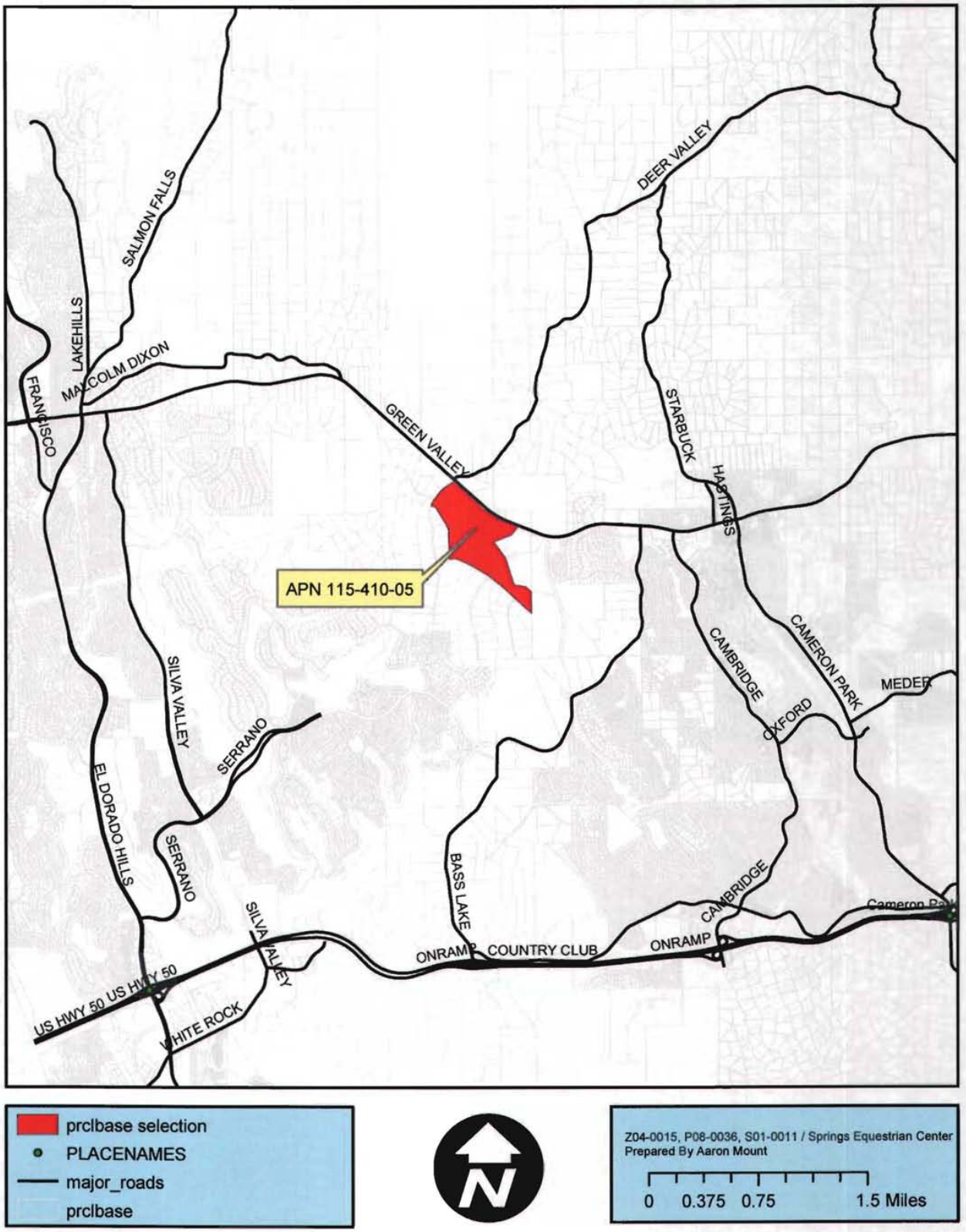
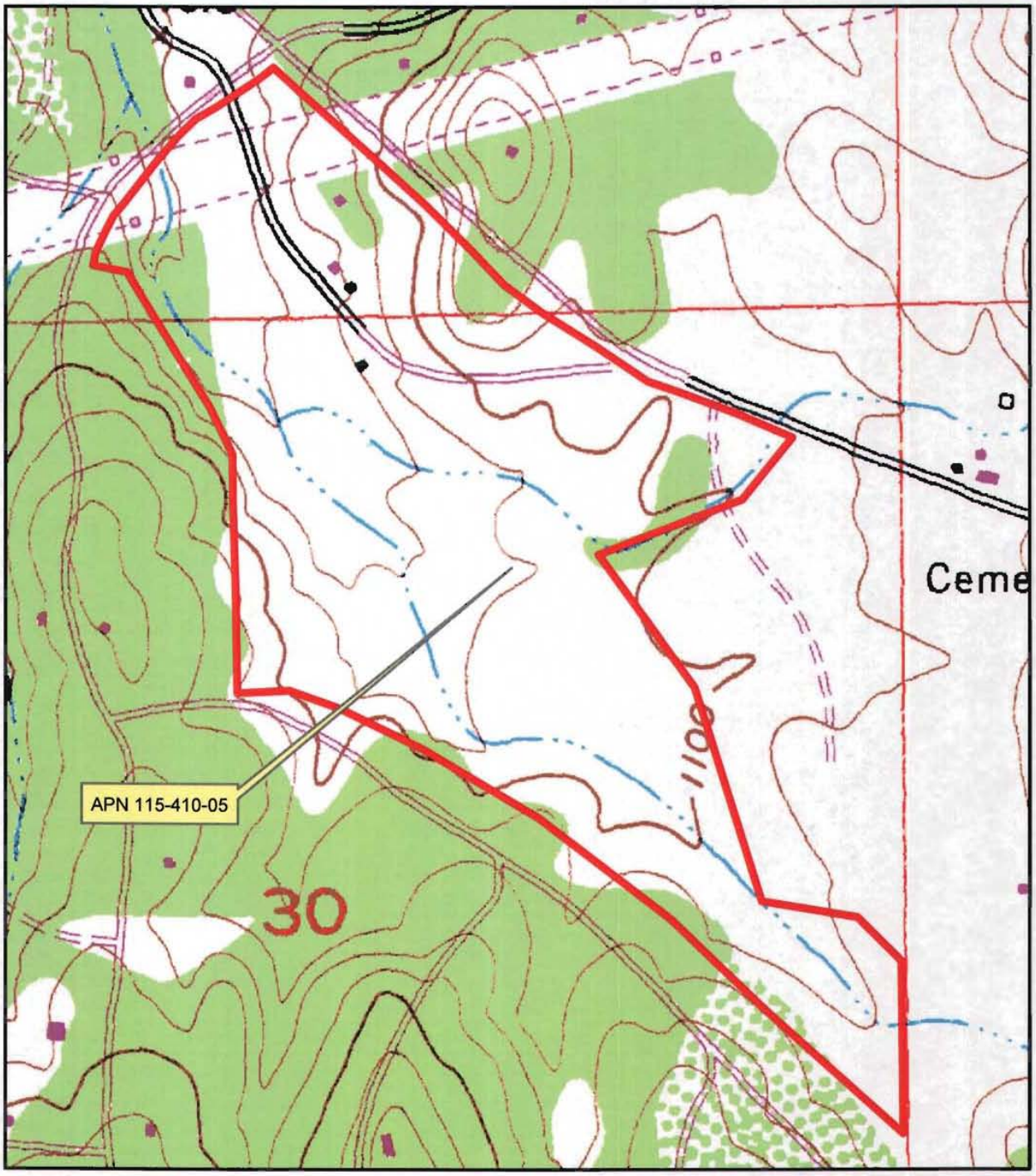
Attachment 1: Location Map



Attachment 2: USGS Quad Map



0 375 750 1,500 Feet

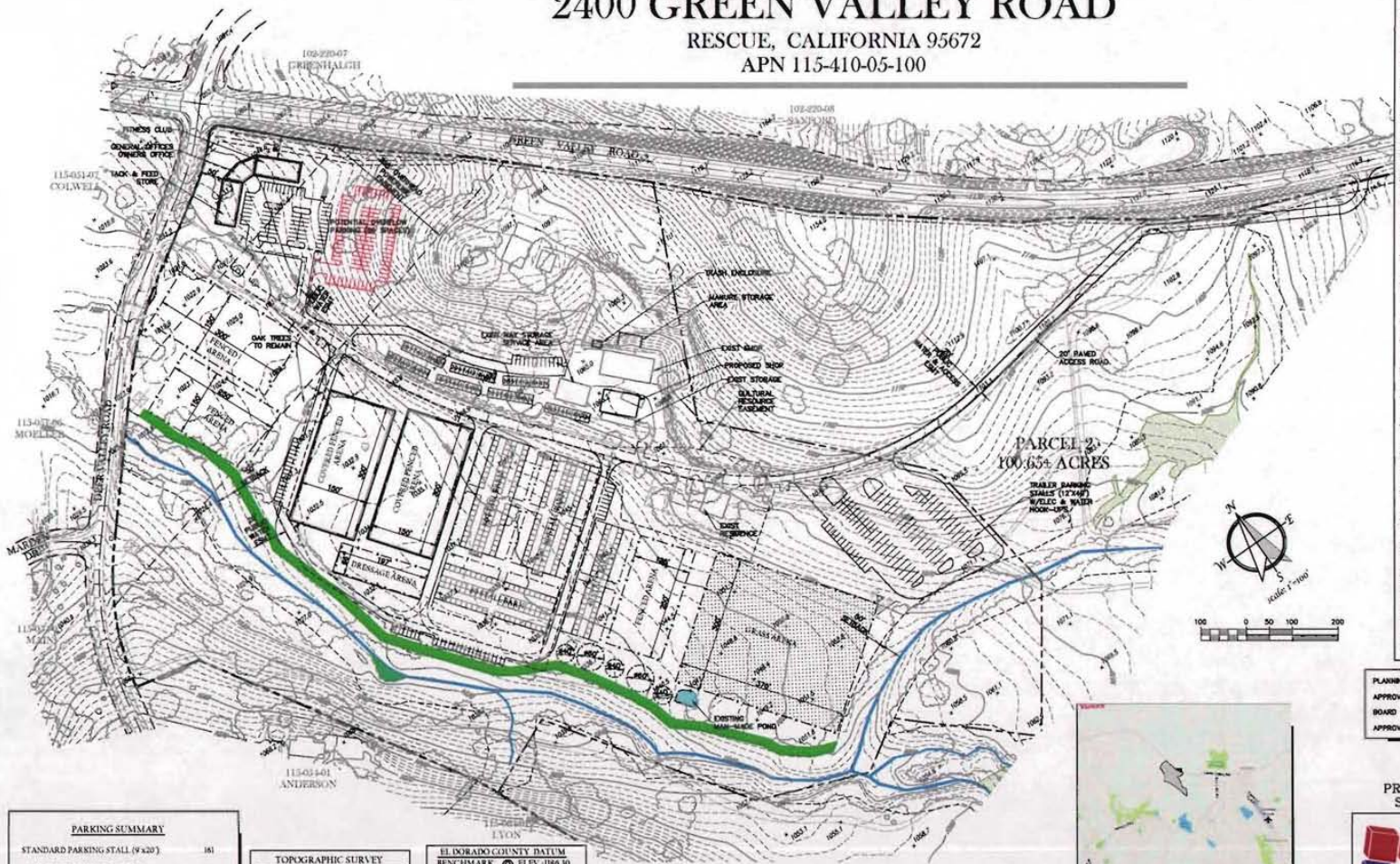
Z04-0015, P08-0036, S01-0011 / Springs Equestrian Center
Prepared By Aaron Mount

PRELIMINARY EQUESTRIAN SITE PLAN

ESSENTIAL PROPERTIES GROUP, INC.
2400 GREEN VALLEY ROAD

RESCUE, CALIFORNIA 95672

APN 115-410-05-100



PROJECT SUMMARY

OWNER/DEVELOPER/APPLICANT
ESSENTIAL PROPERTIES GROUP, INC.
970 RESERCH DRIVE, BUILDING #980
ROSEVILLE, CA 95678
ATTN: DENNIS GRAHAM
dennis.graham@headquartersl.com

ENGINEER
TSD ENGINEERING, INC.
31 NATOMA STREET, SUITE 160
FOLSOM, CA 95630
ATTN: CASEY FRICKERT
cfrickert@tsdeng.com

SCALE
1" = 200'

CONTOUR INTERVAL
10' CONTOUR INTERVAL

TOPOGRAPHY
AERIAL TOPOGRAPHIC SURVEY CONDUCTED ON AUGUST 9, 2010

SECTION, TOWNSHIP AND RANGE
A PORTION OF SECTIONS 19 & 30, TOWNSHIP 10 NORTH, RANGE 9 EAST, M.D.M.

ASSESSORS PARCEL NO
115-410-05-100

PRESENT ZONING
RE-5 & RE-10

PROPOSED ZONING
PARCEL 1 - RF (RECREATIONAL FACILITY)
PARCEL 2 - RE-5 (SAME)

AREA
PARCEL 1 - 43.77± AC
PARCEL 2 - 100.65± AC
TOTAL - 144.42± ACRES

NUMBER OF PARCELS
(2) TWO

WATER SUPPLY
EL DORADO IRRIGATION DISTRICT

SEWAGE DISPOSAL
PRIVATE SEPTIC SYSTEM

FIRE PROTECTION
RESCUE FIRE PROTECTION DISTRICT
EL DORADO FPD

DATE OF PREPARATION
FEBRUARY 24, 2011

PROPOSED USE
EQUESTRIAN CENTER

PARK DISTRICT
EL DORADO COUNTY

SCHOOL DISTRICT
RESCUE UNION SCHOOL DISTRICT
EL DORADO UNION H.S. DISTRICT

GAS & ELECTRIC
PG&E

TELEPHONE
AT&T

PLANNING COMMISSION:	
APPROVAL/DENIAL DATE:	
BOARD OF SUPERVISORS:	
APPROVAL/DENIAL DATE:	

PARKING SUMMARY

STANDARD PARKING STALL (9'x20')	161
ACCESSIBILE PARKING (9'x20')	4
TRAILER PARKING STALL (12'x40')	40
TOTAL STALLS	203

TOPOGRAPHIC SURVEY

1. TOPOGRAPHIC SURVEY PREPARED BY TSD ENGINEERING, INC. TOPOGRAPHIC SURVEY OBTAINED FROM AN AERIAL TOPOGRAPHIC SURVEY WITH ACCURACY STANDARD IN THE INDUSTRY. DATE OF SURVEY: AUGUST 9, 2010
2. TOPOGRAPHIC INFORMATION SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION

EL DORADO COUNTY DATUM

BENCHMARK ELEV - 1086.30

CONTROL POINT NO'S. 15 PER THE EL DORADO COUNTY H.O.T. SURVEY CONTROL DIAGRAM FOR "GREEN VALLEY SIDEWALK FROM PLEASANT GROVE MIDDLE SCHOOL TO BASS LAKE ROAD", BEING A SPIKE LOCATED ON THE SOUTH SIDE OF GREEN VALLEY ROAD APPROXIMATELY 120 FEET EAST OF FUTURE SILVER SPRINGS ROAD. (NGVD'29)

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS IDENTICAL WITH THE NORTHEASTERLY BOUNDARY OF "GREEN SPRINGS RANCH UNIT NO 3" THE FINAL MAP OF WHICH IS FILED IN BOOK J OF MAPS, AT PAGE 89, EL DORADO COUNTY RECORDS

FLOOD ZONE

PROJECT IS LOCATED WITHIN FLOOD ZONE DESIGNATED AS UNSHADED 'X' PER FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP NO. 06017C0135E, DATED SEPT. 28, 2008

PRELIMINARY SITE PLAN
SEPTEMBER 10, 2014

SHEET 2/4

TSD ENGINEERING, INC.
expect more.
31 Natoma Street, Suite #160
Folsom, CA 95630
Phone: (916) 608-0707
Fax: (916) 608-0701

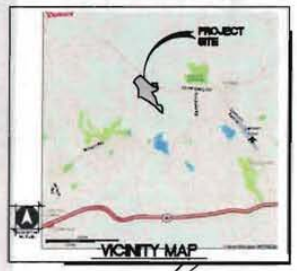
ATTACHMENT 3

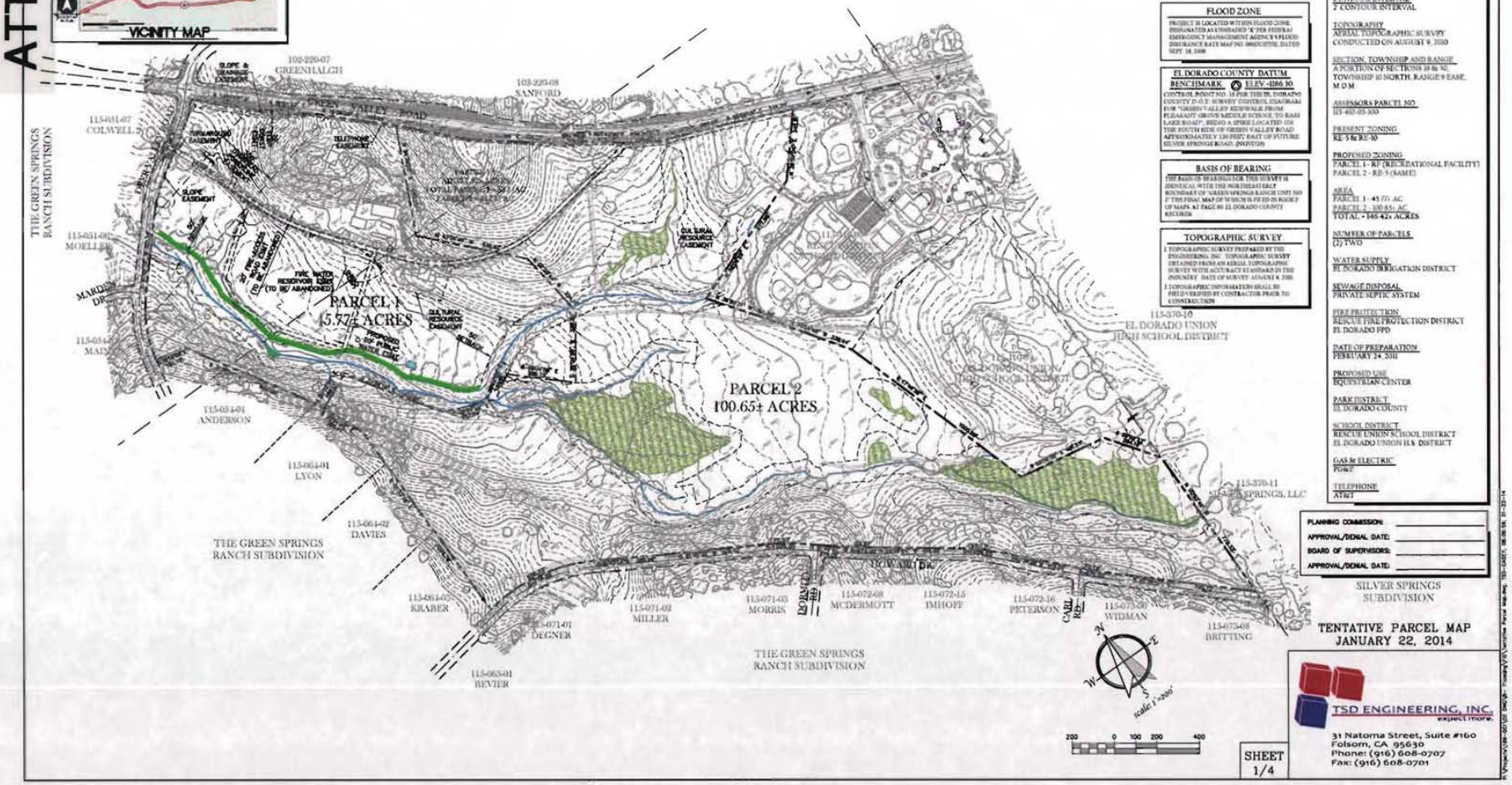
ATTACHMENT 4

TENTATIVE PARCEL MAP

ESSENTIAL PROPERTIES GROUP, INC.
2400 GREEN VALLEY ROAD

RESCUE, CALIFORNIA 95672
APN 115-410-05-100





FLOOD ZONE

PROJECT IS LOCATED WITHIN FLOOD ZONE DESIGNATED AS UNSHADED "X" PER FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP NO. 06017C0375E, DATED SEPT. 28, 2008

EL DORADO COUNTY DATUM

BENCHMARK A ELEV. -1186.30

CONTROL POINT NO. 18 PER THE EL DORADO COUNTY D-G-T SURVEY CONTROL DIAGRAM FOR "GREEN VALLEY SIDEWALK FROM PLEASANT GROVE MIDDLE SCHOOL TO BASS LAKE ROAD", BEING A SPIKE LOCATED ON THE SOUTH SIDE OF GREEN VALLEY ROAD APPROXIMATELY 120 FEET EAST OF FUTURE SILVER SPRINGS ROAD. (NGS'539)

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS IDENTICAL WITH THE NORTHEASTERLY BOUNDARY OF "GREEN SPRINGS RANCH UNIT NO 3" THE FINAL MAP OF WHICH IS FILED IN BOOK F OF MAPS AT PAGE 80 EL DORADO COUNTY RECORDS

TOPOGRAPHIC SURVEY

1. TOPOGRAPHIC SURVEY PREPARED BY TSD ENGINEERING, INC. TOPOGRAPHIC SURVEY OBTAINED FROM AN AERIAL TOPOGRAPHIC SURVEY WITH ACCURACY STANDARD IN THE INDUSTRY. DATE OF SURVEY: AUGUST 9, 2010.
2. TOPOGRAPHIC INFORMATION SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION

PROJECT SUMMARY

OWNER/DEVELOPER/APPLICANT
ESSENTIAL PROPERTIES GROUP, INC
870 RESERVE DRIVE, BUILDING #681
ROSEVILLE, CA 95678
ATTN: DENNIS GRAHAM
dennis.graham@basiquarters1.com

ENGINEER
TSD ENGINEERING, INC
31 NATOMA STREET, SUITE 160
FOLSOM, CA 95630
ATTN: CASEY FEICKERT
cfeickert@tsdeng.com

SCALE
1" = 200'

CONTOUR INTERVAL
2' CONTOUR INTERVAL

TOPOGRAPHY
AERIAL TOPOGRAPHIC SURVEY
CONDUCTED ON AUGUST 9, 2010

SECTION, TOWNSHIP AND RANGE
A PORTION OF SECTIONS 19 & 30, TOWNSHIP 10 NORTH, RANGE 9 EAST, M.D.M.

ASSESSORS PARCEL NO.
115-410-05-100

PRESENT ZONING
RE-5 & RE-10

PROPOSED ZONING
PARCEL 1 - RF (RECREATIONAL FACILITY)
PARCEL 2 - RE-5 (SAME)

AREA
PARCEL 1 - 45.77± AC
PARCEL 2 - 100.65± AC
TOTAL = 146.42± ACRES

NUMBER OF PARCELS
(2) TWO

WATER SUPPLY
EL DORADO IRRIGATION DISTRICT

SEWAGE DISPOSAL
PRIVATE SEPTIC SYSTEM

FIRE PROTECTION
RESCUE FIRE PROTECTION DISTRICT
EL DORADO FPD

DATE OF PREPARATION
FEBRUARY 24, 2011

PROPOSED USE
EQUESTRIAN CENTER

PARK DISTRICT
EL DORADO COUNTY

SCHOOL DISTRICT
RESCUE UNION SCHOOL DISTRICT
EL DORADO UNION H.S. DISTRICT

GAS & ELECTRIC
PG&E

TELEPHONE
AT&T

PLANNING COMMISSION:	
APPROVAL/DENIAL DATE:	
BOARD OF SUPERVISORS:	
APPROVAL/DENIAL DATE:	

TENTATIVE PARCEL MAP
JANUARY 22, 2014

SHEET 1/4

TSD ENGINEERING, INC.
expect more.
31 Natoma Street, Suite #160
Folsom, CA 95630
Phone: (916) 608-0707
Fax: (916) 608-0701

Environmental Noise Assessment

Springs Ranch Equestrian Center

Rescue, California (El Dorado County)

BAC Job # 2011-076

Prepared For:

Essential Properties, Inc

Mr. Dennis Graham
970 Reserve Drive, Building #180
Roseville, CA 95678

Prepared By:

Bollard Acoustical Consultants, Inc.

Paul Bollard, President

Revised February 25, 2014

BOLLARD
Acoustical Consultants

3551 Bankhead Road ▸ Loomis, CA 95650 ▸ Phone: (916) 663-0500 ▸ Fax: (916) 663-0501 ▸ BACNOISE.COM

Introduction

Bollard Acoustical Consultants, Inc. (BAC) has completed an environmental noise assessment for the proposed Springs Ranch Equestrian Center in El Dorado County, California. This report includes revisions to the report previously prepared by BAC for this project (report dated 12-19-2012).

The project site is bounded by Green Valley Road to the north, Howard Drive to the south, a new middle school site to the east, and Deer Valley Road to the west. It is currently occupied by a single family ranch home and a mobile home, and has been used for cattle grazing. Figure 1 shows an aerial photograph of the project site location and nearest surrounding residences.

The project involves the development of a facility to board horses, to offer riding lessons, and to host equestrian events on the weekends. Stalls would be provided to board the horses. Arenas would be provided for horses to train and perform. A small store would provide equestrian products. An office would provide administration for the facility. An RV parking area would be is also proposed for persons gathering for equestrian-related events. The existing single family residence would be used as a clubhouse for members of the center. A new residence would be built in the southern part of the site for the owner of the facility. Also the client proposes to host weddings and evening gatherings in the event areas.

Noise could be generated during public address system usage associated with equestrian events, by amplified speech and music associated with outdoor receptions, and by vehicles arriving and departing the RV/Trailer Parking area. The purpose of this study is to quantify these noise sources and to assess compliance with the applicable El Dorado County noise exposure criteria at the nearest residential receivers to the project site.

Criteria for Acceptable Noise Exposure

The El Dorado County Noise Element of the General Plan establishes hourly noise exposure limits for non-transportation (stationary) noise sources affecting community and rural residential land uses. Policy 6.5.1.7 of the County Noise Element, which specifically applies to new non-transportation noise sources (such as the project) affecting existing noise-sensitive land uses (residences), states the following:

Policy 6.5.1.7 *Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 6-2 for noise-sensitive uses.*

Table 6-2 of the County Noise Element is provided below.

TABLE 6-2
NOISE LEVEL PERFORMANCE PROTECTION STANDARDS FOR NOISE SENSITIVE LAND USES AFFECTED BY NON-TRANSPORTATION* SOURCES

Noise Level Descriptor	Daytime 7 a.m. - 7 p.m.		Evening 7 p.m. - 10 p.m.		Night 10 p.m. - 7 a.m.	
	Community	Rural	Community	Rural	Community	Rural
Hourly L_{eq}, dB	55	50	50	45	45	40
Maximum level, dB	70	60	60	55	55	50

Notes:

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.

In Community areas the exterior noise level standard shall be applied to the property line of the receiving property. In Rural Areas the exterior noise level standard shall be applied at a point 100' away from the residence. The above standards shall be measured only on property containing a noise sensitive land use as defined in Objective 6.5.1. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all affected property owners and approved by the County.

*Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations and aircraft in flight. Control of noise from these sources is preempted by Federal and State regulations. Control of noise from facilities of regulated public facilities is preempted by California Public Utilities Commission (CPUC) regulations. All other noise sources are subject to local regulations. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, schools, hospitals, commercial land uses, other outdoor land use, etc.

This analysis addresses compliance with both the Community and Rural noise level standards of El Dorado County. The County noise standards are reduced by 5 dB in cases where the noise source in question consists of speech or music. The county noise limits are summarized in Table 1, including the -5 dB correction to account for the speech/music nature of the project noise sources. Because the -5 dB correction has been applied, the tonality of speech and music are accounted for in this analysis.

Table 1
Exterior Noise Exposure Criteria (Adjusted by -5 dB for Speech/Music)
Applicable at Residential Land Uses

Zone	Location Where Standard is Applied	Descriptor	Daytime (7 a.m. - 7 p.m.)	Evening (7 p.m. - 10 p.m.)
Rural	100' from Residence	Hourly L_{eq}, dB	45	40
		Maximum Level, dB (L_{max})	55	50
Community	Property Line	Hourly L_{eq}, dB	50	45
		Maximum Level, dB (L_{max})	65	55

Source: El Dorado County General Plan

Figure 1

Springs Ranch Event Center - El Dorado County, California

Project Area and Nearest Noise-Sensitive Receptors

Existing Ambient Noise Levels in the Project Vicinity

The existing ambient noise environment in the immediate project vicinity is defined primarily by local traffic on Green Valley Road. To quantify the existing ambient noise environment at the project site, continuous ambient noise level measurements were conducted at the existing ranch house on the property on November 10, 2011. Ambient noise levels at this location are expected to be similar to, or lower than, ambient conditions at the surrounding residential properties. The reason the measured ambient conditions are expected to be lower than those experienced at some of the nearest residences is that the noise monitoring site was located in an area shielded from view of Green Valley Road and some of the residences to the immediate north of the site (Residences R2 and R3) are exposed to higher Green Valley Road traffic noise levels. By using the ambient noise monitoring site to represent all of the nearest residences to the project site, a conservative assessment of ambient conditions was obtained.

A Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter was used to complete the ambient noise level measurement survey. The meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 (Precision) sound measurement equipment (ANSI S1.4).

The results of the ambient noise level measurements, which are provided numerically in Appendix B and graphically in Appendix C, indicate that typical daytime and evening average noise levels were approximately 45 dB Leq, with maximum noise levels typically in the vicinity of 60 dB Lmax. The Appendix C data also indicate that background noise levels (L90) typically ranged from 35-40 dB during the hours in which activities would occur at the project site. However, to provide a direct comparison of ambient noise levels against the standards utilized in the County General Plan Noise Element, ambient average (Leq) and maximum (Lmax) noise levels are utilized. Given the range of measured ambient noise levels, satisfaction with the noise standards shown in Table 1 would ensure that the project noise levels do not significantly exceed existing average and maximum ambient noise levels currently present in the project vicinity.

Analysis of Project Noise Generation

2011 Event Simulation

The components of the proposed project identified as being potentially significant noise sources include amplified speech & music associated with outdoor receptions and equestrian events and noise generated by the reception attendees. The focal points for these sources include the proposed dance/reception area in the ranch house and the covered arena location. These locations are identified on the aerial photograph shown in Figure 1, and on the site plan shown by Figure 2.

To quantify amplified speech and music levels at the nearest residences, an event simulation was conducted at the project site on November 9, 2011. The simulation consisted of playing amplified music from the reception and arena areas of the site using a pair of Yamaha MSR 400 portable speakers with built-in amplifiers and an MP3 player, and measuring the resulting sound levels at various locations on the project site and nearby residential property lines.

Figure 2 illustrates the locations where monitoring was conducted relative to the reception and arena areas. Weather conditions during the simulation consisted of cool/cold temperatures, clear skies, and light winds. Because sound tends to propagate with the least resistance during cold temperatures, the weather conditions present during the tests were representative of reasonable worst-case conditions.

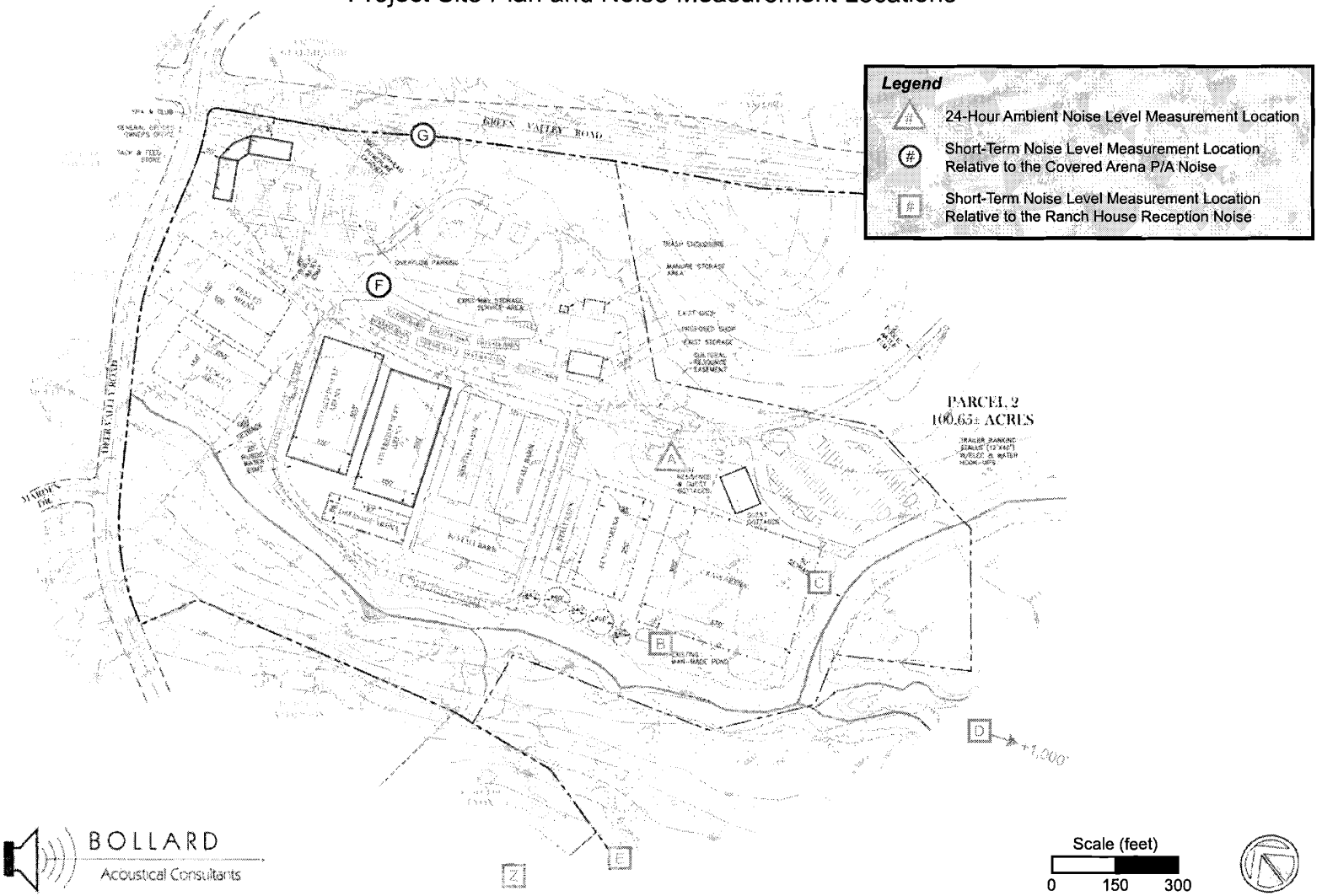
It should be noted that the November 2011 simulation was conducted based on the assumption that the project area was within the "community" zoning district. As a result, the noise measurements conducted during the simulation focused on the nearest residential property lines, rather than at locations within 100 feet of the actual residences as would be required for the "rural" zoning designation.

