B

Type

X

Plans

BLD 05-4534

Permit Number

22095

Street Number

Umland Cir

Street Name

TIM

Community Code

109-420-013

APN

COUNTY OF SONOMA
DEPARTMENT OF EMERGENCY SERVICES
FIRE SERVICES • EMERGENCY MANAGEMENT • HAZARDOUS MATERIALS

VERNON A. LOSH II, DIRECTOR

Date: November 22, 2005

To: Linda and Craig Willes
387 Michell St
Livermore CA 94551

From: Caerleon Safford, Vegetation Management Planning

Re: Vegetation Management Requirements
22095 Umland Circle, Cazadero

APN: 109 420 013

Dear Mr and Mrs Willes,

Based on our on-site review of your project October 12, 2005, we find that this letter of requirements in lieu of a full Vegetation Management Plan will satisfy the defensible space conditions established by our office.

Section 4291 of the California Public Resources and pertinent Sonoma County Codes require a minimum of 100 feet of defensible space surrounding structures in unincorporated areas in California, including those in Sonoma County. Additional space may be required in high hazard areas.

FINDINGS:

Your project consists of the construction of a new garage and single family home situated on a parcel with down slope areas on two sides.

Our assessment of the slope, aspect and fuel types specific to your project indicates that a Defensible Space Radius of 150 feet from around the building envelope of the combined residence & garage is required. See detail in "Requirements" below.

Critical Slope:	15% average.
Critical Aspect:	Southwest 210°
Prevailing Wind:	Westerly winds usually prevail in Sonoma County in the afternoons, especially on the coast, but direction may be influenced by local land features. Localized upslope, up canyon winds may also be anticipated in the afternoons as the land heats. Hot dry northeasterly "Santa Ana" type winds may be expected in the late summer and fall months.

2300 County Center Drive, Suite 221A, Santa Rosa, CA 95403 • phone (707) 565-1152 • fax (707) 565-1172.

Dominant Vegetation (FUEL):	Pine, redwood, tan oak, bay, shrubs, grasses.
Access:	Via a narrow road system, paved.
Fire History:	Though there have been no large wildfire incidents within the Timber Cove Subdivision in recent years, the heavy fuel volume, relatively high population density, the tendency for strong wind incidents, and fire history of the general area combined have caused Timber Cove to be designated as a Community-at-risk for fire.
Area-wide overview:	The Timber Cove Subdivision has a municipal water system with hydrants. Vegetation is dense, with many dead or unhealthy pines.

Terms and Concepts:

Critical Slope(s): As a general rule, the steeper the slope, the greater the rate of fire spread. The critical slopes on your site are those that pose the greatest influence on fire behavior and thus the greatest danger to structures.

The ***Critical Aspect*** on your site is the cardinal direction (e.g., north, east, south or west) that is the most crucial from a wildland fire behavior standpoint. Generally speaking, a south or southwesterly aspect will represent the greatest hazards from wildfire. The aspect determines the intensity of solar heating and rate at which wildland fire fuels might be expected to dry out during the fire day. The measurement of aspect also generally reflects the type and volume of vegetation that might be found on a specific exposure. Both of these factors are important to fire planners to predict fire intensity and spread.

Prevailing Wind is important because almost all wildland fires are wind-driven. Knowing the direction of prevailing winds and how they might behave on your site is crucial for wildland fire protection planning. Typically, in the late summer and fall, California gets hot dry Northeasterly "Santa Ana," winds.Northeast winds have been a major factor in virtually every California fire storm.

Dominant vegetation: To a large degree, vegetation type, arrangement and volume determine fire behavior—the intensity that a fire will burn on your property and its rate of spread. Identification of fuel types is an important planning tool.

Construction Type: "Ignition resistant construction" or "fire hardening" indicates construction methods or components that may increase exterior ignition resistance. In combination with defensible space and vegetation management measures, fire hardening may increase survivability in a wildland fire.

VEGETATION MANAGEMENT and MAINTENANCE GOALS:

• Reduce the volume of the vegetation through selective thinning, crown separation, removal of dead wood and limbs in tree stems and crowns, and removal of any dead material on the ground except the duff layer.

• To conduct continuing annual maintenance of required Defensible Space.

• Creation of defensible space must not increase erosion or compromise erosion control measures.

• To conduct continuing annual maintenance of required Defensible Space.

COUNTY OF SONOMA
DEPARTMENT OF EMERGENCY SERVICES

FIRE SERVICES • EMERGENCY MANAGEMENT • HAZARDOUS MATERIALS

VERNON A. LOSH II, DIRECTOR

Invoice for Services

Invoice: 22987
Date: November 23, 2005
Due Date: December 23, 2005

Rec'd 12-1-05

Linda and Craig Wiles
387 Mitchell Street
Livermore, CA 94551

Description of Services	Amount
Vegetation Management Plan & Inspection:	
Site: 22095 Umland Circle	
Permit: APN 109 420 013	
Date: 10/28/05	
3.0 hours @ $109.00/hour	
Total Invoice:	**$327.00**

Payable in 30 days to: Sonoma County Department of Emergency Services
2300 County Center Drive, #221A
Santa Rosa, CA 95403

LINDA A. WILLES
CRAIG E. WILLES
387 MICHELL ST.
LIVERMORE CA 94551

1007

DATE 12-2-05

25-3/440 99991

PAY TO THE ORDER OF Sonoma County Dpt of Emergency Svcs $ 327 -

Three hundred twenty-seven & no/100 DOLLARS

CHASE
JPMorgan Chase Bank, N.A.
Columbus, Ohio 43271

MEMO City fees

Linda A. Wiles

2300 Coun

1172

COUNTY OF SONOMA
Department of Emergency Services
FIRE SERVICES * EMERGENCY MANAGEMENT * HAZARDOUS MATERIALS
Vernon A. Losh II, Director

VEGETATION MANAGEMENT INSPECTIONS / CONSULTATION LOG

Minimum Residential Project Billing 2.0 hours
Maximum Residential Project Billing 5.0 hours

Project address:	22095 Umland Circle Cazadero CA
Initial assessment Date:	10/28/05
Project representative:	Linda and Craig Willes
Permit No.	APN: 109 420 013
Mailing Address:	387 Michell St Livermore, CA 94551
Inspector:	Caerleon Safford
Travel time (round trip):	.75 hour
On-site assessment time:	.75 hour
Report preparation time:	1.5 hour
TOTAL TIME:	**3 HOURS**

2300 County Center Drive, #221-A, Santa Rosa, CA 95403 * phone (707) 565-1152 * fax (707) 565-1172

COUNTY OF SONOMA
DEPARTMENT OF EMERGENCY SERVICES
FIRE SERVICES • EMERGENCY MANAGEMENT • HAZARDOUS MATERIALS

VERNON A. LOSH II, DIRECTOR

For Property Located at
22095 Umland Circle
Cazadero, CA

[ ] I individually [X] We jointly and severally agree to establish minimum defensible space zones as set forth in this report at the above location as required by Sonoma County Code.

CRAIG E. WILLES
Name of Property Owner

Signature of Property Owner

12-2-05
Date

LINDA A. WILLES
Name of Property Owner

Signature of Property Owner

12-2-05
Date

Please RETURN this copy

2300 County Center Drive, Suite 221A, Santa Rosa, CA 95403 • phone (707) 565-1152 • fax (707) 565-1172

COUNTY OF SONOMA
DEPARTMENT OF EMERGENCY SERVICES
FIRE SERVICES • EMERGENCY MANAGEMENT • HAZARDOUS MATERIALS
VERNON A. LOSH II, DIRECTOR

Agreement to Establish Required Defensible Space

For Property Located at
22095 Umland Circle
Cazadero, CA

[ ] I individually [X] We jointly and severally agree to establish minimum defensible space zones as set forth in this report at the above location as required by Sonoma County Code.

CRAIG E. WILLES
Name of Property Owner

Signature of Property Owner

12-2-05
Date

LINDA A. WILLES
Name of Property Owner

Signature of Property Owner

12-2-05
Date

- Please RETAIN this copy

2300 County Center Drive, Suite 221A, Santa Rosa, CA 95403 • phone (707) 565-1152 • fax (707) 565-1172

COUNTY OF SONOMA
DEPARTMENT OF EMERGENCY SERVICES

FIRE SERVICES • EMERGENCY MANAGEMENT • HAZARDOUS MATERIALS

VERNON A. LOSH II, DIRECTOR

VEGETATION MANAGEMENT & DEFENSIBLE SPACE AGREEMENT to PERFORM ANNUAL MAINTNANCE

Owner(s) Name(s) CRAIG E. & LINDA A. WILLES

Site Address: 22095 UMLAND CIRCLE JENNER, CA 95450

Mailing Address 387 Mitchell St. Livermore, Ca 94551 (925) 373-7451
(if Different from Site Address) Telephone

Assessor's Parcel Number: 109-420-013 BLD#: 05-4534

Section 13-59.5 of Fire Safe Standards requires that "The property owner shall record a covenant, in a form satisfactory to county counsel, which ensures that the approved (vegetation management) plan will be implemented and maintained."

