4054

5 October 2006
Project Number 2645SC01-G
Via US Mail and FAX

Leavesley Road Partners LLC
c/o MH Engineering Co.
16075 Vineyard Boulevard
Morgan Hill, California 95037

Subject: **Leavesley Road Four-Parcel Subdivision**
Supplement to Fault Investigation Report
Leavesley Road [APN 898-34-002]
Gilroy, Santa Clara County, California

Gentlemen:

As requested by Gloria Ballard of MH Engineering Co. on your behalf, E_2C Inc. is issuing this supplemental geologic report addressing the location of some of the strands of the Calaveras fault relative to the placement of the proposed building sites. The supplement is required to satisfy requests from the Santa Clara County geologist and other members of the County Planning Department.

Earth Systems Consultants Northern California (ESCNC) issued a Geologic Hazards Evaluation report (ESCNC, 2005) and a Fault Investigation Report (ESCNC, 2006) which addressed the Calaveras fault zone which crosses the subject 100± acre site. The mapped fault traces shown in the geologic hazards evaluation were based upon review of published geologic maps, consultants' reports, and interpretation of stereo aerial photographs.

The published geologic maps cited in the above-referenced reports were by Dibblee (1973), Armstrong and Wagner (1976), and Helley and Nakata (1991). The mapping was accomplished by field reconnaissance (Dibblee, 1973), primarily air-photo interpretation (Armstrong and Wagner, 1976), and a combination of these methods (Helley and Nakata, 1991).

A site-specific geologic study of the subject site (which included exploratory trenching) was conducted by Kaldveer Associates (1988). They identified two active fault traces (in their trenches T-1 and T-2) at the site that correspond with fault traces mapped by Armstrong and Wagner (1976). Steven F. Connelly, C.E.G. (2002), conducted an engineering geologic investigation of a contiguous site to the west and southwest of the subject site. Connelly's (2002) exploratory trenching exposed a fault trace, which if projected to the east roughly coincides with one of the faults identified by Kaldveer Associates (1988). ESCNC (2005) recommended exploratory trenching in order to locate viable building sites in the fault zone.

The fault investigation by ESCNC (2006) utilized exploratory trenching to further identify the location of the mapped fault traces so that appropriate fault set-backs could be established. The exploratory trenching exposed three strands of the Calaveras fault and 50-foot fault setbacks were established (Plate 1). ESCNC's (2006) recommended 50-foot fault set-backs were established from generally well-identified faults exposed in their exploratory trenches. Four proposed building sites were selected based, in part, upon those setbacks.

The Santa Clara County Planning Department later required MH Engineering Co. to relocate the previously selected building sites to locations that were not "shadowed" by ESCNC's (2006) exploratory trenches, but were shadowed by an exploratory trench excavated and logged by Kaldveer Associates (1988). Mr. Jim Baker, the County Geologist, subsequently reviewed the trench logs by Kaldveer Associates (1988) and interpreted several features as fault-related. E_2C's discussion with Mr. Baker on 4 October 2006 eliminated two of the suspect subsurface features, resulting in a potentially viable building zone south of the PG&E easement that ranges from approximately 300 to 350 feet wide. However, one of the fault features noted by Mr. Baker is located at station 6+40 in Kaldveer trench T-1 (i.e., 640 feet from the beginning of the trench at sta. 0+0) which is within the potential building zone and is critical to the current layout of the proposed buildings. The feature is a contact between moderately weathered agglomerate to the southwest and deeply weathered, crushed, and intensely fractured tuff to the northeast. The contact is shown as a curved dashed line, which usually indicates a gradational or vague contact. This particular feature does not appear to disrupt the younger surficial soil. However, the trench log by Kaldveer Associates (1988) does not describe or illustrate the contact in sufficient detail to fully demonstrate the nature of the contact (i.e., depositional or tectonic). Additional exploratory trenching would be required at that location in order to further evaluate the contact. However, time constraints make additional trenching impracticable for this project.

As an alternative to further exploratory trenching, we have taken a conservative interpretation of the feature at station 6+40 and recommend a 25-foot building set-back from the feature which will extend subparallel to the general northwest structural trend as shown on the published geologic maps (Plate 1). Since the agglomerate/tuff contact may be depositional rather than fault-related, it is E_2C's recommendation that the typical 50-foot setback be reduced, and a 25-foot set-back be established as shown on Plate 1. The viable building zone for proposed building areas no. 2,3,and 4 now is roughly 275 to 325 feet wide and located south of the PG&E easement (Plate 1). Proposed building area no. 1 has been relocated to the originally proposed area north of the PG&E easement. No structures intended for human habitation should be built wholly or partly within a fault set-back. Proposed leachfields may be located within a set-back zone, but should not be placed directly over a mapped fault trace. The proposed building sites and leachfield locations shown on Plate 1 conform to our recommended building setbacks.

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

Sincerely,

E_2C, Inc.