To provide an assessment of the state of compliance of project noise generation with the County's "rural" noise standards, BAC repeated portions of the simulation on February 5, 2014. During the 2014 simulation, noise monitoring was conducted from the elevated deck of the nearest residence to the proposed reception area. The 2014 simulation is discussed in detail in the next section of this report.

Figure 2

Springs Ranch Event Center - El Dorado County, California

Project Site Plan and Noise Measurement Locations



According to project applicants, the speaker system at the reception area would be located on the deck of the residence facing southeast. At the arena area, the speakers would reportedly be pointed to the northeast, away from the residences on Deer Valley Road. The 2011 measurement sites were chosen to represent worst-case property-line exposure relative to speaker orientation. Figures 3 and 4 show photos of the 2011 simulation sound system setup and speaker test orientations. The sound system was adjusted to produce sound levels typical of what would be produced at outdoor events at this facility.

Figure 3 – Ranch House Deck Speaker Placement (reception location)

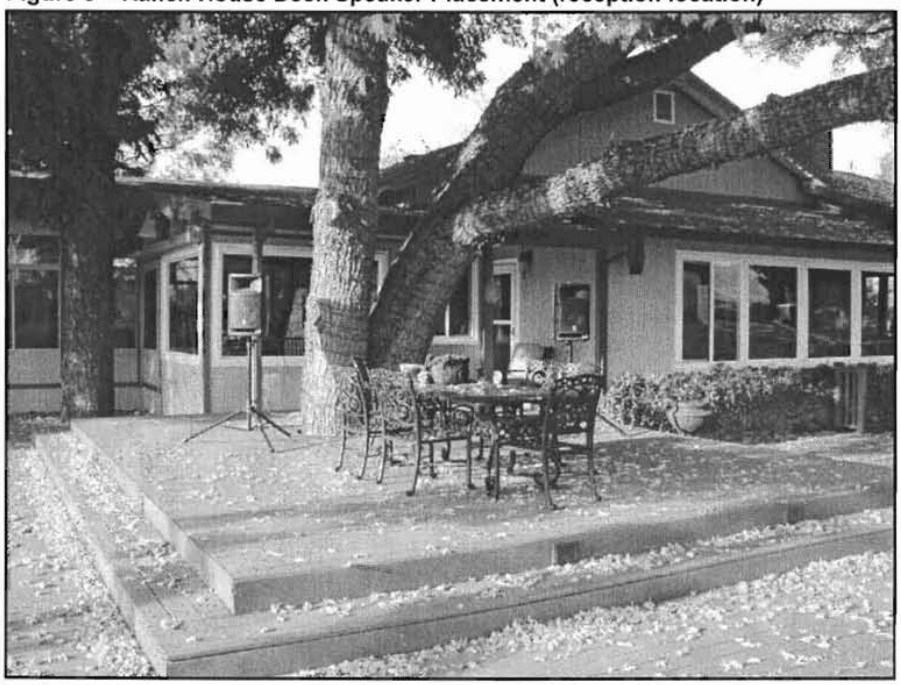
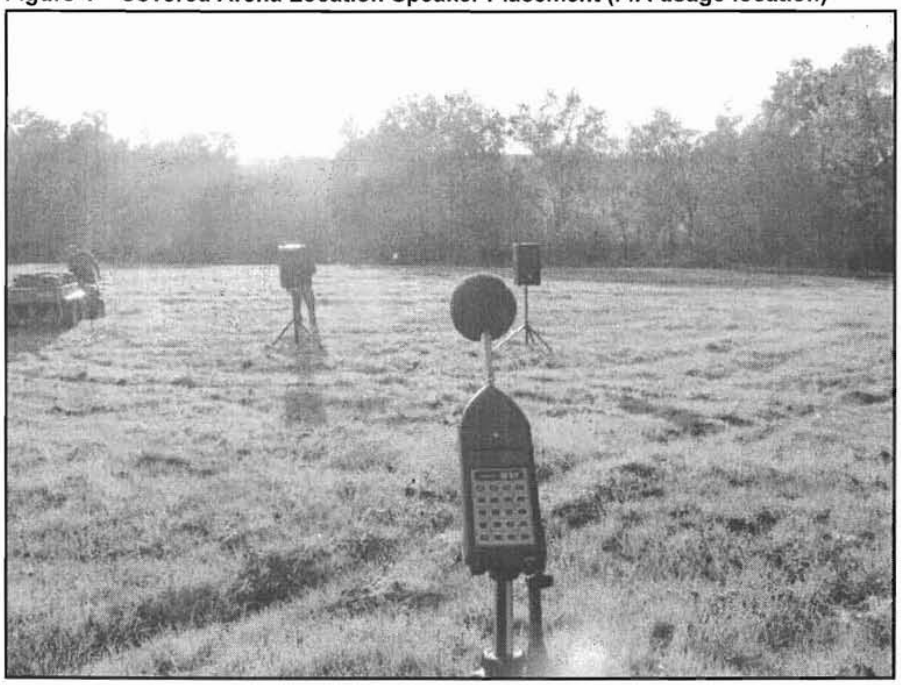


Figure 4 – Covered Arena Location Speaker Placement (P/A usage location)



The results of the amplified speech/music sound tests for the proposed Ranch House reception area are provided in Table 2. The results of the amplified speech/music sound tests for the proposed Arena area are provided in Table 3.

Table 2
Summary of 2011 Simulated Reception Noise Level Measurements
Springs Ranch Equestrian Center Ranch House Area – El Dorado County, California
November 9th, 2011

Measurement Site – Description	L_{eq} (dB)	L_{max} (dB)
Ref. – Center of dance area (50 feet NW of speakers)	78	95
B – 490 feet Southwest of the speakers in field	63	78
C – 610 feet Southeast of the speakers in field	45	58
D – 1,900 feet Southeast of the speakers in field	51	58
E – 1,000 feet Southwest of the speakers in field	40	55
County "Community" Evening Property Line Noise	45	55

Notes: Please see the measurement locations in Figure 2.

The Table 2 data, which is most important to this evaluation, is the data for Sites D and E, as these sites are near the project property lines where the El Dorado County noise standards would be applied. The data for Sites D and E indicate that the County's evening average and maximum noise level standards could be exceeded at Site D during the playing of amplified music. The Table 2 data also indicate that measured sound levels were 3 dB above County noise standards at Site D. To ensure compliance with the County noise standards, the level of amplified speech or music should be maintained at or below 85 dB Lmax and 75 dB Leq at a 50 foot reference distance from the speakers, and all reception activities should be completed by 10 pm.

The levels reported in Table 2 for sites D & E are representative of property line noise levels, which is where the El Dorado County exterior noise standards are applied for community uses. The nearest residence to noise measurement Site E is located 200 feet from the property line. Noise levels received at that nearest residence during reception events were the subject of the 2014 simulation, which is discussed in the next section of this report.

Table 3
Summary of Covered Arena Area Noise Level Measurements
Springs Ranch Equestrian Center – El Dorado County, California
November 9th, 2011

Measurement Site – Description	L_{eq}, dB	L_{max}, dB
Ref. – Center of dance area (50 feet NW of speakers)	79	89
F – Northeast of the source across from entry	65	87
G – On the Northeast corner of the property line	62	71
County Evening Property Line Noise Standard	45	55

Note: Please see the measurement locations in Figure 3.

The Table 3 data which is most important to this evaluation is the data for Site G, as this location was directly in line with the speakers at the northeastern project property line adjacent to Green Valley Road. While the data for Site G indicate that the County's evening noise level standards were exceeded during the event simulation, it should be noted that the measurement results were defined primarily by traffic on Green Valley Road. In the absence of traffic, observed noise levels due to the event simulation were noted as being less than 50 dB Leq. Given the setback to the nearest residential property lines to the northeast, the shielding of event noise in the direction of those residences by intervening topography, and the masking of event noise in that direction by Green Valley Road traffic, sound generated by the P/A system at the nearest residences to the north are predicted to be well below the County's 45 dB Leq and 55 dB Lmax evening noise standards. As a result, no noise impacts are anticipated at those nearest residences to the northeast. Because the speakers would be pointed away from the nearest residences to the south and west (over 500 feet from the center of the arena area), amplified speech and music noise levels at those locations are predicted to be well within

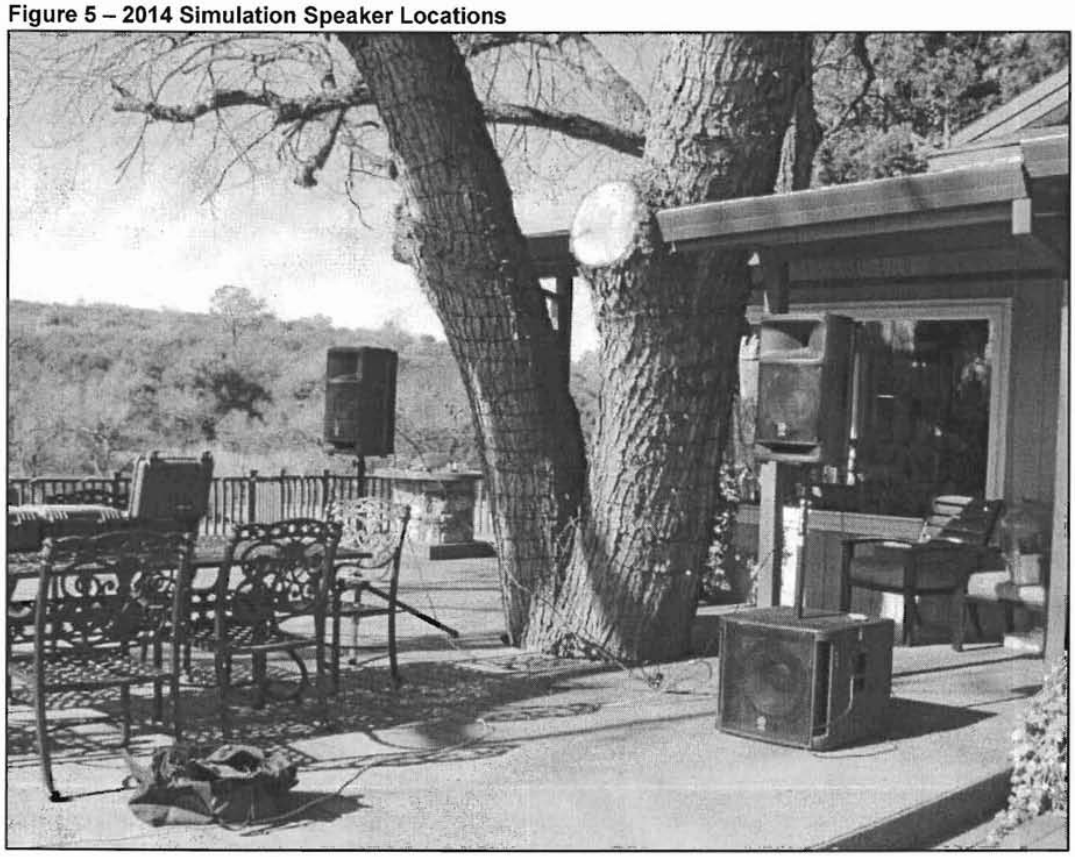
compliance of the County noise standards. In addition, the presence of Green Valley Road traffic noise would further mask project noise emissions at the nearest residences to the north.

2014 Event Simulation

Based on concerns expressed by adjacent residential neighbors on Deer Valley Road regarding the application of the noise standards at the property lines, rather than the residences themselves, a second event simulation was conducted at the project site on February 5, 2015. The purposes for the second simulation was to quantify sound levels generated during events at the project site from the nearest residence to the project site, rather than the property line of that residence, and to compare those sound levels against the County's "rural" noise level standards, rather than the "community" standards.

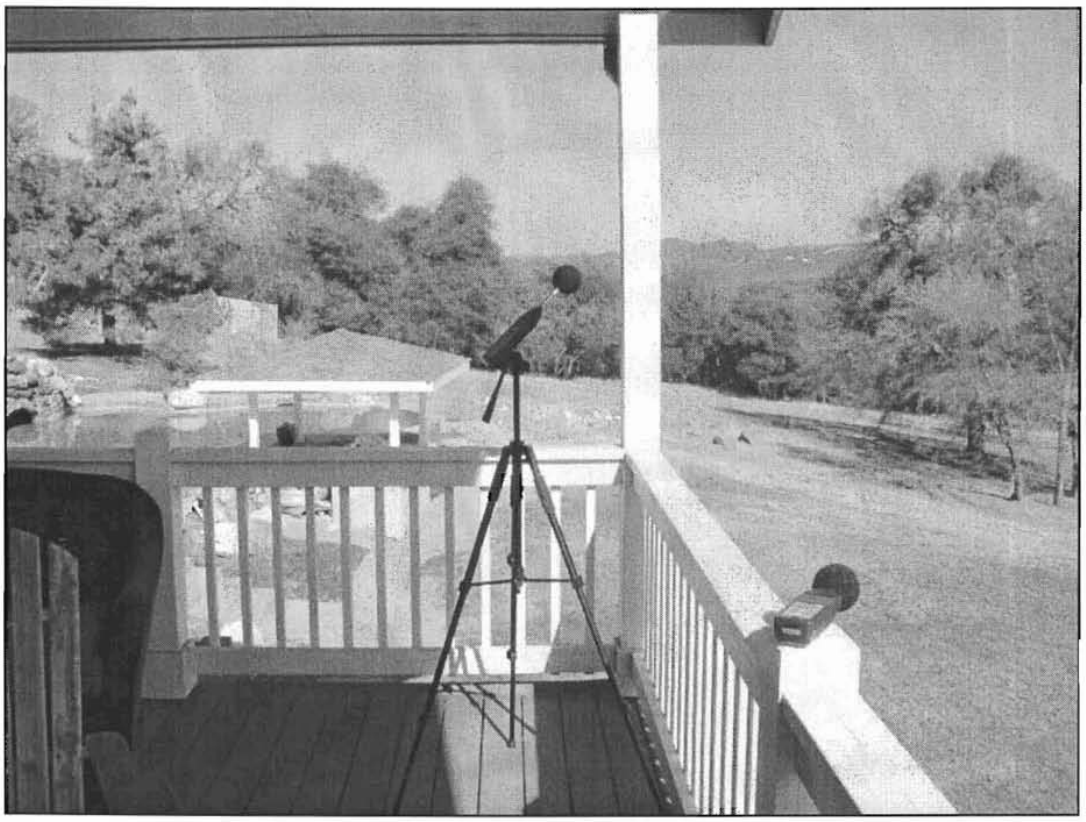
During the 2014 simulation, the same sound system utilized for the 2011 simulation was used, except that a Yamaha MSR800 subwoofer was added to provide additional low-frequency simulation of reception events. A photograph of the 2014 sound system setup is provided in Figure 5.

Figure 5 – 2014 Simulation Speaker Locations



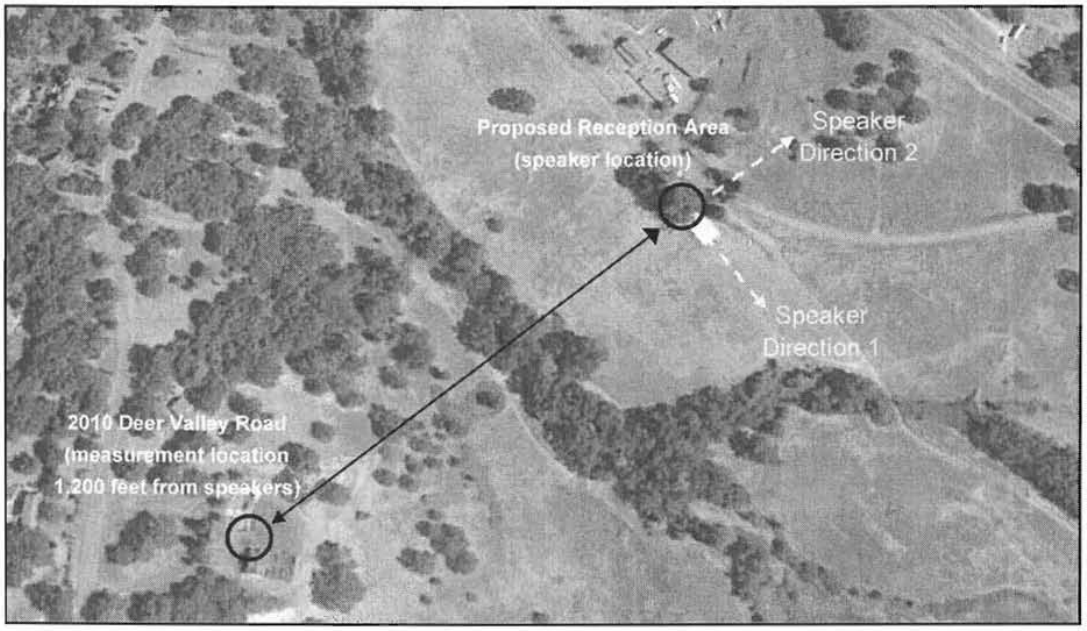
While music was being played from the proposed reception area on the deck of the ranch house (Figure 5), BAC staff conducted a series of sound level measurements from the deck of the residence located at 2010 Deer Valley Road. During the simulation, the owner of that residence and a nearby neighbor were present to conduct their own sound level measurements and observations. Figure 6 shows the sound level measurement position on the deck of the residences, including the sound level meter used by BAC (tripod) and the meter used by the nearby resident (deck railing). The approximate location of that noise monitoring site is identified as noise measurement location "Z" on Figure 2. Figure 7 shows a more precise illustration of the relationship of the 2010 Deer Valley Road residence to the simulation area.

Figure 6 – 2014 Simulation Test Location on Deck of 2010 Deer Valley Road



Weather conditions present during the 2014 simulation consisted of cold temperatures, clear skies, and light winds. Because sound tends to propagate with the least resistance during cold temperatures, the weather conditions present during the 2014 simulation were also representative of reasonable worst-case conditions. During warmer days, atmospheric absorption of sound would be greater and sound levels received at the nearest residences would be lower.

Figure 7 – 2014 Simulation Source and Measurement Locations



During the 2014 simulation, two different speaker orientations were used to quantify the differences in sound levels at the receiver associated with the speakers oriented perpendicular to the nearest residence and away from the nearest residences. Those locations are identified as Speaker Directions 1 (perpendicular) and 2 (away) on Figure 7.

In addition to altering the speaker direction, BAC staff modified the source sound level to check the audibility of reception-generated sound at the test residence under different volume settings. Table 4 shows the results of the 2014 simulation, including BAC staff observations regarding the audibility of the music under the different speaker directions and volume settings.

Table 4
2014 Event Simulation Results
Springs Ranch Equestrian Center – El Dorado County

Test	Time	Speaker Direction (Fig 7)	Measurement Location	Maximum (Lmax)	Average (Leq)	Notes/Observations
1	11:26 am	1 (90 degree)	50 ft. from speaker Residential Deck	82-84 44-49	77-81 **41-44**	Loudest configuration. Sound levels exceeded County 40 dB Leq standard and very audible at residence.
2	11:33 am	2 (180 degrees)	50 ft. from speaker Residential Deck	82-84 40-48	77-81 38-43	Volume levels not changed but speaker turned away from residences. Clear decrease in noise but average level still above standard & music still clearly audible.
3	11:51 am	2 (180 degrees)	50 ft. from speaker Residential Deck	77-79 38-44	72-76 36-41	Music decreased by 5 dB. Speakers still facing away from residence. Clearly quieter at residence but still slight exceedance of 40 dB standard.
4	12:00 pm	2 (180 degrees)	50 ft. from speaker Residential Interior	77-79 34-35	72-76 25	Test conducted inside residence with windows closed. Music completely inaudible.
5	12:11 pm	2 (180 degrees)	50 ft. from speaker Residential Deck	72-74 40-44	67-71 36-38	Volume levels decreased by an additional 5 dB. Speakers still facing away. Music extremely faint and only audible during absence of traffic on Green Valley Road. Maximum level on deck caused by background traffic noise.

Source: Bollard Acoustical Consultants, Inc. (BAC), February 5, 2015
Values in Red indicate exceedance of County 40 dB Leq "rural" noise standard for evening hours (standard adjusted down by 5 dB for music).

The Table 4 results indicate that the sound levels generated by the 2014 simulated event exceeded the County's adjusted, evening, "rural", average noise standard at the worst-case residential receptor location with the loudest volume settings regardless of whether the speakers were pointed perpendicular to the residence or away from the residence (Tests 1 & 2).

After lowering the speaker volume and facing the speakers away from the residences on Deer Valley Road, the levels decreased substantially and only exceeded the County's average noise standard by 1 dB (Test 3). Under warmer conditions, such as would typically be present during outdoor receptions, the Test 3 conditions would be expected to satisfy the County's average (Leq) noise standard.

It should be noted that, although the Test 3 results were in substantial conformance with the County's noise standard (the 1 dB exceedance of the average noise standard occurred during only 1 of the 4, one-minute periods of Test 3), the residents present during the test expressed concern that the levels would still be objectionable due to the audibility of the music and duration of time the music could play during a reception.

The interior test (Test 4) was conducted to determine the audibility of the music from within the residence with the windows closed. Although the music was inaudible with windows in the closed position, it could be audible inside when the windows are in the open position, depending on speaker volume level and orientation.

The final test, Test 5, resulted in the lowest sound levels received at the residences on Deer Valley Road. The music was feint to inaudible for the entire duration of this test. Test 5 was conducted with the speakers facing away from the residences with the volume levels considerably reduced (10 dB) relative to the Test 1 conditions. The Test 5 results were in full compliance with the County's noise standards. Despite the fact that the Test 5 results were only audible in the complete absence of Green Valley Road traffic and natural sounds (birds chirping), the residents present still felt that prolonged exposure to those levels could still be excessive.

Guest Noise Assessment (Cheering, Elevated Voice, Applause, Etc.)

Persons engaged in conversation or cheering with raised voices generally produce noise levels of approximately 70-75 dB Lmax at a distance of 5 feet. Based on 100 people speaking or cheering in elevated voices at any given time, the reference voice level at a distance of 50 feet would be approximately 75 dB Lmax. At the nearest residence to either the reception area or arena area, located over 400 feet away, the reference level of 75 dB Lmax at 50 feet would be reduced to approximately 55 dB Lmax, assuming the cheering was directed towards those nearest residences.

Average (Leq) values would depend on the duration of the hour the elevated speech were to occur, but would be lower than the predicted maximum value of 55 dB Lmax. As a result, typical sound level generated by guests speaking in raised voices during events held at the project site are not expected to exceed the County's noise standards at the nearest residences or residential property lines. However, such speech will likely be audible at those nearest

residences, so any patrons speaking in exceptionally loud voice (or yelling), should be reminded of the proximity to the nearby neighbors.

RV and Horse Trailer Parking Noise Assessment

The project proposes an RV parking area at the locations indicated on Figures 1 & 2. The distance between the nearest existing residence and the proposed RV parking area is over 1,000 feet, and the distance to the nearest school building to the east is over 1,500 feet. Because the RV parking area will be equipped with electrical hook-ups, generators would not be necessary at this location (or allowed). As a result, the primary noise source associated with the RV parking area will be the vehicles arriving and departing the site.

To quantify the noise emissions of RV usage at the projects site, BAC conducted as series of noise measurements on August 17, 2012. The measurements consisted of two vehicles arriving and departing the test location, including engines starting, idling, and stopping, doors opening and closing, and typical arrival and departure activities. The vehicles tested included a 2005 Ford F250 ¾-ton truck with a 6 litre V8 Turbo Diesel, which is commonly used as a trailer tow vehicle, and a 1998 30-foot Lazy Daze Class C RV with a Ford Triton V10 Super Duty gasoline engine.

The measurements were conducted from a position 50 feet from the RV parking location using a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter. The meter was calibrated before use with an LDL CA200 acoustical calibrator to ensure the accuracy of the measurements. The measurement system meets ANSI specifications for precision sound level measurement systems.
The noise measurement results indicate that the V8 Turbo Diesel generated average and maximum noise levels of 65 dB Leq and 70 dB Lmax during the noise surveys, and the gasoline-powered V10 generated average and maximum noise levels of 60 dB Leq and 65 dB Lmax.

Given a sound level decay rate of 6 dB per doubling of distance from the source for standard spherical spreading of sound waves, and an additional attenuation of 1.5 dB per thousand feet for atmospheric and excess ground attenuation, RV parking noise levels at the nearest noise sensitive receiver located over 1,000 feet would be reduced to less than 40 dB Leq and 45 dB Lmax.

Because the predicted noise levels associated with RV arrivals and departures, including engines starting, idling and stopping, and RV doors opening and closing, are well below the El Dorado County 50 dB Leq and 60 dB Lmax noise level standards (these standards do not include the -5 dB correction because this source is not comprised of speech or music), and well below measured existing ambient noise levels in the project area, no adverse noise impacts are identified for this aspect of the project.

Conclusions & Recommendations

Noise generated during equestrian events and outdoor receptions, including amplified speech and music, and sound generated by guests speaking or cheering in raised voices, is generally predicted to satisfy the El Dorado County "community" noise standards at the property lines of the nearest existing residences (and the school to the southeast). However, the 2014 event simulation indicated that amplified music played at the proposed outdoor reception area would exceed the County's noise standards at the elevated deck of the nearest potentially affected residence under certain operating conditions. As a result, the following specific measures are recommended to reduce noise levels generated during events at this facility to a state of compliance with County requirements and reduce the potential for adverse public reaction at the nearest residences.

1. All events and on-site activities shall be completed by 10 p.m., including amplified speech and music, and guests departing the premises.

2. Background music played in the ranch house deck shall not exceed maximum sound levels of 75 dBA Leq at a position 50 feet in front of the speakers. (Note: Following the completion of the 2014 simulation, the applicant has agreed to adhere to this lower sound system output, which would result in compliance with County "rural" noise standards at the nearest residences. The applicant state he will attempt to further reduce music levels below this level, but will ensure the County's rural standards are satisfied).

3. The speakers at the ranch house deck should be oriented to the northeast, away from the nearest residences on Deer Valley Road. (Note: Following the completion of the 2014 simulation, the applicant has agreed to adhere to this speaker orientation requirement).

4. The speakers at the proposed covered arena area should be oriented in an easterly direction, not pointed directly towards the nearest residences to the north and west.

5. In the event that speaker orientation alone does not result in compliance with the County noise standards at the nearest residences then it will be necessary to either reduce the amplifier settings or utilize a greater number of speakers in closer proximity to the arena or reception area with each speaker generating lower sound levels.

6. Periodic noise monitoring during both equestrian events and outdoor receptions is recommended to ensure satisfaction with the County's noise standards and the conditions cited above. Such monitoring should occur at a position 50 feet in front of the speakers. However, if concerns are expressed regarding the sound level received at the nearest residences during events, project representatives should coordinate with those residences to periodically conduct noise monitoring at the nearest residence(s). The monitoring should be conducted for a suitable duration to ensure that project noise emissions have been adequately quantified. That duration will depend on the nature of the on-site activities. (Note: The applicant has proposed to purchase a sound level meter and will conduct monitoring of all events to measure and manage compliance. This should be conducted as proposed).

7. Amplified music and speech originating at the arena and reception area will likely be audible at the nearest residences under certain atmospheric conditions. Facility representatives are encouraged to work with the neighbors to notify them of upcoming events and to develop procedures for addressing noise-related concerns the surrounding neighbors may have.

These conclusions are based on the project site plans, noise level test data, and recommendations contained herein. Deviations from these plans, data and recommendations will cause actual noise levels to differ from those described herein. BAC is not responsible for exceedance of County noise standards caused by amplified music or for noise generated by event activities or by event attendees.

Appendix A

Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

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Appendix B

Springs Ranch Event Center

24hr Continuous Noise Monitoring at Ranch House (Site 1)

Thursday, November 10, 2011

Hour	Leq	Lmax	L50	L90
0:00	38	54	37	33
1:00	36	47	34	31
2:00	38	50	35	32
3:00	37	48	34	32
4:00	34	51	32	31
5:00	36	49	35	32
6:00	43	56	39	35
7:00	43	53	42	38
8:00	45	60	44	41
9:00	44	54	43	41
10:00	48	67	43	40
11:00	43	58	40	36
12:00	42	56	39	37
13:00	44	62	42	38
14:00	43	55	42	38
15:00	41	61	38	36
16:00	41	57	40	38
17:00	46	61	44	40
18:00	48	58	47	45
19:00	44	53	44	41
20:00	45	58	43	39
21:00	43	56	42	39
22:00	44	57	43	39
23:00	41	57	39	34

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	48.0	41.1	44.5	43.8	34.3	39.7
Lmax (Maximum)	67.4	53.1	58.0	57.1	46.6	52.1
L50 (Median)	47.3	38.2	42.3	42.7	32.3	36.4
L90 (Background)	45.0	35.9	39.1	38.7	31.2	33.3

Computed Ldn, dB	47.2
% Daytime Energy	83%
% Nighttime Energy	17%

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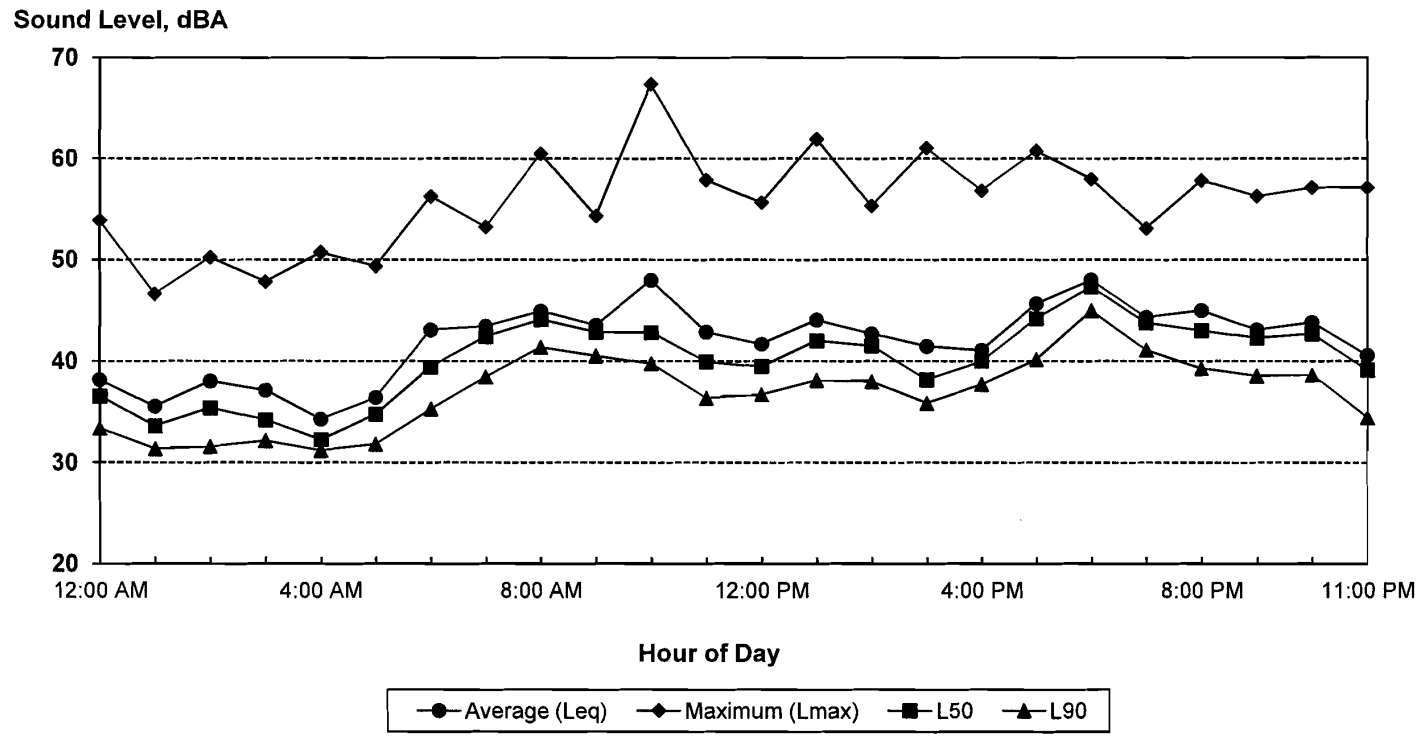
Appendix C
Springs Ranch Event Center
24hr Continuous Noise Monitoring at Ranch House (Site 1)
Thursday, November 10, 2011



Ldn: 47 dB

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ATTACHMENT 6

El Dorado Irrigation District

In Reply Refer To: FIL1212-022

December 3, 2012

Mr. Dennis Graham
Essential Properties Group, Inc.
970 Reserve Drive #180
Roseville, CA 95678

SUBJECT: Facility Improvement Letter (FIL), Springs Ranch Equestrian Center - **Annexation**
Assessor's Parcel No. 115-410-05 (Outside)
EDC Project No: Z-04-0015,S 01-0011, P 08-0036

Dear Mr. Graham:

This letter is in response to your request dated September 25, 2012. This letter revises the previous FIL dated November 30, 2011 and is valid for a period of three years from that date. If a Facility Plan Report (FPR) for your project has not been submitted to the District within three years of the date of the previous letter, a new FIL will be required.

Design drawings for your project must be in conformance with the District's *Water, Sewer and Recycled Water Design and Construction Standards*.

This project is an equestrian center on 146.42 acres. Water service, sewer service, private fire service, and fire hydrants are requested. The property is **not** within the District boundary and will require annexation before service can be obtained. This letter is not a commitment to serve, but does address the location and approximate capacity of existing facilities that may be available to serve your project.

Water Supply

In terms of water supply, as of January 1, 2012, there were 2,000 equivalent dwelling units (EDUs) available in the Western/Eastern Water Supply Region. Your project as proposed on this date would require 12 EDUs of water supply.

Water Facilities

A 12-inch water line exists in Green Valley Road approximately 900 feet southeast of your parcel. The Rescue Fire Protection District has determined that the minimum fire flow for this project is 1500 GPM for a two-hour duration while maintaining a 20-psi residual pressure. According to the District's hydraulic model, the existing system can deliver the required fire flow.

In order to provide this fire flow and receive service, you must construct a water line extension connecting to the existing 12-inch water line in Green Valley Road. The hydraulic grade line for the existing water distribution facilities is 1488 feet above mean sea level at static conditions and 1459 feet above mean sea level during fire flow and maximum day demands.

The flow predicted above was developed using a computer model and is not an actual field flow test.