This form shall be accepted by the Sonoma County Department of Emergency Services in lieu of recording a covenant as agreement that the approved vegetation management plan will be implemented prior to final inspection, and maintained annually.

AGREEMENT TO PERFORM ANNUAL MAINTENANCE IN ACCORDANCE WITH APPROVED VEGETATION MANAGEMENT PLAN.

[ ] ***I individually*** [X] ***We jointly*** and severally promise to provide no less than annual maintenance at the above location as required by Sonoma County Code, and in accordance with the approved vegetation management and defensible space.

12-2-05
Date

CRAIG E. WILLES
Name of Property Owner

Signature of Property Owner

12-2-05
Date

LINDA A. WILLES
Name of Property Owner

Linda A. Willes
Signature of Property Owner

Adobe
Associates, Inc.
Civil Engineering,
Land Surveying &
Land Development
Services

PERCOLATION TEST RESULTS TRANSMITTAL

County of Sonoma, Permit and Resource Management Department
2250 Ventura Avenue, Santa Rosa, CA 95403

Att: Dave Donavan

Site Address: 22095 Umland Circle, APN 109-420-013

Job Number: 96033

Enclosures: Assessor's Parcel Map, Soil Profile Log, Hydrometer Test Results, Percolation Test Data, and Percolation Test Map

These tests were run in order to establish subsurface wastewater disposal potential for this 1.40 acre parcel in Timber Cove Subdivision. The site lies on the south side of Ruoff Drive on the west side of the intersection with Umland Circle. The site is wooded with oak, pine, and redwood and slopes to the southwest at approximately 12 percent. Site soils are identified as Mendocino-Empire complex in the Soil Survey of Sonoma County. A soil sample from Profile A taken at 24 inch depth indicates zone 2 soils to justify the percolation test under dry weather conditions.

On July 22, 1996, six 24 inch deep holes were tested with an average percolation rate of 32 minutes per inch excluding failing test hole 3. This site is considered suitable for installation of a fill land type system in accordance with Sonoma County Public Health Department Rule V-1. System design should provide 129 lineal feet of trench per bedroom. Trenches should be 36 inches deep (including 12 inches of fill), 24 inches wide, with 12 inches of drain rock below the disposal line. A 20 percent sizing reduction can be taken with inclusion of an effluent filter and a dual field or pressure dosing. Maintain all applicable setbacks including 10 feet to large trees and 20 feet to test hole 3. Installation of this system will require removal of trees within the field.

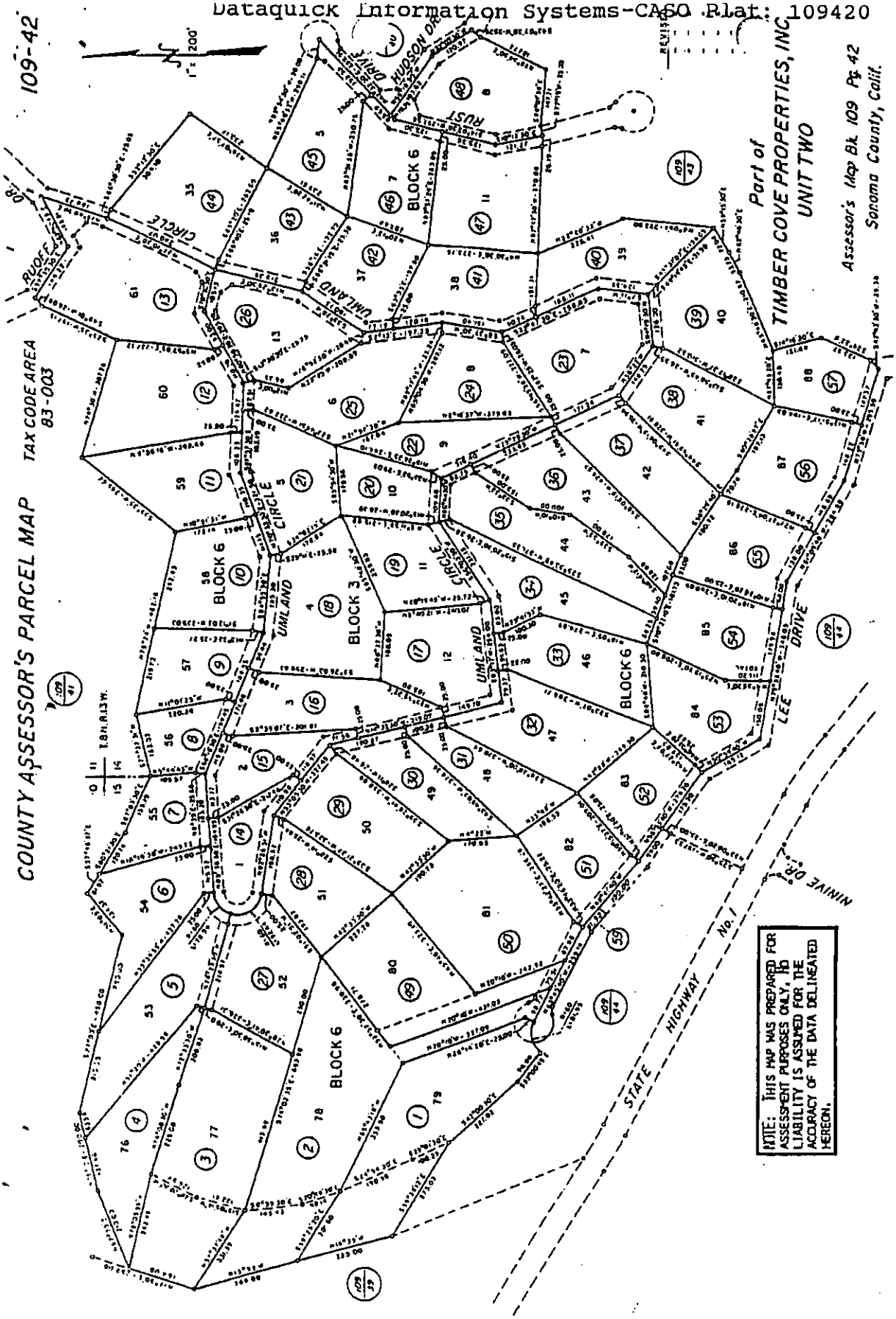
The attached percolation test data was generated from percolation tests run in conformance with the methods and procedures of the Sonoma County Permit and Resource Management Department, Well and Septic Division. The results are a true and accurate account of the tests. Recommendations made in this report are subject to review and approval of the Well and Septic Division staff. A response to this report will be on file at the PRMD office.

Signed:

Steven R. Brown, RCE 43825 date: 10/31/96
my license expires 6/30/97

REGISTERED PROFESSIONAL ENGINEER
STEVEN R. BROWN
Lic. #43825
Exp. 6/30/97
CIVIL
STATE OF CALIFORNIA

1742
State Farm Drive
Santa Rosa
California
95403
707 526 2664
Fax: 707 526 0331



This is not a survey of the land but is compiled for information purposes only from various records. Map is not to scale.

96099

Pre-Perc Field Notes

Address:: 22095 UMLAND CIRCLE	Test date: 6/25/96	Time:
AP#: 109 - 420 - 013	Site review by: Dave Donavan	
Test conducted by: Adobe Associates	Subdivision: Yes ☐ No ☒	
Test verified by: Steve Brown	Water availability zone:	
Special standards area:	SCS soil type:	

Topography: Ridge ☐ Slope ☒ Saddle ☐ Basin ☐ Convex ☐ Planar ☐ Concave ☐

Setbacks: Grade break ☐ Wells ☐ Springs ☐ Streams ☐

Areas of concern: Trees ☐ Drainage ☐ Geology report ☐ Rock outcrops ☐ % Rock _____