James E. Ball
Project Geologist

Sako K. Noravian, MSSE, PE, REA
Principal Structural Engineer

Craig S. Harwood, PG, CEG
Senior Engineering Geologist

REGISTERED GEOLOGIST
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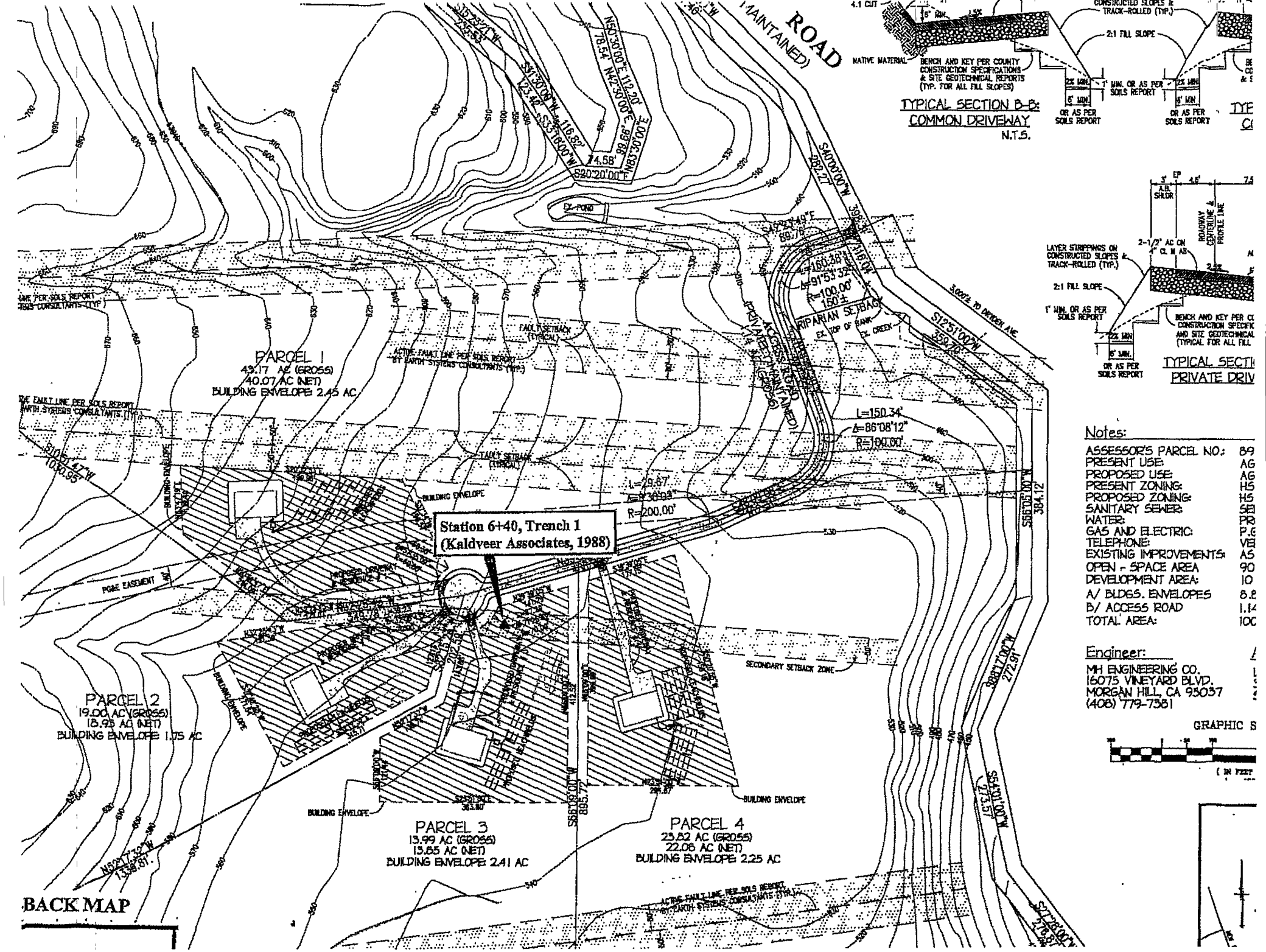
PLATE 1

Fault Set-Back Map


ROAD
(MAINTAINED)
TYPICAL SECTION B-B:
COMMON DRIVEWAY
N.T.S.
NATIVE MATERIAL
BENCH AND KEY PER COUNTY CONSTRUCTION SPECIFICATIONS & SITE GEOTECHNICAL REPORTS (TYP. FOR ALL FILL SLOPES)
2:1 FILL SLOPE
OR AS PER SOILS REPORT
TYPICAL SECTION
PRIVATE DRIV
LAYER STRIPPINGS ON CONSTRUCTED SLOPES & TRACK-ROLLED (TYP.)
2-1/2" AC ON 4" CL. II AB
ROADWAY CENTERLINE & PROFILE LINE
BENCH AND KEY PER CONSTRUCTION SPECIFIC
AND SITE GEOTECHNICAL
(TYPICAL FOR ALL FILL
PARCEL 1
43.17 AC (GROSS)
40.07 AC (NET)
BUILDING ENVELOPE 2.45 AC
PARCEL 2
19.00 AC (GROSS)
18.93 AC (NET)
BUILDING ENVELOPE 1.75 AC
PARCEL 3
13.99 AC (GROSS)
13.85 AC (NET)
BUILDING ENVELOPE 2.41 AC
PARCEL 4
23.82 AC (GROSS)
22.06 AC (NET)
BUILDING ENVELOPE 2.25 AC
Station 6+40, Trench 1
(Kaldveer Associates, 1988)
ACCESS ROAD (MAINTAINED)
RIPARIAN SETBACK
EX. TOP OF BANK
EX. CREEK
FAULT SETBACK (TYPICAL)
ACTIVE FAULT LINE PER SOILS REPORT BY EARTH SYSTEMS CONSULTANTS (TYP.)
BUILDING ENVELOPE
SECONDARY SETBACK ZONE
PG&E EASEMENT
EX. POND
BACK MAP
Notes:
ASSESSOR'S PARCEL NO: 89
PRESENT USE: AG
PROPOSED USE: AG
PRESENT ZONING: HS
PROPOSED ZONING: HS
SANITARY SEWER: SEI
WATER: PR
GAS AND ELECTRIC: P.G
TELEPHONE: VE
EXISTING IMPROVEMENTS: AS
OPEN - SPACE AREA 90
DEVELOPMENT AREA: 10
A/ BLDGS. ENVELOPES 8.8
B/ ACCESS ROAD 1.14
TOTAL AREA: 100
Engineer:
MH ENGINEERING CO.
16075 VINEYARD BLVD.
MORGAN HILL, CA 95037
(408) 779-7381
GRAPHIC S
(IN FEET

D4054

FAULT LOCATION INVESTIGATION
FOR
JAPANESE CULTURAL CENTER
GILROY, CALIFORNIA

Kaldveer Associates
Geoscience Consultants

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July 1, 1988
K771-4, 11706

Mr. Ted Uchida
Educational Development Organization
(of California)
c/o Sugimura/Takamoto and Associates
2542 South Bascom Avenue, Suite 203
Campbell, California 95008

RE: FAULT LOCATION INVESTIGATION
JAPANESE CULTURAL CENTER
GILROY, CALIFORNIA

Gentlemen:

In accordance with your request, we have performed a fault location for the proposed Japanese Cultural Center in Gilroy, California. The accompanying report presents the results and analyses of our geologic reconnaissance, literature review, aerial photograph analysis and trench logging. The site conditions are discussed and conclusions concerning the fault location are presented.

We have concluded that the two active traces of the Calaveras fault underly the site, and that setback of structures from the fault will be required. We refer you to the text of the report for detailed conclusions as to the fault location and for our recommendations. If you have any questions concerning our findings, please call us.

Very truly yours,

KALDVEER ASSOCIATES, INC.

REGISTERED GEOLOGIST
DAVID F. HOEXTER
No. 1158
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

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FAULT LOCATION INVESTIGATION

For
JAPANESE CULTURAL CENTER
GILROY, CALIFORNIA

To
Mr. Ted Uchida
Educational Development Organization
(of California)
c/o Sugimura/Takamoto and Associates
2542 South Bascom Avenue, Suite 203
Campbell, California 95008

July 1988

TABLE OF CONTENTS

FAULT LOCATION INVESTIGATION
FOR
JAPANESE CULTURAL CENTER
GILROY, CALIFORNIA

I. INTRODUCTION

This report presents the results of our Fault Location Investigation for the proposed Japanese Cultural Center in Gilroy, California. The project site is west of Leavesley Road in northeastern Gilroy as shown on the Site Location Map, Figure 1.