Sewer Facilities

The Pioneer Place Lift Station serving the project area is located at the southeastern edge of the subject property. In order to receive service, an onsite private gravity sewer collection system and a full sewage lift station must be constructed. You will also need to construct an offsite District sewer main to the 10-inch gravity main at the Pioneer Place Lift Station. These facilities have adequate capacity at this time. Your project as proposed on this date would require 8 EDUs of sewer service.

Facility Plan Report

A Facility Plan Report (FPR) may be required for this project. The FPR shall address the expansion of the water and sewer facilities and the specific fire flow requirements for all phases of the project. A meeting to discuss the content of the report will be required. Please contact this office to arrange the meeting. A preliminary utility plan prepared by your engineer must be brought to the meeting.

Two copies of the FPR will be required along with a $2,000.00 deposit. You will be billed for actual time spent in review and processing of your FPR. Please submit the FPR and fee to our Customer Service Department. Enclosed is the FPR description and transmittal form for your use. The items listed under content in the description and the completed transmittal form must be bound in each copy of the FPR.

Easement Requirements

Proposed water lines, sewer lines and related facilities must be located within an easement accessible by conventional maintenance vehicles. When the water lines or waste water lines are within streets, they shall be located within the paved section of the roadway. No structures will be permitted within the easements of any existing or proposed facilities. The District must have unobstructed access to these easements at all times, and does not generally allow water or waste water facilities along lot lines.

Easements for any new District facilities constructed by this project must be granted to the District prior to District approval of water and/or waste water improvement plans, whether on-site or off-site. In addition, due to either nonexistent or prescriptive easements for some older facilities, any existing District facilities that will remain in place after the development of this property must also have an easement granted to the District.

Environmental

The County is the lead agency for environmental review of this project per Section 15051 of the California Environmental Quality Act Guidelines (CEQA). The County's environmental document should include a review of both off-site and on-site water and sewer facilities that may be constructed by this project. You may be requested to submit a copy of the County's environmental document to the District if your project involves significant off-site facilities. If the County's environmental document does not address all water and waste water facilities and they are not exempt from environmental review, a supplemental environmental document will be required. This document would be prepared by a consultant. It could require several months to prepare and you would be responsible for its cost.

Annexation

The applicant is charged for all costs associated with the annexation proposal. A preliminary cost benefit analysis has been completed. This project as currently defined **will not** have a negative financial impact on the District. Please contact Development Services regarding the annexation.

Summary

Service to this proposed development is contingent upon the following:

- Annexation approval from the District's Board of Directors and El Dorado County Local Agency Formation Commission
- Payment of District Annexation Impact Fee (Contact Development Services for fee calculation)
- The availability of uncommitted water supplies at the time service is requested.
- Approval of the County's environmental document by the District (if requested)
- Approval of a Facility Plan Report by the District(if required)
- Approval of an extension of facilities application by the District
- Approval of facility improvement plans by the District
- Construction by the developer of all on-site and off-site proposed water and sewer facilities
- Acceptance of these facilities by the District
- Payment of all District connection costs

Services shall be provided in accordance with El Dorado Irrigation District Board Policies and Administrative Regulations, as amended from time-to-time. As they relate to conditions of and fees for extension of service, District Administrative Regulations will apply as of the date of a fully executed Extension of Facilities Agreement.

If you have any questions, please contact Marc Mackay at (530) 642-4135.

Sincerely,

EL DORADO IRRIGATION DISTRICT

Elizabeth D. Wells, P.E.
Engineering Division Manager

EW/MM:lk

Enclosures: System Map
FPR guidelines and transmittal

cc: Guy M. Delaney, Captain, Rescue Fire Protection District,
P.O. Box 201, Rescue, CA 95672

Casey Feickert, TSD Engineering, Inc.
31 Natoma Street, Suite 160, Folsom, CA 95630

Roger Trout, Director- El Dorado County Development Services Department,
2850 Fairlane Court, Placerville, CA 95667

José C. Henríquez, 550 Main Street, Suite E, Placerville, CA 95667

Lori Grace, Development Services, El Dorado Irrigation District

El Dorado Irrigation District

ENGINEERING FACILITY PLAN REPORT (FPR) GUIDELINES

PURPOSE

The District requires the submittal of an engineering Facility Plan Report (FPR) for the extension of District facilities for subdivisions, commercial projects and industrial developments. The purpose of the report is to establish an understanding between the developer and the District on what system improvements the developer must construct prior to receiving service. This will help avoid misunderstandings and costly revisions in the plan review process, and will help the developer determine the costs that will be incurred for water and wastewater service.

For most development projects, the FPR includes a detailed analysis of all proposed water, sewer and recycled water facilities. However, a Master Plan FPR is often appropriate for large, multi-phased developments. Master Plan FPRs focus on major trunk sewers and water transmission facilities and do not include minor subdivision and collection facilities. One or more subsequent detailed FPRs would be required after the overall master plan has been approved.

PROCEDURE

1. The developer's engineer will submit a packet containing a completed EID FPR Transmittal Form (template attached), two copies of a Draft FPR, an additional electronic copy (pdf format) of the report on CD, and a deposit of $2,000.00, to an EID Development Services Section representative.

   All FPRs must be bound and conform to the outline describe in the FPR CONTENT section of this document. If the project is to be constructed in phases, the number of parcels and the number of EDUs for each phase must be indicated in the FPR.

2. An initial screening for completeness will be conducted by the Development Engineer. If the report is found to be unacceptable because it is not substantially complete, it will be returned to the developer's engineer without a review.

3. Complete FPRs will be reviewed by the Development Engineer **within approximately six weeks** and returned with comments, if necessary. If there are no comments, the Final FPR will be approved and returned to the engineer along with a review letter. The FPR must be approved prior to the first submittal of facility improvement plans for District review. Any re-submittal of an FPR must contain two hardcopies and one .pdf electronic copy of the revised report and also include a copy of the previous review letter(s) in the FPR appendix.

4. After approval of the FPR, the developer's engineer may submit the facility improvement plans for review. If significant changes are required to the improvement plans during the review process, which affect the Final FPR, such changes must be reflected in an addendum to the Final FPR.

Any questions regarding FPRs or facility improvement plan reviews should be directed to the District's Development Engineer.

EXPIRATION

The approved FPR is valid for two years from the date of approval.

FPR CONTENT

The complexity of the report will depend upon the size of the project, the number of phases and the extent of improvements that are required. The report must conform to the following outline, which is based on Section 2 of the District's Water Design and Construction Standards (Design Standards). All FPR's will be bound and, at a *minimum*, include:

Section I – General

- Completed EID FPR Transmittal Form (A hardcopy is attached, and electronic copies are available on request. Please use this form as a master for future transmittals.)
- Cover page containing the project name; the name, address and telephone number of the engineer and owner/developer; the date of submittal and the Assessor's Parcel Number(s)
- Introduction
- Background including:
    a. Statement of whether or not the property is within the District's service area boundary
    b. Existing County zoning designation(s)
    c. Identification of the CEQA document prepared for the project and a statement regarding whether the entire project, including offsite water and/or sewer lines, are addressed
- Project description
- Vicinity map
- Project phasing (if applicable)
- A general project boundary map, showing adjacent developments and their existing or proposed EDU's
- Description of adjacent developments impacting or having the potential to impact this project
- Typical street cross section showing all utilities and separations

Section II – Water

- Contour map showing the location and size of all water facilities, including pressure reducing stations and pump stations (if applicable)
- Contour map showing proposed pressure zone boundaries (if applicable)
- Proposed sources(s) of water (existing District facilities, individual wells)
- Description of water demands based upon the equivalent dwelling unit (EDU) concept and maximum demand criteria as provided in the Design Standards
- Description of any storage requirements and proposed pressure zones
- Description of pumping and pressure reducing facilities (if applicable)
- Demand table with average day, peak hour, and maximum day demands detailed by junction node

Section III – Sewer

- Proposed sewage treatment location (such as El Dorado Hills WWTP, Deer Creek WWTP, Camino Heights)
- Description of average dry weather flow (ADWF) sewage generation, based upon the equivalent dwelling unit (EDU) concept; and peak wet weather flow (PWWF) sewage generation, based upon criteria as provided in the Design Standards
- Contour map showing all sewer facilities, including the size and slope of sewer mains, the location of sewage lift stations, pumped lots and offsite contributions (if applicable)
- Description of sewage lift station facilities, including capacity and head, and any proposed individual hours pump installations (if applicable)
- Table showing proposed sewer hydraulics, such as capacities, flows, velocities, depth of flow

El Dorado Irrigation District

Section IV – Recycled Water

- Contour map showing the location and size of all reclaim water facilities, including pressure reducing stations and pump stations (if applicable)
- Proposed source(s) of water (such as existing District facilities, irrigation wells)
- Description of reclaimed water demands based upon the equivalent dwelling unit (EDU) concept and maximum demand criteria as provided in the Design Standards
- Descriptions of any reclaimed water storage requirements and proposed pressure zones
- Description of pumping and pressure reducing facilities (if applicable)
- Demand table with average day, peak hour, and maximum day demands detailed by junction node
- Preliminary irrigation plan

Appendix

- Copy of Facility Improvement Letter(s)
- Letter from appropriate Fire Department stating required fire flow and duration for the project
- Copy of the tentative map (if applicable)
- Copy of pertinent calculations and hydraulic modeling analysis
- Water, sewer and recycled water exhibits

El Dorado Irrigation District

Facility Plan Report (FPR) Transmittal Form

Submittal Requirements: Two (2) copies of Facility Plan Report (FPR) and one (1) electronic copy in pdf format and a $2,000 deposit must be submitted along with this completed Transmittal Form.

Project Name: _____
Contact Person: _____
Address: _____
Telephone Number: _____ FAX Number: _____

1. Assessor's Parcel No(s): _____
2. Location: _____
3. This development will be constructed in _____ phases.
4. The property requires Annexation to EID _____Yes, _____ No.
5. The total acreage of the development is _____ acres.
6. The number of parcels proposed is _____.
7. The number of water EDU's requested is _____.
8. The number of sewer EDU's requested is _____.
9. The estimated maximum day water demand is _____ gpm and peak hour demand of _____ gpm.
10. The fire flow requirement is _____ gpm for _____ hours duration at _____ psi.
11. Pressure reducing stations are required? _____Yes, _____No.
12. The estimated average dry weather sewer flow is _____ gpm.
13. The estimated peak wet weather sewer flow is _____ gpm.
14. Recycled water proposed for irrigation _____Yes, _____No. Number of EDU's _____.
15. Estimated maximum day recycled demand is _____ gpm and peak hour demand of _____ gpm.
16. The engineer's cost estimates for all facilities to be built is attached ___Yes, ___ No.
17. Are any lift stations, pump stations or water tanks proposed? If so provide the following for each: latitude: _____ longitude: _____ elevation: _____

Exceptions: _____

_____

_____

FPR submitted by:

_____
Developer's Engineer

RCE# _____

Date _____

Final FPR approved by:

_____
EID Development Engineer

RCE# _____

Date _____

Form DE-001
Created: 06-29-08

ATTACHMENT 7

Michael Brandman Associates

Fresno
559.497.0310

Irvine
714.508.4100

Palm Springs
760.322.8847

Sacramento
916.447.1100

San Bernardino
909.884.2255

San Ramon
925.830.2733

March 8, 2011

Aaron Mount, Associate Planner
2850 Fair Lane Court, Building C
Placerville, CA 95667

Subject: Spring Ranch Jurisdictional Delineation and Special Status Species Assessment

Dear Mr. Mount:

At the request of Dennis Graham (Applicant) and Casey Feickert (Project Engineer, TSD Engineering), Michael Brandman Associates (MBA) conducted a jurisdictional delineation and a special status species assessment for the Spring Ranch project, (hereafter referred to as "project site" or "site") located in El Dorado County. The jurisdictional delineation (JD) was conducted to determine the location and extent of waters and/or wetlands within the project site potentially subject to the jurisdiction of the U. S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or the California Department of Fish and Game (CDFG). The special status species assessment was conducted to determine if the project site warrants additional special status species surveys.

Project Location and Description

The project site is generally located west of Green Valley Road, and south of Deer Valley Road, adjacent to the Pleasant Grove Middle School (See Project Engineer's drawings). The site is contained within the United States Geological Survey (USGS) Clarksville Quad 7.5 minute topographic quadrangle map. The project is largely open grass/oak woodland with interspersed seasonal wetlands, a seasonal creek (with multiple channels), and associated riparian vegetation. The grassland area is dominated by non-native grasses and forbs. The developed portion of the site contains two homes, several out/work buildings, and associated infrastructure.

Executive Summary

The project site contains **10.92** acres of jurisdictional features that, if impacted, would likely be regulated pursuant to the federal Clean Water Act or the state Fish and Game code and subject to review and approval by the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Game (CDFG). The drawings prepared by the Project Engineer and reviewed by MBA depict these jurisdictional areas. The jurisdictional areas include a seasonal creek and associated riparian vegetation, seasonal wetland swales, a man-made pond, and riparian wetland. The man-made pond may or may not be considered jurisdictional, but is included herewith to document prevalent features on the site.

The responsible resource agencies make the ultimate determination of jurisdiction boundaries and permit requirements. However, according to the applicant, the site has been specifically designed to ensure no impacts (including those areas associated with appropriate buffers) are proposed; therefore, additional coordination with the applicable resource agencies is not required.

No special status species were observed on the site during the site assessments, and no additional surveys are recommended.

Regulatory Framework

Federal

Regulatory permitting for dredge and fill activities involves a compliance framework requiring interaction with federal, state, and local agencies, often involving a several statutes and regulations. In particular, pursuant to Section 404 of the Clean Water Act (CWA), the USACE regulates the discharge of dredged or fill material into waters of the U.S. Regulated activities include but are not limited to: grading; installation of riprap, concrete, and sod; or stockpiling excavated material. In general, any activity, which will temporarily or permanently affect areas delineated as waters of the U.S., including wetlands, typically requires prior authorization from the USACE, pursuant to Section 404 of the CWA. Successful applications propose projects with a valid purpose that comply with the avoidance, minimization, and mitigation ("no net loss") goals of the USACE.

Sensitive species are protected under the Federal Endangered Species Act (FESA). The purposes of FESA are to provide a means to conserve the ecosystems that endangered and threatened species depend on and to provide a program for conservation and recovery of these species. The FESA defines species as "endangered" and "threatened" and provides regulatory protection for any species so designated. Section 9 of the FESA prohibits the take of species listed by the U.S. Fish and Wildlife Service (USFWS) as threatened or endangered. As defined in the FESA, take means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct." Harm is defined by the USFWS to encompass "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering" (50 Code of Federal Regulations Section 17.3). Thus, some instances of habitat modification can constitute prohibited "take" if it can be shown that such modification can be expected to result in injury or death to one or more individuals of a listed species.

State

The State of California regulates "Waters of the State," which is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These water bodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program, which regulates discharges of fill, and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact "Waters of the State," are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

The State of California has its own version of the Endangered Species Act (CESA), which considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. The State considers a threatened species as one present in such small numbers throughout its range that it is considered likely to become an endangered species in the near future in the absence of special protection or management. A rare species is considered as present in such small numbers throughout its range that it may become endangered if its present environment worsens. The designation "rare species" applies only to California native plants. State threatened and endangered species include both plants and wildlife (not including invertebrates) and are legally protected against "take" as this term is defined in the CESA

(California Fish & Game Code Section 2050, et seq.). "Species of Special Concern" is an informal designation used by the CDFG for some declining wildlife species that are not officially listed as endangered, threatened, or rare. This designation does not provide legal protection, but it signifies that these species are recognized as vulnerable by CDFG.

Methodology

The JD was conducted in accordance with regulations set forth in 33 Code of Federal Regulations (CFR) part 328 and the USACE guidance documents referenced below:

- USACE Wetlands Research Program Technical Report Y-87-1 (online edition), Wetlands Delineation Manual, Environmental Laboratory, 1987.
- USACE Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest, 2001 (Arid Southwest Guidelines).
- USACE Minimum Standards for Acceptance of Preliminary Wetlands Delineations, November 30, 2001 (Minimum Standards).
- USACE Jurisdictional Determination Form Instructional Guidebook, May 30, 2007 (JD Form Guidebook).
- USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, September 2008 (Arid West Supplement).
- USACE A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States A Delineation Manual, August 2008.

Pre-Survey Investigation

Prior to the field visit, aerial photograph(s) of the site were compared with a topographic base map (provided by the Project Engineer) and the US Geographic Service topographic map to determine any visible drainage patterns or known project features. The National Wetland Inventory was also reviewed to determine whether any wetland areas had been documented within the vicinity of the site. The United States Department of Agriculture (USDA) Soil Survey Map was reviewed to identify the soil series that occur on the site.

The California Natural Diversity Data Base (CNDDB) was reviewed prior to the field investigation to determine what special status species are known within the immediate area using a 5-mile radius to help target the presence of specific species or presence of habitat for specific species during the site visit.

Field Investigation

Due to the somewhat complicated site hydrology, three separate site visits were conducted in order to fully understand site circumstances, including significant urban runoff coming onto the site from the Pleasant Grove Middle School, affecting the site's hydrology. These site visits were scheduled to represent the three phases of project site hydrology: phase one—dry; phase two— post heavy rain; and phase three—drying after rainy period.

A MBA Regulatory Specialist/Wetland Scientist performed a preliminary field investigation on November 8, 2011. A post-rain survey was conducted on November 30, 2011 and a subsequent follow up visit was conducted on December 23, 2011. Field surveys were conducted on foot. Activities during the field surveys included width measurement of relevant drainage systems and the identification and mapping of any wetlands. All data was collected using a sub-meter accurate GPS unit; locations of drainage features were also manually mapped on recent aerial photographs that were later rectified against the GPS data and the Engineering topographic data.

All potentially jurisdictional features within the project site were systematically inspected to record existing conditions and to determine potential jurisdictional limits. Associated riparian vegetation coverage previously indicated on aerial photographs was verified during the investigation.

Potential CDFG jurisdiction was based on the presence of a bed and bank, and the presence of riparian vegetation and/or wildlife resources. The lateral extent of potential CDFG jurisdiction was measured from bank to bank at the top of the channel, or to the drip-line of the riparian vegetation rooted within the banks, where it extends beyond the bank of the channel.

All data was entered in CAD software and Computations were verified using a 200-scale aerial photograph and field data.

A Munsell soil color chart was used to compare the site soils with the known soils within the area, and to help determine site hydrology.

Results

Waters, including wetlands

Table 1 documents the individual waters, including wetland features that are present on the site. This information is presented graphically in the map produced by the Project Engineer (included as an attachment).

Table 1: Wetland Acreages

Feature/Reference Number	Area (ft2)	Area (acres)	Average Width (ft)	Length
Seasonal Wetland Swale				
SWS1	2,814	0.0646	-	-
SWS2	204,561	4.6961	-	-
SWS3	8,658	0.1988	-	-
SWS4	8,004	0.1837	-	-
SWS5	186,853	4.2896	-	-
SWS6	26,776	0.6147	-	-
SWS7	212	0.0049	-	-
Subtotal	437,878	10.0523	-	-
Riparian Wetlands				
R1	1,440	0.0331	-	-
Subtotal	1,440	0.0331	-	-
Manmade Pond				
P1	1,318	0.0303	-	-
Subtotal	1,318	0.0303	-	-
Seasonal Creeks				
C1	13,951	0.3203	5	2,969
C2	10,847	0.2490	5	2,950

Feature/Reference Number	Area (ft2)	Area (acres)	Average Width (ft)	Length
C3	640	0.0147	3	217
C4	5470	0.1256	4	1279
C5	267	0.0061	3	89
C6	3168	0.0727	3	1,013
C7	526	0.0121	3	177
Subtotal	34,869	0.8005	-	-
Total	**475,505**	**10.9161**	-	-
Source: TSD Engineering, INC., 2011.				

Wetland Hydrology

Wetland hydrology is permanent or periodic inundation, or soil saturation for a significant period during the growing season. Numerous factors influence the wetness of an area, including precipitation, stratigraphy, topography, soil permeability, and plant cover. At certain times of the year in most wetlands, and in certain types of wetlands at most times, wetland hydrology is quite evident, since surface water or saturated soils may be observed. Yet in many instances, especially along the uppermost boundary of wetlands, hydrology is not readily apparent. Despite this limitation, hydrologic indicators can be useful for confirming that a site with hydrophytic vegetation and hydric soils still exhibits wetland hydrology. While hydrologic indicators are sometimes diagnostic of the presence of wetlands, they are generally either operationally impracticable, as in the case of recorded data, or technically inaccurate, as in the case of some field indicators, for delineating wetland boundaries.

The following hydrologic indicators, while not necessarily indicative of hydrologic events during the growing season or in wetlands alone, do provide evidence that inundation or soil saturation has occurred at some time:

- Visual observation of inundation
- Visual observation of soil saturation
- Oxidized channels (rhizospheres) associated with living roots and rhizomes
- Water marks
- Drift lines
- Waterborne sediment deposits
- Water-stained leaves
- Surface scoured areas
- Morphological plant adaptations
- Hydric soil characteristics

Significant urban runoff was observed being discharged to the project site from the adjacent Pleasant Valley Middle School. This made the determination of site hydrology somewhat difficult. It is evident that some water naturally flowed across the project site, but this flow has been exaggerated with the construction of the adjacent school site. As a result, the exact extent of the natural hydrology of the project site is difficult to determine. This challenge is largely restricted to an area of the site that is not proposed for development activities. Therefore, a rather expansive area was mapped. If development is planned for this area at a future date, an updated study is recommended.

Hydrophytic Vegetation

Hydrophytic vegetation is defined as plant life growing in water, soil, or substrate that is at least periodically deficient in oxygen because of excessive water content. The United States Fish and Wildlife Service (USFWS) has published the National List of Plant Species That Occur in Wetlands, and divided plants into four groups based on their "wetland indicator status:"

1. Obligate wetland plants (OBL) that occur almost always in wetlands under natural conditions
2. Facultative wetland plants (FACW) that usually occur in wetlands but occasionally are found in upland areas
3. Facultative plants (FAC) that are equally likely to occur in wetlands as well as upland
4. Facultative upland plants (FACU) that usually occur in upland areas but occasionally are found in wetlands

An area has hydrophytic vegetation when, under normal circumstances, more than 50 percent of the composition of dominant plant species from all strata are obligate wetland (OBL), facultative wetland (FACW) and/or facultative species (FAC).

Due to the seasonal timing of the fieldwork, a definitive plant species list could not be developed. However, OBL, FACW, or FAC plants were clearly evident in the areas mapped as jurisdictional. Adjacent areas, albeit with boundaries that were difficult to determine, showed a dominance of FACU plants.

Hydric Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil. "Long enough" generally means 1 week during the growing season; soils that are saturated for this period usually support hydrophytic vegetation. The criteria for establishing the presence of hydric soils vary among different types of soils and between normal circumstances, disturbed areas, and problem areas. Due to their wetness during the growing season, hydric soils usually develop certain morphological properties that can be readily observed in the field. Prolonged anaerobic soil conditions typically lower the soil redox potential, causing a chemical reduction of some soil components, mainly iron oxides and manganese oxides. This reduction is typically reflected by the presence of iron or manganese concretions, gleying, or mottling. Other field indicators of hydric soils include the presence of sulfidic material, an aquic, or peraquic moisture regime, or a spodic horizon. All organic soils, with the exception of Folists, are classified as hydric soils.

Like hydrology, areas mapped as jurisdictional showed strong indication of hydric soils whereas upland areas did not. Here again however, the exact boundaries were difficult to determine. If further development is planned in these areas in the future, additional work is recommended to further refine these boundaries.

Results

Special Status Species

During each of site visits, assessment level evaluations were conducted with particular attention paid with regard to the species in Table 2 below. These species are known to occur within a 5-mile radius of the site. No species were observed during the site visits.

Species of particular interest included the California red-legged frog, related to the presence of a manmade pond on the site. However, this pond was recently constructed and it contains bass; both of which significantly limit the potential presence of the California red-legged frog.

Due to timing, definitive determinations could not be made with regard to sensitive plant species, however specific soil types required by said plants were not identified; thus, the potential for sensitive plant species is considered very low.

No protocol level surveys are recommended at this time due to the low probability of sensitive plant species being present onsite.

Table 2: CNDDB Results

Scientific Name	Common Name	Federal Status	California Status	DFG Status	CNPS List
Rana draytonii	California red-legged frog	Threatened	None	SSC	
Ardea herodias	great blue heron	None	None		
Ardea alba	great egret	None	None		
Elanus leucurus	white-tailed kite	None	None	FP	
Haliaeetus leucocephalus	bald eagle	Delisted	Endangered	FP	
Athene cunicularia	burrowing owl	None	None	SSC	
Agelaius tricolor	tricolored blackbird	None	None	SSC	
Emys marmorata	western pond turtle	None	None	SSC	
Branchinecta lynchi	vernal pool fairy shrimp	Threatened	None		
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Threatened	None		
Hydrochara rickseckeri	Ricksecker's water scavenger beetle	None	None		
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	None	None		
Packera layneae	Layne's ragwort	Threatened	Rare		1B.2
Wyethia reticulata	El Dorado County mule ears	None	None		1B.2
Helianthemum suffrutescens	Bisbee Peak rush-rose	None	None		3.2
Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	None	None		1B.2
Ceanothus roderickii	Pine Hill ceanothus	Endangered	Rare		1B.2
Gallium californicum ssp. sierrae	El Dorado bedstraw	Endangered	Rare		1B.2
Fremontodendron decumbens	Pine Hill flannelbush	Endangered	Rare		1B.2
Sagittaria sanfordii	Sanford's arrowhead	None	None		1B.2
Chlorogalum grandiflorum	Red Hills soaproot	None	None		1B.2

SSC = Species of Special Concern, FP = Federally Protected, 1B.2 = Plants rare, threatened, or endangered

Scientific Name	Common Name	Federal Status	California Status	DFG Status	CNPS List
in California and elsewhere, 3.2 = Plants about which more information is needed. Source: CNDDB, 2011.					

Recommendations

The project site contains significant wetland resources. To ensure protection of such resources, it is our understanding that the project has been designed for complete avoidance. In addition, appropriate buffers, per the County's requirements, have been established. If project plans change and impacts do occur, consultation with the appropriate resource agencies will be required. Additionally, if future projects are anticipated a more detailed review of site hydrology may be warranted in the future to determine the extent that urban runoff is contributing to the maintenance or expansion of the existing features on the site.

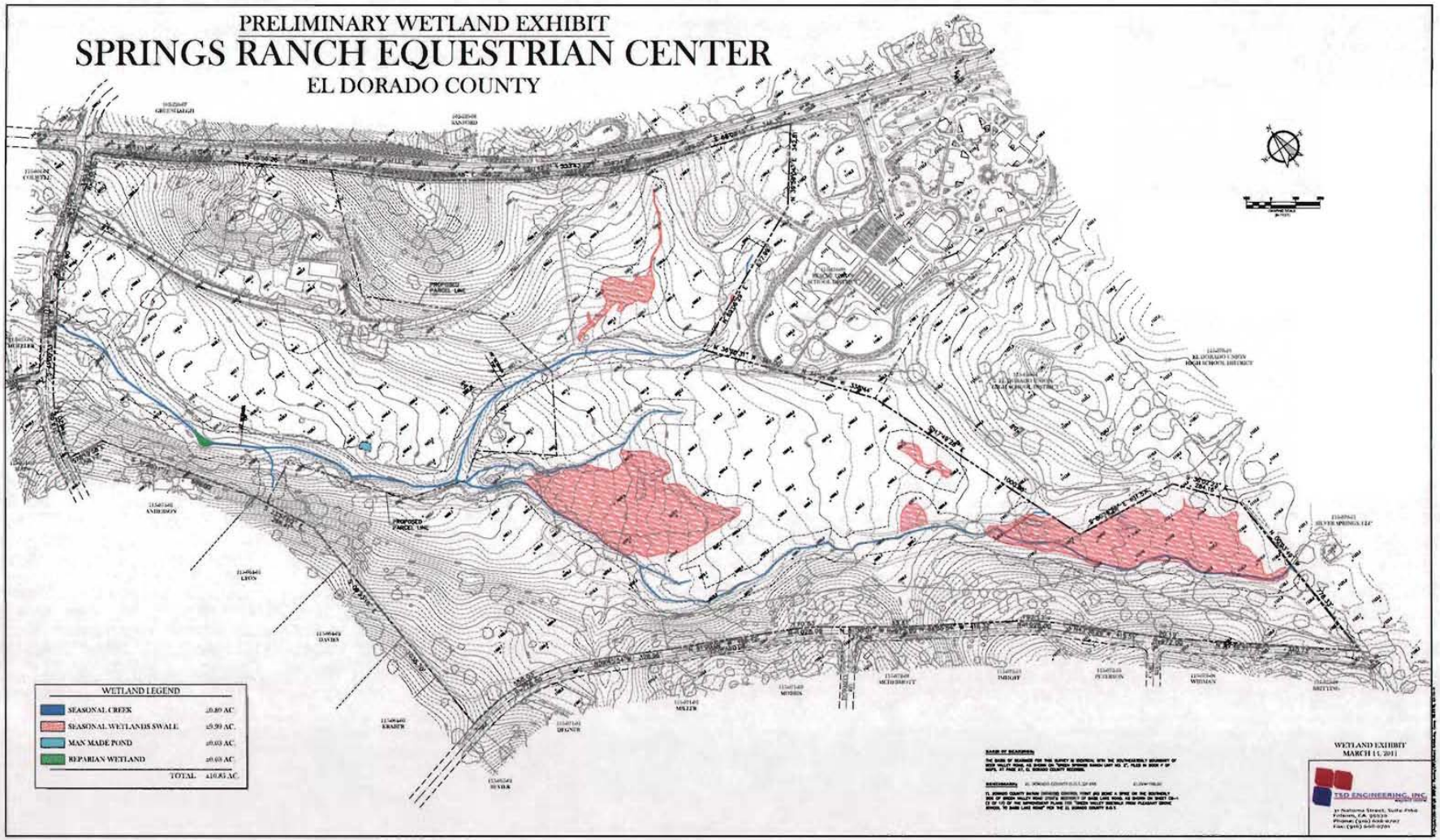
If you have any questions regarding the findings of our JD or special status species work, please give me a call at 916-955-8641 or email me at rfrancisco@brandman.com

Sincerely,

Robert Francisco, Vice-President
Michael Brandman Associates
2000 "O" Street, Suite 200
Sacramento, CA 95811

cc: Dennis Graham
Casey Feickert

Enc: Project Engineering drawing (depicts extent of jurisdictional features)


PRELIMINARY WETLAND EXHIBIT
SPRINGS RANCH EQUESTRIAN CENTER
EL DORADO COUNTY
WETLAND LEGEND
SEASONAL CREEK
SEASONAL WETLANDS SWALE
MAN MADE POND
RIPARIAN WETLAND
TOTAL
WETLAND EXHIBIT
MARCH 11, 2011
TSD ENGINEERING, INC.

D Anderson
ansportation Engineers

December 4, 2003

Mr. Robert Fish
P.O. Box 1465
San Juan Capistrano, CA 92675

RE: TRAFFIC IMPACT ASSESSMENT FOR THE SPRINGS EQUESTRIAN CENTER IN EL DORADO COUNTY (SUPA SO1-11)

Dear Mr. Fish:

Thank you for contacting our firm regarding preparation of a traffic study for **The Springs Equestrian Center** project. As we discussed, the proposed project involves development of facility to board up to 250± horses, to offer riding lessons, and to occasionally host equestrian events on weekends. While the County's April 5, 2001 correspondence suggests that a full traffic study was initially thought to be required, you have indicated that subsequent conversation has revealed that a traffic impact analysis is not required. Instead, we have provided the background information needed to complete air quality and noise analyses.

Background Information. The project site is located south of Green Valley Road in the area west of Bass Lake Road. The site adjoins the new Middle School being built by the Rescue School District.

Today Green Valley Road is a two lane rural arterial that carries about 10,705 vehicles per day in the area west of Bass Lake Road. Bass Lake Road is also a two lane road, and the most recent traffic counts available from El Dorado County suggest that this road carries about 3,363 vehicles per day just south of Green Valley Road, with the volume rising to 4,925 north of the US 50 interchange.

Long term improvements are planned to both roads in order to accommodate anticipated growth in El Dorado County. Bass Lake Road will be realigned to the west as it approaches Green Valley Road, and a new signalized intersection will be constructed. Green Valley Road in this area is ultimately planned as a divided two lane road.

Projections for future traffic volumes were obtained from El Dorado County. By the year 2020 the peak hour traffic volume on Green Valley Road west of Bass Lake Road is expected to increase to about 1,469 vehicles per hour or about 14,700 vehicles per day. Based on the thresholds employed by El Dorado County these volumes are indicative of Level of Service D-E on this road, as the limit of LOS D is 1,471 vph.

Project Trip Generation. We have determined the number of automobile and truck "trips" that are likely to be generated by your project based on the data you have collected at two other equestrian centers in Southern California. Table 1 presents information regarding the number of horses boarded at each facility, the number of trainers offering lessons and the number of students concurrently taking lessons at the peak time. As shown in Table 2 and Table 3, data was collected throughout the day at two locations on typical weekdays and on the weekday with the highest level of activity (Friday) and on a Saturday.

As indicated, the two centers you observed are of different sizes but the traffic counts at each location are similar. Thus, as noted in Table 3, the equivalent trip generation rates for each site differ. We used the average rates between the two samples to suggest the volume of traffic that may be generated by your project, as shown in Table 4.

As shown in Table 5, based simply on the number of horses stabled, we would expect The Springs Equestrian Center to generate about 175 trip ends on a weekday. The volume on a Saturday could be slightly higher. During the typical weekday commute hour (i.e., 4:00 to 6:00 p.m.) we would expect this project to generate 16 trips.

As noted in Tables 2 and 3, relatively little traffic from equestrian centers will be generated by commercial vehicles or by vehicles pulling trailers. About 5% of the project trips may be these types of uses, or about 8 to 9 truck trip ends on a daily basis at your site.

