia californica), 10" trunk diameter, 6′ drip line, moderate vigor, fair health, poor structure, growing on slope, for proposed construction, removal recommended.

Tree #34 California Coast Live Oak (Quercus agrifolia), 6" trunk diameter 4′ drip line, strong vigor, good health, fair structure, growing on slope, for proposed construction, removal recommended.

Tree # 35 Brazilian Pepper (Schinus terebinthefolius) 21" trunk diameter 18′ drip line, strong vigor, good health, fair structure. For the protection and safety of the tree prior to construction placement of temporary barrier fencing be placed 10′ from tree trunk and remain in place during construction. Proposed construction shall not adversely affect this tree.

Fencing Detail

The fencing should not interfere with actual construction, but is intended to redirect unnecessary traffic, and to protect limbs and roots. No storage of materials, unnecessary trenching, grading or compaction shall be allowed within fencing. The fence should be a minimum of six feet high, made of pig wire, snow fence, or cyclone fence, with steel stakes or pipes as posts. All contractors, subcontractors, and other personnel shall be warned that encroachment within the fenced area is forbidden without the consent of the certified arborist on the job. This includes, but is not limited to, storage of lumber and other materials, disposed-of-paints, solvents, or other noxious materials, parked cars, grading equipment, and other heavy equipment. The temporary fence shall be maintained until the landscape contractor enters the job and commences landscape construction.

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THE GREEN JEANNIE

Summary
12 Trees on site are in decline and pose a risk to property. Proposed construction shall not adversely affect site trees. Removal recommended for 17 declining Trees - # 1, #2, #3, #4 Eucalyptus (Eucalyptus caesia), # 8, #11, #15, #17, #22, #26, #28, #34 California Coast Live Oak (Quercus agrifolia), # 9, #13, #16, #30 California Bay (Umbellularia californica), #32 Acacia (Acacia melanoxylon). Site trees over all health are fair with moderate vigor and fair structure site trees will not be impacted by proposed construction. I recommend placement of temporary barrier fencing prior to construction for the protection and safety of #5, #6, #7, #10, #12, #14, #18, #19, #20, #21, #23, #24, #25, #27, #29, #30, #31, and #35 tree during construction. Removal of trees should be done prior to construction after removal of the Eucalyptus and Oak; the stump should be chemically treated with Herbicide (Round-up) or stumps ground where possible to prevent any sucker growth. Minimal pruning of trees should be done prior to construction. Placement of temporary barrier fencing should remain until construction is completed. When tree roots 2 inches in diameter or larger encountered during hand digging under tree drip line, the consulting arborist will be called and remain on site when work is performed under tree drip line. Replanting of a 15-gallon species for replacement recommended after tree removal. Native California plant species are generally inexpensive, grow hardy, and often have fewer needs. California Coastal Redwood (Sequoia sempervirens) would be a good species for this site. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Trees are living reacting to change. Trees respond to survive in their altered environment. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk.

Thank you for the opportunity to touch these trees. Respectfully submitted with the best of my arboricultural knowledge.

Jeannette Raye

Jeannette Raye
Certified Arborist
WE-2258

Eucalyptus (Eucalyptus caesia) Fungus Disease	Eucalyptus (Eucalyptus caesia) Branch die back
	