Hydrometer test: Yes ☒ No ☐ Depth A-24" Bulk density: Yes ☐ No ☒ Depth _____

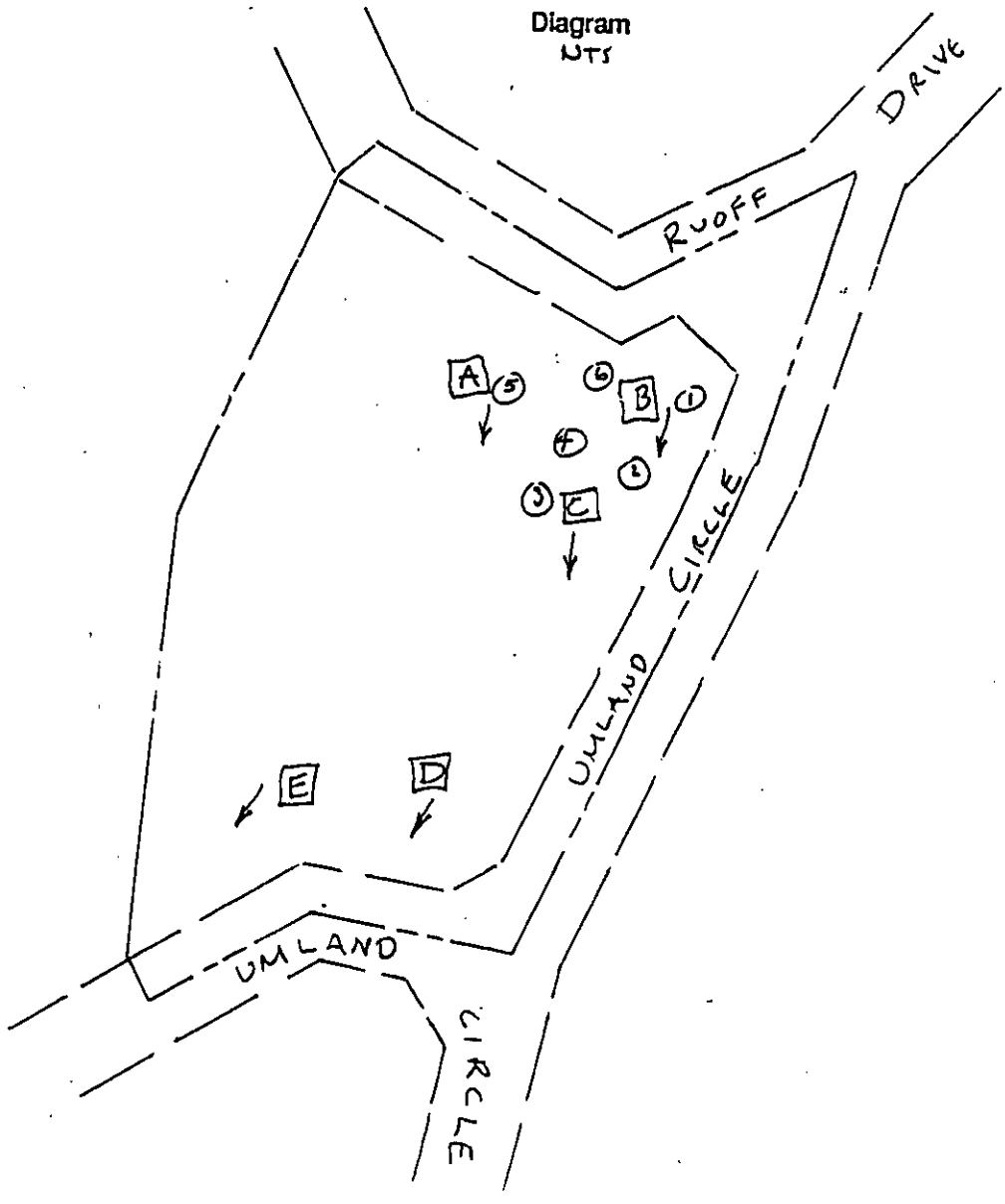
Wet-weather perc required: Yes ☐ No ☒ Wet-weather groundwater required: Yes ☐ No ☒

Perc depth: 24" Possible trench & rock depth: _____ Pump system: Yes ☐ No ☐

Mound ☒ PD ☐ Eng. design ☒ Fill system

Comments:

Diagram
NTS



Profile A Average Ground Slope 10%

Depth	Color	% Rock	Texture	Structure	Consistency	Moist	Pores	Roots
-24	10YR 4/4	—	SCL/CL	BL	Fr/F	Dry	Good	Good
-72	Orange and Gray	—	SC	BL/M	F	Dry	Few	Few

Mottling: Depth to groundwater:

Other:

Profile B Average Ground Slope

Depth	Color	% Rock	Texture	Structure	Consistency	Moist	Pores	Roots
-30	10YR 4/4	—	CL/SCL	BL	F	Dry	Many	Many
-47	10YR 5/6	—	SC	BL	F	Dry	Few	Few
-108	10YR 5/6	—	Dec. ss.	BL	F/Fr	Sl. Damp	Some	Some

Mottling: Depth to groundwater:

Other:

Profile C Average Ground Slope 8% ±

Depth	Color	% Rock	Texture	Structure	Consistency	Moist	Pores	Roots
-17	10YR 4/4	—	SL	BL	Fr	Dry	Many	Many
-26	10YR 5/6	—	SCL/SL	BL	Fr	Dry	V Few	Few
-68	Orange and Gray	—	SC	BL	F	Sl. Damp	No	No

Mottling: Depth to groundwater:

Other:

94033 22095 UMLAND

Abbreviations:

Texture: Gravel=G, Sand=S, Sandy Loam=SL, Sandy Clay Loam=SCL, Sandy Clay=SC, Silt Loam=SiL, Loam=L, Clay Loam=CL, Silty Clay Loam=SiCL, Clay=C

Structure: Granular=G, Platy=P, Blocky=B, Prismatic=Pr, Massive=M

Consistency: Loose=L, Very Friable=VFr, Friable=Fr, Firm=F, Very Firm=VF, Extremely Firm=EF

Moisture: Dry=Dr, Damp=D, Very Damp=VD, Saturated=S, Seepage=Se

Profile D Average Ground Slope

Depth	Color	% Rock	Texture	Structure	Consistency	Moist	Pores	Roots
-24	10YR 4/4	—	SL	BC	Fr	Dry	Many	Many
-42	10YR 5/6	—	C	M	F	Sl. Damp	No	No

Mottling: Depth to groundwater:

Other:

Profile E Average Ground Slope

Depth	Color	% Rock	Texture	Structure	Consistency	Moist	Pores	Roots
-16	10YR 4/4	—	SL	BC	Fr	Dry	Many	Many
-80	10YR 5/6	—	C	M	F	Sl. Damp	No	No

Mottling: Depth to groundwater:

Other:

Profile Average Ground Slope

Depth	Color	% Rock	Texture	Structure	Consistency	Moist	Pores	Roots

Mottling: Depth to groundwater:

Other:

96033 22095 UMLAND

Abbreviations:

Texture: Gravel=G, Sand=S, Sandy Loam=SL, Sandy Clay Loam=SCL, Sandy Clay=SC, Silt Loam=SiL, Loam=L, Cl Loam=CL, Silty Clay Loam=SiCL, Clay=C