TABLE 1
COMPARABLE EQUESTRIAN FACILITIES

	Rancho Sierra Vista Equestrian Center	Coto Valley Equestrian Center
Horses Stabled	405 horses	235 horses
Trainers	9*	18
Peak Students per Hour	48	72

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TABLE 2
TRAFFIC VOLUME OBSERVATIONS AT RANCHO SIERRA VISTA EQUESTRIAN CENTER

Description	Vehicle Trip Ends 405 horses – 9 Trainers – 48 Students Per Hour Friday 2/8/02	Saturday 2/9/02	Tuesday 4/2/02	Wednesday 4/3/02	Thursday 4/4/02	Friday 4/5/02	Saturday 4/6/02	Average Weekday Tuesday - Thursday
Automobiles and Pick-up trucks	346	404	182	196	204	246	286	194
Vehicles Pulling Trailers	4	4	4	4	1	6	6	2
Commercial Vehicles	14	14	4	10	8	6	4	8
Daily Total	364	422	190	200	213	258	296	204
Total in PM Peak Hour (4:00 to 6:00 p.m.)	25	25	20	20	20	21	25	20
Total in Highest Volume Hour	46 (2:00 to 3:00 p.m.)	57 (11:00 a.m. to 12:00 p.m.)	25 (12:00 to 3:00 p.m.)	27 (3:00 to 4:00 p.m.)	29 (2:00 to 4:00 p.m.)	23 (3:00 to 4:00 p.m.)	25 (12:00 to 1:00 p.m.)	27

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TABLE 3
TRAFFIC VOLUME OBSERVATIONS AT COTO VALLEY EQUESTRIAN CENTER

Description	Vehicle Trip Ends 235 horses – 18 Trainers – 72 Students Per Hour Friday 2/1/02	Saturday 2/2/02	Tuesday 4/2/02	Wednesday 4/3/02	Thursday 4/4/02	Average Weekday Tuesday - Thursday
Automobiles and Pick-up trucks	384	438	216	206	196	206
Vehicles Pulling Trailers	0	8	2	4	0	2
Commercial Vehicles	0	4	2	2	2	2
Daily Total	384	450	220	212	198	210
Total in PM Peak Hour (4:00 to 6:00 p.m.)	48	32	20	19	14	18
Total in Highest Volume Hour	52 (3:00 to 4:00 p.m.)	58 (11:00 a.m. to 12:00 p.m.)	26 (9:00 to 10:00 a.m.)	23 (3:00 to 4:00 p.m.)	25 (3:00 to 4:00 p.m.)	25

K24

TABLE 4
EQUIVALENT TRIP GENERATION RATES FOR OTHER EQUESTRIAN FACILITIES

Description	Vehicle Trip Ends per Horse		
	Rancho Sierra Vista	Coto Valley	
	405 Horses	235 Horses	Average
Weekday Trips	0.504	0.894	0.699
Total in PM Peak Hour (4:00 to 6:00 p.m.)	0.050	0.077	0.064
Total in Highest Volume Hour	0.06	0.106	0.083

Description	Vehicle Trip Ends per Trainer		
	Rancho Sierra Vista	Coto Valley	
	9 Trainers	18 Trainers	Average
Weekday Trips	22.67	11.67	17.17
Total in PM Peak Hour (4:00 to 6:00 p.m.)	2.222	1.000	1.611
Total in Highest Volume Hour	3.000	1.389	2.195

Description	Vehicle Trip Ends per Students Per Hour		
	Rancho Sierra Vista	Coto Valley	
	48 per Hour	72 Per Hour	Average
Weekday Trips	4.250	2.917	3.584
Total in PM Peak Hour (4:00 to 6:00 p.m.)	0.417	0.250	0.334
Total in Highest Volume Hour	0.563	0.347	0.455

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TABLE 5
TRIP GENERATION ESTIMATES FOR THE SPRINGS IN EL DORADO COUNTY

	Vehicle Trip Ends					
	Per Horse (250 horses)		Per Trainer		Per Students Per Hour	
Description	Rate	Trips	Rate	Trainers	Rate	Students
Weekday Trips	0.699	175	17.170	10±	3.584	49
Total in PM Peak Hour (4:00 to 6:00 p.m.)	0.064	16	1.611	10±	0.334	48
Total in Highest Volume Hour	0.083	21	2.195	10±	0.455	46

Traffic Impacts. Based on the project's location in rural El Dorado County it is reasonable to expect that horse owners will use both Green Valley Road and Bass Lake Road to reach the site. Based on the relative population distribution in this area we would expect about 15% of the project's trips to arrive from the east on Green Valley Road, 30% to arrive from the west via Green Valley Road and the remaining 55% to use Bass Lake Road and US 50.

As shown in Table 6, on each road the traffic increase resulting from this project would be relatively minor. While the project could increase the daily traffic volume on Bass Lake Road by 2.8%, the resulting traffic volume would remain below applicable County Level of Service standards.

Cumulatively, the project may incrementally contribute to traffic volume increases anticipated in the future. However, the change would be relative to the difference between the trips generated by the project and by the underlying residential use. Assuming the 150 acre site was developed with 5 acre estates uses, 30 homes could be developed. At the standard Institute of Transportation Engineers (ITE) rate of 1.01 trips per dwelling, the site could generate 31 p.m. peak hour trips if developed residentially. This estimate is nearly the same as the p.m. estimate to be derived from the number of horses stabled (i.e., 38 p.m. peak hour trips). Thus, we can conclude that this project would be unlikely to have cumulative long term impacts that were significantly worse than the underlying residential use.

The actual number of trips that may be generated by this kind of use may also be linked to the number of trainers and the number of students taking classes at one time. As shown in Table 6, the project trip generation based on the number of horses (i.e., 38 peak hour and 419 daily trips) would be expected to be produced by about 10 trailers with about 46 to 48 students per hour at a peak

KDA

time. Therefore, if there was any reason to reduce site trip generation, it could be accomplished by reducing the number of trailers or maximum number of students, rather than simply by reducing the number of horses.

TABLE 6
DAILY TRAFFIC VOLUMES WITH PROPOSED PROJECT

Road	Location	Existing Weekday Volume	Existing Plus Project		
			Project Only	% Increase	Total
Green Valley Road	West of Bass Lake Road	10,705	55	0.5%	10,760
	East of Bass Lake Road	11,361	25	0.2%	11,386
Bass Lake Road	South of Green Valley Road	3,363	95	2.8%	3,358
	North of County Club	4,924	95	1.9%	5,019

Please feel free to contact me at (916) 660-1555 if you have any questions.

Sincerely yours,

kdANDERSON Transportation Engineers

Kenneth D. Anderson, P.E.
Principal

KD Anderson & Associates, Inc.
Transportation Engineers

September 30, 2011

Mr. Dave Graham
American Services, Inc.
970 Reserve Drive, Building #180
Roseville, CA 95678

RE: TRAFFIC IMPACT ASSESSMENT FOR THE SPRINGS EQUESTRIAN CENTER IN EL DORADO COUNTY (SUPA SO1-11)

Dear Mr. Graham:

Thank you for contacting our firm regarding preparation of a traffic study for **The Springs Equestrian Center** project. As we discussed, in 2003 our firm prepared a focused traffic impact assessment for this project. This letter is our updated assessment addressing the current project description.

The proposed project involves development of facility to board up to 420± horses, to offer riding lessons, and to occasionally host equestrian events on weekends. This letter identifies the trip generation associated with the project, summarizes background information and confirms the adequacy of planned improvements to accommodate project traffic.

Background Information. The project site is located south of Green Valley Road in the area west of Bass Lake Road. The site adjoins Pleasant Grove Middle School but has access via Deer Valley Road.

Today Green Valley Road is a two lane rural arterial that carries about 10,240 vehicles per day in the area west of Bass Lake Road. Bass Lake Road is also a two lane road, and the most recent traffic counts available from El Dorado County suggest that this road carries about 5,350 vehicles per day just south of Green Valley Road, with the volume rising to 9,830 north of the US 50 interchange. Deer Valley Road is a local two lane road that extends south from Green Valley Road to serve existing rural residences in the area between Green Valley Road and the Serrano community. There is no traffic count for Deer Valley Road.

Long term improvements are planned to major roads in order to accommodate anticipated growth in El Dorado County. Bass Lake Road will be realigned to the west as it approaches Green Valley Road, and a new signalized intersection will be constructed on Green Valley Road. Green Valley Road in this area is ultimately planned as a divided two lane road.

The most current projections for future traffic volumes were obtained from El Dorado County's Year 2025 regional travel demand forecasting model. Raw year 2025 forecasts were compared to the baseline year 1998 projections, and the growth increment and annualized growth rate were identified. The growth rate and applicable portion of the increment were applied to the year 2011 count to create initial year 2035 adjusted forecasts. These initial results were then averaged to

identify the Year 2025 forecast as indicated in the attachment to this letter. By the year 2025 the daily traffic volume on Green Valley Road west of Bass Lake Road is expected to increase to about 13,612 vehicles per day. Based on the thresholds employed by El Dorado County these volumes are indicative of Level of Service D on this road, as the limit of LOS D is 14,700 vph.

El Dorado County is in the process of improving the Green Valley Road / Deer Valley Road intersection. The planned improvement will create separate left turn lanes on Green Valley Road, and will create standard rural road approach tapers on the northbound Deer Valley Road approach. The westbound left turn lane will be 450 feet long and will be preceded by a 120 foot long bay taper.

Project Trip Generation. We have determined the number of automobile and truck "trips" that are likely to be generated by this project based on the data collected at two existing equestrian centers in Southern California. Table 1 presents information regarding the trip generation parameters that may be applicable: number of horses boarded at each facility, the number of trainers offering lessons and the number of students concurrently taking lessons at the peak time. As shown in Table 2 and Table 3, traffic count data was collected throughout the day at these two locations on typical weekdays, on the weekday with the highest level of activity (Friday) and on a Saturday.

As indicated, the two centers are of different sizes but the traffic counts at each location are similar. Thus, as noted in Table 3, the equivalent trip generation rates per horse, per student or per trainer for each site differ. We averaged the rates between the two samples to suggest the volume of traffic that may be generated by the proposed project, as shown in Table 4.

Table 5 presents the resulting trip generation forecasts for the project. As shown in Table 5, based simply on the number of horses stabled (i.e., 420), we would expect The Springs Equestrian Center to generate about 294 trip ends on a weekday. The volume on a Saturday could be slightly higher. During the typical weekday commute hour (i.e., 4:00 to 6:00 p.m.) we would expect this project to generate 27 trips.

As noted in Tables 2 and 3, relatively little traffic from equestrian centers will be generated by commercial vehicles or by vehicles pulling trailers. About 5% of the project trips may be these types of uses, or about 14 to 15 truck trip ends on a daily basis at your site.

TABLE 1
COMPARABLE EQUESTRIAN FACILITIES

	Rancho Sierra Vista Equestrian Center	Coto Valley Equestrian Center
Horses Stabled	405 horses	235 horses
Trainers	9*	18
Peak Students per Hour	48	72

KDA

TABLE 2
TRAFFIC VOLUME OBSERVATIONS AT RANCHO SIERRA VISTA EQUESTRIAN CENTER

Description	Vehicle Trip Ends 405 horses – 9 Trainers – 48 Students Per Hour Friday 2/8/02	Saturday 2/9/02	Tuesday 4/2/02	Wednesday 4/3/02	Thursday 4/4/02	Friday 4/5/02	Saturday 4/6/02	Average Weekday Tuesday - Thursday
Automobiles and Pick-up trucks	346	404	182	196	204	246	286	194
Vehicles Pulling Trailers	4	4	4	4	1	6	6	2
Commercial Vehicles	14	14	4	10	8	6	4	8
Daily Total	364	422	190	200	213	258	296	204
Total in PM Peak Hour (4:00 to 6:00 p.m.)	25	25	20	20	20	21	25	20
Total in Highest Volume Hour	46 (2:00 to 3:00 p.m.)	57 (11:00 a.m. to 12:00 p.m.)	25 (12:00 to 3:00 p.m.)	27 (3:00 to 4:00 p.m.)	29 (2:00 to 4:00 p.m.)	23 (3:00 to 4:00 p.m.)	25 (12:00 to 1:00 p.m.)	27

KDA

TABLE 3
TRAFFIC VOLUME OBSERVATIONS AT COTO VALLEY EQUESTRIAN CENTER

Description	Vehicle Trip Ends 235 horses – 18 Trainers – 72 Students Per Hour Friday 2/1/02	Saturday 2/2/02	Tuesday 4/2/02	Wednesday 4/3/02	Thursday 4/4/02	Average Weekday Tuesday - Thursday
Automobiles and Pick-up trucks	384	438	216	206	196	206
Vehicles Pulling Trailers	0	8	2	4	0	2
Commercial Vehicles	0	4	2	2	2	2
Daily Total	384	450	220	212	198	210
Total in PM Peak Hour (4:00 to 6:00 p.m.)	48	32	20	19	14	18
Total in Highest Volume Hour	52 (3:00 to 4:00 p.m.)	58 (11:00 a.m. to 12:00 p.m.)	26 (9:00 to 10:00 a.m.)	23 (3:00 to 4:00 p.m.)	25 (3:00 to 4:00 p.m.)	25

KDA

TABLE 4
EQUIVALENT TRIP GENERATION RATES FOR OTHER EQUESTRIAN FACILITIES

Description	Vehicle Trip Ends per Horse		
	Rancho Sierra Vista	Coto Valley	
	405 Horses	235 Horses	Average
Weekday Trips	0.504	0.894	0.699
Total in PM Peak Hour (4:00 to 6:00 p.m.)	0.050	0.077	0.064
Total in Highest Volume Hour	0.06	0.106	0.083

Description	Vehicle Trip Ends per Trainer		
	Rancho Sierra Vista	Coto Valley	
	9 Trainers	18 Trainers	Average
Weekday Trips	22.67	11.67	17.17
Total in PM Peak Hour (4:00 to 6:00 p.m.)	2.222	1.000	1.611
Total in Highest Volume Hour	3.000	1.389	2.195

Description	Vehicle Trip Ends per Students Per Hour		
	Rancho Sierra Vista	Coto Valley	
	48 per Hour	72 Per Hour	Average
Weekday Trips	4.250	2.917	3.584
Total in PM Peak Hour (4:00 to 6:00 p.m.)	0.417	0.250	0.334
Total in Highest Volume Hour	0.563	0.347	0.455

KDA

TABLE 5
TRIP GENERATION ESTIMATES FOR THE SPRINGS IN EL DORADO COUNTY

	Vehicle Trip Ends					
	Using Rates Per Horse (420 horses)		Using Rates Per Trainer		Using Rates Per Students Per Hour	
Description	**Rate**	**Trips**	**Rate**	**Trainers**	**Rate**	**Students**
Weekday Trips	0.699	294	17.170	17±	3.584	82
Total in PM Peak Hour (4:00 to 6:00 p.m.)	0.064	27	1.611	17±	0.334	81
Total in Highest Volume Hour	0.083	35	2.195	17±	0.455	77

Traffic Impacts. Based on the project's location in rural El Dorado County it is reasonable to expect that horse owners will use both Green Valley Road and Bass Lake Road to reach the site. Based on the relative population distribution in this area we would expect about 15% of the project's trips to arrive from the east on Green Valley Road, 30% to arrive from the west via Green Valley Road and the remaining 55% to use Bass Lake Road and US 50.

As shown in Table 6, on each road the traffic increase resulting from this project would be relatively minor. While the project could increase the daily traffic volume on Bass Lake Road by 3.0%, the resulting traffic volume would remain below applicable County Level of Service standards.

Cumulatively, the project may incrementally contribute to traffic volume increases anticipated in the future. However, the change would be relative to the difference between the trips generated by the project and by the underlying residential use. Assuming the 150 acre site was developed with 5 acre estates uses, 30 homes could be developed. At the standard Institute of Transportation Engineers (ITE) rate of 1.01 trips per dwelling, the site could generate 31 p.m. peak hour trips if developed residentially. This estimate is nearly the same as the p.m. estimate to be derived from the number of horses stabled (i.e., 27 p.m. peak hour trips). Thus, we can conclude that this project would be unlikely to have cumulative long term impacts that were significantly worse than the underlying residential use.

The actual number of trips that may be generated by this kind of use may also be linked to the number of trainers and the number of students taking classes at one time. As shown in Table 6, the project trip generation based on the number of horses (i.e., 31 peak hour and 294 daily trips) would be expected to be produced by about a facility service by 17 trailers with about 77 to 82 students per hour at a peak time. Therefore, if there was any reason to reduce site trip generation, it could be accomplished by reducing the number of trailers or maximum number of students, rather than simply by reducing the number of horses.

KDA

TABLE 6
DAILY TRAFFIC VOLUMES WITH PROPOSED PROJECT

Road	Location	Existing Weekday Volume	Existing Plus Project		
			Project Only	% Increase	Total
Green Valley Road	West of Bass Lake Road	10,240	88	0.9%	10,328
	East of Bass Lake Road	11,080	44	0.4%	11,124
Bass Lake Road	South of Green Valley Road	5,350	162	3.0%	5,512
	North of County Club	9,832	162	1.7%	9,994

The adequacy of the local street access available to serve the proposed project has also been assesses. With the improvements planned by El Dorado County the Deer Valley Road access to Green Valley Road will system be adequate to accommodate the turning requirements of trucks – trailers transporting horses to and from the site. Because the intersection is designed for travel at 55 mph, the deceleration length provided by new left turn lanes also yields appreciable storage for special events. While it is reasonable to expect that two or three rigs might occasionally arrive at the site concurrently, the 450 foot long westbound left turn lane on Green Valley Road is long enough to store 18 waiting automobiles (@ 25 feet per vehicle) or 11 vehicles pulling trailers (@ 40 feet per rig). Thus the proposed improvements are adequate for this project.

Please feel free to contact me at (916) 660-1555 if you have any questions.

Sincerely yours,

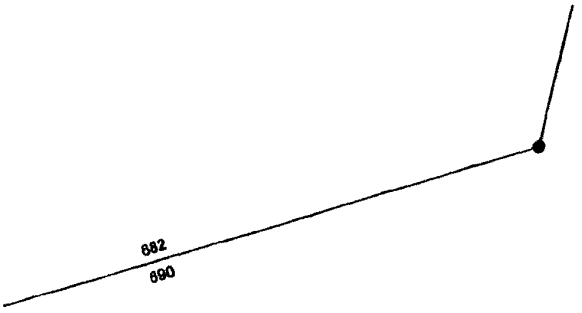
KD Anderson & Associates, Inc.

Kenneth D. Anderson, P.E.
President

Road Name	Count Station	Mile Post	Location	Count	Count Period
Green Valley Rd	1500002	6.17	200 ft W of Bass Lake Rd	**10,242**	JAN & JUL
Green Valley Rd	1700002	6.24	150 ft E of Bass Lake Rd	**11,077**	JAN & JUL
Green Valley Rd	1800002	6.83	300 ft W of Cameron Park Dr	**11,206**	JAN & JUL
Green Valley Rd	1900002	7.24	300 ft E of La Crescenta Dr	**6,402**	JAN & JUL
Green Valley Rd	2000002	9.58	500 ft E of Deer Valley Rd (E)	**4,884**	JAN & JUL
Green Valley Rd	2100002	10.91	300 ft W of Lotus Rd	**7,414**	JAN & JUL
Green Valley Rd	2200002	13.68	100 ft W of Greenstone Rd	**4,075**	JAN & JUL
Green Valley Rd	2250002	15.29	400 ft W of Campus Dr	**4,462**	JAN & JUL
Green Valley Rd	2300002	15.47	200 ft W of Missouri Flat Rd	**6,357**	JAN & JUL
Greenstone Rd	1100007	0.05	300 ft N of Mother Lode Dr	**1,284**	DEC
Greenstone Rd	1200007	1.79	0.20 mi N of US 50	**2,784**	DEC
Greenwood Rd	1100056	0.02	100 ft W of Marshall Rd	**1,437**	JUL
Greenwood Rd	1200056	4.67	0.03 mi S of SR 193	**1,134**	JUL
Grizzly Flat Rd	1100100	0.11	200 yds E of Mt Aukum Rd	**2,335**	AUG
Harvard Wy	1401103	0.37	200 ft W of Silva Valley Pkwy	**5,987**	MAR
Icehouse Rd	1100147	0.07	300 ft N of US 50	**1,700**	JUL
Investment Bl	1101135	0.02	100 ft W of Latrobe Rd	**3,202**	DEC
Lake Hills Dr	1102039	0.02	100 ft N of Salmon Falls Rd	**3,202**	AUG
Lakeridge Oaks Dr (E)	1102220	0.04	200 ft N of Green Valley Rd	**262**	JAN & JUL
Latrobe Rd	1100018	0.05	250 ft N of County Line	**3,395**	OCT
Latrobe Rd	1200018	4.46	1.5 mi N of S Shingle Rd	**3,559**	OCT
Latrobe Rd	1300018	6.71	At Deer Creek Bridge	**4,526**	OCT
Latrobe Rd	1400018	8.88	100 ft S of Investment Bl	**5,150**	DEC
Latrobe Rd	1450018	8.92	100 ft N of Investment Bl	**8,075**	DEC
Latrobe Rd	1600018	11.06	300 ft N of White Rock Rd	**24,389**	OCT
Lime Kiln Rd	1100028	0.02	100 ft E of China Garden Rd	**2,145**	FEB
Lotus Rd	1100021	0.05	300 ft N of Green Valley Rd	**7,386**	AUG

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION
2010 ANNUAL TRAFFIC COUNT SUMMARY

Road Name	Count Station	Mile Post	Location	Count	Count Period
Barkley Rd	1101300	0.01	50 ft N of Carson Rd	1,056	APR
Bass Lake Rd	1100004	0.31	400 yd N of Country Club Dr	9,832	JAN
Bass Lake Rd	1300004	3.81	100 yd S of Green Vly Rd	5,349	JAN
Bassi Rd	1100023	0.04	200 ft W of Lotus Rd	1,090	AUG
Bedford Av	1100133	0.00	At City Limits	467	MAR
Big Cut Rd	1100026	0.02	100 ft N of Pleasant Vly Rd	971	APR
Black Oak Mine Rd	1150059	0.68	3590 ft E of Marshall Rd	2,180	APR
Blair Rd	1100122	0.01	50 ft N of Pony Express Tr	963	APR
Broadway	1100127	0.00	At City Limits	4,118	MAR
Bucks Bar Rd	1100099	4.70	50 ft S of Pleasant Vly Rd	5,018	MAY
Cambridge Rd	1100306	0.02	At US 50 OC	9,287	NOV
Cambridge Rd	1200306	0.30	300 ft S of Country Club Dr.	8,405	NOV
Cambridge Rd	1300306	0.38	100 ft N of Country Club Dr	8,145	NOV
Cambridge Rd	1400306	1.84	300 yds N of Oxford Rd	5,030	NOV
Cambridge Rd	1500306	3.33	300 ft S of Green Valley Rd	4,481	NOV
Cameron Park Dr	1100200	0.02	100 ft N of Robin Ln	9,203	MAR
Cameron Park Dr	1200200	0.16	100 ft N of Coach Ln	25,703	MAR
Cameron Park Dr	1600200	0.54	300 yds S of Hacienda Dr	18,103	MAR & DEC
Cameron Park Dr	1700200	1.81	200 ft N of Oxford Rd	16,720	DEC
Cameron Park Dr	1800200	2.39	200 yds N of Mira Loma Dr	13,991	MAR & DEC
Cameron Park Dr	1900200	3.35	200 yds S of Green Valley Rd	9,849	DEC
Carson Rd	1100089	0.60	0.6 Mi E of City Limits	2,015	JUN
Carson Rd	1200089	4.23	300 yds E of Gatlin Rd	1,479	JUN
Carson Rd	1300089	4.44	At Carson Ct	1,962	JUN



ANNUAL GROWTH RATE METHOD

RATE $\sqrt[27]{\frac{18386}{11182}} = 1.0186$ $(1.0186)^{14} = 1.29$

$10240 \times 1.29 = 13{,}250$

INCREMENT METHOD

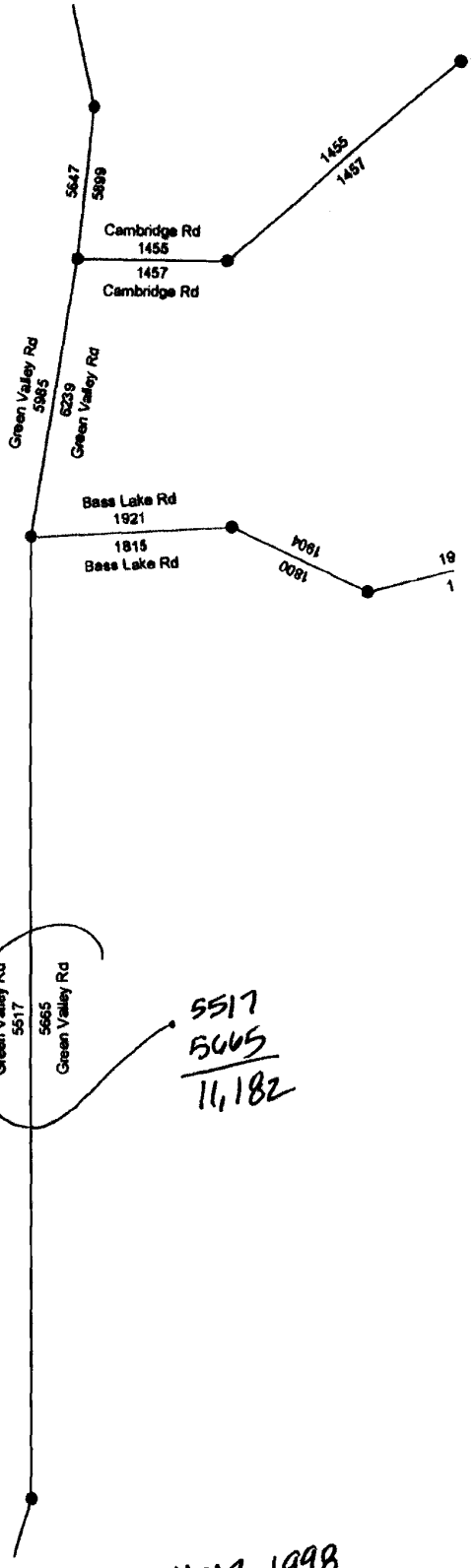
INCREMENT $_{(2025-1998)} = 18{,}386 - 11{,}182 = 7204$

INCREMENT PER YEAR $= \frac{7204}{27} = 267$

$267 \times 14 = 3735$

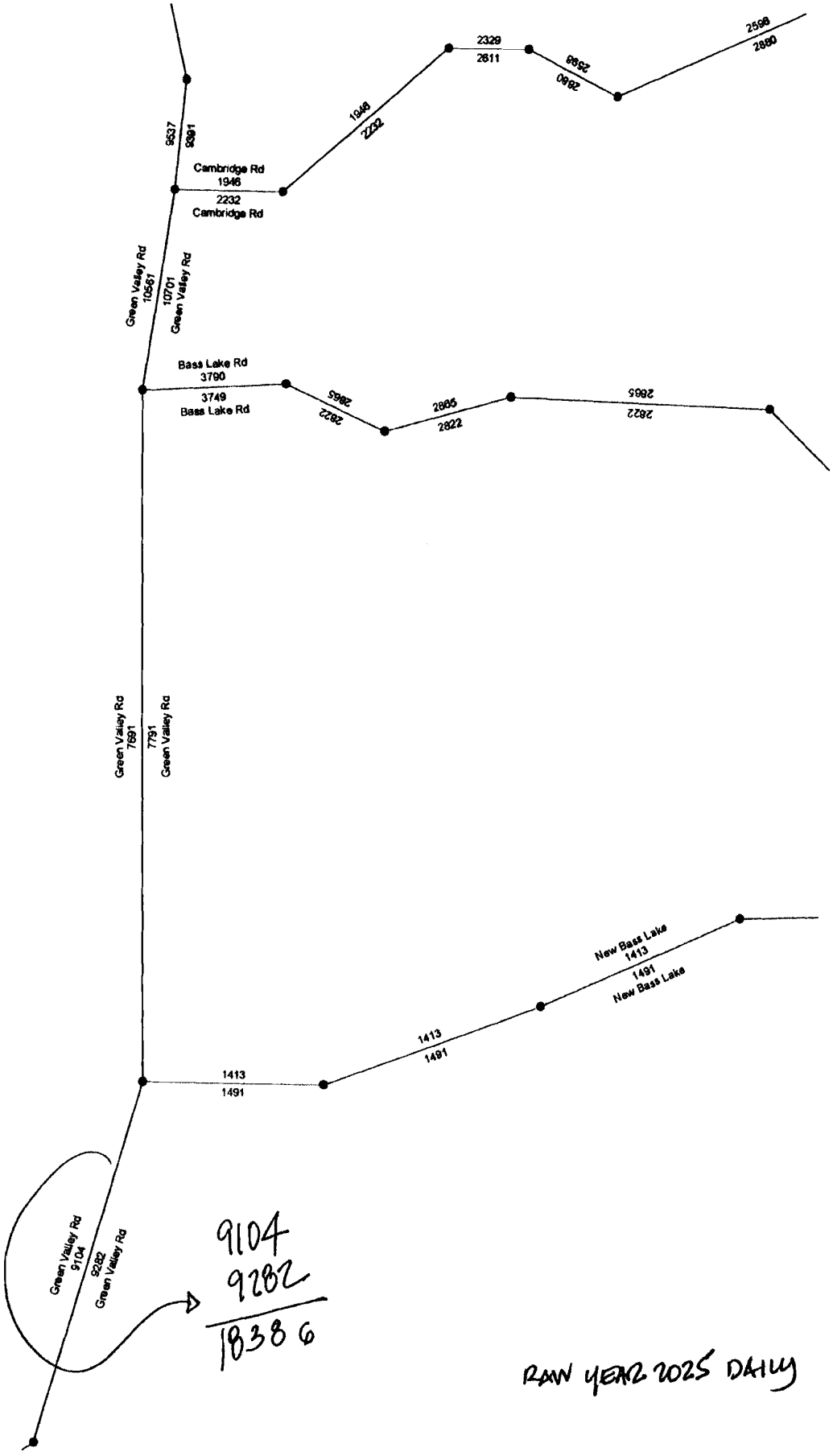
$10{,}240 + 3735 = 13{,}975$

AVERAGE $= \frac{13975 + 13250}{2} = 13612$



KOA 9/30/2011

RAW YEAR 1998


Cambridge Rd
1946
2232
Cambridge Rd
Green Valley Rd
10581
10701
Green Valley Rd
Bass Lake Rd
3790
3749
Bass Lake Rd
Green Valley Rd
7691
7791
Green Valley Rd
New Bass Lake
1413
1491
New Bass Lake
1413
1491
Green Valley Rd
9104
9282
Green Valley Rd
9104
9282
18386
RAW YEAR 2025 DAILY

KD Anderson & Associates, Inc.
Transportation Engineers

November 26, 2013

Mr. Dennis Graham, President
Essential Properties, Inc.
970 Reserve Drive #180
Roseville, CA 95678

RE: ADDENDUM TO TRAFFIC IMPACT ASSESSMENT FOR THE SPRINGS EQUESTRIAN CENTER IN EL DORADO COUNTY (SUPA SO1-11)

Dear Mr. Graham:

Thank you for contacting our firm regarding **The Springs Equestrian Center** project in El Dorado County. As we discussed, in 2003 our firm prepared a focused traffic impact assessment for this project. This letter is our updated assessment addressing the current project description, which now includes a secondary access on Green Valley Road.

The proposed project involves development of a facility to board up to 420± horses, to offer riding lessons, and to occasionally host equestrian events on weekends. This letter identifies the trip generation associated with the project, summarizes background information, discusses the feasibility of site access and confirms the adequacy of planned improvements to accommodate project traffic.

Background Information

Site Plan. The project site plan is attached. The Springs Equestrian Center project is located south of Green Valley Road in the area between Pleasant Grove Middle School (PGMS) and Deer Valley Road. The project has primary access via Deer Valley Road, but a secondary access on Green Valley Road at the east end of the site is proposed for use during special events.

Current Traffic Volumes. Today Green Valley Road is a two lane rural arterial that carries about 4,680 vehicles per day in the area east of Deer Valley Road (2012). Bass Lake Road is also a two lane road, and the most recent traffic counts available from El Dorado County suggest that this road carries about 5,323 vehicles per day just south of Green Valley Road (2012), with the volume rising to 10,433 north of Country Club Drive. Deer Valley Road is a local two lane road that extends south from Green Valley Road to serve existing rural residences in the area between Green Valley Road and the Serrano community. There is no El Dorado County traffic count for Deer Valley Road.

Recent / Pending Improvements. Improvements are being made to major roads in order to accommodate anticipated growth in El Dorado County. The Bass Lake Road connection to Green Valley Road is currently being reconstructed at a new signalized intersection on the east side of PGMS. El Dorado County has recently improved the Green Valley Road / Deer Valley Road

3853 Taylor Road, Suite G • Loomis, CA 95650 • (916) 660-1555 • FAX (916)660-1535

intersection by creating separate left turn and right turn lanes on Green Valley Road. The westbound left turn lane will be 450 feet long and will be preceded by a 120 foot long bay taper.

The most current projections for future traffic volumes were obtained from El Dorado County's new year 2035 regional travel demand forecasting model. Raw year 2035 forecasts were compared to the baseline year 2010 projections, and the resulting growth increment was identified. The sum of current daily volume and growth increment are the "adjusted" Year 2035 volume. Based on model forecasts, by the year 2035 the daily traffic volume on Green Valley Road east of Deer Valley Road is expected to increase to about 9,000 vehicles per day. Based on the thresholds employed by El Dorado County these volumes are indicative of Level of Service D on this road, as the limit of LOS D is 14,700 vph.

Project Trip Generation. We have determined the number of automobile and truck "trips" that are likely to be generated by this project based on the data collected at two existing equestrian centers in Southern California. Table 1 presents information regarding the trip generation parameters that may be applicable: number of horses boarded at each facility, the number of trainers offering lessons and the number of students concurrently taking lessons at the peak time. As shown in Table 2 and Table 3, traffic count data was collected throughout the day at these two locations on typical weekdays, on the weekday with the highest level of activity (Friday) and on a Saturday.

As indicated, the two centers are of different sizes but the traffic counts at each location are similar. Thus, as noted in Table 3, the equivalent trip generation rates per horse, per student or per trainer for each site differ. We averaged the rates between the two samples to suggest the volume of traffic that may be generated by the proposed project, as shown in Table 4.

Table 5 presents the resulting trip generation forecasts for the project. As shown in Table 5, based simply on the number of horses stabled (i.e., 420), we would expect The Springs Equestrian Center to generate about 294 trip ends on a weekday. The volume on a Saturday could be slightly higher. During the typical weekday commute hour (i.e., 4:00 to 6:00 p.m.) we would expect this project to generate 27 trips.

As noted in Tables 2 and 3, relatively little traffic from equestrian centers will be generated by commercial vehicles or by vehicles pulling trailers. About 5% of the project trips may be these types of uses, or about 14 to 15 truck trip ends on a daily basis at this site.

TABLE 1
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	Rancho Sierra Vista Equestrian Center	Coto Valley Equestrian Center
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KDA

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KDA

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Weekday Trips	0.504	0.894	0.699
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Total in Highest Volume Hour	0.563	0.347	0.455

KDA

TABLE 5
TRIP GENERATION ESTIMATES FOR THE SPRINGS IN EL DORADO COUNTY

	Vehicle Trip Ends					
	Using Rates Per Horse (420 horses)		Using Rates Per Trainer		Using Rates Per Students Per Hour	
Description	Rate	Trips	Rate	Trainers	Rate	Students
Weekday Trips	0.699	294	17.170	17±	3.584	82
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Traffic Impacts. Based on the project's location in rural El Dorado County it is reasonable to expect that horse owners will use both Green Valley Road and Bass Lake Road to reach the site. Based on the relative population distribution in this area we would expect about 15% of the project's trips to arrive from the east on Green Valley Road, 30% to arrive from the west via Green Valley Road and the remaining 55% to use Bass Lake Road and US 50.