# 33 California Bay (Umbellularia californica)	#4 Eucalyptus (Eucalyptus caesia) California
	
	Bay (Umbellularia californica)#33

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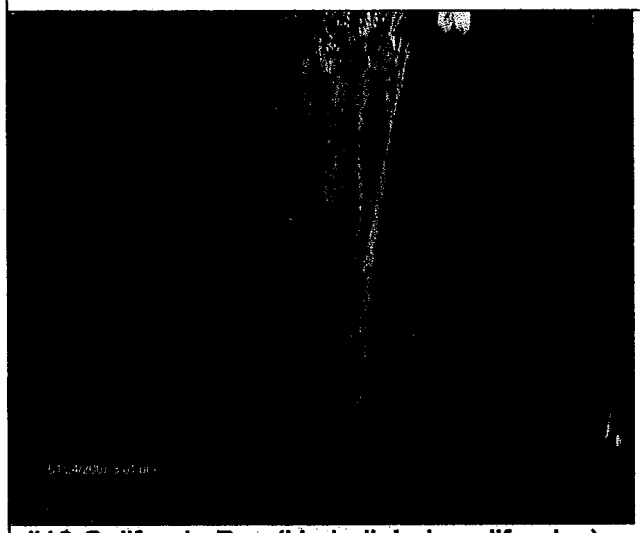
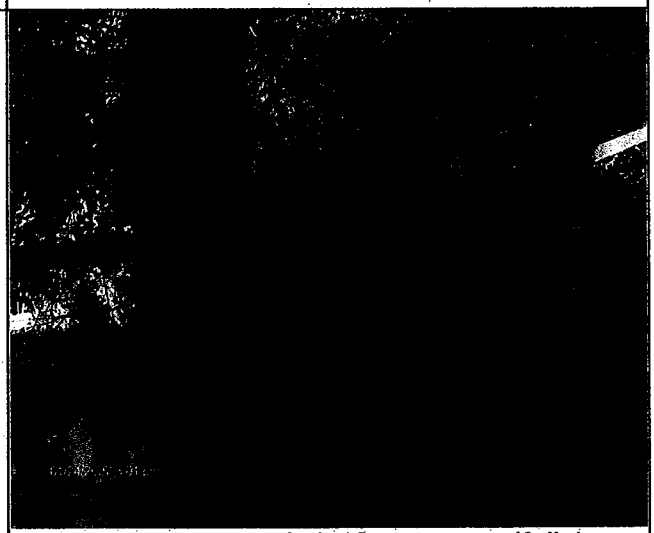
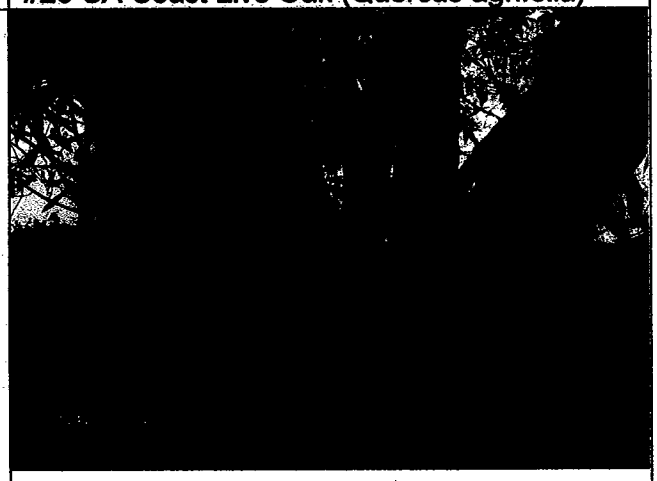
#11 California Coast Live Oak (Quercus	#9 California Bay (Umbellularia californica)
	
#16 California Bay (Umbellularia californica)	**#26 CA Coast Live Oak (Quercus agrifolia)**
	

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Peninsula Tree Care, Inc.

State License # 674160

Covering All Phases of Tree Care

April 26, 2007

Babak Ehteshami
21 Estrada Place
Redwood City, CA 94062

Re: Estrada Place

As requested to examine one California Coast live Oak (Quercus agrifolia), at the above location, these are my findings:

It is a multi-trunk tree with diameters 10", 8", 8", 9", 8", 7" and 18". 10' drip line, slow vigor, poor health, poor structure, branch die back, less than one-third foliage present in canopy, insect damage present, fungus present, tree in decline. This tree also has a "bowl" on bottom which collects water and leaves, this creates more rot.

Recommendation: Removal of tree.

CERTIFIED ARBORIST ISA
William C. Kleinheinz, Jr.
WE-7388A

Sincerely,

William C. Kleinheinz, Jr
Certified Arborist
WE-7388A

985 Parrott Drive Hillsborough, CA 94010-7414
Telephone:(650) 349-9367 * Facsimile:(650) 593-9639

000297

EVALUATION OF FOUR CALIFORNIA LIVE OAKS AND TREE PRESERVATION RECOMMENDATIONS PRIOR TO CONSTRUCTION

Prepared for:
Mr. Babak Ehteshami
21 Estrada Place
Redwood City, CA 94062

Prepared by:
Mark Sustarich, ISA, ASCA
140 W. Moltke St.
Daly City, CA 94014
650.992.5977
May 7, 2007

May 06, 2007

Dear Mr. Ehteshami
21 Estrada Place
Redwood City, CA 94062

Summary

In summary, I am recommending the following actions concerning the four trees that I evaluated.