Structure: Granular=G, Platy=P, Blocky=B, Prismatic=Pr, Massive=M

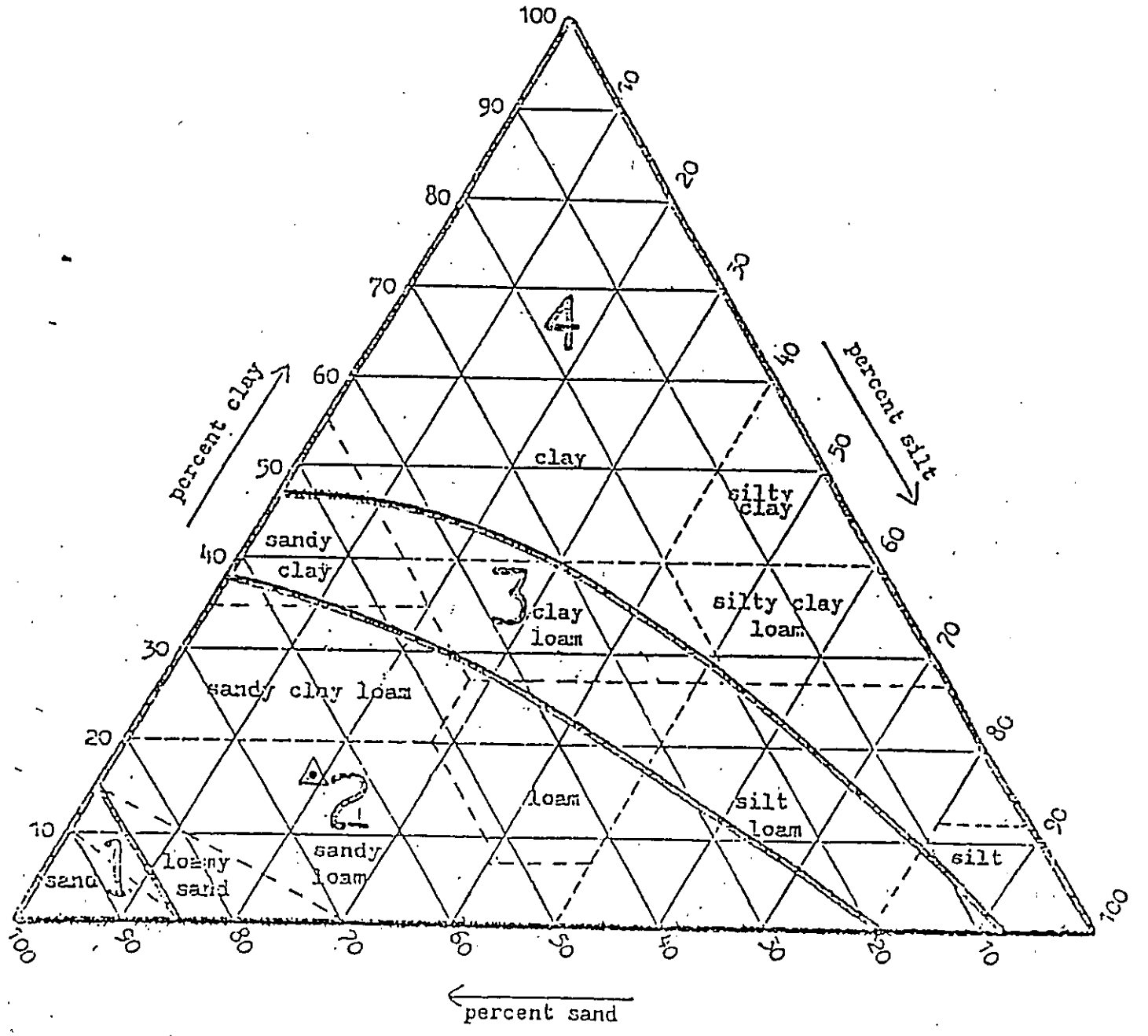
Consistency: Loose=L, Very Friable=VFr, Friable=Fr, Firm=F, Very Firm=VF, Extremely Firm=EF

Moisture: Dry=Dr, Damp=D, Very Damp=VD, Saturated=S, Seepage=Se

ASSOCIATES, INC.
Civil Engineering, Land Surveying and Planning
1150 State Farm Drive, Santa Rosa, CA 95403
(707) 526-2664

SITE ADDRESS: 22095 UMLAND CIRCLE	JOB NO. 96033	DATE: 6/25/96

profile hole no.	A
depth (inches)	24"



Oakley Laboratory & Field Services
1645 Chapman Way • Santa Rosa , CA 95403 • Telephone 707-575-1075

June 30,1996
Job No. 96-105.13

Adobe Associates, Inc.
1142 State Farm Drive
Santa Rosa, CA 95403

Attention: Mr. Steve Brown

Re: Results of Soil Texture Analysis
By Bouyoucos Hydrometry Method

Client Address 22095 Umland Drive

The results of soil texture analysis on samples received on June 28, 1996 are as follows:

Sample Location	A @ 24"
% Plus No. 10	1.4
% Sand	63.8
% Clay	17.2
% Silt	19.0
Db g/cc	--

We are pleased to provide laboratory services for you and look forward to your continued work. If you have any questions, please call.

Oakley Laboratory and Field Services

By: _____
Wayne G. Oakley
Laboratory Director

SONOMA COUNTY PUBLIC HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH
1030 Center Drive, Suite A - Santa Rosa, CA 95403

SOIL PERCOLATION TEST DATA

Address of Percolation Test: 22095 OMLAND CIRCLE	A.P. Number: 109-420-013	Winter Groundwater Test: No	"Wet Weather Perc" No
Owner's Name: JOHN GALLO		Field Check: Yes No By: Date: Time:	
Owner's Mailing Address: 1716 MAZE BLVD.		Review of Data: Rates Acceptable: Yes No	
City/State/Zip Code: MODESTO, CA 95358	Telephone Number: (209) 579-3837	Remarks:	Receipt Information:
Water Supply: Private Public	Lot or Parcel Size:		
Test Conducted By: Adobe Associates, Inc.	Telephone Number: (707) 526-2664		
Address/City/State/Zip Code: 1142 State Farm Drive Santa Rosa, CA 95403			
Type of Soil:	Date of Test: 7/22/96	Circle One: (Initial Test) Supplemental	Sanitarian

Hole No.	Depth of Hole	Pipe Length	Presoak Remaining	Start Time	Start Inches	First Measurement Time	First Measurement Inches	Second Measurement Time	Second Measurement Inches	Third Measurement Time	Third Measurement Inches	Fourth Measurement Time	Fourth Measurement Inches	Fifth Measurement Time	Fifth Measurement Inches	Sixth Measurement Time	Sixth Measurement Inches	RATE
1	24	24	Ø	9:15	12	10:15	19 3/8	11:15	D 20 7/8 / R	12:15	22 1/4 / R	1:15	20 3/4	2:15	22 7/8 * / R	3:15	19	44
2	24	24	Ø		12		TRACE / R		21 3/4		D/R		21 1/2		22 7/8 * / R		21 1/2	44
3	24	24	Ø		12		14 1/2		16 1/4		17 3/4		18 1/2		19 3/8		*20	96
4	24	24	Ø		12		23 / R		22 3/4 / R		22 1/4 / R		21 5/8		D/R		*21 1/4	6
5	24	24	Ø		12		22 1/4 / R		21 3/4		D/R		21 1/4		D/R		20	8
6	26	24	Ø	↓	12	↓	21 3/4	↓	D/R	↓	21 3/8	↓	22 3/4 / R	↓	21 1/4	↓	22 1/4	60

PHS-EH-4a (Revised 6/84)

CLOUD CASTLE ENGINEERING, Inc.

12384 E. ARIZONA DR.
AURORA, CO 80012
PH/Fx (303) 745-9825

CALCULATIONS

BY WILLIAM HILTSCHER, P.E.

FOR

WILLES RESIDENCE

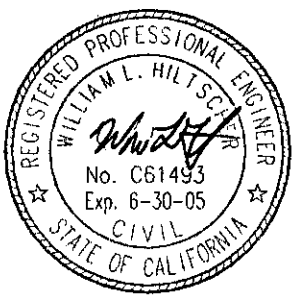
Job #: LL-04-120

Description: SFR

Date: 20 January 2005

Sheet 1 of 54

COASTLAND CIVIL ENGINEERING HAS REVIEWED THIS SHEET AND FINDS IT IN GENERAL CONFORMANCE WITH THE CURRENTLY ADOPTED BUILDING CODES OF THE JURISDICTION.



Miller Pacific
ENGINEERING GROUP

504 Redwood Blvd.
Suite 220
Novato, California 94947
T 415 / 382-3444
F 415 / 382-3450

November 14, 2005
File: 1275.01ltr.doc

Craig and Linda A. Willes
387 Michael Street
Livermore, California 94550

Re: Geotechnical Investigation
Planned New Single-Family Residence
22095 Umland Circle
APN 109-420-013
Sonoma County, California

Dear Mr. and Mrs. Willes:

Introduction

Miller Pacific Engineering Group (MPEG) has completed a geotechnical investigation for the planned residence on your property at 22095 Umland Circle in northwestern Sonoma County, California. The site location is shown on the attached Vicinity Map, Figure 1.

Scope of Services

We are providing our services in accordance with our Agreement dated September 27, 2005. The purpose of these services is to evaluate subsurface soil/rock conditions at the site in order to provide geotechnical engineering design criteria for site preparation and foundation design. Our current scope of services included subsurface exploration, laboratory testing, engineering analysis, and preparation of this letter report presenting our findings and providing our conclusions and recommendations.

Our subsequent services will include additional consultation, as requested, review of project plans for conformance with the intent of our geotechnical recommendations and observation and testing during construction.

Site Conditions

The property is located within a residential subdivision, northeast and above Highway One, near the Pacific Coast at the northwestern edge of Sonoma County. Terrain in the vicinity generally slopes down gently towards the southwest. It does not appear that significant grading has been performed at the site. The lot is shown on Figure 2.

Recent tectonic activity in this area is concentrated along the San Andreas Fault zone. The closest know active fault to the site is the San Andreas Fault, mapped within two kilometers northeast of the site. The sites location relative to known active faults in the region is shown on Figure 3.

Project Description

Based on our conversations with Linda Willes, we anticipate that new construction will be typical single- or two-story wood frame, with either concrete slab-on-grade or raised wood floors. Only minor grading is anticipated to create the building pad and to provide positive site drainage.