The California Public Resources Code, Chapter 7.5, Division 2 (Alquist-Priolo Special Studies Zone Act of 1972) requires detailed geologic studies of areas planned for development located within potential fault rupture zones delineated by the State Geologist. The majority of the Japanese Cultural Center site lies within the boundaries of a potential fault rupture zone associated with the Calaveras fault as illustrated on the Special Studies Zones map, Figure 2. The purpose of this investigation has been to evaluate the site, determine if active or potentially active traces of the Calaveras fault or related faults underlie the site, and formulate conclusions and recommendations regarding potential fault rupture at the site.

A. Scope of Services

The general scope of services of this investigation included:

1. Review of available published and unpublished geologic and geotechnical engineering literature regarding the site and surrounding vicinity.

2. Interpretation of black and white stereoscopic aerial photographs of the site and surrounding vicinity.

3. Geologic reconnaissance and detailed geologic mapping of the site.

4. Excavation and general logging of test pits in the area of planned development.

5. Excavation and logging in detail of fault location trenches.

6. Evaluation of field data.

7. Preparation of this report.

The investigation was conducted by Mr. Randy P. Rowley, Senior Engineering Geologist. Trench logging was conducted by Mr. Ken Ferrone and by Ms. Lyn Gillespie, Staff Geologists. The project was supervised by David F. Hoexter, C.E.G. Mr. Rowley and Mr. Hoexter viewed the trench exposures while they were being logged. Fault exposures in

Trenches 1 and 2 were observed by a representative of the U.S. Geological Survey, Menlo Park, and by Mr. James Burkeland, Santa Clara County Geologist.

B. Site Description

The site of the proposed Japanese Cultural Center is in northeast Gilroy, and is bounded on the south and east by Leavesley Road. The site is an irregularly shaped parcel of approximately 100 acres, dissected by several drainages flowing in a general north-south direction and a steep-sided ravine trending in a north-south direction on the western portion of the property. The site of the planned development is relatively flat, with an elevation of about 540 to 550 feet (USGS datum), and is bounded by a knoll on the south. South of the knoll the ground surface slopes downward to Leavesley Road at an inclination of about 2:1 (horizontal to vertical). The remaining portions of the site typically consists of rolling hills, sloping at approximate inclinations ranging from 10:1 to 2:1.

The present use of the site is cattle rangeland. A dirt road crosses the site. The road originates on the adjacent property to the west, traverses the area of the planned cultural center in an east-west direction and turns south to intersect Leavesley Road. Vegetation at the site consists of low grasses and weeds, and intermittent trees within the drainages and on top of the knoll.

Surface water was observed as seepage in several locations across the site. Groundwater conditions are described in the Subsurface Conditions section of this report.

C. Project Description

It is our understanding that the proposed development will consist of approximately 17 structures totalling about 60,000 square feet in area. Most structures will be of wood-frame construction and one- to two-stories in height. However, a few of the structures might reach heights up to 90 feet. About 10 acres of the site will be developed as paved and non-paved surfaces for approximately 300 cars and buses. Cuts and fills up to 15 feet in height will be required to develop the property. The general site layout is shown on the Site Plan with Building Setback, Figure 3.

II. REGIONAL GEOLOGY

The area of investigation is located in the Coast Range Geomorphic Province of California. This geomorphic province is characterized by a series of northwesterly trending folds and faults. The Coast Range contains mostly Mesozoic and Cenozoic sedimentary rock which have undergone slight metamorphic changes. The region has a complex geologic history of sedimentation, volcanism, folding, faulting, uplift and erosion.

The site is located on the western flank of the Diablo Mountain Range. The general structural pattern of the Diablo Range shows large anticlinal

folds with Franciscan Complex core rocks arranged en echelon and separated by synclinal folds containing younger rocks. The southern Great Valley units, dominated by late Cretaceous beds, form large collars around the elliptical masses of Franciscan rocks that are the core of the Diablo Range. Locally the crudely anticlinal features (antiforms) are diapirs composed of a mixture of serpentinite and other Franciscan volcanic and sedimentary rocks that have been forced up along faults into and even through the younger rocks.

The right lateral, strike-slip Calaveras fault zone has been mapped through the property, as shown on Figure 4, Regional Geology Map. The bedrock at the property is late Cretaceous marine sedimentary rocks east of the Calaveras Fault zone and Quaternary volcanics west of the fault zone.

III. REGIONAL FAULTING AND SEISMICITY

The majority of the site lies within the State of California Special Studies Zone for the Calaveras fault (State of California, 1982), and the trace of the Calaveras fault has been mapped within the property boundaries (Figure 2). The northwest trending Calaveras fault extends from Hollister (San Benito County) northward to at least Danville (Contra Costa County), a distance of over 80 miles (Page, 1982). The Calaveras Fault is a branch of the San Andreas fault system, a major active rift in the earth's crust that extends for at least 450 miles along the California Coast. This fault system also includes the San Andreas and Hayward fault zones, among others. The site is located approximately four miles and eight miles northeast of the Sargent and San Andreas fault zones, respectively, and 20 miles southwest of the southern terminus of the Hayward fault zone. The locations of known faults around the site are shown on Figure 4.

The Calaveras fault, like the other faults of the San Andreas fault system, is active. Fault creep is currently occurring both north and south of the site along the Calaveras fault. Creep has been occurring along the fault at Cochrane Bridge on Anderson Lake and at the spillway of Coyote Lake Dam (Radbruch-Hall, 1974). Locally, apparent creep was observed northeast and south of the site on Leavesley Road.

Since the early 1800's, major earthquakes have been recorded along all three of the above fault zones (San Andreas, Calaveras and Hayward faults). In the early 1800's a major earthquake of unknown magnitude was reported on the Calaveras fault. In 1836 and again in 1868, earthquakes having Richter magnitudes estimated at 7.0 occurred along the Hayward fault. These earthquakes opened fissures at random locations along the fault from San Pablo to Mission San Jose. The presumed epicenter of the 1836 earthquake was located approximately 70 miles northwest of the site; the presumed epicenter of the 1868 earthquake was located approximately 45 miles northwest of the site. The San Francisco earthquake of 1906 had a Richter magnitude of 8.3 and the epicenter of this earthquake was located approximately 100 miles northwest of the site.