Remove trees T12 and T26.
Trim and install protective fencing during construction for tree T22.
Install protective fencing during construction for tree T10

Assignment

On May 6, 2007, I met with Babak Ehteshami to perform a visual evaluation and make recommendation to protect four trees prior to construction based on Moezzi's house plans and tree numbering. Babak provided me with a site plan and location of the trees in question. The building site has been staked and taped.

The Trees

The trees are California Live Oak (*Quercus agrifolia).* They are native components of the Foothill Woodland. This vegetation type is considered to be of a high fire potential. Except for tree T26 none of the trees appear to have ever been trimmed or cared for in any manner.

Tree T10 has a height of 40 feet and a DSH (diameter standard height) of 15 inches. The tree bends out to west with most of the canopy off center of the trunk. It may eventually uproot and fall over. The trunk is 10 feet, 6 inches from construction survey line.

Tree T12 has a height of 45 feet and a DSH of 14 inches. The trunk has a decay cavity at the 10 foot height resulting from an 8 inch diameter limb that has rotted away years ago. At the 13 foot and 20 foot height two 5 inch diameter limbs are decaying which is developing decay in the trunk. The canopy leans to the southwest and the trunk leans to the east. The tree is on the decline, much deadwood and poor structure. The trunk is 9 feet from the construction survey line.

Tree T22 has a height of 40 feet and a DSH of 12 inches. There is considerable deadwood and poor structure on some of the limbs. General structure and health are satisfactory. The trunk is 7 feet from the construction survey line.

Tree T26 has a height of 45 feet and a multi- trunk of seven trunks with DSH of 10 inch, 8 inch, 8 inch, 9 inch, 8 inch, 7 inch, and 10 inch. The tree appears to have been cut to the ground level about forty years ago and the multi-trunks are the resultant sucker growth from the stump of the tree. This type of growth typically has considerable **included bark,** which results in poor structural integrity. There is considerable decay in the center of the tree. A fungus, possibly a *Phytophora sp.* has infected the trunk to the southwest, a bleeding canker is present. The canopy has considerable deadwood and most of the canopy leans to the north. The trunks are 9 feet from the construction survey line.

Recommendations

Tree T10
Place protective fencing 5 feet from trunk during construction.
No trimming necessary as it will not improve the structure of the tree.
Monitor the tree in the future for possible uprooting due to the extreme lean of the trunk.

Tree T12
Remove tree as decay in trunk and poor structure could cause the tree to become hazardous.
If you choose to keep this tree, a protective fence 5 feet from the trunk should protect it from any construction damage.
The foot print and foundation of the house should have minimal affect on this tree.
If roots are found in the trench area, make a clean cut with a handsaw or loppers and paint cut surface with latex paint.
Trim tree to reduce weight of off center canopy and remove deadwood.
Monitor tree for decay and structural problems.

Tree T22
Place protective fencing 5 feet from trunk during construction.
If roots are found in the trench area, make a clean cut with a handsaw or loppers and paint cut surface with latex paint.
Trim tree to remove deadwood and improve structural stability of limbs.

Tree T26
Remove tree due complete decay of the original stump, poor structural stability due to **included bark,** canopy leaning towards the north and presence of a fungus, possibly *Phytophora sp.*
If the tree must be retained, I suggest cutting out the north four trunks and trimming the south three trunks with the understanding that the fungus may kill the tree and there will still be structural problems to monitor.
Sterilize chainsaws and other tools in contact with the tree using Lysol or Chlorox to minimize the spread of fungus. If roots are found in the trench area, make a clean cut with a handsaw or loppers and paint cut surface with latex paint.

After removal of the north trunks, a protective fence should be placed at a distance of 5 feet from the trunks.
The foundation and location of the house should have minimal impact on the already poor health of this tree.
Monitor tree for spread of fungus and resultant dieback.

Certification Statement

That the report analysis, opinions and conclusions are limited only to the Assignment referenced herein and represent my personal, unbiased analysis, opinions and conclusions.