As shown in Table 6, on each road the traffic increase resulting from this project would be relatively minor. Note: these projections are for year 2012 conditions prior to the construction of new Bass Lake Road. While the project could increase the daily traffic volume on Bass Lake Road by 3.0%, the resulting traffic volume would remain below applicable County Level of Service standards.

Cumulatively, the project may incrementally contribute to traffic volume increases anticipated in the future. However, the change would be relative to the difference between the trips generated by the project and by the underlying residential use. Assuming the 150 acre site was developed with 5 acre estates uses, 30 homes could be developed. At the standard Institute of Transportation Engineers (ITE) rate of 1.01 trips per dwelling, the site could generate 31 p.m. peak hour trips if developed residentially. This estimate is nearly the same as the p.m. estimate to be derived from the number of horses stabled (i.e., 27 p.m. peak hour trips). Thus, we can conclude that this project would be unlikely to have cumulative long term impacts that were significantly worse than the underlying residential use.

The actual number of trips that may be generated by this kind of use may also be linked to the number of trainers and the number of students taking classes at one time. As shown in Table 6, the project trip generation based on the number of horses (i.e., 31 peak hour and 294 daily trips) would be expected to be produced by about a facility service by 17 trailers with about 77 to 82 students per hour at a peak time. Therefore, if there was any reason to reduce site trip generation, it could be accomplished by reducing the number of trailers or maximum number of students, rather than simply by reducing the number of horses.

KDA

TABLE 6
DAILY TRAFFIC VOLUMES WITH PROPOSED PROJECT

Road	Location	Existing Weekday Volume (2012)	Existing Plus Project		
			Project Only	% Increase	Total
Green Valley Road	West of Deer Valley Road	4,680	88	1.9%	4,768
	West of Bass Lake Road	11,010	206	1.9%	11,216
	East of Bass Lake Road	11,948	44	0.4%	11,992
Bass Lake Road	South of Green Valley Road	5,323	162	3.0%	5,485
	North of County Club	10,433	162	1.6%	10,595

Access Evaluation. The adequacy of the local street access available to serve the proposed project has also been assesses. With the improvements installed by El Dorado County the Deer Valley Road connection to Green Valley Road will be adequate to accommodate the turning requirements of trucks – trailers transporting horses to and from the site. Because the intersection is designed for travel at 55 mph, the deceleration length provided by new left turn lanes also yields appreciable storage for special events. While it is reasonable to expect that two or three rigs might occasionally arrive at the site concurrently, the 450 foot long westbound left turn lane on Green Valley Road is long enough to store 18 waiting automobiles (@ 25 feet per vehicle) or 11 vehicles pulling trailers (@ 40 feet per rig). A separate eastbound right turn lane has also been developed onto Deer Valley Road. Thus the proposed improvements at the Green Valley Road / Deer Valley Road intersection are adequate for this project.

The secondary access has also been evaluated. The secondary access is proposed at an existing minor rural encroachment to Green Valley Road. The access is located roughly ½ mile east of Deer Valley Road and 440 feet west of the signalized access to PGMS. The access is located at the end of a horizontal curve to the north, and this segment of Green Valley Road is on moderate downhill grade in the eastbound direction. This connection is expected to be used as an "exit only" during special events, and the existing encroachment would be improved to meet the turning requirements of trucks.

The adequacy of the secondary access is related to the availability of sight distance for exiting vehicles based on El Dorado County standards and the Caltrans Highway Design Manual (HDM). Measured from the location prescribed in the HDM, approaching eastbound vehicles become visible at a location roughly 975 feet from the access. The view to the east is obstructed by a tree, but is the tree is trimmed the sight distance to the east would exceed 1,000 feet. As a comparison, the *Minimum Safe Stopping Sight Distance* established by the HDM is 580 feet at 60

KDA

mph and the *Corner Sight Distance* requirement is 660 feet. If both standards were increased by 20% to account for downhill grade, the available sight distance would meet the adjusted value. Thus, this exit will be adequate for exiting traffic during special events.

Please feel free to contact me at (916) 660-1555 if you have any questions.

Sincerely yours,

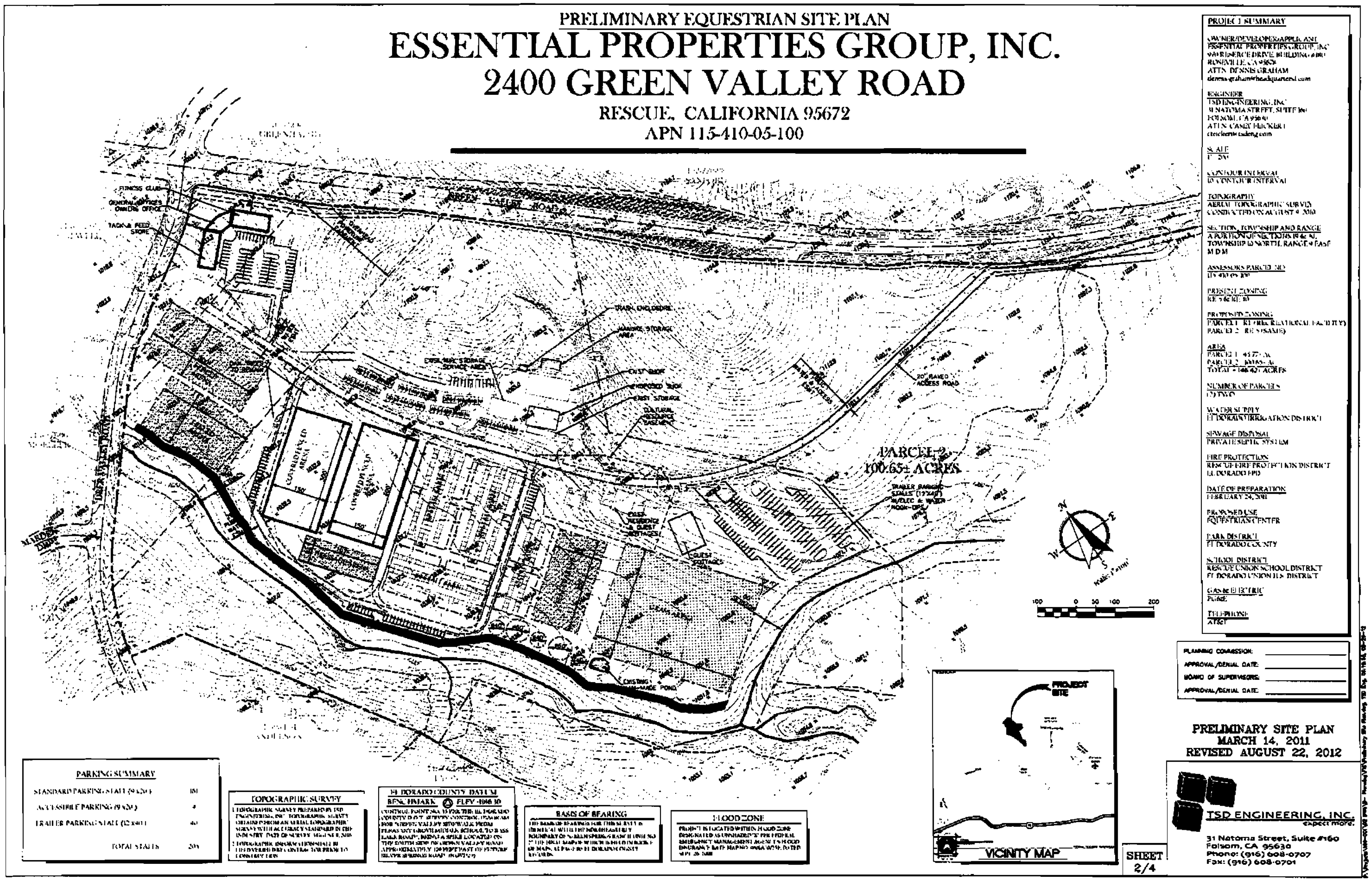
KD Anderson & Associates, Inc.

Kenneth D. Anderson, P.E.
President

Attachments: site plan, traffic counts

Springs Equestrian Center 11-26-13.ltr

KDA


PRELIMINARY EQUESTRIAN SITE PLAN
ESSENTIAL PROPERTIES GROUP, INC.
2400 GREEN VALLEY ROAD
RESCUE, CALIFORNIA 95672
APN 115-410-05-100
PROJECT SUMMARY
OWNER/DEVELOPER/APPLICANT
ATTN: DENNIS GRAHAM
ENGINEER
SCALE
CONTOUR INTERVAL
TOPOGRAPHY
SECTION, TOWNSHIP AND RANGE
ASSESSORS PARCEL NO
PRESENT ZONING
PROPOSED ZONING
AREA
NUMBER OF PARCELS
WATER SUPPLY
SEWAGE DISPOSAL
PRIVATE SEPTIC SYSTEM
FIRE PROTECTION
DATE OF PREPARATION
PROPOSED USE
EQUESTRIAN CENTER
PARK DISTRICT
EL DORADO COUNTY
SCHOOL DISTRICT
RESCUE UNION SCHOOL DISTRICT
GAS & ELECTRIC
PG&E
TELEPHONE
AT&T
PLANNING COMMISSION:
APPROVAL/DENIAL DATE:
BOARD OF SUPERVISORS:
APPROVAL/DENIAL DATE:
PARCEL 2
100.65± ACRES
PRELIMINARY SITE PLAN
MARCH 14, 2011
REVISED AUGUST 22, 2012
TSD ENGINEERING, INC.
expect more.
31 Natoma Street, Suite #160
Folsom, CA 95630
Phone: (916) 608-0707
Fax: (916) 608-0701
VICINITY MAP
PROJECT SITE
SHEET
2/4
PARKING SUMMARY
TOPOGRAPHIC SURVEY
EL DORADO COUNTY DATUM
BASIS OF BEARING
FLOOD ZONE

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 25, 2012

Count Station:	2000002	Counter ID:	73
City/Town:	Rescue	Mile Post:	9.58
Road Name:	Green Valley Rd	Location:	500 ft E of Deer Valley Rd (E)
Lanes:	2	Direction:	EASTBOUND

Date	29	30	31	25	26	27	28	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	18	4	11	8	17	12	18	13	10
200	22	2	1	2	5	4	11	7	3
300	9	3	3	1	2	4	4	4	3
400	7	7	4	2	2	3	6	4	4
500	7	8	7	4	0	6	3	5	5
600	7	17	14	14	11	14	9	12	14
700	15	87	87	92	100	96	28	72	92
800	37	125	129	119	126	120	45	100	124
900	65	180	149	179	134	110	66	126	150
1000	116	109	137	122	113	131	103	119	122
1100	111	132	120	127	104	123	119	119	121
1200	170	128	133	135	120	118	141	135	127
1300	190	144	125	162	143	160	160	155	147
1400	206	149	165	162	143	186	179	170	161
1500	165	206	189	207	196	208	202	196	201
1600	161	227	240	250	242	231	198	221	238
1700	130	243	242	250	236	241	166	215	242
1800	106	226	256	209	227	256	169	207	235
1900	94	151	169	192	178	170	104	151	172
2000	79	84	101	107	96	105	84	94	99
2100	72	78	71	81	68	82	64	74	76
2200	34	47	56	69	50	52	54	52	55
2300	23	44	37	39	37	43	48	39	40
2400	17	15	21	24	16	37	41	24	23
Totals	1861	2416	2467	2557	2366	2512	2022	2314	2464
AM Peak Hr	12:00	9:00	9:00	9:00	9:00	10:00	12:00	12:00	9:00
AM Count	170	180	149	179	134	131	141	135	150
PM Peak Hr	2:00	5:00	6:00	4:00	4:00	6:00	3:00	4:00	5:00
PM Count	206	243	256	250	242	256	202	221	242

TOTAL ADT: 4,682

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 25, 2012

Count Station:	2000002	Counter ID:	73
City/Town:	Rescue	Mile Post:	9.58
Road Name:	Green Valley Rd	Location:	500 ft E of Deer Valley Rd (E)
Lanes:	2	Direction:	WESTBOUND

Date	29	30	31	25	26	27	28	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	8	5	5	4	4	10	10	7	6
200	5	2	5	8	2	5	9	5	4
300	3	0	1	1	6	3	1	2	2
400	2	7	5	5	5	2	5	4	5
500	7	18	15	21	15	10	6	13	16
600	10	50	62	47	47	57	20	42	53
700	21	112	117	119	112	96	31	87	111
800	44	194	192	214	199	205	45	156	201
900	65	197	188	215	224	185	101	168	202
1000	159	112	153	131	115	149	128	135	132
1100	135	148	135	152	142	150	158	146	145
1200	137	134	116	140	112	135	168	135	127
1300	133	153	134	170	162	131	151	148	150
1400	143	111	154	141	123	147	147	138	135
1500	168	180	160	234	201	185	135	180	192
1600	149	149	210	175	136	166	140	161	167
1700	156	129	161	181	149	156	163	156	155
1800	157	149	126	146	142	155	145	146	144
1900	74	95	92	92	87	95	105	91	92
2000	56	46	70	62	58	59	63	59	59
2100	38	18	39	56	46	51	46	42	42
2200	23	49	44	51	41	47	54	44	46
2300	13	18	29	19	31	32	26	24	26
2400	7	1	5	4	9	9	17	7	6
Totals	1713	2077	2218	2388	2168	2240	1874	2097	2218
AM Peak Hr	10:00	9:00	8:00	9:00	9:00	8:00	12:00	9:00	9:00
AM Count	159	197	192	215	224	205	168	168	202
PM Peak Hr	3:00	3:00	4:00	3:00	3:00	3:00	5:00	3:00	3:00
PM Count	168	180	210	234	201	185	163	180	192

TOTAL ADT: 4,682

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 26, 2012

Count Station:	1500002	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	6.17
Road Name:	**Green Valley Rd**	Location:	**200 ft W of Bass Lake Rd**
Lanes:	2	Direction:	WESTBOUND

Date	29	30	31	1	26	27	28	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	33	10	10	1	11	13	20	14	9
200	20	10	6	11	9	9	21	12	9
300	11	11	6	11	8	6	8	9	8
400	13	14	19	10	12	10	12	13	13
500	18	43	38	33	36	32	22	32	36
600	39	124	122	127	105	115	39	96	119
700	51	305	315	328	308	272	96	239	306
800	78	765	776	800	798	748	164	590	777
900	162	418	400	453	434	425	275	367	426
1000	241	305	346	300	352	335	336	316	328
1100	327	276	315	255	271	313	364	303	286
1200	333	276	283	260	266	317	397	305	280
1300	334	278	266	280	316	272	353	300	282
1400	313	319	348	362	366	360	360	347	351
1500	292	419	405	388	409	429	351	385	410
1600	279	340	407	355	357	364	340	349	365
1700	300	333	355	321	341	351	293	328	340
1800	243	303	352	303	344	362	264	310	333
1900	138	200	224	233	213	289	173	210	232
2000	123	101	129	134	126	150	145	130	128
2100	89	94	98	93	103	125	100	100	103
2200	50	68	63	60	63	118	84	72	74
2300	38	42	49	41	43	77	66	51	50
2400	20	20	18	20	20	37	49	26	23
Totals	3545	5074	5350	5179	5311	5529	4332	4903	5289
AM Peak Hr	12:00	8:00	8:00	8:00	8:00	8:00	12:00	8:00	8:00
AM Count	333	765	776	800	798	748	397	590	777
PM Peak Hr	1:00	3:00	4:00	3:00	3:00	3:00	2:00	3:00	3:00
PM Count	334	419	407	388	409	429	360	385	410

TOTAL ADT: 11,010

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 26, 2012

Count Station:	1500002	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	6.17
Road Name:	Green Valley Rd	Location:	200 ft W of Bass Lake Rd
Lanes:	2	Direction:	EASTBOUND

Date	29	30	31	1	26	27	28	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	62	21	28	23	39	26	52	36	27
200	38	5	7	19	13	11	32	18	11
300	35	13	8	13	9	14	15	15	11
400	12	10	6	15	12	12	23	13	11
500	11	5	14	6	8	13	9	9	9
600	17	29	28	31	27	35	10	25	30
700	30	108	92	96	92	90	23	76	96
800	69	506	502	505	487	473	75	374	495
900	109	292	284	303	272	269	175	243	284
1000	168	207	225	230	236	250	211	218	230
1100	219	230	232	201	207	227	248	223	219
1200	271	232	298	264	271	264	306	272	266
1300	295	292	289	269	296	325	370	305	294
1400	363	290	304	317	343	312	386	331	313
1500	374	586	605	580	607	620	399	539	600
1600	354	487	566	499	508	541	392	478	520
1700	335	519	548	543	526	510	407	484	529
1800	333	557	592	547	555	616	389	513	573
1900	206	359	369	415	422	504	274	364	414
2000	189	269	268	248	262	254	202	242	260
2100	155	178	206	234	193	195	172	190	201
2200	104	145	153	176	168	185	162	156	165
2300	73	87	78	88	99	141	143	101	99
2400	34	42	55	60	59	99	97	64	63
Totals	3856	5469	5757	5682	5711	5986	4572	5290	5721
AM Peak Hr	12:00	8:00	8:00	8:00	8:00	8:00	12:00	8:00	8:00
AM Count	271	506	502	505	487	473	306	374	495
PM Peak Hr	3:00	3:00	3:00	3:00	3:00	3:00	5:00	3:00	3:00
PM Count	374	586	605	580	607	620	407	539	600

TOTAL ADT: 11,010

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 26, 2012

Count Station:	1100004	Counter ID:	62
City/Town:	Cameron Park	Mile Post:	0.31
Road Name:	**Bass Lake Rd**	Location:	**400 yd N of Country Club Dr**
Lanes:	2	Direction:	NORTHBOUND

Date	29	30	31	1	26	27	28	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	62	21	18	36	29	29	52	35	27
200	37	13	16	13	18	16	34	21	15
300	23	6	10	9	9	6	20	12	8
400	13	8	7	13	8	12	14	11	10
500	9	4	5	6	8	6	6	6	6
600	9	17	7	10	10	13	9	11	11
700	20	65	67	74	69	61	22	54	67
800	33	198	190	197	180	178	56	147	189
900	93	209	198	187	212	202	89	170	202
1000	114	168	144	155	152	187	153	153	161
1100	236	188	182	156	178	178	231	193	176
1200	215	216	237	210	227	253	266	232	229
1300	356	243	245	245	284	297	293	280	263
1400	306	272	298	274	236	290	299	282	274
1500	297	336	357	311	337	384	391	345	345
1600	302	462	509	466	482	526	313	437	489
1700	374	619	567	546	567	563	364	514	572
1800	326	686	622	609	610	546	351	536	615
1900	297	451	477	476	495	428	334	423	465
2000	197	284	378	331	335	302	194	289	326
2100	173	193	247	280	243	263	191	227	245
2200	120	150	190	185	166	244	202	180	187
2300	64	68	92	88	100	153	145	101	100
2400	28	39	39	50	55	112	93	59	59
Totals	3704	4916	5102	4927	5010	5249	4122	4719	5041
AM Peak Hr	11:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
AM Count	236	216	237	210	227	253	266	232	229
PM Peak Hr	5:00	6:00	6:00	6:00	6:00	5:00	3:00	6:00	6:00
PM Count	374	686	622	609	610	563	391	536	615

TOTAL ADT: 10,433

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 26, 2012

Count Station:	1100004	Counter ID:	62
City/Town:	Cameron Park	Mile Post:	0.31
Road Name:	**Bass Lake Rd**	Location:	**400 yd N of Country Club Dr**
Lanes:	2	Direction:	SOUTHBOUND

Date	29	30	31	1	26	27	28	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	19	7	6	8	9	10	15	11	8
200	14	8	5	2	5	7	8	7	5
300	16	2	5	6	5	8	4	7	5
400	11	21	18	17	11	10	9	14	15
500	17	65	58	61	60	50	22	48	59
600	32	185	198	175	191	164	49	142	183
700	70	476	491	472	442	416	93	351	459
800	163	816	826	786	826	741	185	620	799
900	233	591	621	586	575	565	308	497	588
1000	334	370	339	343	375	364	368	356	358
1100	476	304	303	285	295	324	377	338	302
1200	301	248	259	248	294	322	321	285	274
1300	337	263	269	305	286	298	378	305	284
1400	297	247	240	259	239	272	294	264	251
1500	269	344	297	294	297	333	282	302	313
1600	261	332	321	302	318	343	297	311	323
1700	226	296	339	320	308	329	272	299	318
1800	296	295	356	285	304	360	348	321	320
1900	160	197	222	210	230	277	215	216	227
2000	112	90	117	101	96	130	139	112	107
2100	76	41	80	79	75	105	98	79	76
2200	52	40	54	50	56	75	87	59	55
2300	31	28	26	38	36	64	69	42	38
2400	14	16	21	12	24	38	48	25	22
Totals	3817	5282	5471	5244	5357	5605	4286	5009	5392
AM Peak Hr	11:00	8:00	8:00	8:00	8:00	8:00	11:00	8:00	8:00
AM Count	476	816	826	786	826	741	377	620	799
PM Peak Hr	1:00	3:00	6:00	5:00	4:00	6:00	1:00	6:00	4:00
PM Count	337	344	356	320	318	360	378	321	323

TOTAL ADT: 10,433

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 11, 2012

Count Station:	1300004	Counter ID:	54
City/Town:	Cameron Park	Mile Post:	3.81
Road Name:	**Bass Lake Rd**	Location:	**100 yd S of Green Vly Rd**
Lanes:	2	Direction:	NORTHBOUND

Date	15	16	17	11	12	13	14	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									Non-Holiday
100	23	16	8	7	6	7	15		7
200	12	8	7	11	4	11	12		8
300	8	7	3	2	4	1	4		3
400	3	7	3	8	5	3	1		5
500	9	8	10	5	9	6	3		8
600	7	22	24	27	32	23	11		27
700	22	44	91	101	98	79	26		92
800	49	61	201	206	210	135	90		188
900	95	114	216	247	220	150	154		208
1000	134	116	169	144	144	136	167		148
1100	147	150	114	125	131	142	167		128
1200	170	155	115	129	145	146	173		134
1300	170	137	142	148	157	134	176		145
1400	149	154	153	170	157	171	155		163
1500	148	145	187	231	193	156	137		192
1600	134	214	265	253	274	179	114		243
1700	149	193	198	223	203	229	166		213
1800	147	173	241	241	230	237	157		237
1900	122	145	150	175	176	163	122		166
2000	74	90	95	102	127	115	88		110
2100	70	60	80	82	93	88	77		86
2200	49	45	68	70	46	77	81		65
2300	43	42	38	42	37	62	54		45
2400	14	16	15	14	17	35	39		20
Totals	1948	2122	2593	2763	2718	2485	2189		2640
AM Peak Hr	12:00	12:00	9:00	9:00	9:00	9:00	12:00		9:00
AM Count	170	155	216	247	220	150	173		208
PM Peak Hr	1:00	4:00	4:00	4:00	4:00	6:00	1:00		4:00
PM Count	170	214	265	253	274	237	176		243

Martin Luther King Jr. Holiday

TOTAL ADT: 5,323

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 11, 2012

Count Station:	1300004	Counter ID:	54
City/Town:	Cameron Park	Mile Post:	3.81
Road Name:	**Bass Lake Rd**	Location:	**100 yd S of Green Vly Rd**
Lanes:	2	Direction:	SOUTHBOUND

Date	15	16	17	11	12	13	14	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									Non-Holiday
100	23	19	10	4	11	14	25		10
200	16	7	6	6	4	11	12		7
300	8	7	3	4	4	6	7		4
400	8	5	6	2	3	7	5		5
500	8	11	14	11	11	11	6		12
600	7	35	43	51	44	48	16		47
700	7	68	111	94	94	96	18		99
800	45	95	316	294	294	172	43		269
900	54	93	239	246	208	143	81		209
1000	96	98	117	139	154	131	124		135
1100	116	121	105	127	127	122	158		120
1200	132	114	142	144	133	142	179		140
1300	179	143	124	122	133	119	183		125
1400	152	157	130	130	145	139	179		136
1500	164	183	260	271	286	180	140		249
1600	144	149	223	223	219	200	180		216
1700	154	188	187	170	190	223	154		193
1800	152	184	204	218	233	231	172		222
1900	98	156	175	167	171	186	142		175
2000	95	92	95	128	102	100	96		106
2100	64	66	77	97	94	92	92		90
2200	52	44	68	74	54	76	68		68
2300	30	31	21	27	24	44	56		29
2400	9	11	17	14	18	26	32		19
Totals	1813	2077	2693	2763	2756	2518	2168		2683
AM Peak Hr	12:00	11:00	8:00	8:00	8:00	8:00	12:00		8:00
AM Count	132	121	316	294	294	172	179		269
PM Peak Hr	1:00	5:00	3:00	3:00	3:00	6:00	1:00		3:00
PM Count	179	188	260	271	286	231	183		249

Martin Luther King Jr. Holiday

TOTAL ADT: 5,323

I. COLLECTIONS

Unpaid balances turned over to the County Revenue Recovery Division will be assessed an additional charge of 15 percent.

J. REFUNDS

1. The Director of Development Services may authorize a refund of any unexpended application fees upon any of the following circumstances:

   (a) The application is approved or denied and no further work will be required and the Time and Materials account is closed.

   (b) The applicant withdraws the application and requests a refund in writing.

   (c) The application has been deemed incomplete, information has been requested in writing by the Department, and the applicant has not provided the information within a one year period.

   (d) The application has been placed on-hold or moved off-calendar at the request of the applicant and the applicant has not responded or requested the matter to be rescheduled for hearing within the last year.

   (e) The application was moved off-calendar by the decision maker and the applicant has been requested to perform additional tasks such as: provide more information, consult with other agencies, or make revisions, but the necessary information has not been provided within the last one-year period.

2. A refund processing charge of $50.^{00}$ will be deducted from any amount due to cover the costs of processing the refund. Any refund of $10.^{00}$ or less will not be issued. As a result, any deposit balance of $60.^{00}$ or less will not be eligible for refund and will be kept by the County.

3. It is the applicant's responsibility to keep track of the amounts submitted and to inform the Department of all changes in address or ownership.

4. If an account is inactive for three years and no written request for a refund is submitted, any unclaimed funds in that account will become the property of the County.

KD Anderson & Associates, Inc.
Transportation Engineers

May 20, 2014

Mr. Dennis Graham, President
Essential Properties, Inc.
970 Reserve Drive #180
Roseville, CA 95678

RE: SUPPLEMENT TO TRAFFIC IMPACT ASSESSMENT FOR THE SPRINGS EQUESTRIAN CENTER IN EL DORADO COUNTY (SUPA SO1-11)

Dear Mr. Graham:

This letter addresses issues relating to weekend traffic conditions associated with **The Springs Equestrian Center** project in El Dorado County. As we discussed, our firm has been involved with the project since preparing our original traffic assessment in 2003, and last year we provided an updated assessment addressing the current project description and existing condition on Green Valley Road.

The proposed project involves development of a facility that will:

1. board up to 420± horses and offer riding lessons
2. host equestrian events on weekends attracting up to 150 riders for the weekend (i.e., 100 riders on Saturday and 75 on Sunday)
3. host weddings with up to 150 persons in attendance
4. include a 12,000 sf building that will provide ancillary services (i.e., 6,000 sf of office/ meeting space, 3,000 tack sales, 3,000 workout facilities).

Comments have been received regarding the combined traffic effects of these activities and the resulting need for roadway improvements. This supplement is intended to describe the traffic characteristics of these activities and to evaluate the adequacy of the project's access via Green Valley Road / Deer Valley Road based on El Dorado County's minimum Level of Service standard.

Current Traffic Volumes. Today Green Valley Road is a two lane rural arterial that carries about 11,010 vehicles per day in the area west of Bass Lake Road (2012). This count would include trips made to and from Spring Valley Middle School. The south side of Deer Valley Road is a private two lane road that extends south from Green Valley Road to serve existing rural residences in the area between Green Valley Road and the Serrano community. There is no El Dorado County traffic count for Deer Valley Road.

Because peak activity associated with these ancillary uses would most often occur on Saturday, we conducted a new midday intersection turning movement count at the Green Valley Road / Deer Valley Road intersection on April 26, 2014. The count was made during the peak time period for Saturday traffic originally reported for the two existing equestrian centers presented in our 2013 assessment (i.e., noon-2:00 p.m.). The results of this traffic count are attached. During the highest hourly volume period Green Valley Road carried 780 vehicles per hour in the area east of the Deer Valley Road intersection, and Deer Valley Road carried 37 vehicles per hour south of Green Valley Road.

3853 Taylor Road, Suite G • Loomis, CA 95650 • (916) 660-1555 • FAX (916)660-1535

Project Trip Generation

Boarding. We originally determined the number of automobile and truck "trips" that are likely to be generated by the regular operation of The Springs Equestrian Center based on the data collected at two existing equestrian centers in Southern California. Table 1 presents information regarding the number of horses stabled at each facility, as well as the number of trips ends observed on Saturday and during the peak traffic hour on Saturday.

Table 1 also presents the resulting trip generation forecasts for the regular operation of the project. Based on the number of horses stabled (i.e., 420), we would expect The Springs Equestrian Center to generate about 517 trip ends on a Saturday. Half of those trips would be inbound and half would be outbound. The estimate is 67 trips during the highest volume hour, which would be 34 inbound and 33 outbound trips during that time period.

Table 1
Saturday Trip Generation Rates
at Comparable Equestrian Facilities

	Rancho Sierra Vista Equestrian Center		Coto Valley Equestrian Center	Average
Horses Stabled	405 horses		235 horses	-
Date	Saturday (2/9/2002	Saturday (4/6/2002)	Saturday (2/2/2002)	-
Daily Trip ends by Automobiles, Vehicles Pulling Trailers and Commercial Vehicles	422	296	450	-
Daily Trips per Stabled Horse	1.04	0.73	1.91	1.23
Peak Hour Saturday	11:00 a.m. to noon	Noon to 1:00 p.m.	11:00 a.m. to noon	-
Saturday Peak Hour Trip Ends	57	25	58	-
Saturday peak trips per Stabled Horse	0.14	0.06	0.29	0.16
Saturday Daily Trips for The Springs @ 420 Horses Stabled				517
Saturday Peak Hour trips from The Springs @ 420 horses Stabled				67

This estimate reflects the regular operation of the facility. It is unlikely that this level of trip generation would occur on a day when a competitive event was held since the riding facilities would be unavailable to non-participants. You have estimated that perhaps ¼ of the persons normally electing to visit their horses on a typical Saturday may do so on the day when a competitive event was held.

KDA

Horse Show Competition. We have discussed the general characteristics of horse shows / competitions that would be hosted at the site, and I have used that information to estimate trip generation during the Saturday peak hour.

As we discussed, a horse show could have a total participation level of up to 175 riders spread over two days. You have space for RV's to stay on-site, and some participants elect to arrive on Friday afternoon/ evening and stay for the weekend. Others will come and go on Saturday and Sunday.

The competition itself occurs within 30 minute event periods that combine set up and staging, the actual competition, and awards. As with other youth activities like soccer or softball, riders compete in age groups (i.e., "classes) and riders may participate in more than one event. Events for younger riders begin Saturday morning, with older riders later in the day. The highest level class rides on Sundays, but there are fewer older participants in each class. As a result, roughly 100 riders may participate on Saturday and 75 may participate on Sunday.

Competition occurs from 8:00 a.m. to 6:00 p.m. on Saturday. Riders would generally arrive an hour before their first event, spend three to four hours at the equestrian center and then depart. As a result, most arrivals are spread over the period from 7:00 a.m. to roughly 2 or 3:00 p.m. (i.e., 7 to 8 hours), but most of this traffic occurs before 10:00 a.m. Similarly, departures are spread from 11:00 a.m. to 6 or 7:00 p.m. (i.e., 7 to 8 hours) but most will exit before 3:00 p.m. Combining peak inbound traffic and peak outbound traffic would suggest that 16 to 17 riders arrive or depart during the "worst case" hour.

Riders are typically accompanied by a driver (parent), and a few riders (i.e., 1/4) attract a separate "spectator". After including ancillary trips, we have assumed that a two day event attracting 175 riders person could generate 20 inbound and 20 outbound vehicles trips during the "worst case" Saturday hour.

It is important to note that as the boarding occupancy level increases most of the event participants will be persons who already board their horses at The Springs. Because the arena and other facilities are being used for the show, other facility members who are not participating are less likely to visit The Springs on a show day. For this analysis we have assumed that ¼ of the regular activity Saturday could still occur on a day when events occurred.

Weddings. We have estimated the trip generated by a wedding from traffic counts conducted in 2013 by this consultant at a rural event venue of similar size in Butte County. The resulting trip generation rates are presented in Table 2. As noted, based on these rates a 150 person event could generate 66 trips in the hour prior to the event and 41 trips in the highest volume period after the event. Arriving and departing traffic for the wedding would not occur in the same hour.

You have indicated that weddings will not be scheduled at times when equestrian events are being held due to the on-site noise associated with competition, although they may occur at other times on the same day. Thus, if a wedding was to occur on a Saturday when a competitive event was staged, the wedding would begin after the event was over.

KDA

Table 2
Wedding Trip Generation

Activity	Unit	Period	Trips per Unit		
			In	Out	Total
Rural Wedding	attendee	before	0.42	0.02	0.44
	150 attendees		63	3	66
	attendee	after	0.01	0.26	0.27
	150 attendees		2	39	41

Ancillary Uses. The project includes a 12,000 sf building that will house activities that support the operation of the equestrian center. These include office space for staff, sales of tack and other supplies and a small workout area. The office is expected to be closed on weekends. The majority of the persons traveling to and from these uses will be regular boarders or event participants, and as a result, the businesses themselves would be unlikely to generate additional trips. However, the project description notes that these facilities may be available on a limited basis to others, including local residents.

We employed regular trip generation rates published by the Institute of Transportation Engineers (ITE) to identify a "worst case" estimate of the trip generation associated with the 12,000 sf building on a Saturday afternoon assuming no trips were associated with other on site activities. As standalone uses, the building could generate 19 peak hour trips based on regular ITE trip generation rates.

Table 3
Club House Saturday Trip Generation Rates

Use (ITE Code)	Unit	Peak Hour Rates	Quantity	Peak Hour trips		
				In	Out	Total
Tack Store (826)	ksf	2.71	3 ksf	3	5	8
Health Club (492)	ksf	2.78	3 ksf	4	4	8
Office (710)	ksf	0.44	6 ksf	2	1	3
Total			12 ksf	9	10	19

Worst Case Saturday Trip Generation Totals. To evaluate the potential traffic impacts of the project under a "worst case" scenario, we summed all the individual trip generation forecasts, as noted in Tables 4 and 5. These totals represent two alternative conditions. The first condition assumes that a wedding is held during the middle of the day, that regular boarding activities occur and that the building generates trips at ITE rates. The second condition assumes that a show is held but a wedding does not occur at the same time.