Numerous earthquakes of magnitude 4.0 or greater have been recorded throughout the Bay Area along all three of these faults. Recent earthquakes along the Calaveras fault include a magnitude 5.1 event in 1988, a magnitude 6.2 event in 1984 epicentered 18¼ miles northwest of the site and a magnitude 5.8 event in 1979 epicentered 4 miles southeast of the property. The 1984 earthquake was accompanied by surface fault rupture at the southern end of Anderson Lake and along Coyote Creek northeast of the site (Harms et. al. 1984 and Hart, 1984). Based on fault length and historic evidence, the maximum credible earthquakes on the Calaveras fault is expected to be at least magnitude 7.0 (Slemmons and Chung, 1982) and has been estimated to be as large as 7.5 (Greensfelder, 1974). Other significant earthquakes recorded on faults with 100 kilometers (approximately 65 miles) of the site include the following:

Fault System Generating Earthquake	Approximate Magnitude (Richter)	Epicenter From Site (Miles)	Date of Occurrence
San Andreas	7.5±	65 NW	1838
Calaveras	6.5±	52 NW	1861
Antioch	Unknown	Unknown	1872
Midland	Unknown	Unknown	1892
Mount Diablo	5.5	63 N	1980
Greenville	5.2-5.8	55 NW	1980

IV. SITE GEOLOGY

A. Stratigraphy

In general, the project site is separated into two geologic units as shown on the Site Geology Map, Figure 5. In the western portion, the bedrock is the Coyote Lake Volcanics (tuff, agglomerate and basalt) of Quaternary/Tertiary age. These rocks were observed as surface outcrops and in the test pits and test trenches.

In the eastern portion of the site (separated from the west by the Calaveras fault zone), the bedrock consists of unnamed marine sedimentary rocks (sandstone, conglomerate and shale) of Cretaceous age. These rocks were exposed in rare outcrops, in stream channels and road cuts.

B. Aerial Photographic Evaluation and Surface Reconnaissance

Two sets of black-and-white aerial photographic pairs of the site vicinity were examined stereographically for this investigation. Both sets were supplied by Pacific Aerial Surveys of Oakland, California. The photo nomenclature, scale and dates are listed in the References.

Our examination of these photos along the trace of the Calaveras Fault (through the subject site) indicates recent faulting. Tonal color contrasts trending northwest are present just south of the site. Through the site following the same trace, there are several well defined shallow linear depressions and a steep scarp. No other specifically fault-related features are noted crossing the site. Our observations of geomorphic features at the site are presented in the Photolinement Interpretation Map, Figure 6.

During our field investigation phase (between May 27 and June 3, 1988) our geologist performed a surface geologic reconnaissance of the site and adjacent properties. Unstable (landslide) features were observed on the steep slopes along the southern portion of the property and in the creek area (with steep banks) which flows through the site, but both areas are outside of any planned development. All of the mapped field reconnaissance data are presented on the Site Geology Map. Additionally, en echelon fractures crossing Leavesley Road (both north and south of the site) were noted during the field reconnaissance. The locations of the fault-related fractures are presented on the Photolinement Interpretation Map. We found that the fractures north of the site had been strip-painted (by others) and in some cases, showed up to ½ inch right lateral offset. We noted no such strip-painting on the fractures south of the site, but did strip-paint them before we completed our field investigation.

C. Field Investigation

Three exploratory trenches were excavated at the site between May 31, and June 3, 1988. The trench locations are shown on Figure 5. The trenches varied in depth from 2 to 11½ feet below the adjacent ground surface and totalled approximately 1,050 lineal feet. A Case 580E Extenda-Hoe with a 24-inch bucket was used to excavate the trenches. The excavations were backfilled, however, the backfill was not compacted to the typical requirements of engineered fill. If structures, concrete flat work, foundations, pavements, utilities or other improvements are to be located in the vicinity of any of the test trenches, the backfill should be removed and compacted in accordance with the requirements for engineered fill.

All trench excavations were logged by our Staff Geologist under the direction of our Principal Engineering Geologist. The trench locations were chosen to cross mapped faults and to explore lineaments located by both surface observations and air photo stereographic interpretations. Both logs and locations of the trenches as presented, were determined using hand compass, measuring tapes, and hand levels from reference points on the Site Plan provided by Sugimura/Takamoto and Associates.

Test trench logs and material legends are presented on Figures 7 through 12. The soil materials were classified in the field using the Unified Soil Classification System. Bedrock units were classified using visual techniques, according to the Rock Classification Chart. Both classification systems attached in Appendix A.

Ten test pits were excavated in conjunction with our Phase I geotechnical investigation on May 27, 1988. The purpose of the test pits was to provide field data regarding the geotechnical aspects of the project, and to supplement our surface geologic site reconnaissance. The test pits extended to a maximum depth of about 10½ feet, and were also excavated with a Case 580E Extenda-Hoe (24-inch bucket). The locations of the test pits are shown on Figure 5, and were located in the field by pacing.

The test pits were logged by our field engineer and the logs are presented in the Appendix. Materials encountered in the test pits were classified as described above.

D. Subsurface Conditions

In general, soils observed during this investigation consisted of residual clay soils. The clayey soils exhibited expansion/shrinkage features near the surface and laboratory test results performed for Phase I of our geotechnical investigation showed soils with moderate to high expansion potential. The clayey expansive soils are discussed in our letter report titled, "Geotechnical Investigation, Phase I".

Test Trench No. 1 was excavated to expose two faults mapped by Armstrong and Wagner (1978). Test Trench No. 1 exposed clayey soil overlying massive to thin bedded bedrock. One fault was exposed at the western end of Test Trench No. 1. Where exposed, the fault was noted as an approximately planar surface, with a northwest bearing and a steep dip towards the southwest. Other geologic explanations for the presence of this feature, such as expansive soils or landslide were evaluated. These possible explanations were eliminated. The immediate area of the fault traces and a zone extending to the east approximately 45 feet was intensely fractured to crushed. No other fault was found in Test Trench 1.

Test Trench No. 2 was excavated to cross the main trace of the Calaveras Fault. The fault was exposed at the eastern end of Test Trench No. 2. Where exposed, the fault was noted as a thin band (2 to 3 inches in width) of intensely sheared, argillaceous fault gouge with a north-northwest bearing and a steep dip towards the southwest. The immediate area surrounding the fault trace was intensely fractured to crushed.

Test Trench No. 3 was used as a check trench to verify adequate setbacks for the proposed structures. The trench exposed clayey top soils overlying intensely fractured to crushed bedrock. No apparent faults were exposed.

Generally, the rocks exposed in Test Trenches 1, 2 and 3 were tuff and agglomerate. The light colored (light-brown) tuff was found to be moderately fractured, friable to moderately hard and moderately to little weathered. The darker (orange-brown) agglomerate was found to be moderately to little fractured, moderately hard to hard, little weathered. The tuff and agglomerate are generally found in the topographically low

elevations of the western portion of the site, as shown on the Site Geology Map. More specific descriptions of the materials observed in the trenches are presented on the respective Test Trench Logs. Please note that the described order of soil and bedrock units (i.e. A, B, C, D...) does not reflect relative ages of the particular unit.

None of our subsurface excavations exposed the dark colored (black to red-black) basalt. However, when exposed in surface outcrops, it was found to be occasionally fractured, hard to very hard, little weathered. Also, the basalt was often found to be visicular and to have nodules of peridotite. The approximate location of the basalt is shown on the Site Geology Map.