I did not mechanically do a root-crown inspection or mechanically bore into the trunk to determine the degree or internal decay.

Sincerely,
Mark K Sustarich

Mark Sustarich
International Society of Arboriculture (ISA) Certified Arborist #WE-0291
Member of the American Society of Consulting Arborists (ASCA)

Econo Tree Service INC

Impact of construction on the trees at 632 Palomar Drive, Redwood City, CA

Prepared for:

Kurt and Sue Oppenheimer
632 Palomar Drive
Redwood City, CA 94062

Prepared by:
Karl Murphy
Econo Tree Service, Inc.
1914 Spring Street
Redwood City, CA 94063
ISA Certified Arborist WE-1740-A

000302

Attachment K –4

ARBORISTS

Econo Tree Service inc

CONTRACTORS

1914 Spring St. Redwood City, CA 94063
650 367-4900
www.econotree.com
fax 650 367-4901

05/25/07

Kurt and Sue Oppenheimer
632 Palomar Drive
Redwood City, CA 94062

Oppenheimers,

On 05/17/2007 we met at the above address to discuss the impact of the construction being proposed directly down hill from your property. You also stated that the neighbors to your east are concerned about the impact on their trees.

I have completed my inspection and am submitting this document on my finding and recommendations.

Karl Murphy
ISA Certified Arborist WE-1740-A

000303

ARBORISTS

CONTRACTORS

1914 Spring St. Redwood City, CA 94063
650 367-4900
www.econotree.com
fax 650 367-4901

Scope of work

The assignment in this case is to assess and make recommendations on the impact to the trees on the property at 632 Palomar Drive, Redwood City, CA from construction taking place at 25 Estrada Place, in unincorporated San Mateo County. The goal is too retain as much plant material as possible between the two properties by reducing stress and damage to the trees in question.

San Mateo county guidelines require that trees over 6" DBH (diameter at breast height) be listing and protection procedures be put in place for those that are to be saved. In this case it is the desire of the owners of 682 Palomar Drive too protect all vegetation between the two properties to provide screening and privacy.

Methodology

A preliminary site inspection was made on 05/17/2007. I walked the area of the property in question with Kurt Oppenheimer and took note of the location of the trees and shrubs in relation to the property line and the proposed excavation. Mr. Oppenheimer provided maps detailing the position of the trees to the proposed grading and pointed out the trees and shrubs of concern.

A second inspection was made on 05/24/2007. The trees were inspected and marked with numbered aluminum tags. Measurements were made of the trees diameters and the condition and health of the trees were noted. Also, measurements were made of the relationship between the property line and the trees. Measurements from tree to the proposed excavation could not be made because of trespassing issues, however a document titled "Exhibit B - Grading Study" was provided and consulted.

The details of the inventory are listed below, along with recommendations how the trees may be protected. It should be noted that regardless of condition, none of the trees have been recommended for removal. A removal would only be warranted because of a hazardous condition that includes a target. Since there are no targets involved, none of the trees pose a hazard.

Inventory

Tree One
Species: Coast live oak, *Quercus agrifolia*
Size: 8 inch DBH
Location: Neighbors tree, (Goodrich). On property line with 25 Estrada Place.
Condition: Good structure, fair condition.
Recommendation: The roots of this tree may extend into the graded area and care should be taken to prevent against root injury. The canopy also extends over the property line. Any root pruning or canopy trimming should be under the direction of a Certified Arborist. Protective fencing should be installed at least as far as the drip line of the tree. Fencing should be installed in accordance with Attachment C.

Tree Two
Species: Coast live oak, *Quercus agrifolia*
Size: 33 inch DBH
Location: Neighbors tree, (Goodrich). 13 feet from the property line with 25 Estrada Place.
Condition: Good structure, good condition.
Recommendation: This tree is far enough away from the excavation that no impact is anticipated.

Tree Three
Species: California bay, *Umbellularia californica*
Size: Under 6 inches DBH, sprouted stump.
Location: 4 feet from property line.
Condition: Vigorous stump sprouts
Recommendation: Tree should not adversely be impacted by the excavation.

Tree Four
Species: California bay, *Umbellularia californica*
Size: 12m2, (2 multiple trunks totaling 12 inches in diameter.)
Location: 10 feet from property line.
Condition: Poor structure, dead limb.
Recommendation: Remove dead limb, tree is far enough away that it should not be impacted by the excavation.