KDA

As indicate the greatest total "worst case" trip generation estimate is for 106 inbound and 46 outbound trips during the Saturday peak hour with a wedding and without a show.

Table 4
"Worst Case" Total Saturday Trip Generation Without Show

Activity	Quantity	Saturday Peak Hour Trip Generation		
		In	Out	Total
Regular Boarding	420 horses	34	33	67
Wedding (Before Event)	150 attendees	63	3	66
Ancillary Uses	12.0 ksf	9	10	19
Total		**106**	**46**	**152**

Table 5
"Worst Case" Total Saturday Trip Generation With Show

Activity	Quantity	Saturday Peak Hour Trip Generation		
		In	Out	Total
Regular Boarding (Partial)	420 horses	9	9	18
Horse Show competition	150 riders	20	20	40
Ancillary Uses	12.0 ksf	9	10	19
Total		**38**	**39**	**77**

Level of Service Analysis

The extent to which operation of The Springs may impact traffic conditions at the Green Valley Road / Deer Valley Road intersection has been calculated based on the operating Level of Service occurring at the intersection under current Saturday and "worst case" conditions. Projected trips under the "worst case" assumptions were assigned to Green Valley Road through the Deer Valley Road intersection assuming the directional distribution assumptions made identified in earlier studies (i.e., 1/3 westbound and 2/3 eastbound). No use of a secondary access on Green Valley Road has been assumed for this calculation.

As indicated, the intersection currently operates at LOS C for motorists waiting to turn onto Green Valley Road from northbound Deer Valley Road. Under the "worst case" Saturday condition, the length of delays may be slightly longer (i.e., five seconds per vehicle longer on average), but the Level of

KDA

Service would remain at LOS C. As LOS C satisfies the County's minimum LOS D standard, the project's impacts are not significant and no improvements to the Green Valley Road / Deer Valley Road intersection are required.

Table 6
Intersection Operating Level of Service

Location	Control	Saturday Peak Hour			
		Existing		Existing Plus Project	
		Average Delay (sec/veh)	Level of Service	Average Delay (sec/veh)	Level of Service
Green Valley Road / Deer Valley Road	NB/SB	16.1	C	20.9	C
Northbound left turn and right turn	Stop	14.3	B	17.3	C
Southbound left turn and right turn					

Please feel free to contact me at (916) 660-1555 if you have any questions.

Sincerely yours,

KD Anderson & Associates, Inc.

Kenneth D. Anderson, P.E.
President

Attachments: Saturday traffic counts, LOS worksheets

Springs Equestrian Center Saturday 5-20-14.ltr

KDA

ALL TRAFFIC DATA

El Dorado County
All Vehicles on Unshifted
Nothing on Bank 1
Nothing on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7280-001 Deer Valley-Green Valley.ppd
Date : 4/26/2014

Unshifted Count = All Vehicles

	Deer Valley Road Southbound					Green Valley Road Westbound					Deer Valley Road Northbound					Green Valley Road Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
12:00	1	0	6	0	7	3	83	0	0	86	1	0	1	0	2	4	78	1	0	83	178	0
12:15	2	1	11	0	14	1	83	5	0	89	0	0	3	0	3	6	74	4	0	84	190	0
12:30	0	0	11	0	11	5	132	2	0	139	2	0	3	0	5	8	74	3	0	85	240	0
12:45	4	0	4	0	8	2	102	1	0	105	0	0	2	0	2	8	95	3	0	106	221	0
Total	7	1	32	0	40	11	400	8	0	419	3	0	9	0	12	26	321	11	0	358	829	0
13:00	3	0	6	0	9	0	93	2	0	95	4	0	1	0	5	2	80	1	0	83	192	0
13:15	2	0	7	0	9	2	98	2	0	102	2	0	3	0	5	4	70	4	0	78	194	0
13:30	3	0	8	0	11	1	84	2	0	87	2	0	2	0	4	5	96	6	0	107	209	0
13:45	0	0	1	0	1	3	70	0	0	73	2	0	1	0	3	6	87	2	0	95	172	0
Total	8	0	22	0	30	6	345	6	0	357	10	0	7	0	17	17	333	13	0	363	767	0
Grand Total	15	1	54	0	70	17	745	14	0	776	13	0	16	0	29	43	654	24	0	721	1596	0
Apprch %	21.4%	1.4%	77.1%	0.0%		2.2%	96.0%	1.8%	0.0%		44.8%	0.0%	55.2%	0.0%		6.0%	90.7%	3.3%	0.0%			
Total %	0.9%	0.1%	3.4%	0.0%	4.4%	1.1%	46.7%	0.9%	0.0%	48.6%	0.8%	0.0%	1.0%	0.0%	1.8%	2.7%	41.0%	1.5%	0.0%	45.2%	100.0%	

Scenario Report

Scenario:	saturday peak
Command:	Default Command
Volume:	saturday middday
Geometry:	existing
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	saturday
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Trip Generation Report

Forecast for saturday midday

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	boarding	420.00	horses boarded	0.08	0.08	34	34	68	44.2
	Zone 1 Subtotal					34	34	68	44.2
2	wedding	150.00	guests	0.42	0.02	63	3	66	42.9
	Zone 2 Subtotal					63	3	66	42.9
4	ancilliary	6.00	office	0.23	0.21	1	1	2	1.3
4	ancilliary	3.00	tack sales	1.19	1.52	4	5	9	5.8
4	ancilliary	3.00	health club	1.25	1.53	4	5	9	5.8
	Zone 4 Subtotal					9	11	20	13.0
TOTAL						106	48	154	100.0

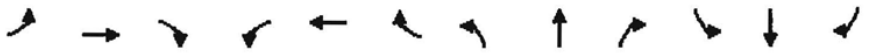
Trip Distribution Report

Percent Of Trips saturday

Zone	To Gates 1	2	3
1	30.0	5.0	65.0
2	40.0	0.0	60.0
4	35.0	5.0	60.0

Turning Movement Report
saturday midday

Volume Type	Northbound Left	Thru	Right	Southbound Left	Thru	Right	Eastbound Left	Thru	Right	Westbound Left	Thru	Right	Total Volume
#1 Green Valley Road / Deer Valley													
Base	8	0	9	9	0	28	22	319	11	9	425	7	847
Added	15	2	31	0	2	0	0	0	39	65	0	0	154
Total	23	2	40	9	2	28	22	319	50	74	425	7	1001



Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	22	319	11	9	425	7	8	0	9	9	0	28
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	362	12	10	483	8	9	0	10	10	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	491			375			954	930	369	930	932	487
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	491			375			954	930	369	930	932	487
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			96	100	98	96	100	95
cM capacity (veh/h)	1072			1183			220	259	677	238	258	581

Volume Total	25	376	10	491	19	42
Volume Left	25	0	10	0	9	10
Volume Right	0	12	0	8	10	32
cSH	1072	1700	1183	1700	342	430
Volume to Capacity	0.02	0.22	0.01	0.29	0.06	0.10
Queue Length 95th (ft)	2	0	1	0	4	8
Control Delay (s)	8.4	0.0	8.1	0.0	16.1	14.3
Lane LOS	A		A		C	B
Approach Delay (s)	0.5		0.2		16.1	14.3
Approach LOS					C	B

Average Delay	1.3		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	22	319	50	74	425	7	23	2	40	9	2	28
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	362	57	84	483	8	26	2	45	10	2	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	491			419			1125	1100	391	1114	1124	487
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	491			419			1125	1100	391	1114	1124	487
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			93			83	99	93	94	99	95
cM capacity (veh/h)	1072			1140			155	192	658	159	186	681

Volume Total	25	419	84	491	74	42
Volume Left	25	0	84	0	26	10
Volume Right	0	57	0	8	45	32
cSH	1072	1700	1140	1700	300	337
Volume to Capacity	0.02	0.25	0.07	0.29	0.25	0.13
Queue Length 95th (ft)	2	0	6	0	24	11
Control Delay (s)	8.4	0.0	8.4	0.0	20.9	17.8
Lane LOS	A		A		C	C
Approach Delay (s)	0.5		1.2		20.9	17.8
Approach LOS					C	C

Average Delay	2.8		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

K D Anderson & Associates, Inc.
Transportation Engineers

August 13, 2014

Mr. Dennis Graham, President
Essential Properties, Inc.
970 Reserve Drive #180
Roseville, CA 95678

RE: ADDENDUM TO TRAFFIC IMPACT ASSESSMENT FOR THE SPRINGS EQUESTRIAN CENTER IN EL DORADO COUNTY (SUPA SO1-11)

Dear Mr. Graham:

Thank you for contacting our firm regarding **The Springs Equestrian Center** project in El Dorado County. As we discussed, in 2003 our firm prepared the original focused traffic impact assessment for this project. Subsequent letters have presented updated assessments addressing the current project description and relative project impacts on a Saturday with an event at the site.

This letter addresses project impacts on typical weekday commute peak hours. Our assessment makes use of the following information:

1. A.m. and p.m. peak hour intersection turning movement counts conducted at the Green Valley Road / Deer Valley Road intersection for El Dorado County in 2014 while area schools were in session, and
2. A.m. and p.m. peak hour trip generation forecasts for the project based on new observations at a similar facility (i.e., Coto De Caza Equestrian Center).

Updated Trip Generation Rates. The original trip generation information collected in 2003 is presented in Table 1. This data was collected at two large equestrian centers in Southern California that are of a size similar to the prosed project. Because all Northern California centers are smaller (i.e., 50 to 100 horses boarded) and may not be applicable, new traffic counts were made this week at Coto De Caza. This information was reviewed, and the highest one hour total trip volume during each time period is noted in Table 1. New trip generation rates were determined by dividing the total by the 300 horses currently boarded.

Table 1
Equivalent Trip Generation Rates Observed at Other Equestrian Facilities

	Vehicle Trip Ends per Horse			
	Rancho Sierra Vista	Coto De Caza (2003)		Coto De Caza (8/2014)
Description	405 horses	235 horses	Average	300 horses
Daily Trip Rate	0.504	0.894	0.699	n.a.
AM Peak Hour Trips	n.a.			51
AM Peak Hour Rate				0.170
PM Peak Hour Trips				34
PM Peak Hour Rate	0.050	0.077	0.064	0.113
Highest Volume Hour	0.06	0.106	0.083	n.a

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The new trip generation rates were applied to the number of horses that may be boarded at The Springs, and new a.m. and p.m. peak hour trips generation forecasts were made. These results are presented in Table 2. As shown, the project could generate 71 trips in the a.m. peak hour (i.e., 50 in and 21 out) with 47 trips (22 in and 25 out) generated during the p.m. peak hour.

Table 2
Trip Generation Estimates For The Springs Equestrian Center

Description	Vehicle Trip Ends		
	Rate	In	Out
AM Peak Hour Rates	0.17	71%	28%
420 Horses in AM	71	50	21
PM Peak Hour Rates	0.113	47%	53%
420 Horses in PM	47	22	25

Traffic Impacts. The year 2014 traffic counts provided by El Dorado County were used as the baseline for identifying existing Level of Service at the Green Valley Road / Deer Valley Road intersection and for evaluating the project's impacts. The Level of Service worksheets completed for each scenario are attached, and the results are noted in Table 3.

As indicated, today motorists waiting to turn onto Green Valley Road from Deer Valley Road experience delays that are indicative of LOS C conditions during the a.m. and p.m. peak hours.

Table 3
Green Valley Road / Deer Valley Road Intersection Level of Service

Approach	Time Period	Peak Hour Conditions			
		Existing		Existing Plus Project	
		Level of Service	Average Delay	Level of Service	Average Delay
Northbound Deer Valley Rd	AM	C	17.0	C	18.4
Southbound Deer Valley Rd		C	15.1	C	16.7
Northbound Deer Valley Rd	PM	C	23.9	D	25.8
Southbound Deer Valley Rd		C	17.2	C	18.8

As noted in previous assessments, based on the project's location it is reasonable to expect that horse owners will use both Green Valley Road and Bass Lake Road to reach the site. Based on the relative population distribution in this area we would expect about 15% of the project's trips to arrive from the east on Green Valley Road, 30% to arrive from the west via Green Valley Road, 5% to use Deer Valley Road and the remaining 50% to use Bass Lake Road and US 50. The resulting assignment of the trips generated by the project is noted with the LOS worksheets.

KDA

As shown, the addition of project traffic will slightly increase the length of delays experienced by motorists using Deer Valley Road. In the p.m. peak hour, motorists leaving the site on Deer Valley Road will experience delays that are indicative of LOS D. However, the LOS C and LOS D conditions forecast with the project fall within the El Dorado County minimum LOS D standard in rural areas and LOS E standard in community areas. As a result, the project's impacts are not significant, and no mitigation is required.

Please feel free to contact me at (916) 660-1555 if you have any questions.

Sincerely yours,

KD Anderson & Associates, Inc.

Kenneth D. Anderson, P.E.
President

Attachments: traffic counts, TRAFFIX assignment, LOS worksheets

The Springs Equestrian Center 8-13-14.ltr

KDA

COTO DE CAZA EQUESTRIAN CENTER - VEHICLE COUNT

8/13/2014

horses 300

8/12-TUES AFTERNOON	4:00-4:15	4:15-4:30	4:30-4:45	4:45-5:00	5:00-5:15	5:15-5:30	5:30-5:45	5:45-6:00		rate
IN	3	2	2	1	5	1	3	7		
OUT	3	4	4	0	4	3	3	8		
	6	6	6	1	9	4	6	15		
				19	22	20	20	34		0.113
								16	in	
								18	out	

8/13-WED MORNING	7:00-7:15	7:15-7:30	7:30-7:45	7:45-8:00	8:00-8:15	8:15-8:30	8:30-8:45	8:45-9:00		
IN	2	4	4	7	4	14	11	1		
OUT	0	0	2	6	0	4	5	2		
	2	4	6	13	4	18	16	3		
				25	27	41	51	41		0.170
							36	in		
							15	out		

Study Completed By Allen 8/13/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	269	2	7	487	4	16	0	14	12	1	37
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	306	2	8	553	5	18	0	16	14	1	42
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	558			308			929	891	306	902	889	553
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			308			929	891	306	902	889	553
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			92	100	98	95	100	92
cM capacity (veh/h)	1013			1253			226	278	734	251	279	532

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	6	306	2	8	553	5	34	57
Volume Left	6	0	0	8	0	0	18	14
Volume Right	0	0	2	0	0	5	16	42
cSH	1013	1700	1700	1253	1700	1700	333	413
Volume to Capacity	0.01	0.18	0.00	0.01	0.33	0.00	0.10	0.14
Queue Length 95th (ft)	0	0	0	0	0	0	8	12
Control Delay (s)	8.6	0.0	0.0	7.9	0.0	0.0	17.0	15.1
Lane LOS	A			A			C	C
Approach Delay (s)	0.2			0.1			17.0	15.1
Approach LOS							C	C

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	269	27	40	487	4	22	1	28	12	4	37
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	306	31	45	553	5	25	1	32	14	5	42
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	558			336			1006	966	306	994	992	553
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			336			1006	966	306	994	992	553
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			87	100	96	93	98	92
cM capacity (veh/h)	1013			1223			193	244	734	207	235	532

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	6	306	31	45	553	5	58	60
Volume Left	6	0	0	45	0	0	25	14
Volume Right	0	0	31	0	0	5	32	42
cSH	1013	1700	1700	1223	1700	1700	327	367
Volume to Capacity	0.01	0.18	0.02	0.04	0.33	0.00	0.18	0.16
Queue Length 95th (ft)	0	0	0	3	0	0	16	15
Control Delay (s)	8.6	0.0	0.0	8.1	0.0	0.0	18.4	16.7
Lane LOS	A			A			C	C
Approach Delay (s)	0.1			0.6			18.4	16.7
Approach LOS							C	C

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	44.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	38	591	21	14	377	6	14	1	13	10	1	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	642	23	15	410	7	15	1	14	11	1	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	416			665			1194	1172	642	1180	1188	410
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	416			665			1194	1172	642	1180	1188	410
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			90	99	97	93	99	96
cM capacity (veh/h)	1143			924			149	182	474	155	178	642

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	41	642	23	15	410	7	30	40
Volume Left	41	0	0	15	0	0	15	11
Volume Right	0	0	23	0	0	7	14	28
cSH	1143	1700	1700	924	1700	1700	221	334
Volume to Capacity	0.04	0.38	0.01	0.02	0.24	0.00	0.14	0.12
Queue Length 95th (ft)	3	0	0	1	0	0	12	10
Control Delay (s)	8.3	0.0	0.0	9.0	0.0	0.0	23.9	17.2
Lane LOS	A			A			C	C
Approach Delay (s)	0.5			0.3			23.9	17.2
Approach LOS							C	C

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	38	591	27	28	377	6	22	2	29	10	2	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	642	29	30	410	7	24	2	32	11	2	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	416			672			1225	1202	642	1228	1225	410
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	416			672			1225	1202	642	1228	1225	410
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			97			83	99	93	92	99	96
cM capacity (veh/h)	1143			919			140	172	474	136	167	642

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	41	642	29	30	410	7	58	41
Volume Left	41	0	0	30	0	0	24	11
Volume Right	0	0	29	0	0	7	32	28
cSH	1143	1700	1700	919	1700	1700	230	301
Volume to Capacity	0.04	0.38	0.02	0.03	0.24	0.00	0.25	0.14
Queue Length 95th (ft)	3	0	0	3	0	0	24	12
Control Delay (s)	8.3	0.0	0.0	9.1	0.0	0.0	25.8	18.8
Lane LOS	A			A			D	C
Approach Delay (s)	0.5			0.6			25.8	18.8
Approach LOS							D	C

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	43.3%	ICU Level of Service	A	
Analysis Period (min)	15			

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Scenario Report

Scenario:	AM PEAK
Command:	Default Command
Volume:	AM PEAK
Geometry:	existing
Impact Fee:	Default Impact Fee
Trip Generation:	AM PEAK
Trip Distribution:	WEEKDAY
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Trip Generation Report

Forecast for AM PEAK

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	boarding	420.00	horses boarded	0.12	0.05	50	21	71	100.0
	Zone 1 Subtotal					50	21	71	100.0
TOTAL						50	21	71	100.0

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Trip Distribution Report

Percent Of Trips WEEKDAY

Zone	To Gates 1	2	3
1	30.0	5.0	65.0
2	0.0	0.0	0.0
4	0.0	0.0	0.0

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Turning Movement Report
AM PEAK

Volume	Northbound			Southbound			Eastbound			Westbound			Total
Type	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Volume
#1 Green Valley Road / Deer Valley													
Base	16	0	14	12	1	37	5	269	12	7	487	4	864
Added	6	1	14	0	3	0	0	0	15	33	0	0	72
Total	22	1	28	12	4	37	5	269	27	40	487	4	936

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Scenario Report

Scenario:	PM PEAK
Command:	Default Command
Volume:	PM PEAK
Geometry:	existing
Impact Fee:	Default Impact Fee
Trip Generation:	PM PEAK
Trip Distribution:	saturday
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Trip Generation Report

Forecast for PM PEAK

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	boarding	420.00	horses boarded	0.05	0.06	21	25	46	100.0
	Zone 1 Subtotal					21	25	46	100.0
TOTAL						21	25	46	100.0

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Trip Distribution Report

Percent Of Trips WEEKDAY

Zone	To Gates 1	2	3
1	30.0	5.0	65.0
2	0.0	0.0	0.0
4	0.0	0.0	0.0

existing plus project
THE SPRINGS EQUESTRIAN CENTER

Turning Movement Report
PM PEAK

Volume Type	Northbound Left	Thru	Right	Southbound Left	Thru	Right	Eastbound Left	Thru	Right	Westbound Left	Thru	Right	Total Volume
#1 Green Valley Road / Deer Valley													
Base	14	1	13	10	1	26	38	591	21	14	377	6	1112
Added	8	1	16	0	1	0	0	0	6	14	0	0	46
Total	22	2	29	10	2	26	38	591	27	28	377	6	1158

Kurt Stegen Consulting Arborist

Kurt Stegen
6299 Horseshoe Bar Road.
Loomis, California 95650
916-652-3840

March 7, 2012

Mr. Casey Feickert
TSD Engineering Inc.
31 Natoma Street
Suite #160
Folsom, CA 95630
Phone: 916 608-0707
Fax: 916 608-0701

RE: Proposed Oak Tree Mitigation Plan for the Springs Ranch Equestrian Center

Dear Casey Feickert,

According to Option A of the El Dorado County General Plan Policy 7.4.4.4., the Oak Canopy to be removed will be replaced at the ration of 1:1 as follows:

	Acres	Percent
Total Existing Oak Canopy	27.9	100.00%
Portion of Oak Canopy to remain	26.37	94.52%
Portion of Oak Canopy to be removed	1.53	5.48%
Total Property Acreage	146.42	
Percentage of Existing Oak Canopy		19.05%
Thus per Option A -- 10% of oak canopy can be removed and replaced at 1:1	1.53	5.48%
Remaining portion of oak canopy to be removed with 2:1 replacement	0	0.00%
Thus, for 2:1 replacement Acres*2=	0	0.00%
1:1 Replacement acreage	1.53	
Total Oak Replacement Area Required:	1.53	
Total Oak Replacement Area	1.53	

There are two Oak Canopy Area Options. Option 1 is 1.91 acres. Option 2 is 1.50 acres. Three hundred six Saplings are to be planted in these designated areas pursuant to the attached map (200 Sapling Trees per Acre times 1.53 acres = 306) (Also see legend in the attached map for option areas.)

Please call me should you have any questions.

Sincerely,

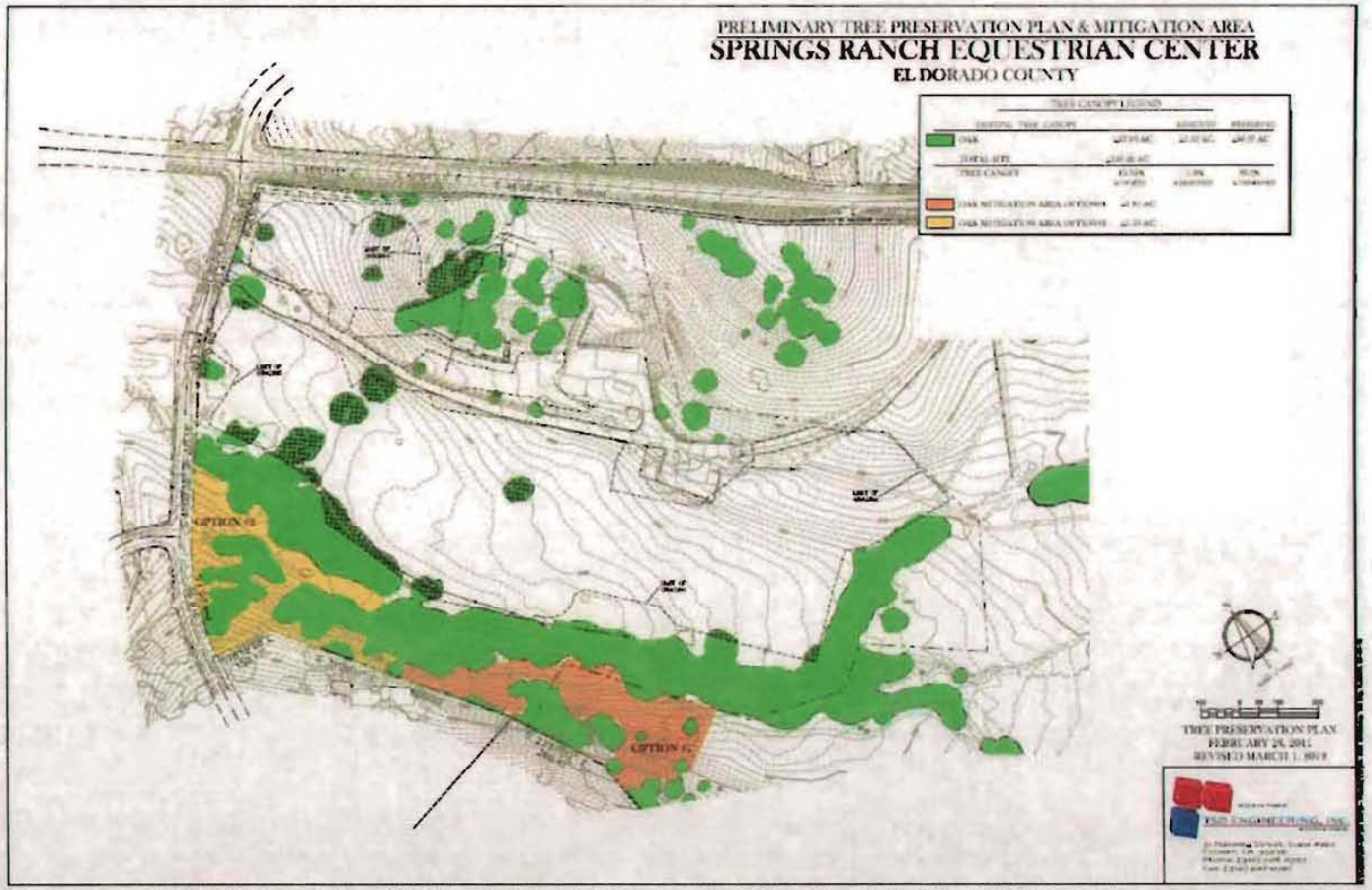
Kurt Stegen

Kurt Stegen,
Certified Arborist

PRELIMINARY TREE PRESERVATION PLAN & MITIGATION AREA

SPRINGS RANCH EQUESTRIAN CENTER

EL DORADO COUNTY



TREE PRESERVATION PLAN
FEBRUARY 28, 2011
REVISED MARCH 1, 2011

Certification of Performance

I, Kurt Stegen, Certify:

- That I have personally inspected the tree(s) and/or the property referred to in this report and have stated my findings accurately. The extent of the evaluation or appraisal is stated in the attached report and the Terms of Assignment;
- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;
- That the analysis, options and conclusions stated herein are my own and are based on current scientific procedures and facts;
- That my analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices;
- That no one provided significant professional assistance to me, except as indicated within the report;
- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a state licensed Tree Trimming Contractor (State License Number 494115), a Certified Arborist (ISA# WE-6356), and a member to the International Society of Arboriculture. I have been involved in the field of Arboriculture in a full time capacity for a period of more than twenty-five years.

Signed: Kurt Stegen

Date: March 7, 2012

SPRINGS RANCH EQUESTRIAN CENTER

PRELIMINARY HYDROLOGIC REPORT

November 6, 2013

Prepared For:

Essential Properties Group, INC
970 Reserce Drive, Building #180
Roseville, CA 95678

Prepared By:

TSD Engineering, Inc.
31 Natoma Street, Suite 160
Folsom, CA 95630

INTRODUCTION

This report presents hydrologic and hydraulic estimates and supporting calculations for the Springs Ranch Equestrian Center. The proposed project is located southeast of the intersection of Green Valley Road and Deer Valley Road approximately 4.5 miles from Cameron Park. A vicinity map showing the project location is included as Figure 1 in Appendix A. Out of the entire 146 acre site, only 46.3 acres are being developed as an Equestrian Center. The 46.3 acre site lies within the FEMA flood zone area "X" (area of minimal flooding). Please refer to Figure 2 in Appendix A.

SITE DESCRIPTION

The Springs Ranch Equestrian Center comprises approximately 46.3 acres of land. Currently, there is one house, two building and two storage structures located in the northwest corner of the property. Old Green Valley Road also runs through the northwest corner from Deer Valley Road to Green Valley Road. The site generally slopes toward a seasonal swale that runs along the south end of the property West toward Deer Valley Road at slopes varying from 2% to 20%. The ground elevations vary from 1150 feet at Green Valley Road to 1050 Near Howard Road at the south end of the property. Vegetation consists of open grassland, oak trees and a mixture of brush. The site is bounded by Green Valley Road to the North, Deer Valley Road to the West, Howard Drive to the South and open space to the East.

PROJECT DESCRIPTION

Springs Ranch is proposed to be developed as an Equestrian Center 46.3 acres in size consisting of two covered arenas, eight barns containing 420 stalls, a grass practice arena, a grass arena, a fenced arena, a dressage arena, drive isles, parking and landscaping. A majority of the site surface will remain "pervious" and minimal grading will be done to maintain the natural overland flow discharging into the existing natural swale. Even with very minimum contaminants, the project owner is proposing a 20 foot wide vegetative filter to be constructed to intercept runoff prior to being discharged to the natural swale. All drainage ultimately is conveyed to the South Fork of the American River.

EXISTING DRAINAGE

This portion of the report was generated to analyze the 100 year peak drainage flow rates for the existing watershed. The watershed for the project outfall is located to the west of the project site, near the intersection of Green Valley Road and Deer Valley Road. The mean annual precipitation for the basin is 26 inches and the 24 hour – 100 year depth is 5.261 inches (*El Dorado Rainfall, Goodridge, 1989).*

PROPOSED DRAINAGE

The on-site drainage system consists of overland release routes, earth swales and storm drains. Minimal grading and paving will be done to maintain the

natural topography and drainage of the project area. A majority of the area surface will remain "pervious" and a proposed 20 foot wide vegetative filter will be constructed between the developed area and the natural swale.

HYDROLOGY

Design runoff was calculated from the *County of El Dorado Drainage Manual,* dated March 14, 1995. More specifically the **Peak Discharge Method** – Section 2.5 was used to estimate both 10-year design flows and 100-year design flows. The post development catchment area and calculations can be seen in Appendix A of the Hydrology Report. Approximately 21.25 acres of the 46.3 acre project site will be graded and of that graded area only approximately 4 acres will be developed with impervious surface.

The total watershed area for this project site is approximately 62.5 acres. The total developed area of impervious surface of 4 acres represents approximately 6.5% of the total watershed area. The increase in runoff due to the small increase of impervious surfaces is minimal and is considered to be an insignificant increase. The peak discharge time of concentration for the proposed development is approximately one hour.

HYDRAULICS

This project will require minimal grading and will utilize the natural terrain for overland release. The project site surfaces are currently and will remain mostly pervious. Increase flow from the developed area will be insignificant.

WATER QUALITY

During construction and post construction the erosion control methods to be utilized will meet the Storm Water Prevention Plan requirements and any additional requirements stated in County of El Dorado Grading, Erosion and Sediment Control Ordinance. A 20 foot wide vegetative filter will be constructed between the developed area and the natural swale to intercept storm flows before runoff is discharged to the natural swale. Vegetative filter strips protect surface water bodies in a number of ways:

- They intercept surface water runoff and trap as much as 75 to 100 percent of the water's sediment.
- They capture nutrients in runoff, both through plant uptake and through adsorption to soil particles.
- They promote degradation and transformation of pollutants into less-toxic forms.
- They remove over 60 percent of certain pathogens from the runoff.

Additionally, absorbent bedding will be used in the horse stalls to filter animal waste and stalls will be cleaned at a minimum of twice a day. No animals will be pastured for extensive time periods.

CONCLUSIONS

1. Methods used to calculate storm runoff and various hydraulic characteristics for the project or in compliance with the *County of El Dorado Drainage Manual.*

2. The proposed project lies outside of a FEMA-designated Flood Zone or Special Flood Hazard Area.

3. 10-Year storm flows generated from onsite catchment area are conveyed through onsite overland flow, swales and storm drains.

4. All storm water runoff shall be treated by a vegetative filter prior to being discharged.

5. The 4 acres of impervious improvements represent 6.5% of the total watershed area, so the increase runoff from the site is minimal and considered insignificant.