No excavations were performed in the eastern portion of the property. However, rare surface outcrops, exposures in creekbeds and a road cut allowed general observations to be made of the rock units. In general, they were unnamed marine sedimentary rocks (sandstone and conglomerate) of Cretaceous age.

The sandstone was found to be massive, moderately intensely fractured, moderately hard to hard and moderately to little weathered. The conglomerate was observed to be composed of well-rounded clasts (to gravel size) of resistant rock types of chert and volcanic rocks. The conglomerate was massive, little fractured, hard and little weathered.

Groundwater was noted in Test Trench 1 at a stabilized depth of approximately six feet. It was observed to be accumulated behind a very hard agglomerate layer. The other test trenches did not encounter groundwater.

Surface water was noted as springs in three different locations at the site. Two springs were observed in the Tertiary age sedimentary rock of the eastern portion of the site. One spring area was noted in the western portion of the site. This spring does not appear to be associated with faulting. The spring locations are presented on the Site Geology Map.

V. DISCUSSION AND CONCLUSIONS

Based upon the data obtained and evaluated during this investigation, it is our conclusion that the Calaveras fault zone clearly underlies the project site. Two potentially active fault traces were identified at the site in the locations shown on Figure 5. The suspected main trace of the Calaveras fault underlies the area of the proposed Ninja Village, and an associated potentially active fault exists in the area west of Building C of the proposed Cultural Center.

VI. RECOMMENDATIONS

From an engineering geology view point, it is our opinion that the site is suitable for the proposed development provided the recommendations presented in this report are incorporated in the project planning. Based upon the results of our site reconnaissance, aerial photo interpretation,

review of available literature and our exploratory trenching, we recommend that a restricted building zone or set-back extend at least 100 feet on either side of the identified fault traces. The wide recommended set-back distance is based upon the relative wide shear zones adjacent to the identified faults, and to allow a factor of safety for possible undetected splay faulting. High-occupancy structures, including spectator seating should not be constructed within the set-back zone. The restricted area within the set-back limits may be used for roads, parking and similar facilities. Where possible, all utility lines should avoid crossing the fault traces to prevent possible structural damage. Alternatively, utility lines crossing fault traces could be fitted with flexible couplings.

The locations of the exploratory trenches were not surveyed, but determined by hand compass, tape measure and hand level. We recommend that surveying be performed within the next few months to locate the trenches more accurately.

LIMITATIONS

This report is based upon a visual examination of the property and upon the scope of work described above. The conclusions and recommendations presented herein are based upon applicable standards of our profession at the time this report has been prepared. No other warranties, expressed or implied, as to the professional advice provided under the terms of our agreement and as described in this report are made. While we believe our conclusions are well founded, it is possible that there may be undiscovered conditions that would cause us to revise our opinions and/or recommendations.

* * * * * * * * * * * * * * * * * * *

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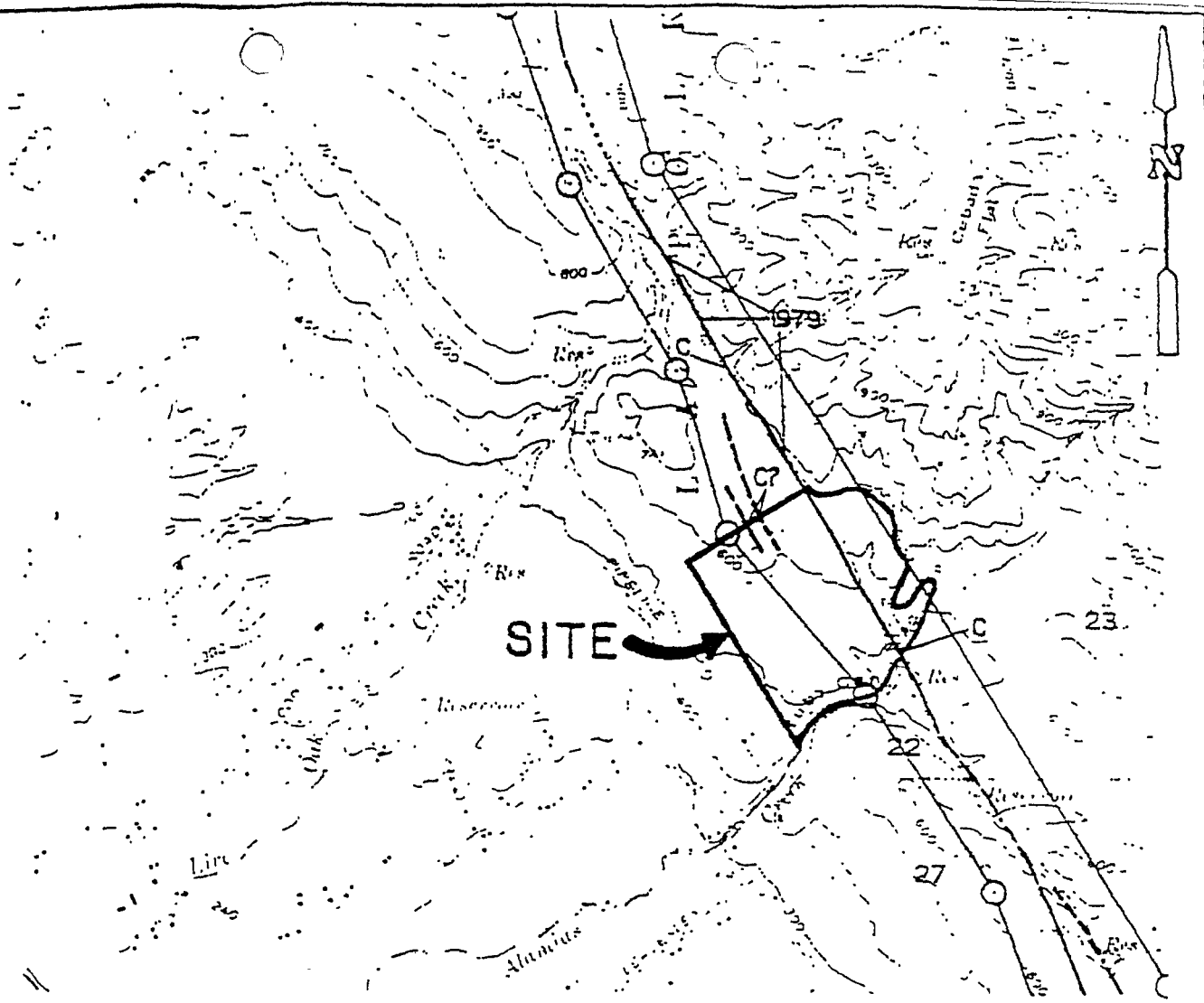

LEGEND

C — Faults considered to have been active during Holocene time and to have a relatively high potential for surface rupture; solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query(?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by creep or possible creep.