Tree Five
Species: California bay, *Umbellularia californica*
Size: 18m2
Location: 11 feet from property line. One limb extends over line.
Condition: Growing, some decay at nurse stump.
Recommendation: Tree is far enough away from it should not be impacted by the excavation.

Tree Six
Species: Coast live oak, *Quercus agrifolia*
Size: 11 inch DBH
Location: 9 feet from property line.
Condition: Good structure and condition.
Recommendation: Tree is far enough away that it should not be impacted by the exca-

vation.

Tree Seven
Species: Coast live oak, *Quercus agrifolia*
Size: 19m2
Location: Straddles property line.
Condition: Small area of decay. Fair structure, poor condition.
Recommendation: This tree should be fenced at least as far as the drip line to prevent soil compaction over the root area. No equipment of materials should be used or stored in the protected area. Fencing should be installed in accordance with Attachment C.

Tree Eight
Species: California buckeye, textitAesculus californica
Size: 17m2
Location: 2 feet from property line.
Condition: Leggy, all growth on ends.
Recommendation: Tree is far enough away that it should not be impacted by the excavation.

Tree Nine
Species: California bay, *Umbellularia californica*
Size: 6.5 inch DBH
Location: 1 foot from property line.
Condition: Growing stump sprouts.
Recommendation: Tree is far enough away that it should not be impacted by the excavation.

Tree Ten
Species: Coast live oak, *Quercus agrifolia*
Size: 21 inch DBH
Location: Straddles property line.
Condition: Good condition, root from neighboring bay tree is beginning to girdle root crown.
Recommendation: This tree should be fenced at least as far as the drip line to prevent soil compaction over the root area. No equipment of materials should be used or stored in the protected area. Fencing should be installed in accordance with Attachment C.

Tree Eleven
Species: Coast live oak, *Quercus agrifolia*
Size: 9 inch DBH
Location: 5 feet from property line.
Condition: Sparse foliage. Fair condition.
Recommendation: Tree is far enough away that it should not be impacted by the excavation.

Tree Twelve
Species: Coast live oak, *Quercus agrifolia*
Size: 14 inch DBH
Location: 0 feet from property line.
Condition: Wound at base, dogleg trunk, twist in trunk. Poor condition.

Recommendation: This tree should be fenced at least as far as the drip line to prevent soil compaction over the root area. No equipment of materials should be used or stored in the protected area. Fencing should be installed in accordance with Attachment C.

Tree Thirteen
Species: Coast live oak, *Quercus agrifolia*
Size: 14 inch DBH
Location: 0 feet from property line.
Condition: Dogleg in trunk. Poor structure.
Recommendation: This tree should be fenced at least as far as the drip line to prevent soil compaction over the root area. No equipment of materials should be used or stored in the protected area. Fencing should be installed in accordance with Attachment C.

Discussion

The recommendations have been made according to the amount of buffer space each tree has from the property line and the likelihood of root or canopy damage being done either by excavation or general construction activities. Even where excavation is not taking place, foot traffic, vehicle traffic and storage of materials or equipment can compact the root zone of a tree, preventing water and air exchange by the roots.

The trees that are not partially or completely on the property not under the Oppenheimer's or Goldman's control have not been included in this inventory. It is expected that the arborist hired for the project at 25 Estrada will prepare and enforce a comprehensive tree protection plan in compliance with San Mateo County development requirements.

As a reference to the general protection measures accepted by local agencies and arborists I have included as attachments our set of Standard Protection Measures.

Conclusion

If these guidelines and the guidelines of the project arborist are followed, all the trees involved should survive the construction with as little stress as possible. I am available to answer any questions and/or direct installation of protection and impact of excavation.

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Attachment A

PRESERVATION CHRONOLOGY and STEPS

PLANNING PHASE:

The most important part of the preservation is to start early and plan ahead. The key to good protection is implementing the preservation steps before construction begins.

I. START PLANNING:

1. Select a Certified Arborist for your project and have them recommend a full service tree company to perform the recommended work.