Subsurface Conditions

We observed subsurface soil and rock conditions on October 26, 2005 with three hand-augured test borings at the approximate locations shown on Figure 2. Borings were excavated to a maximum depth of approximately seven feet. Our field personnel logged the borings and collected representative soil samples. Samples were transported to our laboratory for further classification and testing. The subsurface profile consists of a surface layer, approximately one to two feet thick, of loose and potentially compressible soil over well consolidated colluvium and weathered sandstone bedrock. Total depth to weathered bedrock was between four and five feet.

Conclusions and Recommendations

The results of our exploration, evaluation, and previous experience with similar projects in the site vicinity lead us to conclude that your site is suitable for the planned residence. The primary geotechnical engineering concerns are providing uniform foundation support on firm native soil or weathered rock, proper design to resist strong seismic ground shaking, and appropriate grading and drainage provisions.

Foundation Design: To minimize differential foundation settlement, it is important to provide uniform foundation support for new structures on firm native soil or weathered bedrock (i.e., below loose near-surface soil). As no significant grading is anticipated, depth to firm bearing material will likely be between two and three feet. The new residence can be founded on conventional spread footings, deepened as necessary to maintain a uniform bearing in the firm native soil or weathered rock. Minimum embedment depths would be two feet, but depths could require deepening to between three and four feet to maintain a uniform foundation condition. As an alternative, a foundation system of drilled and cast-in-place reinforced concrete piers with interconnecting grade beams would also be acceptable.

We provide design criteria for both spread footings and drilled pier foundations in the tables below. Either system is technically acceptable. The designer should select the foundation type based on time/cost of construction or personal preference.

TABLE A
FOUNDATION DESIGN CRITERIA
WILLES RESIDENCES
SONOMA COUNTY, CALIFORNIA

Spread Footings	
Minimum Total Depth:	24 inches
Minimum Depth into firm soil/rock[1]:	12 inches
Minimum Width[2]:	12 inches
Allowable Bearing Capacity	
Dead plus Live Loads [3, 4]	2,500 psf
Lateral passive resistance [5, 6]	350 pcf
Base Friction Coefficient	0.35
Drilled Piers	
Minimum Diameter	15 inches
Minimum Depth	8 feet
Friction Resistance[4]	750 psf
Lateral passive resistance [5, 6]	350 pcf

(1) Firm bearing material is at least one to two feet below existing grade. Total footing depth must be field verified by Geotechnical Engineer. May require localized deepening.
(2) Size footings to maintain near-uniform design bearing pressure.
(3) May increase design values by 1/3 for total design loads.
(4) Uniform pressure distribution. Ignore upper three feet.
(5) Equivalent fluid pressure.
(6) Ignore upper 12 inches unless surface is confined by concrete or asphalt.

Seismic Design: The site will experience strong ground shaking similar to other areas of the seismically active San Francisco Bay Area. Sustained strong ground shaking could damage the proposed structures. Mitigation of ground shaking includes seismic design of the structure in conformance with the most recent provisions of the California Building Code (2001). Based on the interpreted subsurface conditions and the site location relative to the nearest known active fault (San Andreas Fault less than 2 kilometers away), we recommend the following CBC Coefficients to calculate the design base shear of the planned residence.

Coefficients	2001 CBC
Seismic Zone Factor	Z = 0.40
Soil Profile Type	S_D= Stiff Soil profile
Seismic Coefficient	C_a =0.66
Seismic Coefficient	C_v =1.28
Near-Source Factor	N_a =1.50
Near-Source Factor	N_v =2.00

Seismic Source Type A – Faults capable of producing large magnitude events with a high slip rate.

Site Preparation and Grading: Areas to be graded must be cleared and stripped to remove vegetation and topsoil. We anticipate the depth of stripping will be approximately four to six inches. Vegetation and debris should be disposed of off-site but topsoil can be stockpiled for reuse in future landscaping.

Following clearing, stripping, and required excavations, exposed soil within fill areas (extending to a minimum of five feet beyond perimeter foundations and three feet beyond exterior slabs or pavements) should be scarified to a depth of six inches, moisture conditioned to near-optimum moisture content, and compacted to at least 90 percent relative compaction[1]. If zones of soft or saturated soil are encountered, they should be removed to expose uniformly firm soil or rock and replaced with properly compacted fill. Soils and rock generated from on-site excavations will be suitable for reuse as fill provided that organic material and over-sized rocks (greater than six inches, maximum dimension) are removed.

New fill should be placed in uniformly thin lifts (four to eight inches depending upon size of compaction equipment) and similarly moisture-conditioned to near-optimum moisture content and compacted to at least 90 percent relative compaction. Subgrade surfaces for pavement areas should be further rolled to provide a smooth unyielding surface compacted to at least 95 percent relative compaction.

Concrete Slabs-on-Grade: Interior concrete slabs should be underlain by at least four inches of clean open-graded aggregate (¾ to ¼-inch) to provide a capillary moisture break. Where moisture vapor would be detrimental to the floor covering or intended use of the slab, a moisture barrier consisting of a minimum 10-mil plastic sheeting should be considered. Exterior concrete slabs can be placed directly on the prepared subgrade although some minor movement should be expected due to seasonal moisture changes.

Site Drainage Considerations: All roof edges should be provided with gutters to collect rainfall runoff, and the downspouts should be connected to closed pipe leaders which discharge at least five feet away from the building or onto an impervious surface. If the leaders are to be buried, they should consist of smooth rigid non-perforated pipe to facilitate future maintenance.

The ground surface should slope away from the building at an inclination of at least two percent (¼-inch per foot) for a distance of at least five feet to prevent collection or ponding of surface water adjacent to foundations. Where there is extensive landscape planting, sidewalks or patios that obstruct surface flow, area drains should be added to collect surface water runoff. The exposed ground within crawl spaces should be smooth, firm and sloped to provide surface flow towards an outlet through the perimeter stem wall in order to drain any water that migrates beneath the foundations.

---

[1] Relative compaction is the ratio of the dry density of the in-situ compacted fill compared to the maximum laboratory dry density of the fill material. The maximum laboratory dry density and optimum moisture content are determined in accordance with ASTM Test Method D1557.

The discharge from downspout leaders, foundation drains, and area drains should be downslope of and well away from the residence, preferably directly onto a paved surface or into an established surface drainage system.

Plan Review and Construction Inspection

We should review the plans and specifications for the new residence when they are nearing completion to confirm that the intent of our geotechnical recommendations have been incorporated, and to provide supplemental recommendations, if needed. During construction, we must observe and test the site grading and foundation excavations to check that geotechnical portions of the work are in conformance with project plans and specifications.

We trust that this provides the information required at this time. If you or others have further questions or comments, please call us.

Yours very truly,
MILLER PACIFIC ENGINEERING GROUP

Reviewed by,

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY J. REYNOLDS
No. 2686
Exp. 12/31/06
GEOTECHNICAL
STATE OF CALIFORNIA