Special Studies Zone Boundary

These are delineated as straight-line segments that connect encircled turning points so as to define special studies zone segments.

Base: "State of California Special Studies Zones, Gilroy Quadrangle", 1982.

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SPECIAL STUDIES ZONE MAP

JAPANESE CULTURAL CENTER
Gilroy, California

PROJECT NO.	DATE	Figure
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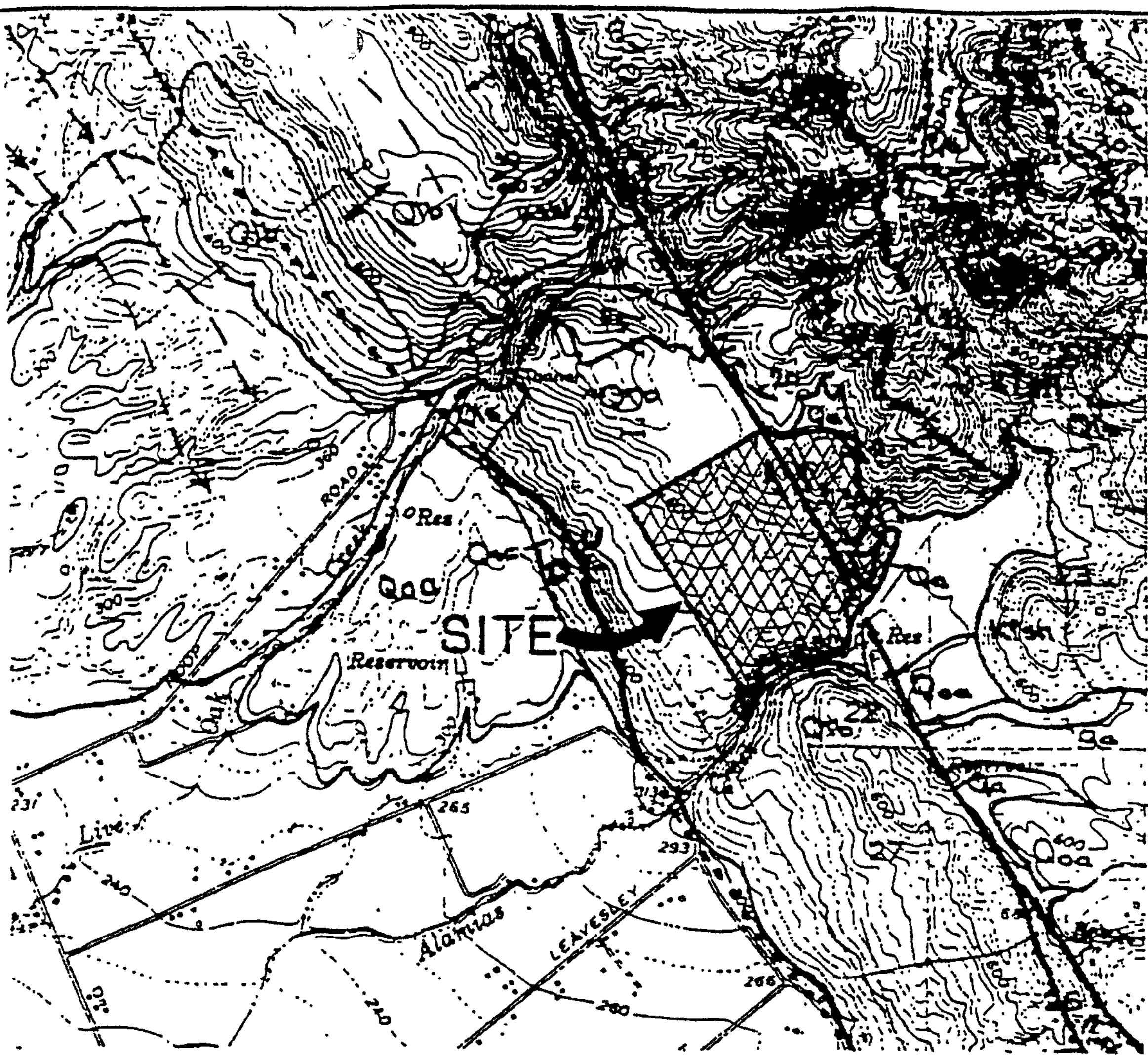

N

LEGEND

Contact, dashed where gradational or approximately located.

Fault, dashed where inferred; dotted where concealed:
U = Upthrown block
D = Downthrown block, relatively;
Single arrow indicates observed dip of fault; double parallel arrows indicate lateral moment.

Qls - Landslide Debris
Qlb - Landslide of Basalt Debris (Holocene)
Qa - Alluvium, Gravel, Sand, Silt and Clay (Holocene)
Qoa - Older Alluvium (Quarternary)
Qsc - Santa Clara Formation, Gravel, Sand and Clay (Quarternary)
QTb - Olivine Basalt Lava (Pliocene-Pleistoane)
KTsh - Marine Sedimentary Rocks (Tertiary)
Kshl - Shale (Cretaceous)
Ksh - Berryessa Formation-Shale (Cretaceous)
SP - Serpentinezed Ultramafic Rocks (Cretaceous)
fs - Franciscan Rocks, Graywacke (Cretaceous)

Base: Dibblee (1973)