2. Schedule a cooperative meeting with the Arborist, the owner and the Architect to establish preservation measures.

II. ITEMS to be INCLUDED in the PLANS:

The following must be included in the plans:

1. Accurate tree and drip line locations

2. Critical root areas to be protected (Tree Protection Zone - TPZ)

3. Protective fencing to be installed and area to be mulched

4. Trenching for utilities and foundations, with distances from protected areas

5. The inspection schedule

6. Tree specific preservation procedures

7. Aeration systems and pier foundations designed to avoid compromising root zone

8. Drainage and downspouts directed away from any trees into French drains or storm drainage systems.

9. Designated construction zone where tools and materials are to be stored. This area should be as far away as possible from trees to be protected.

10. Fair working distance between fencing and construction activities to accommodate both. The area can be expanded and contracted as needed.

11. Arborist inspection guide initialed by both Contractor and Arborist.

III. FINAL PRE-BUILDING PROCEDURES

1. Set a time table for installation of fencing, mulching and irrigation. Arrange for pruning and fertilization if required.

2. During the preparation have the Arborist supervise these procedures and review the plans. The Arborist should sign off on the inspection schedule as each procedure is performed.

3. Arrange a meeting between Arborist and Contractor to walk the site and identify how and where protection measures are to be placed. The Arborist will coach the Contractor on specific protection measures.

4. Fencing, mulching, pruning, hydration and fertilization should be completed and signed off by the supervising Arborist well before any equipment or materials arrive and any construction activity begins.

IV. INSTALLATION of TREE PROTECTION

1. Hydrate the existing root area(s) two weeks prior to any construction activity as part of an ongoing hydration schedule.

2. Mulch and fertilize root zones as specified.

3. Mark grading and trenching cuts prior to the arrival of any heavy equipment.

4. Install non removable fencing. Fencing must be 5 foot tall cyclone fencing, with posts placed on 8 foot centers, sunk 18 inches below grade.

5. Fencing must not be open to foot or vehicle traffic.

6. Post warning signs stating "Tree Protection Zone, Do Not Enter or Remove" on all sides of the protective fencing.

7. Prune trees as directed by project Arborist. Special attention should be given to dead or diseased branches and clearance for equipment and proposed structures.

8. Cordon off traffic and storage zones to protect landscape outside of formal protection zone.

9. Ensure that construction drainage does not flow toward trees.

10. Review plans again to ensure all Protection measures have been followed and to identify construction activities that require the Arborist be present.

11. Arborist and Contractor initial plans and correct any deviations before construction begins.

Attachment B

GUIDELINES DURING CONSTRUCTION

I. DURING EXCAVATION

1. All trenching and excavation in protection zone to be done by hand.

2. Any roots over One inch in diameter to be cleanly cut at a proper root crotch.

3. Exposed roots to be covered with moistened burlap or otherwise prevented from drying until backfilling.

4. Follow Arborist recommendations when large roots interfere with construction goals.

II. DURING CONSTRUCTION

1. Maintain proper drainage and aeration during any grade changes.

2. Notify project Arborist of any changes in schedule for activities affecting the Protected Trees, such as grading, excavation, equipment use, etc.

3. Treat any damaged trees immediately according to Arborist's recommendations.

4. Maintain fencing around Protected Trees. Continue to monitor Protected areas and guard against encroachment.

5. Allocate time after trenching and excavation for root damage appraisal and repair.

6. Continue to follow hydration schedule

7. Contractor and Arborist to continue to cooperate in regards to Tree Protection.

III. FINAL GRADING

1. All work in the Protection Zone to be done by hand. No equipment of any kind to enter the area.

2. Area to remain fenced until landscaping is complete.

3. Grade area to direct drainage away from trees.

4. Grade changes in the Protection Zone to be supervised by project Arborist. Aeration system may be required.

5. Final landscape is to be low impact and not conflict with tree species.

continued from Page 3

6. Hydration, aeration and fertilization to be continued for up to Three years to insure restoration of roots and re-establish vigor.

POST CONSTRUCTION GUIDELINES

After construction is complete it is important to properly care for and maintain the trees that have been so meticulously preserved.

1. Continue to provide proper water management and fertilization.
2. Continue to mulch critical root zone areas.
3. Establish a low impact landscape.
4. Properly prune to thin and protect trees from breakage and reduce hazards.
5. Schedule regular visits by the project Arborist to identify any changes to the tree that may require attention.
6. Notify the project Arborist immediately of any signs of pests, disease or unusual changes in trees stature.