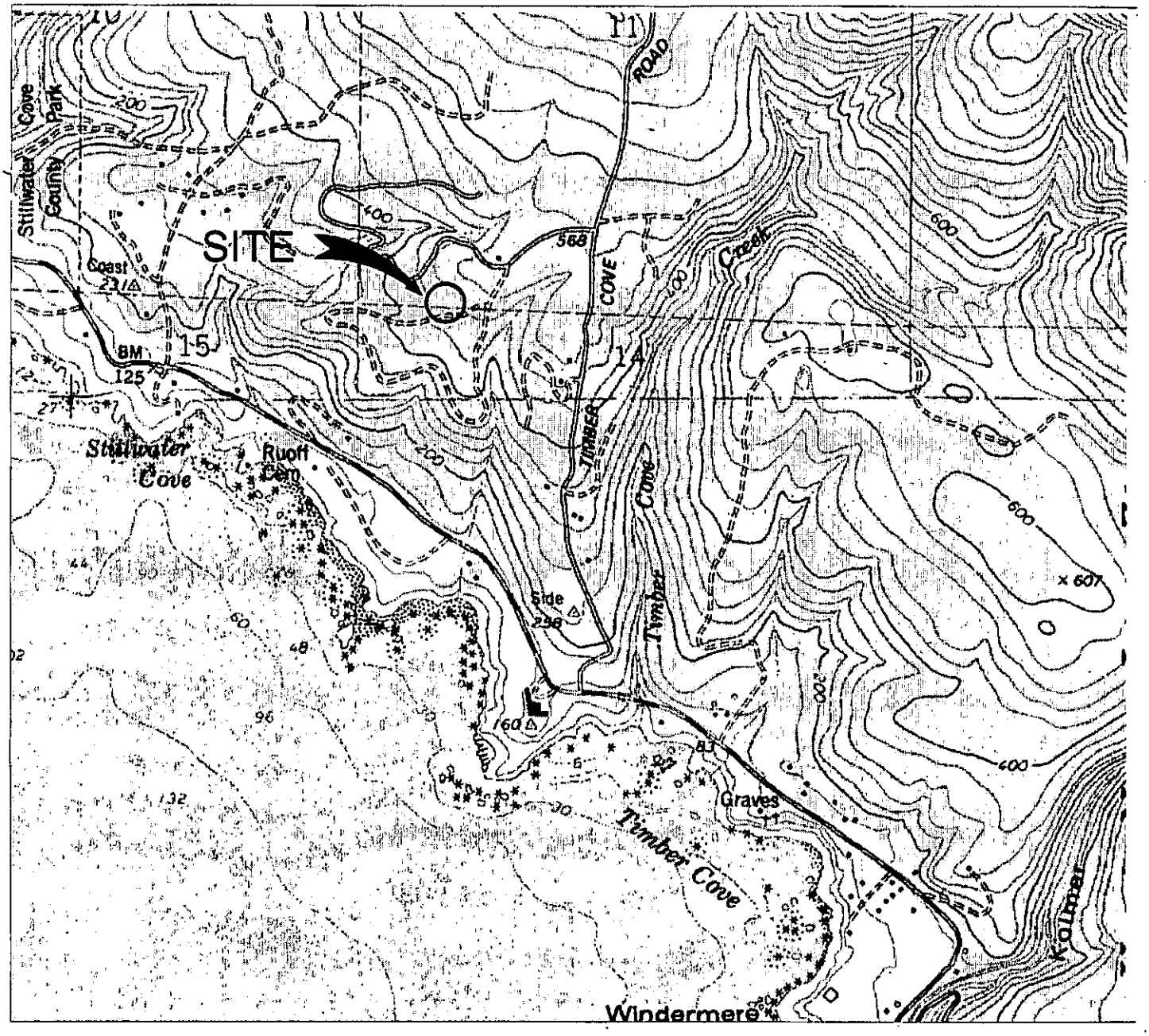
REGISTERED PROFESSIONAL ENGINEER
IAN MACLEAN
No. 61721
Exp. 6/30/07
CIVIL
STATE OF CALIFORNIA

Timothy J. Reynolds
Geotechnical Engineer No. 2686
(Expires 12/31/06)

Ian A Maclean
Civil Engineer No. 61721
(Expires 06/30/07)