Approximate Scale (feet)
0 1000 2000 3000

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REGIONAL GEOLOGY MAP

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PROJECT NO.	DATE	Figure 4
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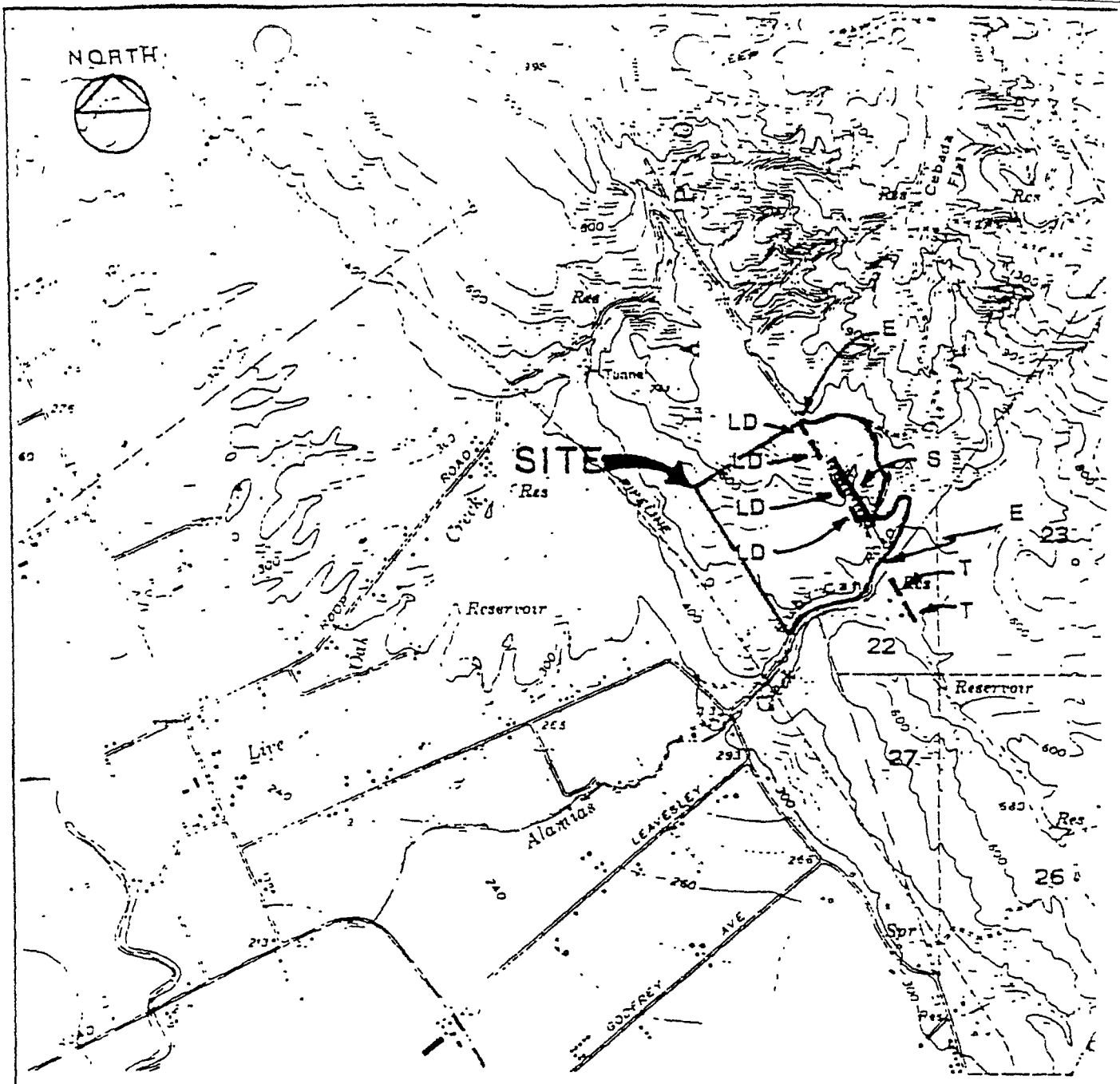

SCALE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 20 FEET

LEGEND

LD – Linear Depression

T – Tonal Contrast

S – Scarp

E – En echelon Fractures Across Leavesley Road, Some Right Lateral Displacement (field data)

Base: U.S.G.S. Gilroy Quadrangle, revised 1968

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PHOTOLINEMENT INTERPRETATION MAP

JAPANESE CULTURAL CENTER
Gilroy, California

PROJECT NO.	DATE	Figure 6
K771-4	July 1988	

APPENDIX A - FIELD INVESTIGATION
Test Pits

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using a Case 580E backhoe with a 24-inch bucket. Eleven test pits were excavated on May 27, 1988, to a maximum depth of 10½ feet. The locations of the test pits are shown on the Site Plan, Figure 5. The soils and rock encountered in the test pits were continuously logged by our field representative. The soils are described in accordance with the Unified Soil Classification System (ASTM D-2487). The logs of the test pits as well as a key for the classification of the soil (Figure A-1) and rock (Figure A-2) are included as part of this appendix.

Bulk soil and bedrock samples were obtained from the test pits at selected depths appropriate to the soil investigation. All samples were transmitted to our laboratory for evaluation and appropriate testing.

Test pit elevations were estimated based on the topographic map prepared by Carnes & Associates, undated.

The attached test pits and related information show our interpretation of the subsurface conditions at the dates and locations indicated, and it is not warranted that they are representative of subsurface conditions at other locations and times.

ROCK CHARACTERISTICS CHART

Bedding of Sedimentary rocks

Stratification	Thickness of Beds
Massive	No apparent bedding
Very thick bedded	Greater than 4 feet
Thick bedded	2 feet to 4 feet
Thin bedded	2 inches to 2 feet
Very thin bedded	1/2 inch to 2 inches
Laminated	1/8 inch to 1/2 inch
Thinly laminated	Less than 1/8 inch

Fracturing

Intensity	Size of Pieces
Little	Greater than 4 feet
Occasional	1 foot to 4 feet
Moderate	6 inches to 1 foot
Close	1 inch to 6 inches
Intense	1/2 inch to 1 inch
Crushed	Less than 1/2 inch

Strength

Soft - Plastic or very low strength
Friable - Crumbles easily by hand
Low Hardness - Crumbles under light hammer blows
Moderate Hardness - Crumbles under a few heavy hammer blows
Hard - Breaks into large pieces under heavy, ringing hammer blows
Very Hard - Resists heavy, ringing hammer blows and will yield with difficulty only dust and small flying fragments

Weathering

Deep - Moderate to complete mineral decomposition; extensive disintegration; deep and thorough discoloration; many extensively-coated fractures.

Moderate - Slight decomposition of minerals; little disintegration; moderate discoloration; moderately-coated fractures.

Little - No megascopic decomposition of minerals; slight to no effect on cementation; slight and intermittent, or localized discoloration; few stains on fracture surfaces.

Fresh - Unaffected by weathering agents; no disintegration or discoloration; fractures usually less numerous than joints.

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS*
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel–sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel–sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel–sand–silt mixtures non–plastic fines.
			GC	Clayey gravels, gravel–sand–clay mixtures, plastic fines
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand–silt mixtures, non–plastic fines.
			SC	Clayey sands, sand–clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

	U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS			
	200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS	
	FINE	MEDIUM	COARSE	FINE	COARSE			

GRAIN SIZES

SANDS AND GRAVELS	BLOWS/FOOT†
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH‡	BLOWS/FOOT†
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

†Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

PETER KALDVEER

AND ASSOCIATES, INC.