6. The existing natural swale has more than enough capacity to handle the 100 year peak flow rate of 45 cfs.

APPENDIX

Vicinity Map

FEMA Exhibit

Quad Map

Mean Annual Rainfall Map

Design Rainfall Tables for El Dorado County

Overland Flow Characteristics

Runoff Curve Numbers

Runoff Coefficients

Peak Flow Calculations – 10 Year Event

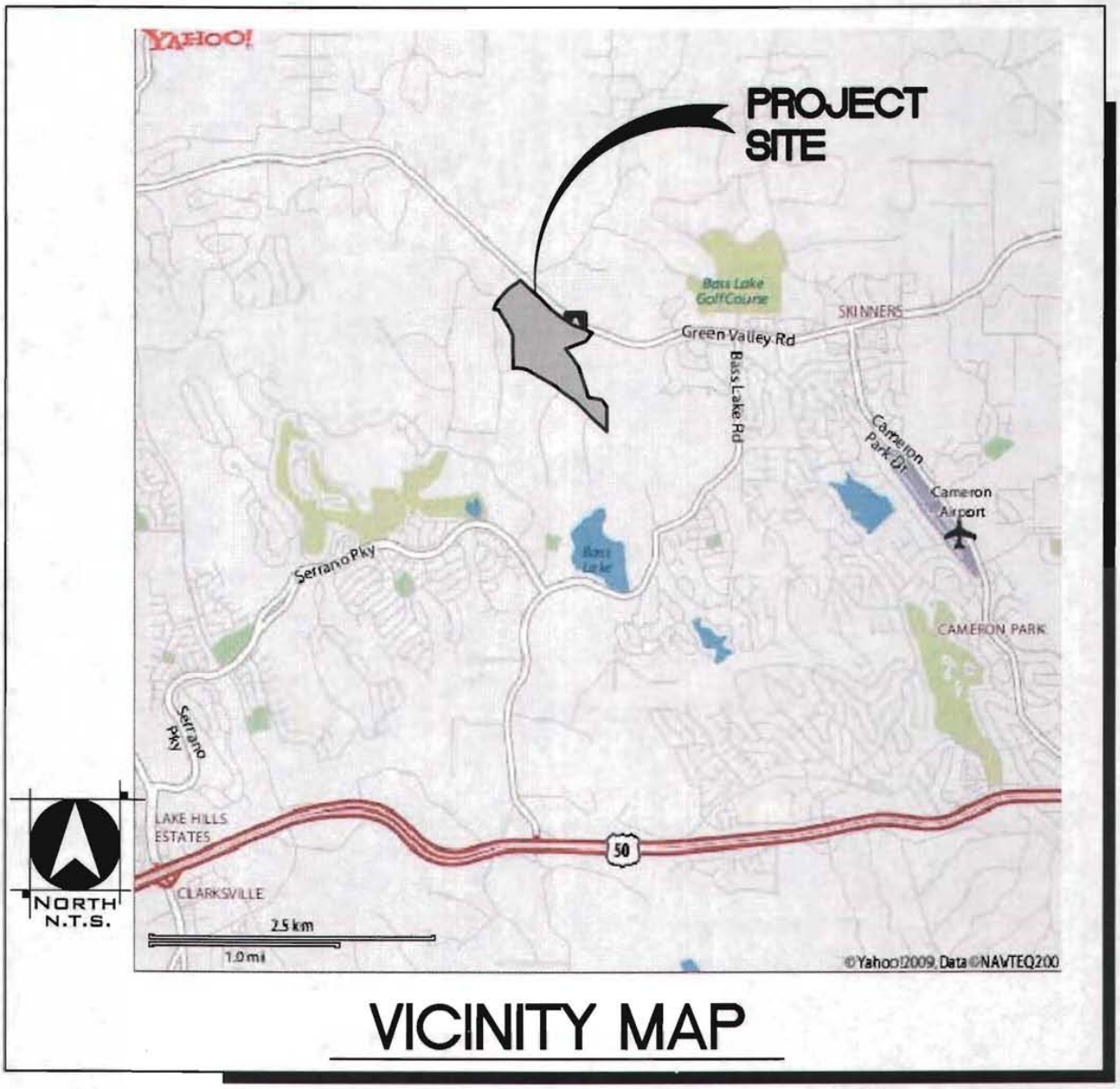
Peak Flow Calculations – 100 Year Event

Pre-Development Site Shed Map

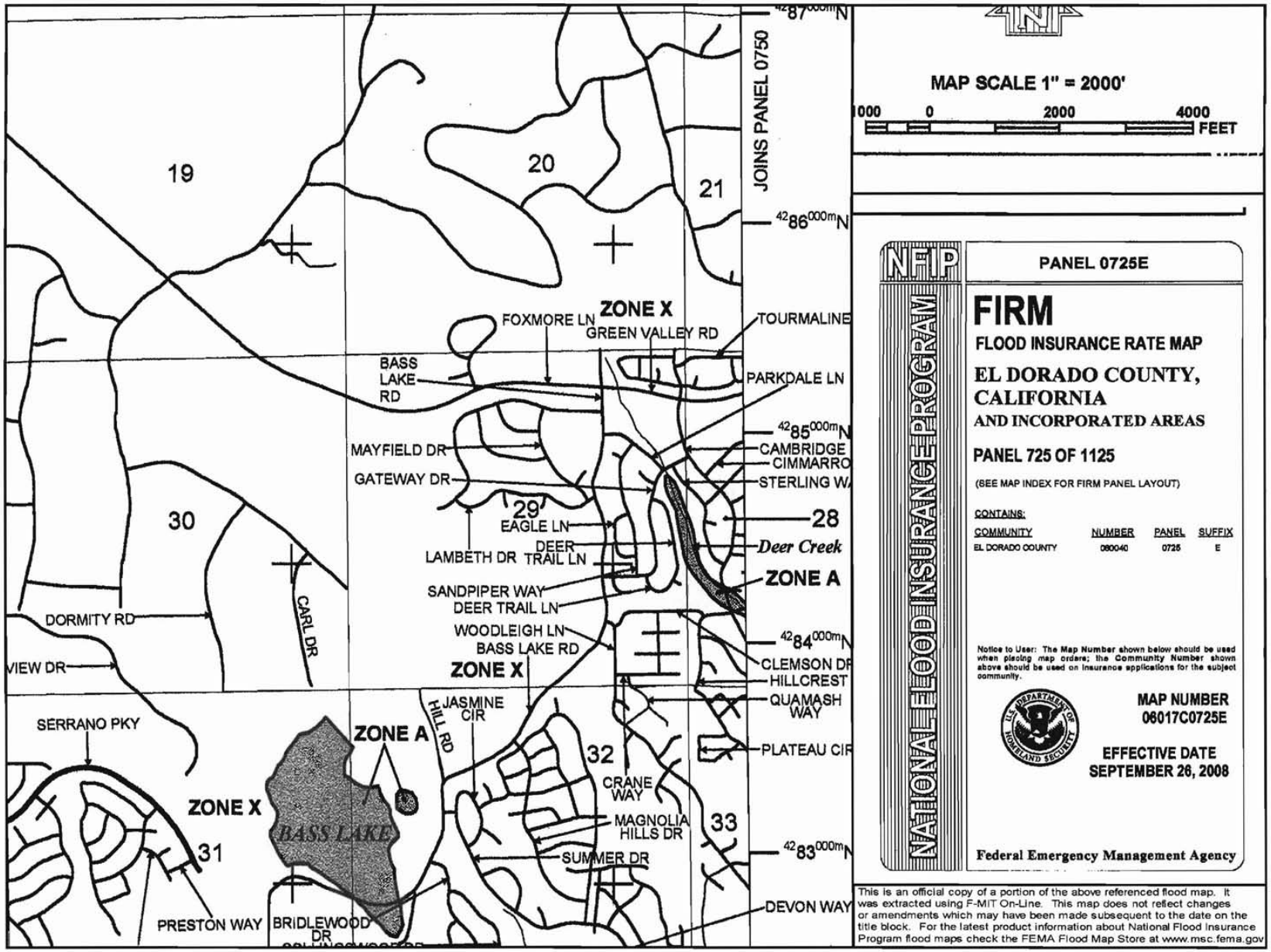
Post Construction Shed Map

Map Pocket – Developed Shed Map

FIGURE 1



VICINITY MAP


MAP SCALE 1" = 2000'
1000 0 2000 4000
FEET
NFIP
PANEL 0725E
FIRM
FLOOD INSURANCE RATE MAP
EL DORADO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 725 OF 1125
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
EL DORADO COUNTY 060040 0725 E
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.
MAP NUMBER
06017C0725E
EFFECTIVE DATE
SEPTEMBER 26, 2008
Federal Emergency Management Agency
NATIONAL FLOOD INSURANCE PROGRAM
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov
JOINS PANEL 0750
4287000mN
4286000mN
4285000mN
4284000mN
4283000mN
19
20
21
30
29
28
31
32
33
ZONE X
ZONE A
FOXMORE LN
GREEN VALLEY RD
TOURMALINE
BASS LAKE RD
PARKDALE LN
MAYFIELD DR
CAMBRIDGE
CIMMARRO
GATEWAY DR
STERLING W
EAGLE LN
DEER TRAIL LN
Deer Creek
LAMBETH DR
SANDPIPER WAY
DEER TRAIL LN
WOODLEIGH LN
BASS LAKE RD
CLEMSON DR
HILLCREST
QUAMASH WAY
PLATEAU CIR
DORMITY RD
VIEW DR
CARL DR
SERRANO PKY
JASMINE CIR
HILL RD
CRANE WAY
MAGNOLIA HILLS DR
SUMMER DR
BASS LAKE
PRESTON WAY
BRIDLEWOOD DR
DEVON WAY

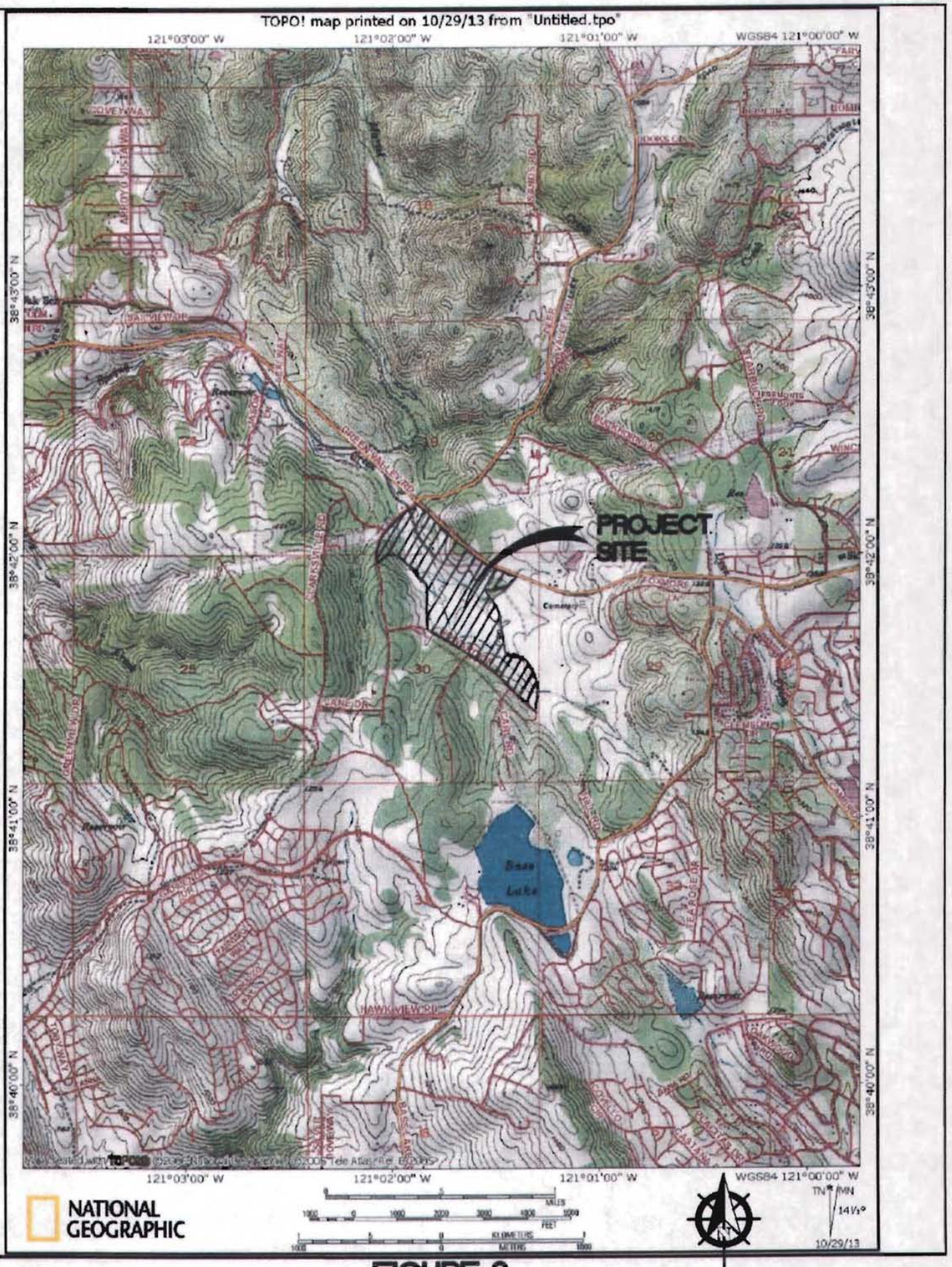


FIGURE 3
TOPO


46
50
54
56
62
66
42
38
34
30
26
22
30
34
38
Auburn
Pilot Hill Grange
FOLSOM LAKE STATE RECREATION AREA
Project SITE
Mormon Island Dam
Placerville
Diamond Springs
El Dorado
Shingle Springs
Old Fort Jim
Balderson
Somerset
Fair Play
Coyoteville
Latrobe
Airways Signal Transmitter
Shenandoah Valley
EL DORADO COUNTY

El Dorado Design Rainfall

Rainfall Depth in Inches for Return Period = 2.33 years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hrs	3 Hrs	6 Hrs	12 Hrs	24 Hrs
20	0.113	0.162	0.200	0.286	0.410	0.587	0.723	1.035	1.481	2.120
22	0.120	0.172	0.212	0.304	0.435	0.623	0.768	1.099	1.572	2.249
24	0.128	0.183	0.225	0.322	0.461	0.660	0.814	1.165	1.667	2.385
26	0.135	0.193	0.238	0.341	0.488	0.698	0.860	1.231	1.762	2.521
28	0.142	0.203	0.251	0.359	0.514	0.735	0.907	1.298	1.857	2.657
30	0.149	0.214	0.264	0.377	0.540	0.773	0.953	1.364	1.952	2.793
32	0.157	0.224	0.277	0.396	0.566	0.810	1.000	1.430	2.047	2.929
34	0.164	0.235	0.289	0.414	0.593	0.848	1.046	1.497	2.142	3.065
36	0.171	0.245	0.302	0.433	0.619	0.886	1.092	1.563	2.237	3.200
38	0.179	0.256	0.315	0.451	0.645	0.923	1.139	1.629	2.332	3.336
40	0.186	0.266	0.328	0.469	0.671	0.961	1.185	1.696	2.426	3.472
42	0.193	0.276	0.341	0.488	0.698	0.998	1.231	1.762	2.521	3.608
44	0.200	0.287	0.354	0.506	0.724	1.036	1.278	1.828	2.616	3.744
46	0.208	0.297	0.366	0.524	0.750	1.074	1.324	1.895	2.711	3.880
48	0.215	0.308	0.379	0.543	0.777	1.111	1.370	1.961	2.806	4.016
50	0.222	0.318	0.392	0.561	0.803	1.149	1.417	2.027	2.901	4.152
52	0.229	0.328	0.405	0.579	0.829	1.186	1.463	2.094	2.996	4.287
54	0.237	0.339	0.418	0.598	0.855	1.224	1.510	2.160	3.091	4.423
56	0.244	0.349	0.431	0.616	0.882	1.262	1.556	2.226	3.186	4.559
58	0.251	0.360	0.443	0.634	0.908	1.299	1.602	2.293	3.281	4.695
60	0.259	0.370	0.456	0.653	0.934	1.337	1.649	2.359	3.376	4.831
62	0.266	0.380	0.469	0.671	0.960	1.374	1.695	2.425	3.471	4.967
64	0.273	0.391	0.482	0.690	0.987	1.412	1.741	2.492	3.566	5.103
66	0.280	0.401	0.495	0.708	1.013	1.450	1.788	2.558	3.661	5.238
68	0.288	0.412	0.508	0.726	1.039	1.487	1.834	2.625	3.756	5.374
70	0.295	0.422	0.520	0.745	1.066	1.525	1.880	2.691	3.851	5.510
72	0.302	0.432	0.533	0.763	1.092	1.562	1.927	2.757	3.946	5.646
74	0.309	0.443	0.546	0.781	1.118	1.600	1.973	2.824	4.040	5.782
76	0.317	0.453	0.559	0.800	1.144	1.638	2.020	2.890	4.135	5.918
78	0.324	0.464	0.572	0.818	1.171	1.675	2.066	2.956	4.230	6.054
80	0.331	0.474	0.585	0.836	1.197	1.713	2.112	3.023	4.325	6.189
82	0.339	0.484	0.597	0.855	1.223	1.750	2.159	3.089	4.420	6.325
84	0.346	0.495	0.610	0.873	1.250	1.788	2.205	3.155	4.515	6.461
86	0.353	0.505	0.623	0.892	1.276	1.826	2.251	3.222	4.610	6.597
88	0.360	0.516	0.636	0.910	1.302	1.863	2.298	3.288	4.705	6.733
90	0.368	0.526	0.649	0.928	1.328	1.901	2.344	3.354	4.800	6.869

Source: Design Rainfall Tables for El Dorado County, prepared by Jim Goodridge, July 29, 1989

El Dorado Design Rainfall

Rainfall Depth in Inches for Return Period = 10 years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hrs	3 Hrs	6 Hrs	12 Hrs	24 Hrs
20	0.167	0.239	0.295	0.422	0.603	0.863	1.065	1.524	2.180	3.120
22	0.177	0.254	0.313	0.448	0.640	0.916	1.130	1.617	2.314	3.311
24	0.188	0.269	0.332	0.475	0.679	0.972	1.198	1.715	2.454	3.511
26	0.199	0.284	0.350	0.502	0.718	1.027	1.267	1.812	2.594	3.711
28	0.209	0.300	0.369	0.529	0.756	1.082	1.335	1.910	2.733	3.911
30	0.220	0.315	0.388	0.556	0.795	1.138	1.403	2.008	2.873	4.111
32	0.231	0.330	0.407	0.583	0.834	1.193	1.471	2.105	3.013	4.311
34	0.241	0.345	0.426	0.610	0.872	1.248	1.540	2.203	3.153	4.511
36	0.252	0.361	0.445	0.637	0.911	1.304	1.608	2.301	3.292	4.711
38	0.263	0.376	0.464	0.664	0.950	1.359	1.676	2.398	3.432	4.911
40	0.274	0.391	0.483	0.691	0.988	1.414	1.744	2.496	3.572	5.111
42	0.284	0.407	0.502	0.718	1.027	1.470	1.813	2.594	3.712	5.311
44	0.295	0.422	0.520	0.745	1.066	1.525	1.881	2.691	3.851	5.511
46	0.306	0.437	0.539	0.772	1.104	1.580	1.949	2.789	3.991	5.711
48	0.316	0.453	0.558	0.799	1.143	1.636	2.017	2.887	4.131	5.911
50	0.327	0.468	0.577	0.826	1.182	1.691	2.086	2.984	4.271	6.111
52	0.338	0.483	0.596	0.853	1.221	1.747	2.154	3.082	4.410	6.311
54	0.348	0.499	0.615	0.880	1.259	1.802	2.222	3.180	4.550	6.511
56	0.359	0.514	0.634	0.907	1.298	1.857	2.290	3.277	4.690	6.711
58	0.370	0.529	0.653	0.934	1.337	1.913	2.359	3.375	4.830	6.911
60	0.381	0.545	0.672	0.961	1.375	1.968	2.427	3.473	4.969	7.111
62	0.391	0.560	0.690	0.988	1.414	2.023	2.495	3.570	5.109	7.311
64	0.402	0.575	0.709	1.015	1.453	2.079	2.563	3.668	5.249	7.511
66	0.413	0.591	0.728	1.042	1.491	2.134	2.632	3.766	5.389	7.711
68	0.423	0.606	0.747	1.069	1.530	2.189	2.700	3.863	5.528	7.911
70	0.434	0.621	0.766	1.096	1.569	2.245	2.768	3.961	5.668	8.111
72	0.445	0.636	0.785	1.123	1.607	2.300	2.836	4.059	5.808	8.311
74	0.455	0.652	0.804	1.150	1.646	2.355	2.905	4.156	5.948	8.511
76	0.466	0.667	0.823	1.177	1.685	2.411	2.973	4.254	6.087	8.711
78	0.477	0.682	0.842	1.204	1.723	2.466	3.041	4.352	6.227	8.911
80	0.488	0.698	0.860	1.231	1.762	2.521	3.109	4.449	6.367	9.111
82	0.498	0.713	0.879	1.258	1.801	2.577	3.178	4.547	6.507	9.311
84	0.509	0.728	0.898	1.285	1.839	2.632	3.246	4.645	6.646	9.511
86	0.520	0.744	0.917	1.312	1.878	2.687	3.314	4.742	6.786	9.711
88	0.530	0.759	0.936	1.339	1.917	2.743	3.382	4.840	6.926	9.911
90	0.541	0.774	0.955	1.366	1.955	2.798	3.451	4.938	7.066	10.111

Source: Design Rainfall Tables for El Dorado County, prepared by Jim Goodridge, July 29, 1989

El Dorado Design Rainfall

Rainfall Depth in Inches for Return Period = 100 years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hrs	3 Hrs	6 Hrs	12 Hrs	24 Hrs
20	0.237	0.339	0.418	0.598	0.855	1.224	1.509	2.160	3.091	4.423
22	0.251	0.359	0.443	0.634	0.908	1.299	1.602	2.292	3.280	4.694
24	0.266	0.381	0.470	0.673	0.963	1.377	1.699	2.431	3.478	4.977
26	0.282	0.403	0.497	0.711	1.017	1.456	1.795	2.569	3.676	5.261
28	0.297	0.425	0.524	0.749	1.072	1.534	1.892	2.708	3.874	5.544
30	0.312	0.446	0.550	0.788	1.127	1.613	1.989	2.846	4.073	5.828
32	0.327	0.468	0.577	0.826	1.182	1.691	2.086	2.984	4.271	6.111
34	0.342	0.490	0.604	0.864	1.237	1.770	2.182	3.123	4.469	6.395
36	0.357	0.511	0.631	0.903	1.291	1.848	2.279	3.261	4.667	6.678
38	0.373	0.533	0.657	0.941	1.346	1.927	2.376	3.400	4.865	6.962
40	0.388	0.555	0.684	0.979	1.401	2.005	2.473	3.538	5.063	7.245
42	0.403	0.577	0.711	1.017	1.456	2.083	2.569	3.677	5.261	7.529
44	0.418	0.598	0.738	1.056	1.511	2.162	2.666	3.815	5.459	7.812
46	0.433	0.620	0.765	1.094	1.566	2.240	2.763	3.954	5.657	8.096
48	0.448	0.642	0.791	1.132	1.620	2.319	2.860	4.092	5.856	8.379
50	0.464	0.663	0.818	1.171	1.675	2.397	2.956	4.230	6.054	8.663
52	0.479	0.685	0.845	1.209	1.730	2.476	3.053	4.369	6.252	8.946
54	0.494	0.707	0.872	1.247	1.785	2.554	3.150	4.507	6.450	9.230
56	0.509	0.729	0.898	1.286	1.840	2.633	3.247	4.646	6.648	9.513
58	0.524	0.750	0.925	1.324	1.895	2.711	3.343	4.784	6.846	9.797
60	0.539	0.772	0.952	1.362	1.949	2.790	3.440	4.923	7.044	10.080
62	0.555	0.794	0.979	1.401	2.004	2.868	3.537	5.061	7.242	10.364
64	0.570	0.815	1.006	1.439	2.059	2.946	3.634	5.200	7.440	10.647
66	0.585	0.837	1.032	1.477	2.114	3.025	3.730	5.338	7.639	10.931
68	0.600	0.859	1.059	1.516	2.169	3.103	3.827	5.476	7.837	11.214
70	0.615	0.881	1.086	1.544	2.223	3.182	3.924	5.615	8.035	11.498
72	0.630	0.902	1.113	1.592	2.278	3.260	4.021	5.753	8.233	11.781
74	0.646	0.924	1.139	1.630	2.333	3.339	4.117	5.892	8.431	12.064
76	0.661	0.946	1.166	1.669	2.388	3.417	4.214	6.030	8.629	12.348
78	0.676	0.967	1.193	1.707	2.443	3.496	4.311	6.169	8.827	12.631
80	0.691	0.989	1.220	1.745	2.498	3.574	4.408	6.307	9.025	12.915
82	0.706	1.011	1.246	1.784	2.552	3.652	4.504	6.446	9.223	13.198
84	0.722	1.032	1.273	1.822	2.607	3.731	4.601	6.584	9.421	13.482
86	0.737	1.054	1.300	1.860	2.662	3.809	4.698	6.722	9.620	13.765
88	0.752	1.076	1.327	1.899	2.717	3.888	4.795	6.861	9.818	14.049
90	0.767	1.098	1.354	1.937	2.772	3.966	4.891	6.999	10.016	14.332

Source: Design Rainfall Tables for El Dorado County, prepared by Jim Goodridge, July 29, 1989

Table 2.4.3 Overland-flow Roughness Coefficients
(Source: SCS, 1986)

Surface description (1)	Overland flow *n* (2)
Smooth surfaces (concrete, asphalt, gravel, or bare soil	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover > 20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses	0.24
Bermuda	0.41
Range (natural)	0.13
Woods:	
* Light underbrush	0.40
Dense underbrush	0.80

PRE DEVELOPMENT

Urban Hydrology for Small Watersheds, US Department of Agriculture, Soil Conservation Service - Technical Release 55

Table 2-2c.—Runoff curve numbers for other agricultural lands[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing.[2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element.[3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	[4]30	48	65	73
Woods—grass combination (orchard or tree farm).[5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods.[6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	[4]30	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

Post Development

Pre Development

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Poor:* <50% ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: >75% ground cover and lightly or only occasionally grazed.

[3]*Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

[4]Actual curve number is less than 30; use CN = 30 for runoff computations.

[5]CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

[6]*Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Fig. 2.5.4 Runoff Coefficients for 100-yr Event below 1,640'

(SCS type I storm)

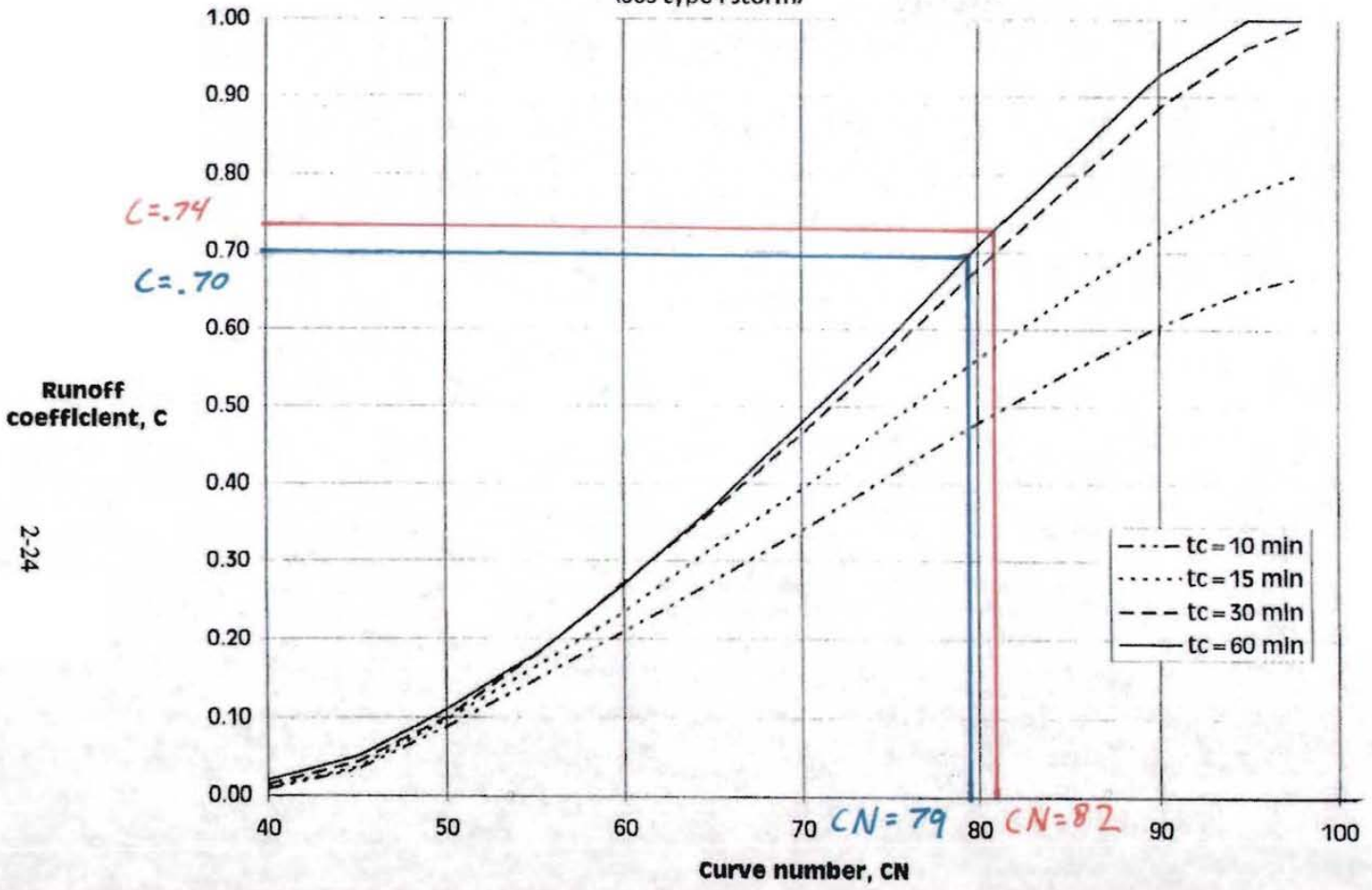
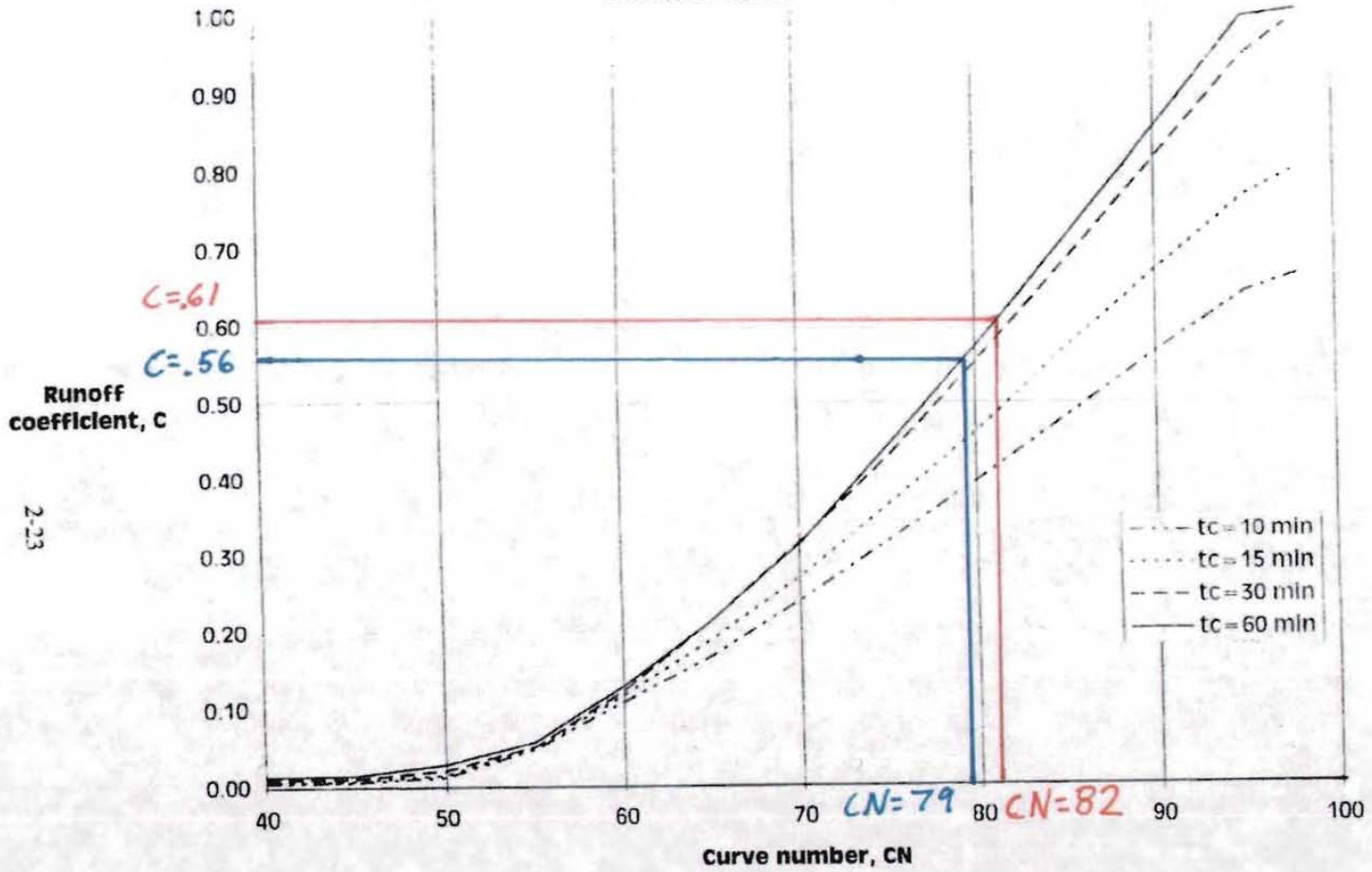


Fig. 2.5.3 Runoff Coefficients for 10-yr Event below 1,640'

(SCS type I storm)



Peak Flow Method – 10 Year Event

$Q_{10} = C_{10} i_{10} A$

Total Catchment Area = 62.5 acres

Project Area = 46.3 acres

Impervious Surface (Pre Development) = 1 acre

Impervious Surface (Post Development) = 4 acres

C_{10} = .56 (Pre Development) – See Appendix A Fig. 2.5.3

C_{10} = .61 (Post Development) – See Appendix A Fig. 2.5.3

Time of Concentration (t_c):

1. Sheet Flow:

$$T = \frac{.007(nl)^{0.8}}{p_2^{0.5} S^{.4}}$$

n = .40 (Light Underbrush – See Appendix A Table 2.4.3)

l = 300 ft.

P_2 = 2.521 in. (2 Yr – 24 hr. Rainfall Depth, *County of El Dorado Drainage Manual)*

S = 1 ft. / ft.

Therefore, T = .54 hrs.

2. Shallow Concentrated Flow:

$$V = 16.1345\sqrt{S}$$

$$T = \frac{l}{V}$$

S = .08
L = 625 ft.
Therefore V = 4.56 ft. / sec.
T = .04 hrs.

3. Channel Flow:
   - Assumed Trapezoidal Channel with 10 ft. base, 1:1 side slopes and depth of 3ft.

$$V = \frac{K_n}{n} R^{2/3} S^{1/2}$$

$$T = \frac{l}{V}$$

$K_n = 1.486$
n = .045 (See table 2.4.3, *County of El Dorado Drainage Manual)*
R = 2.11
S = .02

Therefore, V = 7.7 ft. / sec.
T = .09 hrs.

t_c = T(Sheet Flow) + T(Shallow Concentrated Flow) + T(Channel Flow)

t_c = .67 hrs. (Rounded up to 1 hour per *County of El Dorado Drainage Manual)*

i_{10} = .718 in. / hr. (See Appendix A, *Design Rainfall tables for El Dorado County)*

Pre Development:

Q = (.56)(.718)(62.5) = 25 cfs

Post Development:

Q = (.61)(.718)(62.5) = 27 cfs

Peak Flow Method – 100 Year Event

$Q_{100} = C_{100} i_{100} A$

Total Catchment Area = 62.5 acres

Project Area = 46.3 acres

Impervious Surface (Pre Development) = 1 acre

Impervious Surface (Post Development) = 4 acres

C_{100} = .70 (Pre Development) – See Appendix A Fig. 2.5.3

C_{100} = .74 (Post Development) – See Appendix A Fig. 2.5.3

Time of Concentration (t_c):

4. Sheet Flow:

$$T = \frac{.007(nl)^{0.8}}{p_2^{0.5} S^{.4}}$$

n = .40 (Light Underbrush – See Appendix A Table 2.4.3)

l = 300 ft.

P_2 = 2.521 in. (2 Yr – 24 hr. Rainfall Depth, *County of El Dorado Drainage Manual)*

S = 1 ft. / ft.

Therefore, T = .54 hrs.

5. Shallow Concentrated Flow:

$$V = 16.1345\sqrt{S}$$

$$T = \frac{l}{V}$$

S = .08
L = 625 ft.
Therefore V = 4.56 ft. / sec.
T = .04 hrs.