Attachments: Figures 1 thru 3

5 copies submitted



SITE LOCATION

SCALE

0 1000 2000 4000 FEET

0 500 1000 METERS

NORTH

REFERENCE: USGS 7.5' Plantation Quadrangle Map

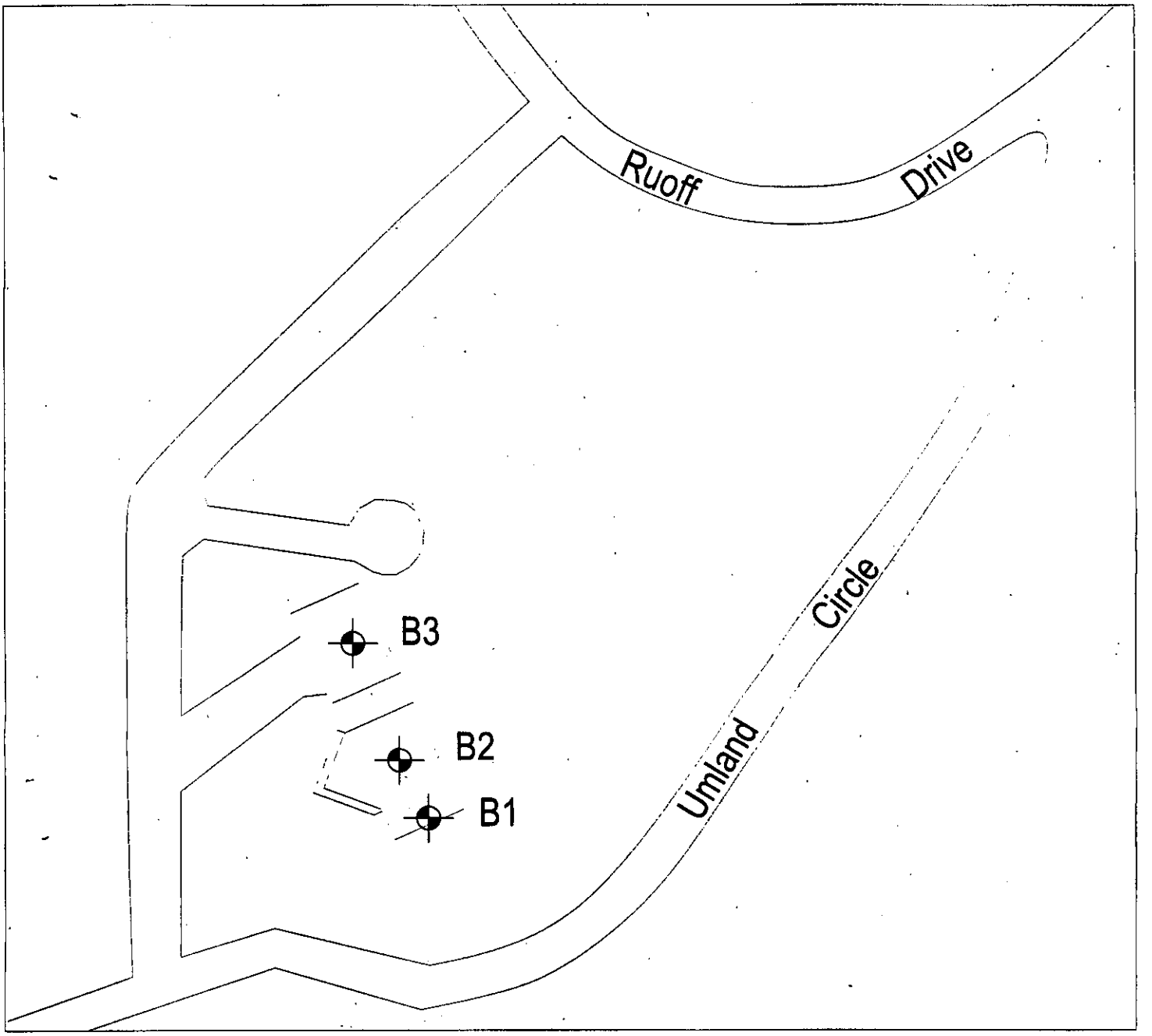
FILE: Site Map.dwg

Miller Pacific
ENGINEERING GROUP

SITE LOCATION MAP
Willes Residence
Timber Cove, California

1

Project No. 1275.01 Date 11/11/05 Approved By: AJR Figure



SITE LOCATION

NOT TO SCALE

NORTH

REFERENCE: All Topo Maps: California, 2001

FILE: Site Map.dwg

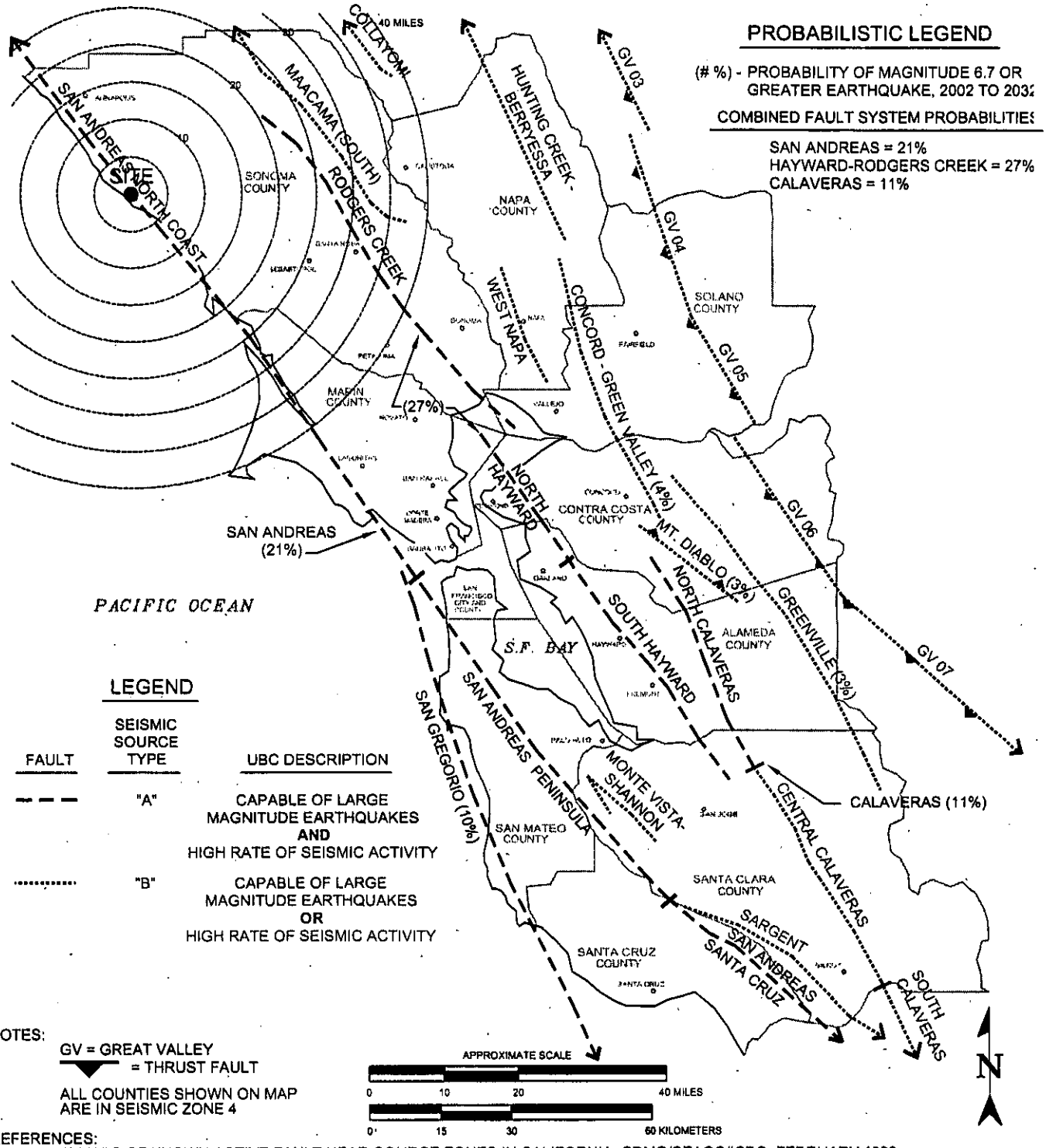
Miller Pacific
ENGINEERING GROUP

SITE LOCATION MAP
Willes Residence
Timber Cove, California

2

Project No. 1275.01 Date 11/14/05 Approved By:

Figure



REFERENCES:

1) MAPS OF KNOWN ACTIVE FAULT NEAR-SOURCE ZONES IN CALIFORNIA, CDMG/SEAOC/ICBO, FEBRUARY 1998
2) DATABASE OF POTENTIAL SOURCES FOR EARTHQUAKES LARGER THAN MAG. 6 IN N. CALIFORNIA, USGS OFR 96-705, 1996
3) SUMMARY OF EARTHQUAKE PROBABILITIES IN THE S.F. BAY REGION, 2003 - 2032, THE WORKING GROUP ON CALIFORNIA EARTHQUAKE PROBABILITIES, 2003.

FILE: fault map.dwg

Miller Pacific
ENGINEERING GROUP

ACTIVE FAULT MAP
Willes Residence
Timber Cove, California

3

Project No. 1275.01 Date 11/11/05 Approved By:

Figure

Miller Pacific
ENGINEERING GROUP

504 Redwood Blvd.
Suite 220
Novato, California 94947
T 415 / 382-3444
F 415 / 382-3450

March 3, 2006
File: 1275.01bltr.doc

Craig and Linda A. Willes
387 Michael Street
Livermore, California 94550
Email: clwilles@comcast.net

Re: Geotechnical Plan Review
Planned New Single-Family Residence
22095 Umland Circle
APN 109-420-013
Sonoma County, California

Dear Mr. and Mrs. Willes:

Introduction

In accordance with our Agreement dated September 27, 2005, Miller Pacific Engineering Group (MPEG) is providing geotechnical engineering services related to a planned new single-family residence on your property at 22095 Umland Circle in northwestern Sonoma County, California. We previously completed a geotechnical investigation for the project and presented the results in a letter report dated November 14, 2005. Prior to preparing this letter, we reviewed our previous work and project plans provided to us (Sheets 1, 6, 10, 12, and D-2), prepared by The Original Lincoln Logs, Ltd., dated February 2, 2006. We have not reviewed Civil plans detailing site preparation or planned grading.

The project includes construction of a new two-story residence with attached garage. The home will have wood floors supported above grade on perimeter and interior strip footings. The garage will have a reinforced concrete slab-on-grade floor. Based on our geotechnical investigation, a primary concern at the site is maintaining uniform foundation support within the firm consolidated alluvium/weathered rock. The foundation material is found at a depth of one to two feet. Therefore, minimum footing embedments of 24 inches were recommended.

Review and Comment

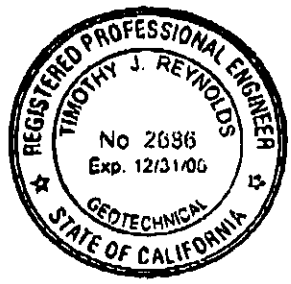
Based on our review, we find the plans are in general conformance with our geotechnical recommendations. However, one clarification/correction must be made. Detail Sheet D-2 shows minimum foundation embedments of 18-inches. In accordance with our report, foundation embedments must be a minimum of 24-inches. We also stress that minimum embedment depths are below existing grade and not final design grade, if different.

Miller Pacific
ENGINEERING GROUP

March 3, 2006

We trust that this provides the information needed at this time. During construction, we must observe and test the site preparation, grading (if any), and foundation excavations to check that geotechnical portions of the work are in conformance with project plans and specifications. If you or others have further questions or comments, please call us.

Yours very truly,
MILLER PACIFIC ENGINEERING GROUP



Timothy J. Reynolds
Geotechnical Engineer No. 2686
(Expires 12/31/06)

5 copies submitted

CC: Jim Chilton, Coastland (Reviewers for Sonoma County), via Fax: 707/571-8037

Project Title..... Willes Log Home Date..01/20/05 16:39:59

MICROPAS6 v6.01 File-WILLES Wth-CTZ01S92 Program-FORM CF-1R
User#-MP1630 User-CompuCalc Run-Two Story Log Home

FENESTRATION

Orientation	Area (sf)	U-Factor	SHGC	Interior Shading	Exterior Shading	Over-hang/ Fins
Window Right (SE)	9.7	0.370	0.320	Standard	Standard	None
Window Left (NW)	9.7	0.370	0.320	Standard	Standard	None
Window Left (NW)	9.7	0.370	0.320	Standard	Standard	None

THERMAL MASS

Type	Exposed	Area (sf)	Thickness (in)	Location/Comments
ExteriorVert	Yes	1056	6.0	Exterior Mass Wall

HVAC SYSTEMS

Equipment Type	Minimum Efficiency	Refrigerant Charge and Airflow	Duct Location	Duct R-value	Tested Duct Leakage	ACCA Manual D	Thermostat Type
Furnace	0.930 AFUE	n/a	Attic	R-4.2	No	No	Setback
NoCooling	10.00 SEER	No	Attic	R-4.2	No	No	Setback

WATER HEATING SYSTEMS

Tank Type	Heater Type	Distribution Type	Number in System	Energy Factor	Tank Size (gal)	External Insulation R-value
GAS.INST.SML Instantaneou	Gas	Standard	1	n/a	n/a	R-n/a
GAS.INST.LG Instantaneou	Gas	Standard	1	n/a	n/a	R-n/a

WATER HEATING SYSTEMS DETAIL

System	Recovery Efficiency	Rated Input	Standby Loss Fraction	Internal Tank Insulation R-value	Pilot Light
GAS.INST.SML Instantaneo	0.78	n/a	n/a	R- n/a	500
GAS.INST.LG Instantaneo	0.85	n/a	n/a	R- n/a	500

SPECIAL FEATURES AND MODELING ASSUMPTIONS

*** Items in this section should be documented on the plans, ***
*** installed to manufacturer and CEC specifications, and ***
*** verified during plan check and field inspection. ***

This building incorporates a High Mass Design.

Project Title..... Wilies Log Home Date..01/20/05 16:39:59

MICROPAS6 v6.01 File-WILLES Wth-CTZ01S92 Program-FORM CF-1R
User#-MP1630 User-CompuCalc Run-Two Story Log Home

SPECIAL FEATURES AND MODELING ASSUMPTIONS

This building does not have a cooling system installed.