Geotechnical Consultants

KEY TO EXPLORATORY BORING LOGS

Unified Soil Classification System (ASTM D-248

JAPANESE CULTURAL CENTER

Gilroy, California

PROJECT NO.	DATE	

EQUIPMENT Case 530L Backhoe	SURFACE ELEVATION 446 Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 3 Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, porous with roots, dry upper 8-10 inches, becoming moist	dark brown	firm-stiff	CH	1 2 3					
TUFF, silty, laminated, intensely fractured to crushed, friable, deeply weathered	tan light brown	soft		4 5 6 7					
Bottom of Pit = 7½ Feet Note: The stratification lines represent the approximate boundaries between material types and the transition may be gradual.				8 9 10 11 12 13 14 15 16 17 18 19 20					

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EXPLORATORY PIT LOG

JAPANESE CULTURAL CENTER
Gilroy, California

PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-1

EQUIPMENT Case 580E Backhoe	SURFACE ELEVATION 2546 Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 4 Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty with roots, damp to moist, porous upper 6-8 inches, with some rock fragments	dark red brown	stiff	CL-CH	1 2 3 4					
AGGLOMERATE, massive, closely fractured, low to moderately hardness, moderately weathered, with pockets of tuffaceous material	mottled rust-brown			5 6					
Bottom of Pit = 6½ Feet				7 8 9 10 11 12 13 14 15 16 17 18 19 20					

Note:
The stratification line represents the approximate boundary between material types and the transition may be gradual.

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EXPLORATORY PIT LOG

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PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-2

EQUIPMENT: Case 580E Backhoe	SURFACE ELEVATION ±544 Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 5 Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, porous with roots, damp at surface, moist at depth	dark brown	stiff	CH	1–5					
AGGLOMERATE, massive, closely fractured, low to moderate hardness (difficult digging)	red brown to yellow brown			6–9					
Bottom of Pit = 9 Feet Note: The stratification line represents the approximate boundary between material types and the transition may be gradual.				10–20					

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EXPLORATORY PIT LOG

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PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-3

EQUIPMENT Case 580E Backhoe	SURFACE ELEVATION ±534 Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 1½ Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, porous and dry upper 12 inches	dark brown	firm-stiff	CH	1					
TUFF, silty, clayey, laminated, crushed to intensely fractured, very soft to low hardness, deeply weathered	light brown-grey			2 3 4 5 6 7 8 9 10					
Bottom of Pit = 10½ Feet Note: The stratification line represents the approximate boundary between material types and the transition may be gradual.				11 12 13 14 15 16 17 18 19 20					

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EXPLORATORY PIT LOG

JAPANESE CULTURAL CENTER
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PROJECT NO.	DATE	PIT
		TP-1

EQUIPMENT Case 580E Backhoe	SURFACE ELEVATION [illegible] Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 3½ Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, with roots and porous to 10", damp to moist at depths of 1½ feet	dark brown	stiff-very stiff	CH	1 2 3					
AGGLOMERATE, massive, closely fractured, low to moderate hardness, moderately weathered	grey-light			4 5 6 7 8 9					
Bottom of Pit = 9½ Feet Note: The stratification line represents the approximate boundary between material types and the transition may be gradual.				10 11 12 13 14 15 16 17 18 19 20					

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EXPLORATORY PIT LOG

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PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-5

EQUIPMENT Case 580E Backhoe	SURFACE ELEVATION ±510 Feet	LOGGED BY SLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 3½ Feet	DATE EXCAVATED 3/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (PSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, dry and porous with roots upper 10", becoming damp to moist with basalt cobbles at 2½ feet	dark brown	firm-very stiff at depth	CH	1, 2, 3					
AGGLOMERATE, massive, closely fractured, low to moderage hardness, moderately weathered	yellow brown			4, 5, 6, 7					
Bottom of Pit = 7½ feet Note: The stratification line represents the approximate boundary between material types and the transition may be gradual.				8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20					

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EXPLORATORY PIT LOG

JAPANESE CULTURAL CENTER
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PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-6

EQUIPMENT	Case 580E Backhoe	SURFACE ELEVATION	Feet	LOGGED BY	BLP
DEPTH TO GROUNDWATER	Not Encountered	DEPTH TO BEDROCK	3½ Feet	DATE EXCAVATED	5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, porous and dry upper 10", with roots, grading to moist	dark brown	firm-stiff	CH	1 2 3					
TUFF, silty, laminated, intensely fractured to crushed, friable, deeply weathered becoming very moist to wet @ 8'	tan-light brown			4 5 6 7 8 9					
Bottom of Pit = 9½ Feet Note: The stratification line represents the approximate boundary between material types and the transition may be gradual.				10 11 12 13 14 15 16 17 18 19 20					

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EXPLORATORY PIT LOG

JAPANESE CULTURAL CENTER
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PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-7

EQUIPMENT Case 580E Backhoe	SURFACE ELEVATION ~53[illegible] Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 4 Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH ( )
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, porous and dry upper 10", becoming moist	dark brown	firm-very stiff	CH	1 2 3 4					
TUFF, silty, clayey, laminated crushed to intensely fractured, very soft to low hardness, deeply weathered (grading to red brown in color) (with rock fragments at 10 feet)	dark red brown			5 6 7 8 9 10					
Bottom of Pit = 10½ Feet Note: The stratification line represents the approximate boundary between material types and the transition may be gradual.				11 12 13 14 15 16 17 18 19 20					

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EXPLORATORY PIT LOG

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PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-8

EQUIPMENT Case 580E Backhoe	SURFACE ELEVATION [illegible] Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 3 Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, porous and dry upper 6-8 inches, also with roots, becoming moist	dark brown	stiff	CH	1 2 3					
TUFF, silty, clayey, laminated,.. crushed to intensely fractured, very soft to low hardness, deeply weathered becoming very stiff at 8 feet-grading into weathered conglomerate	yellow red brown			4 5 6 7 8 9					
Bottom of Pit = 9½ Feet Note: The stratification line represents the approximate boundary between material types and the transition may be gradual.				10 11 12 13 14 15 16 17 18 19 20					

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EXPLORATORY PIT LOG

JAPANESE CULTURAL CENTER
Gilroy, California

PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-9

EQUIPMENT Case 580E. Backhoe	SURFACE ELEVATION ≈355 Feet	LOGGED BY BLP
DEPTH TO GROUNDWATER Not Encountered	DEPTH TO BEDROCK 4 Feet	DATE EXCAVATED 5/27/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (TSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, porous and dry upper 6-8", with roots and some angular rock fragments	brown	stiff	CH	1					
(grading red brown with basalt cobbles 4-8"∅, increasing silt content	red brown	very stiff	CH	2 3 4					
TUFF, silty, clayey, laminated, crushed to intensely fractured, very soft to low hardness, deeply weathered				5 6 7 8					
(practical refusal at 9½ feet)				9					
Bottom of Pit = 9½ Feet				10 11 12 13 14 15 16 17 18 19 20					

Note:
The stratification line represents the approximate boundary between material types and the transition may be gradual.

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EXPLORATORY PIT LOG

JAPANESE CULTURAL CENTER
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PROJECT NO.	DATE	PIT NO.
K771-4	July 1988	TP-10

KALDVEER ASSOCIATES
FAULT LOCATION INVESTIGATION FOR JAPANESE CULTURAL CENTER

NOTE: THE REMAINING FIGURES (OVERSIZED) ARE ON FILE WITH THE SANTA CLARA COUNTY DEPARTMENT OF PLANNING AND DEVELOPMENT.