Any other questions or concerns should be brought to the attention of the project Arborist as soon as possible.

Attachment C

STANDARD PROTECTION DEFINITIONS and SPECIFICATIONS

Pruning:
The removal of dead or living plant parts to benefit entire organism. Improves structure and health of tree and helps reduce hazards.
Specification:
Trees should be pruned to ANSI standards to reduce hazards and provide clearance for construction. All pruning will be done by qualified personnel under the direction of the project Arborist.

Root Pruning:
The removal of underground plant parts over 1 inch in diameter, mainly performed to eliminate interference with underground structures such as utilities and building foundations. Root pruning can be extremely damaging to both the trees health and stability. Alternative methods of construction such as boring should be explored before root pruning is considered an option.
Specification:
Root pruning shall be done with sharp tools, preferably at the site of attachment to the parent root. Roots exposed during trenching and excavation shall be kept moist with wetted burlap or moist organic mulch.

Fertilization:
Organic or inorganic substance added to the soil or foliage to correct or avoid nutrient deficiencies. Trees in construction sites have often been neglected and may require fertilization to improve and maintain vigor and health.
Specification:
Soil application of nutrient solution at a rate and and composition to be determined by the project Arborist. Foliar fertilization is an option when growing area prohibits application of the required amount of solution.

Mulch:
Coarse organic or inorganic material such as wood chips, straw or bark applied to the growing area of the tree. Helps prevent soil compaction by providing cushioning to the root zone. Improves tilth of the soil and aids in Oxygen exchange. Assists in maintaining consistent soil moisture levels.
Specification:
Mulching material should be installed in a 3-5 inch layer around the entire growing area of the tree. This layer shall be maintained for the duration of the project. Mulch should be kept 1-2 inches away from the root collar of the tree.

Hydrate:
Irrigate, water. Maintains optimal soil moisture levels.
Specification:
Tree species have different water requirements according to the season and prior watering history. The project Arborist can determine these requirements and make recommendations. In some cases irrigation lines may need to be installed to provide proper soil moisture levels.

Protective Fencing:
Fencing installed around the area to be protected includes signage. No entry or activity is permitted in this area without the permission of the project Arborist.
Specification:
Protective Fencing shall be constructed of cyclone fencing material at least 5 feet high. Fence posts shall be installed on 6-8 foot centers and sunk 18-24 inches below grade. Permanent signing of at least 8.5x11 inches, stating "Tree Protection Zone, Do Not Enter" shall be placed on the fence at 20 foot intervals.

Aeration:
Tree roots require oxygen in order to keep the tree alive. Grade changes, especially those that raise the soil level over the roots, may require alternative means of providing the needed oxygen.
Specification:
Any grade change shall be approved by the project Arborist and should have been noted on the plans. Aeration systems consisting of flexible perforated tubing, with access to the atmosphere, may be warranted. In less extreme cases, holes drilled into the soil at regular intervals and filled with a porous material, (vertical mulching), may be all that is required.

Attachment D

INSPECTION SCHEDULE

(Include in Plans)

A. Inspection of Protective Tree Fencing

The project Arborist shall prepare a written statement verifying that he has conducted a field evaluation of the trees and that all required protection measures are in place. This statement shall be forwarded to the permitting agency prior to the issuance of any demolition, grading or building permit.

B. Pre-Construction Meeting

A pre-construction meeting shall be held involving the Architect, Contractor, Project Arborist, Equipment Operators, interested Public Officials and any Sub-Contractors.

C. Inspection of Rough Grading

The project Arborist shall perform an inspection during the course of rough grading adjacent to the Tree Protection Zone to insure trees will not be injured by compaction, cut or fill, drainage and trenching. If required the Arborist will inspect aeration systems, tree wells, drains and special paving. The Contractor shall provide the project Arborist at least 48 hours advance notice of such activity.

D. Monthly Inspections

The project Arborist shall perform monthly inspections to monitor changing conditions and tree health and prepare an inspection summary. The inspection summary shall be forwarded to the compliance officer in the projects jurisdiction, i.e.. City Arborist, Planning Dept. official, etc.