This building incorporates non-standard Water Heating System

REMARKS

Listed below are the MINIMUM energy features necessary to meet Title 24 compliance.
HEATING: Gas furnace with 93% AFUE rating. Installing
. . contractor to verify sizing and warrant system performance.
COOLING: No mechanical cooling planned.
DUCTS: R-4.2; shown installed in attic default location. No
. . testing required, no credit taken. May be installed elsewhere
INSULATION: Framed Walls: R-13 & R-19 as noted; Ceiling: R-38;
. . Floor: R-30
WINDOWS: Non-metal frame:
. . Operable: 0.37 u-value & 0.32 SHGC
. . Fixed: 0.57 u-value & 0.67 SHGC
. . French/Patio Doors: 0.36 u-value & 0.34 SHGC
GLASS in Doors: 0.85 u-value & 0.73 SHGC
WATER HEATING: Two instantaneour gas; one rated with 78%
. . efficiency rating and the other rated at 85% efficiency.
ALL APPLICABLE MANDATORY MEASURES ON MF-1R ATTACHED.
SQUARE FOOTAGE is calculated differently depending on the purpose of the calculation. The Energy Commission sets forth guidelines unique to Title 24 compliance. Two of the most common differences result from the necessity to include in the square footage calculation the interior stairway on each floor it intersects and conditioned floor area to the exterior walls. Therefore, square footage figures calculated to meet Title 24 compliance should not be compared with square footage areas for other purposes.
(Breezeway not included in conditioned floor area.)

Project Title..... Willes Log Home Date..01/20/05 16:39:59

MICROPAS6 v6.01 File-WILLES Wth-CTZ01S92 Program-FORM CF-1R
User#-MP1630 User-CompuCalc Run-Two Story Log Home

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and performance specifications needed to comply with Title-24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. When this certificate of compliance is submitted for a single building plan to be built in multiple orientations, any shading feature that is varied is indicated in the Special Features Modeling Assumptions section.

DESIGNER or OWNER

Name.... Craig or Linda Willes
Company. Owner
Address. 387 Michell St.
Livermore, CA 94551-2217
Phone... 925-373-7451
License. _____
Signed.. Linda Willes (date) 8-16-05

DOCUMENTATION AUTHOR

Name.... Elizabeth Smithwick
Company. CompuCalc
Address. 23318 Lone Pine Dr
Auburn, CA 95602
Phone... 530-268-8722
Signed.. Elizabeth Smithwick (date) 8/20/05

Certified Energy Analyst
Elizabeth Smithwick
R98-94-214
CABEC
California Association of Building Energy Consultants

ENFORCEMENT AGENCY

Name.... _____
Title... _____
Agency.. _____
_____
Phone... _____

Signed.. _____ (date)

Project Title..... Willes Log Home
Project Address..... 22095 Umland Cr.
Jenner, CA
Documentation Author... Elizabeth Smithwick
CompuCalc
23318 Lone Pine Dr
Auburn, CA 95602
530-268-8722
Climate Zone..... 01
Compliance Method..... MICROPAS6 v6.01 for 2001 Standards by Enercomp, Inc.

Date..01/20/05 16:39:59

****
v6.01
****

Building Permit #

Plan Check / Date

Field Check/ Date

MICROPAS6 v6.01 File-WILLES Wth-CTZ01S92 Program-FORM C-2R
User#-MP1630 User-CompuCalc Run-Two Story Log Home

MICROPAS6 ENERGY USE SUMMARY

Energy Use (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating.....	18.37	18.53	-0.16
Space Cooling.....	0.00	0.00	0.00
Water Heating.....	12.61	12.33	0.28
Total	30.98	30.86	0.12

*** Building complies with Computer Performance ***

GENERAL INFORMATION

Conditioned Floor Area..... 2110 sf
Building Type..... Single Family Detached
Construction Type ..... New
Building Front Orientation. Front Facing 230 deg (SW)
Number of Dwelling Units... 1
Number of Building Stories. 2
Weather Data Type..... ReducedYear

Floor Construction Type.... Raised Floor
Number of Building Zones... 1
Conditioned Volume..... 26667 cf
Slab-On-Grade Area..... 0 sf
Glazing Percentage..... 20 % of floor area
Average Glazing U-factor... 0.45 Btu/hr-sf-F
Average Glazing SHGC..... 0.42
Average Ceiling Height..... 12.6 ft

BUILDING ZONE INFORMATION

Zone Type	Floor Area (sf)	Volume (cf)	# of Dwell Units	Cond-itioned	Thermostat Type	Vent Height (ft)	Vent Area (sf)	Air Leakage Credit
HOUSE								
Residence	2110	26667	1.00	Yes	Setback	8.0	Standard	No

Note: Lowrise residential buildings subject to the Standards must contain these measures regardless of the compliance approach used. Items marked with an asterisk(*) may be superseded by more stringent compliance requirements listed on the Certificate of Compliance. When this checklist is incorporated into the permit documents, the features noted shall be considered by all parties as minimum component performance specifications for the mandatory measures whether they are shown elsewhere in the documents or on this checklist only.

BUILDING ENVELOPE MEASURES

	Designer	Enforcement
*150(a): Minimum R-19 ceiling insulation.	√	
150(b): Loose fill insulation manufacturer's labeled R-Value.	√	
*150(c): Minimum R-13 wall insulation in wood framed walls or equivalent U-factor in metal frame walls (does not apply to exterior mass walls).	√	
*150(d): Minimum R-13 raised floor insulation in framed floors.	√	
150(l): Slab edge insulation - water absorption rate no greater than 0.3%, water vapor transmission rate no greater than 2.0 perm/inch.	n/a	
118: Insulation specified or installed meets insulation quality standards. Indicate type and form.	√	
116-17: Fenestration Products, Exterior Doors and Infiltration/ Exfiltration Controls		
1. Doors and windows between conditioned and unconditioned spaces designed to limit air leakage.		
2. Fenestration products (except field fabricated) have label with certified U-factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration certification.		
3. Exterior doors and windows weatherstripped; all joints and penetrations caulked and sealed.	√	
150(g): Vapor barriers mandatory in Climate Zones 14& 16 only.	n/a	
150(f): Special infiltration barrier installed to comply with Sec. 151 meets Commission quality standards.	n/a	
150(e): Installation of Fireplaces, Decorative Gas Appliances and Gas Logs		
1. Masonry and factory-built fireplaces have: a. Closeable metal or glass door b. Outside air intake with damper and control c. Flue damper and control		
2. No continuous burning gas pilots allowed.	√	
110-113: HVAC equipment, water heaters, showerheads and faucets certified by the Commission.	√	
150(h): Heating and/or cooling loads calculated in accordance with ASHRAE, SMACNA or ACCA.	√	
150(i): Setback thermostat on all applicable heating and/or cooling systems.	√	
150(j): Pipe and Tank insulation		
1. Storage gas water heaters rated with an Energy Factor less than 0.58 must be externally wrapped with insulation having an installed thermal resistance of R-12 or greater.		
2. First 5 feet of pipes closest to water heater tank, non-recirculating systems, insulated (R-4 or greater).		
3. Back-up tanks for solar system, unfired storage tanks, or other indirect hot water tanks have R-12 external insulation or R-16 combined internal/external insulation.		
4. All buried or exposed piping insulated in recirculating sections of hot water system.		
5. Cooling system piping below 55 degrees insulated.		
6. Piping insulated between heating source and indirect hot water tank.	√	

SPACE CONDITIONING, WATER HEATING AND PLUMBING SYSTEM MEASURES

	Designer	Enforcement
*150(m): Ducts and Fans 1. All ducts and plenums installed, sealed and insulated, to meet the requirements of the 1998 CMC sections 601, 603, and 604, and standard 6-3; ducts insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape, aerosol sealant, or other duct-closure system that meets the applicable requirements of UL181, UL181A, or UL181B. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used. Building cavities shall not be used for conveying conditioned air. Joints and seams of duct systems and their components shall not be sealed with cloth back rubber addhesive duct tapes unless such tape is used in combination with mastic and drawbands. 2. Exhaust fan systems have backdraft or automatic dampers. 3. Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.	√	
114: Pool and Spa Heating Systems and Equipment 1. System is certified with 78% thermal efficiency, on-off switch, weatherproof operating instructions, no electric resistance heating and no pilot light. 2. System is installed with: a. At least 36 inches of pipe between filter and heater for future solar heating. b. Cover for outdoor pools or outdoor spas. 3. Pool system has directional inlets and a circulation pump time switch.	n/a	
115: Gas-fired central furnaces, pool heaters, spa heaters or household cooking appliances have no continuously burning pilot light (Exception: Non-electrical cooking appliances with pilot < 150 Btu/hr).	√	
150(k)1: Luminaires for general lighting in kitchens shall have lamps with an efficacy of 40 lumens/watt or greater for general lighting in kitchens. This general lighting shall be controlled by a switch on a readily accessible lighting control panel at an entrance to the kitchen.	√	
150(k)2: Rooms with a shower or bathtub must have either at least one luminaire with lamps with an efficacy of 40 lumens/watt or greater switched at the entrance to the room or one of the alternatives to this requirement allowed in Sec. 150(k)2.; and recessed ceiling fixtures are IC (insulation cover) approved.	√	