E. Activity within Tree Protection Zone

Any work done in the Tree Protection Zone shall be directly supervised by the project Arborist.

F. Landscape Architect Inspection.

For discretionary development projects, prior to temporary or final occupancy, the applicant or contractor shall call for the Landscape Architect to perform an on site inspection of all plant stock, quality of materials and plantings and that the irrigation and drainage systems are functioning consistent with the approved plans. Written verification of compliance shall be forwarded to the permitting agency before scheduling final inspection of the project.

Attachment E

Tree Preservation Checklist

Use this document to verify that required protection measures are in compliance. Each item is to be initialed and dated by both Contractor and Arborist.

Phase I

Task	Date	Initials
Trees Shown on Plans	----	----
Protection Measures Shown on Plans	----	----
Arborist Selected	----	----
Excavation Boundaries on Plans	----	----
Utility Trenching on Plans	----	----
Tree Company Selected	----	----
Two Week Start Date Set	----	----

Phase II

Task	Date	Initials
Standard Procedures	----	----
Pruning	----	----
Mulching	----	----
Fertilize and Hydrate	----	----
Fencing Installed	----	----
Excavation and Demolition Dates	----	----
Root Pruning	----	----
Hydration Schedule	----	----

Phase III

Task	Date	Initials
Minimal Impact Landscape	----	----
Post Construction Assessment	----	----
Further Maintenance	----	----

ATTACHMENT L

San Mateo County Zoning Regulations

Section 6565.16 – Standards for Design in Palomar Park

SECTION 6565.16. STANDARDS FOR DESIGN IN PALOMAR PARK. The following design standards shall apply within Palomar Park.

A. Site Planning

As much as possible, site new buildings on a parcel in locations that:

1. Minimize tree removal;

2. Minimize alteration of the natural topography;

3. Respect the privacy of neighboring houses and outdoor living areas;

4. Minimize the blockage of sunlight on neighboring buildings; and

5. Minimize alteration of streams and natural drainage channels.

B. Architectural Styles

Design new buildings that are architecturally compatible with existing buildings by requiring them to reflect and emulate, as much as possible, the predominant architectural styles and the natural surroundings of the immediate area. Avoid revivalist historical styles.

C. Building Shapes and Bulk

Design buildings with shapes that respect and conform to the natural topography of the site by requiring them to step up or down hillsides in the same direction as the natural grade.

Control the bulk of buildings on hillsides by requiring them to be terraced up or down the hill at a uniform height.

D. Unenclosed Spaces

As much as possible, avoid the creation of unattractive, useless space beneath buildings by prohibiting buildings that are predominantly built on stilts.

E. Facades

Design well articulated and proportioned facades by:

1. Avoiding the dominance of garages at street level;

2. Considering the placement and appearance of garages and the width of garage doors;

3. Prohibiting massive blank walls by creating aesthetic and proportioned patterns of windows and shadows; and

4. Relating the size, location, and scale of windows and doors to adjacent

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buildings.

F. Roofs

Design buildings using primarily pitched roofs. Design buildings with roofs that reflect the predominant architectural styles of the immediate area.

G. Materials and Colors

Make varying architectural styles compatible by using similar materials and colors which blend with the natural setting and the immediate area. Avoid the use of building materials and colors which are highly reflective and contrasting by requiring them to blend and harmonize with the natural woodland environment and vegetation of the area.

1. Use colors such as warm grays, beiges, natural woods, and muted greens.

2. Encourage the use of building materials that are compatible with the predominant architectural styles of the immediate area. In areas where bungalow, craftsman, and ranch architectural styles are predominant, use real wood and stone building materials such as board and batten, wall shingles, fire-resistant roof shingles, flagstone, and rock. Ensure that all roof materials have Class "C" or better fire resistive ratings.

H. Utilities

Install all new service lines underground.

I. Signs

Control the use of signs so that their number, location, size, design, lighting, materials, and colors harmonize with their surroundings and are compatible with the architectural style of the building.

J. Lighting

Exterior lighting should be subdued and indirect, and glaring fixtures should be avoided.

K. Retaining Walls

Retaining walls should be surfaced, painted, landscaped or otherwise treated to blend with their surroundings.

L. Paved Areas

As much as possible, keep the amount of visible paved areas (e.g., driveways, walkways, etc.) to a minimum.