6. Channel Flow:
   - Assumed Trapezoidal Channel with 10 ft. base, 1:1 side slopes and depth of 3ft.

$$V = \frac{K_n}{n} R^{2/3} S^{1/2}$$

$$T = \frac{l}{V}$$

$K_n = 1.486$
n = .045 (See table 2.4.3, *County of El Dorado Drainage Manual)*
R = 2.11
S = .02

Therefore, V = 7.7 ft. / sec.
T = .09 hrs.

t_c = T(Sheet Flow) + T(Shallow Concentrated Flow) + T(Channel Flow)

t_c = .67 hrs. (Rounded up to 1 hour per *County of El Dorado Drainage Manual)*

i_{100} = 1.017 in. / hr. (See Appendix A, *Design Rainfall tables for El Dorado County)*

Pre Development:

Q = (.70)(1.017)(62.5) = 44 cfs

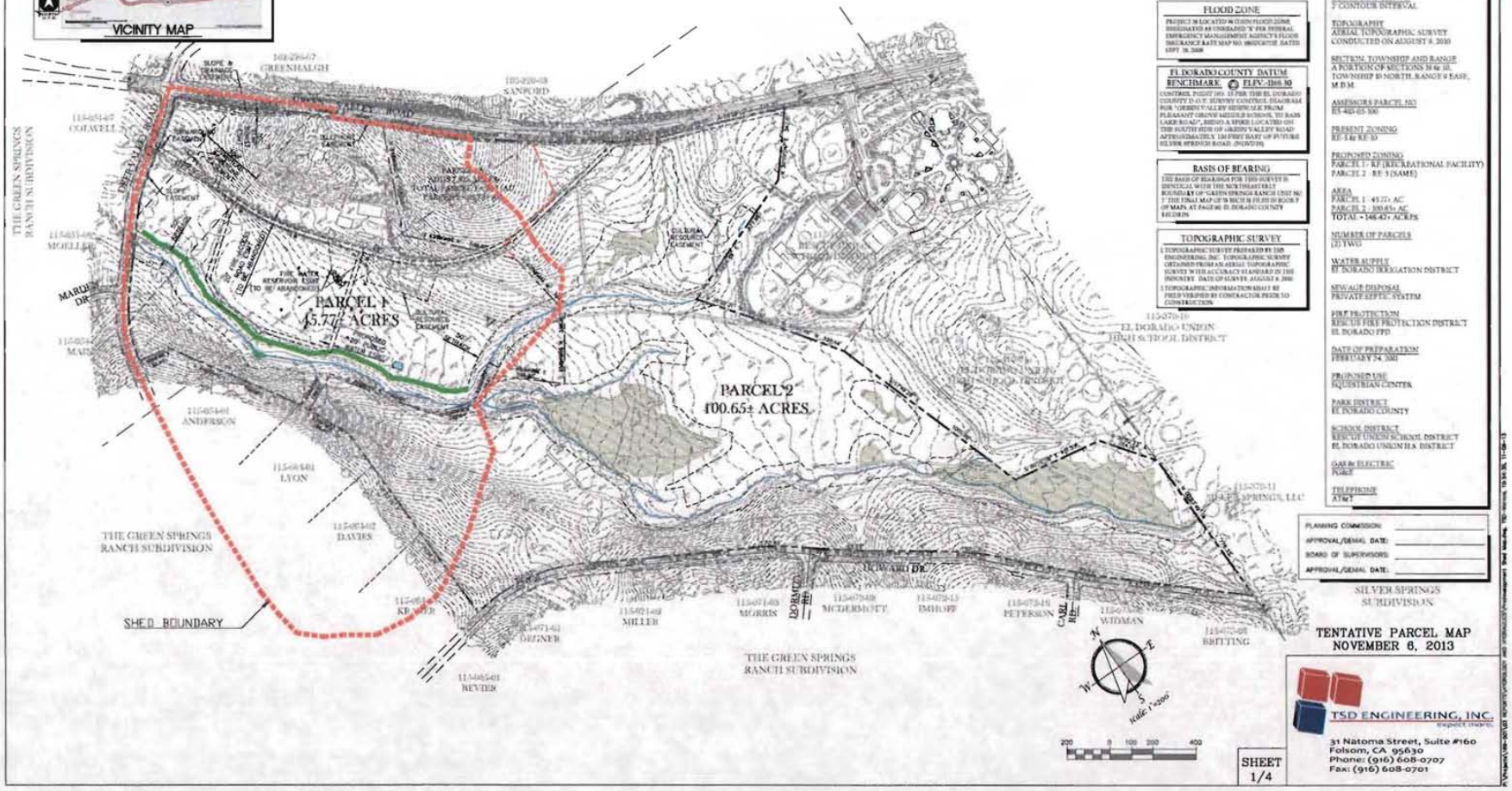
Post Development:

Q = (.74)(1.017)(62.5) = 47 cfs

TENTATIVE PARCEL MAP

ESSENTIAL PROPERTIES GROUP, INC.
2400 GREEN VALLEY ROAD

RESCUE, CALIFORNIA 95672
APN 115-410-05-100



FLOOD ZONE

PROJECT IS LOCATED IN ZONE [illegible] FLOOD ZONE, DESIGNATED AS UNSHADED "X" PER FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP NO. [illegible] DATED SEPT. 26, 2008

EL DORADO COUNTY DATUM

BENCHMARK ELEV.=1269.30

CONTROL POINT 205 IS PER THE EL DORADO COUNTY D.O.T. SURVEY CONTROL DIAGRAM FOR "GREEN VALLEY HIGH/SCHOOL FROM PLEASANT GROVE MIDDLE SCHOOL TO BASS LAKE ROAD", BEING A SPIKE LOCATED ON THE SOUTH SIDE OF GREEN VALLEY ROAD APPROXIMATELY 130 FEET EAST OF FUTURE SILVER SPRINGS ROAD. (NGVD'29)

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS IDENTICAL WITH THE NORTHEASTERLY BOUNDARY OF "GREEN SPRINGS RANCH UNIT NO. 1" THE FINAL MAP OF WHICH IS FILED IN BOOK J OF MAPS AT PAGE 80, EL DORADO COUNTY RECORDS

TOPOGRAPHIC SURVEY

1. TOPOGRAPHIC SURVEY PREPARED BY TSD ENGINEERING, INC. TOPOGRAPHIC SURVEY OBTAINED FROM AN AERIAL TOPOGRAPHIC SURVEY WITH AN ACCURACY STANDARD IN THE INDUSTRY. DATE OF SURVEY: AUGUST 9, 2010
2. TOPOGRAPHIC INFORMATION MAY BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION

PROJECT SUMMARY

OWNER/DEVELOPER/APPLICANT
ESSENTIAL PROPERTIES GROUP, INC.
630 RESERVE DRIVE, BUILDING #380
ROSEVILLE, CA 95678
ATTN: DENNIS GRAHAM
dennis.graham@headquarters1.com

ENGINEER
TSD ENGINEERING, INC.
31 NATOMA STREET, SUITE 160
FOLSOM, CA 95630
ATTN: CASEY FITZGERET
chris.kerr@tsdeng.com

SCALE
1" = 200'

CONTOUR INTERVAL
2' CONTOUR INTERVAL

TOPOGRAPHY
AERIAL TOPOGRAPHIC SURVEY CONDUCTED ON AUGUST 9, 2010

SECTION, TOWNSHIP AND RANGE
A PORTION OF SECTIONS 29 & 30, TOWNSHIP 10 NORTH, RANGE 9 EAST, M.D.M.

ASSESSORS PARCEL NO.
115-410-05-100

PRESENT ZONING
RE-5 & RE-10

PROPOSED ZONING
PARCEL 1 - RF (RECREATIONAL FACILITY)
PARCEL 2 - RE-5 (SAME)

AREA
PARCEL 1 - 45.77± AC
PARCEL 2 - 100.65± AC
TOTAL - 146.42± ACRES

NUMBER OF PARCELS
(2) TWO

WATER SUPPLY
EL DORADO IRRIGATION DISTRICT

SEWAGE DISPOSAL
PRIVATE SEPTIC SYSTEM

FIRE PROTECTION
RESCUE FIRE PROTECTION DISTRICT
EL DORADO FPD

DATE OF PREPARATION
FEBRUARY 24, 2010

PROPOSED USE
EQUESTRIAN CENTER

PARK DISTRICT
EL DORADO COUNTY

SCHOOL DISTRICT
RESCUE UNION SCHOOL DISTRICT
EL DORADO UNION H.S. DISTRICT

GAS & ELECTRIC
PG&E

TELEPHONE
AT&T

PLANNING COMMISSION:
APPROVAL/DENIAL DATE: _____
BOARD OF SUPERVISORS:
APPROVAL/DENIAL DATE: _____

TENTATIVE PARCEL MAP
NOVEMBER 6, 2013

TSD ENGINEERING, INC.
civil engineers
31 Natoma Street, Suite #160
Folsom, CA 95630
Phone: (916) 608-0707
Fax: (916) 608-0701

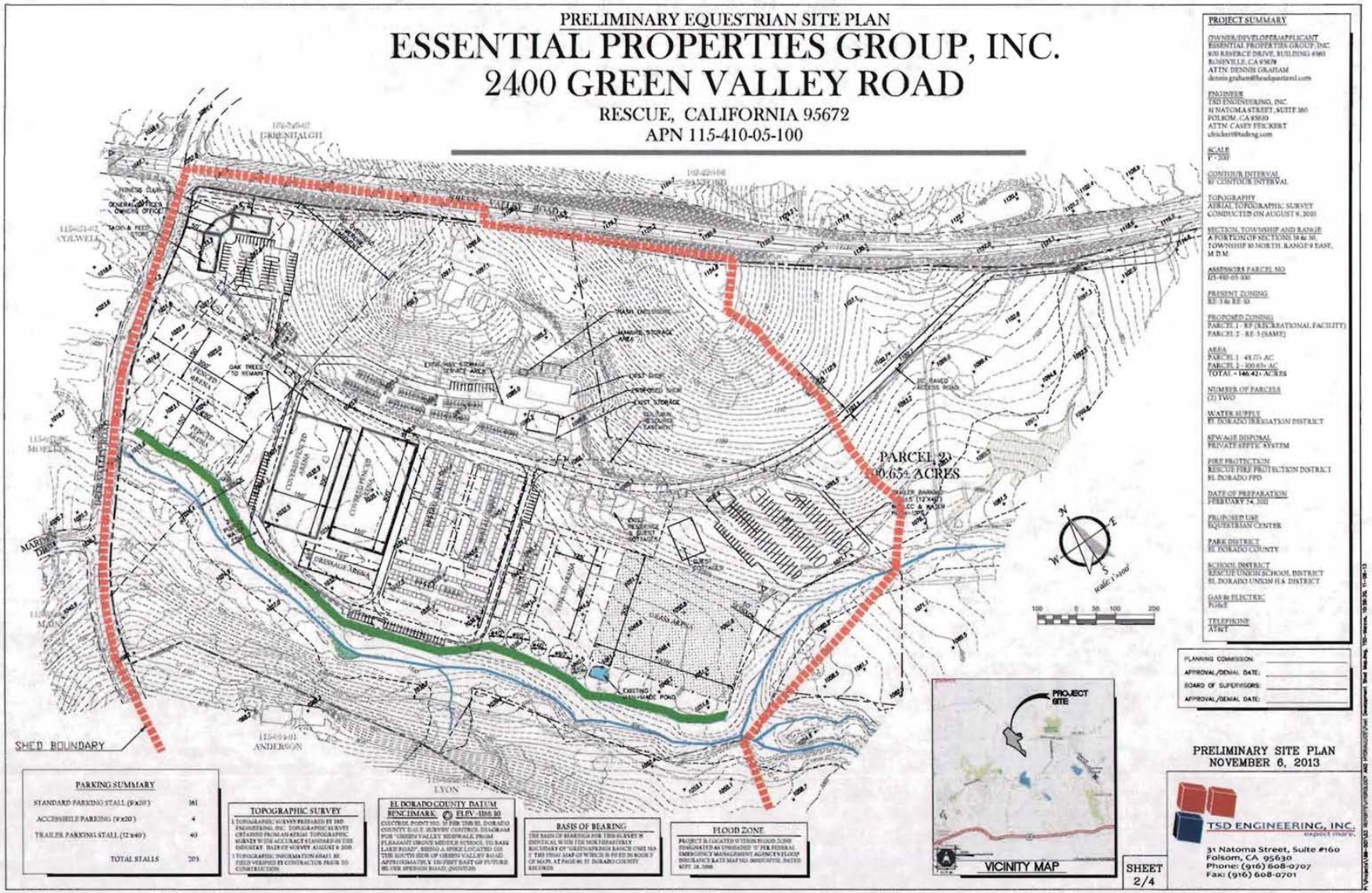
SHEET 1/4

PRELIMINARY EQUESTRIAN SITE PLAN

ESSENTIAL PROPERTIES GROUP, INC.
2400 GREEN VALLEY ROAD

RESCUE, CALIFORNIA 95672

APN 115-410-05-100



PROJECT SUMMARY

OWNER/DEVELOPER/APPLICANT
ESSENTIAL PROPERTIES GROUP, INC.
970 REVERCE DRIVE, BUILDING #360
ROSEVILLE, CA 95678
ATTN: DENNIS GRAHAM
dennis.graham@headquarters1.com

ENGINEER
TSD ENGINEERING, INC.
41 NATOMA STREET, SUITE 160
FOLSOM, CA 95630
ATTN: CASEY FECKERT
cfeckert@tsdeng.com

SCALE
1" = 200'

CONTOUR INTERVAL
10' CONTOUR INTERVAL

TOPOGRAPHY
AERIAL TOPOGRAPHIC SURVEY
CONDUCTED ON AUGUST 9, 2010

SECTION, TOWNSHIP AND RANGE
A PORTION OF SECTIONS 30 & 31, TOWNSHIP 10 NORTH, RANGE 9 EAST, M.D.M.

ASSESSORS PARCEL NO
115-410-05-100

PRESENT ZONING
RE-5 & RE-10

PROPOSED ZONING
PARCEL 1 - RP (RECREATIONAL FACILITY)
PARCEL 2 - RE-5 (SAME)

AREA
PARCEL 1 - 45.77± AC
PARCEL 2 - 100.65± AC
TOTAL = 146.42± ACRES

NUMBER OF PARCELS
(2) TWO

WATER SUPPLY
EL DORADO IRRIGATION DISTRICT

SEWAGE DISPOSAL
PRIVATE SEPTIC SYSTEM

FIRE PROTECTION
RESCUE FIRE PROTECTION DISTRICT
EL DORADO FPD

DATE OF PREPARATION
FEBRUARY 24, 2011

PROPOSED USE
EQUESTRIAN CENTER

PARK DISTRICT
EL DORADO COUNTY

SCHOOL DISTRICT
RESCUE UNION SCHOOL DISTRICT
EL DORADO UNION H.S. DISTRICT

GAS & ELECTRIC
PG&E

TELEPHONE
AT&T

PLANNING COMMISSION:
APPROVAL/DENIAL DATE:
BOARD OF SUPERVISORS:
APPROVAL/DENIAL DATE:

PARKING SUMMARY

STANDARD PARKING STALL (9'x20')	161
ACCESSIBLE PARKING (9'x20')	4
TRAILER PARKING STALL (12'x40')	40
TOTAL STALLS	205

TOPOGRAPHIC SURVEY

1. TOPOGRAPHIC SURVEY PREPARED BY TSD ENGINEERING, INC. TOPOGRAPHIC SURVEY OBTAINED FROM AN AERIAL TOPOGRAPHIC SURVEY WITH ACCURACY STANDARD IN THE INDUSTRY. DATE OF SURVEY AUGUST 9, 2010.
2. TOPOGRAPHIC INFORMATION SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.

EL DORADO COUNTY DATUM

BENCHMARK: ELEV - 1186.10

CONTROL POINT NO. 10 PER THE EL DORADO COUNTY D.O.T. SURVEY CONTROL DIAGRAM FOR "GREEN VALLEY HIGHWALK FROM PLEASANT UNION MIDDLE SCHOOL TO BASS LAKE ROAD", BEING A SPIKE LOCATED ON THE SOUTH SIDE OF GREEN VALLEY ROAD APPROXIMATELY 150 FEET EAST OF FUTURE SILVER SPRINGS ROAD. (NGVD'29)

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS IDENTICAL WITH THE NORTHEASTERLY BOUNDARY OF "GREENSPRINGS RANCH UNIT NO. 1" THE 1950 MAP OF WHICH IS FILED IN BOOK F OF MAPS, AT PAGE 66 ET. EL DORADO COUNTY RECORDS.

FLOOD ZONE

PROJECT IS LOCATED WITHIN FLOOD ZONE X (UNSHADED) PER FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP NO. 06017C0705E, DATED SEPT. 26, 2008.

PRELIMINARY SITE PLAN
NOVEMBER 6, 2013

TSD ENGINEERING, INC.
41 Natoma Street, Suite #160
Folsom, CA 95630
Phone: (916) 608-0707
Fax: (916) 608-0701

SHEET 2/4

ATTACHMENT 15

THE GREEN SPRINGS CEMETERY,

PROPOSED SPRINGS EQUESTRIAN CENTER,

EL DORADO COUNTY, CALIFORNIA

Prepared by

Peak & Associates, Inc.
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95762
(916) 939-2405

Prepared for

Casey S. Feickert
TSD Engineering, Inc.

August 7, 2013
(Job # 13-055)

INTRODUCTION

The proposed project is an equestrian center, located within the former Green Springs Ranch. The ranch lies on the south side of Green Valley Road, in El Dorado County, between the communities of El Dorado Hills and Rescue.

The Green Valley House cemetery issue was discussed at a meeting on the proposed project site on September 7, 2012, with attendance by Francis Carpenter, Susan Mickus (El Dorado County Pioneer Cemeteries Commission), Bonnie Wurm (County Cemetery Administration), and Melinda Peak. Additional contact has been made with Francis Carpenter, Susan Mickus and Sue Silver, and Bonnie Wurm, to gather information for this report, and their assistance is gratefully acknowledged. Research was conducted in a draft report prepared by Sue Silver, Mr. Carpenter's recent book on the Rescue area (2011), and additional research in newspapers and other sources.

HISTORICAL BACKGROUND

The lands later known as the Green Springs Ranch can be first traced to ownership by John and Nicholas Hobart. Although it cannot be confirmed in the 1850 census that the Hobart brothers were specifically on this property, they were assessed for $3,000 in value for a "Green Springs Hotel" later in 1850. They may indeed be the first formal landowners, and the builders of the hotel. By June of 1850, the brothers were advertising that the Green Springs Hotel, with four rooms on each floor, available for rent, served by the Birch stage line (*Placer Times* newspaper June 7, 1850).

Rufus Hitchcock and his family had come to California apparently in 1849, and were listed twice in El Dorado County in the 1850 federal census.

The earlier of the two listings (October 1850) places him on the Green Springs property in a hotel. His wife, Nancy, is also listed as well as five young women with no occupation listed, two young men, said to be laborers, and a four year old girl, possibly a granddaughter of Nancy Hitchcock. One of the young women is Helen Trombly, reportedly the daughter of Nancy Hitchcock from her first marriage to Burrows. She is listed as 18 years old. Their nearest neighbors are the Hobart brothers, also listed with a hotel.

Rufus Hitchcock may have had a survey completed for a pre-emption claim for the ranch, but it was not filed with the County. The family apparently took over the ranch in 1850, but remained mobile. The second federal census listing in 1850 for Rufus Hitchcock shows him in Placerville and vicinity, and dated to November of 1850. His occupation is not legible, but again, his

household includes Nancy, Ellen Hitchcock (possibly Helen Trombly) and a single woman, age 24, with no occupation. There is also a 46 year old male clerk in the house, and Hitchcock declares a net worth of $25,000, far higher than any other individuals in the area.

Rufus Hitchcock was apparently a notorious individual. A synopsis by a family member sent to the El Dorado County Pioneer Cemeteries Commission states that in the Fremont County, Iowa County history (no publication information provided) , mentioned that he settled in the County in 1839, with Arthur Burris (also spelled as Burrows and Burras) and Mrs. Rice, all from Indiana. They settled at Pleasant Grove in 1839 and 1840. Hitchcock and Burris were the second settlers in the region, with their principal trade in whiskey. In 1840, one of the local settlers reported that Mrs. Burris and her daughters were the only white women in the County. Domestic discord caused a split in the Burris marriage; and they split up in the fall of 1840. Mrs. Burris reportedly obtained a divorce, and married Hitchcock. The couple traveled westward in 1847 or 1848.

Hitchcock reportedly rented the old armory building at Sutter's Fort in 1848, with a boarding house upstairs and a bar room with a monte table on the first floor. The family then was supposed to include Rufus, his wife, two daughters, and a son (Cross 1954).

Rufus Hitchcock died April 8, 1851 (*Sacramento Daily Union* newspaper April 15, 1851), with family lore suggesting the death was caused by smallpox. A husband of the daughter of Mrs. Hitchcock puts his cause of death as "apoplexy." Hitchcock was reported to have been buried at the cemetery at Sutter's Fort. His stepdaughter, Susan, who died in 1849, and was placed at the cemetery, was disinterred and moved to lie next to Hitchcock's grave about 300 feet away (*Sacramento Daily Union* newspaper January 2, 1860).

Nancy Hitchcock remained at the ranch with her one of her daughters from her first marriage, Mrs. Helen Trombly. Mrs. Nancy Burrows Hitchcock formally purchased the land from the Hobart brothers in November 1851 for $500. Mrs. Trombly filed a pre-emption claim on the property in late 1851 (Silver 1999).

The 1852 California State census is difficult to read, but Nancy Hitchcock is listed with son Rufus, age 15, daughter Ellen or Helen Trombly, and a two year named Eliza Trombly, likely Helen's daughter.

The story for the Hitchcock family remains a tragedy. A report published in February 1853 states: "The small-pox has not disappeared from Coloma and its neighborhood. Seventeen cases were reported at Green Springs, of which three had died" (*Sacramento Daily Union* newspaper, February 28, 1853).

One of the victims of the disease was reportedly Nancy Hitchcock, with her nieces also reportedly dying from the disease. It is possible that the nieces mentioned are actually the two young granddaughters mentioned in the census rolls: the 4 year old in 1850 at the ranch and Eliza Trombley. In December 1853, an advertisement had been placed in the newspaper

for a Probate sale of her estate to be conducted on January 16, 1854. At this point, the Green Springs Rancho included the Green Springs House and 320 acres, stables, barns and outhouses (*Sacramento Daily Union* newspaper, December 30, 1854). It has been speculated that Mrs. Hitchcock and her nieces were buried on the ranch (Silver 1999, Teie and Carpenter 2011). It seems more likely that the young girls were actually Mrs. Hitchcock's granddaughters rather than nieces.

The purchaser of the property appears to have been William Dormody in 1853 or 1854 (Teie and Carpenter 2013). Dormody, born in 1796 in Ireland, lived at the ranch until his death in an accident in 1876 (*Sacramento Daily Union* newspaper September 9, 1876). Dormody is buried at St. John's Cemetery in Folsom, with wife Sarah (died 1902) and daughter Sarah (died 1892) (Sue Silver, personal communication, 2013). Members of the Dormody family continued to live at the ranch until 1956, at which point the land was sold to Howard Greenhalgh (Teie and Carpenter 2011).

In 1859, a headstone for a Hitchcock stepdaughter, Susan, was found by the Sacramento River. Susan had been buried at Sutter's Fort in 1849 (*Sacramento Daily Union* newspaper December 9, 1859). A friend or relative who lived in Campo Seco wrote to the newspaper in response to the article. Although some of their facts were contradictory to other articles, the writer suggested that Mrs. Hitchcock and her eldest son were buried at the ranch. The writer also suggested that Susan had died and been buried at the ranch as well, not at Sutter's Fort (*Sacramento Daily Union* newspaper December 16, 1859). Susan's brother in law, who ordered the tombstone, confirms that her grave with that of Rufus Hitchcock at the Fort cemetery (*Sacramento Daily Union* newspaper January 2, 1860).

CONCLUSIONS

There were some early burials somewhere on the Green Springs property. It is not known if the burials totaled six, making the site a cemetery under California State law. The specific location of the cemetery within the project boundaries cannot be discerned. There is no physical evidence of the cemetery apparent.

Many years ago, Mr. Carpenter was told that the cemetery might be where a building on the site is currently located; physically, there is no further evidence of the cemetery. The 1883 lithograph illustrating the main house published in the County history by Paolo Sioli does not show a marked cemetery near the house, thought to be on the north side of the old route of Green Valley Road (south of the current alignment).

In our field visit to review the potential location of the graves, all parties agreed that it is not possible to determine where the graves might be on the ranch. If there were a marked location on an early map, or physical evidence, it might be possible to provide an area to set aside and protect. Or barring the ability to protect a large area, it might be possible to conduct ground penetrating radar studies to find the location of the graves. But such a study is not feasible without a narrower zone to investigate.

RECOMMENDATIONS

There is a possibility that graves related to the burials of the Hitchcock family members and possibility also for graves of patrons of the Green Springs House who died at the site. There is no way to discern a specific location within a ranch that totaled 320 acres at one point.

As a result, care must be taken during any excavation work related to the project. Construction personnel should be advised that the discovery of graves or a cemetery is possible; an active plan should be provided to all personnel on the site. The plan should describe the actions to be undertaken by the crew in the event of a discovery of bone or possible bone: including work stoppage; notification of the El Dorado County Coroner for an on-site investigation; and possible re-design or formal excavation and removal of the burials by an archeologist or anthropologist.

REFERENCES

Cross, Ralph Herbert

1954 *The Early Inns of California, 1844-1869.* Cross & Brandt, San Francisco.

Silver, Sue

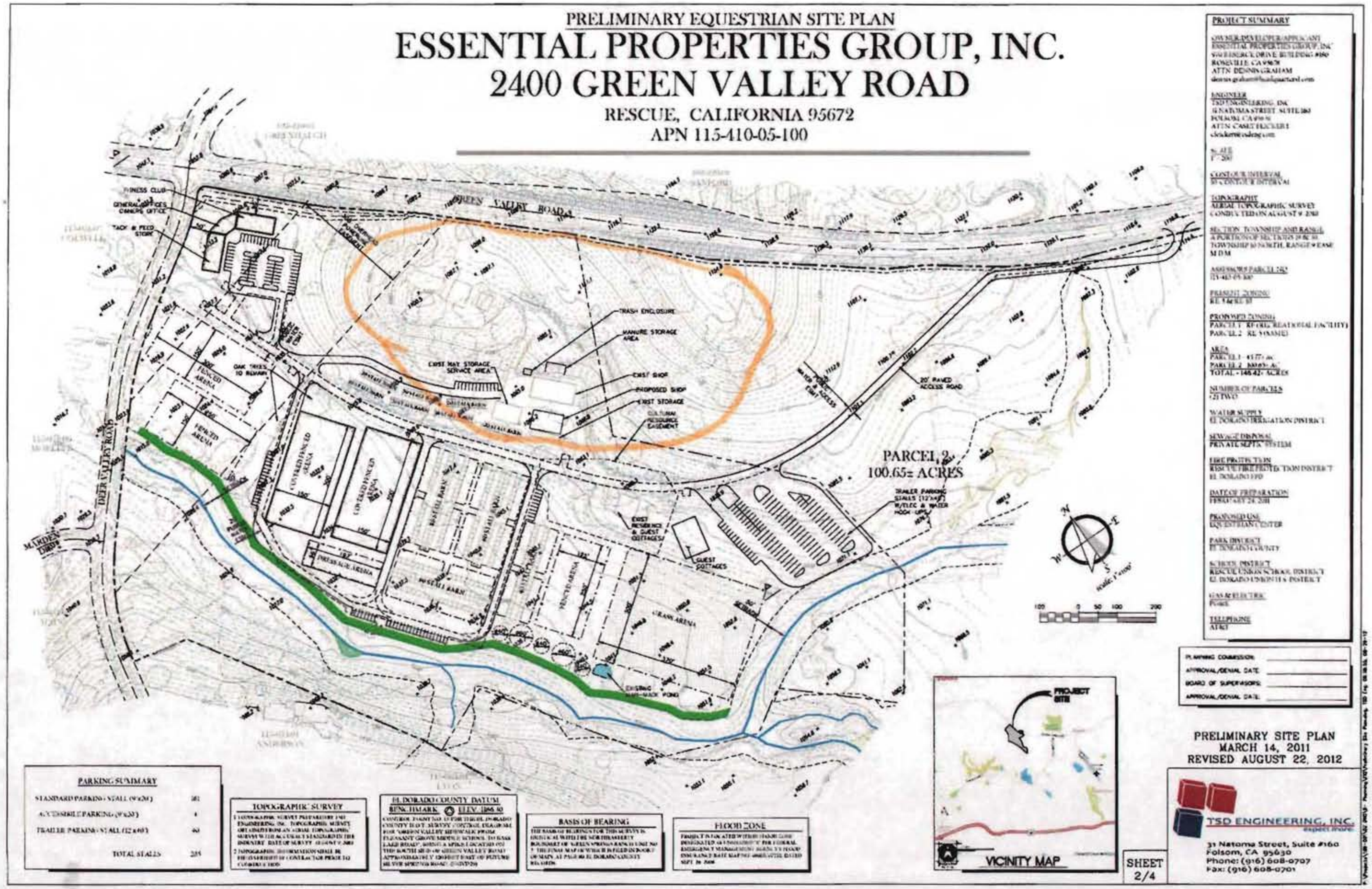
1999 *Draft Manuscript, Road Houses and Road House Cemeteries.* (Ms. Silver is the Past President, El Dorado County Pioneer Cemeteries Commission).

Sioli, Paolo

1883 *History of El Dorado County, California.* Paolo Sioli, Oakland, CA.

Teie, William C. and Francis M. Carpenter

2011 *History of a Place Called Rescue.* Deer Valley Press, Rescue, CA.


PRELIMINARY EQUESTRIAN SITE PLAN
ESSENTIAL PROPERTIES GROUP, INC.
2400 GREEN VALLEY ROAD
RESCUE, CALIFORNIA 95672
APN 115-410-05-100
GREEN VALLEY ROAD
DEER VALLEY ROAD
MARDEN DRIVE
FITNESS CLUB
GENERAL OFFICES OWNERS OFFICE
TACK & FEED STORE
OAK TREES TO REMAIN
FENCED ARENA
COVERED FENCED ARENA
DRESSAGE ARENA
FENCED ARENA
GRASS ARENA
EXIST HAY STORAGE SERVICE AREA
TRASH ENCLOSURE
MANURE STORAGE AREA
EXIST SHOP
PROPOSED SHOP
EXIST STORAGE
CULTURAL RESOURCE EASEMENT
20' PAVED ACCESS ROAD
EXIST RESIDENCE & GUEST COTTAGES
GUEST COTTAGES
TRAILER PARKING STALLS (12'x40') W/ELEC & WATER HOOK UPS
EXISTING PONDS
PARCEL 2
100.65± ACRES
PROJECT SUMMARY
OWNER/DEVELOPER/APPLICANT
ATTN DENNIS GRAHAM
ENGINEER
TSD ENGINEERING, INC
SCALE
CONTOUR INTERVAL
TOPOGRAPHY
AERIAL TOPOGRAPHIC SURVEY
SECTION TOWNSHIP AND RANGE
ASSESSORS PARCEL NO
PRESENT ZONING
PROPOSED ZONING
AREA
TOTAL - 146.42± ACRES
NUMBER OF PARCELS
(2) TWO
WATER SUPPLY
EL DORADO IRRIGATION DISTRICT
SEWAGE DISPOSAL
PRIVATE SEPTIC SYSTEM
FIRE PROTECTION
DATE OF PREPARATION
PROPOSED USE
EQUESTRIAN CENTER
PARK DISTRICT
SCHOOL DISTRICT
GAS & ELECTRIC
TELEPHONE
AT&T
PLANNING COMMISSION
APPROVAL/DENIAL DATE
BOARD OF SUPERVISORS
APPROVAL/DENIAL DATE
PRELIMINARY SITE PLAN
MARCH 14, 2011
REVISED AUGUST 22, 2012
TSD ENGINEERING, INC.
31 Natoma Street, Suite #160
Folsom, CA 95630
Phone: (916) 608-0707
Fax: (916) 608-0701
PROJECT SITE
VICINITY MAP
SHEET 2/4
PARKING SUMMARY
STANDARD PARKING STALL (9'x20')
ACCESSIBLE PARKING (9'x20')
TRAILER PARKING STALL (12'x40')
TOTAL STALLS
TOPOGRAPHIC SURVEY
EL DORADO COUNTY DATUM
BENCHMARK
BASIS OF BEARING
FLOOD ZONE

YOUNGDAHL CONSULTING GROUP, INC.
Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, Ca 95762
5750 Arabian Lane, Loomis, Ca 95650
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net

Project No. E04468.002
1 October 2012

TSD Engineering, Inc.
31 Natoma Street, Suite #160
Folsom, CA 95630

Attention: Mr. Casey Feickert, P.E., Principal

Subject: **2400 GREEN VALLEY ROAD, RESCUE, ELDORADO COUNTY, CALIFORNIA, APN 115-410-05-100**
Review of Onsite Wastewater Disposal Feasibility
Letter Report

References:

1) El Dorado County Ordinance, Chapter 15.31, Private Sewage Disposal System, dated 24 November 1999.
2) Equestrian Center, APN 115-010-30-100, Site Evaluation and Soil Description Report, prepared by John Reay, dated 3 December 2005.
3) Preliminary Equestrian Grading Plan, Essential Properties Group, Inc., 2400 Green Valley Road, Rescue, California 95672, APN 115-410-05-100, prepared by TSD Engineering, Inc. dated 28 February 2011, revised 22 August 2012.

Dear Mr. Feickert:

At your request, Youngdahl Consulting Group, Inc. (Youngdahl) has reviewed the above listed documents in regards to the feasibility of onsite wastewater disposal for the proposed facility. Based on this review, we have concluded that it will be feasible for the proposed office to use an onsite wastewater disposal system and also feasible for wash water from horses to be disposed of or reused onsite.

Project Understanding
We are of the understanding that the project will include an office with up to 20 employees, several horse barns housing up to 420 horses, several fenced arenas, parking, and other support facilities. The horse facilities will also include wash racks to be used to clean horses.

Estimated Wastewater Loading
The office will include up to 20 employees. According to Reference No. 1, the loading rate will be 15 gallons per day per employee. This equates to 300 gallons per day.

According to TSD Engineering Inc., the horses will be washed on an average of once every two weeks. Assuming 420 horses, then 180-210 horses will be cleaned a week

which will average 20-30 horses a day. Each horse wash is assumed to use a low flow nozzle that will average about 30-50 gallons per wash. This equates to a daily loading of from 600 to 1,500 gallons per day. Horse washing typically includes spraying the horse off with a low flow nozzle with some use of soaps as needed.

Youngdahl contacted El Dorado County Environmental Management Staff to clarify the classification of the used wash water for the horses. They indicated that the subsurface disposal of the wash water would not be considered either septic disposal or graywater disposal and would therefore not be regulated by their department.

Feasibility Level Design Analysis

Reference No. 2 provides the results of a soil profile investigation and percolation testing on the site of the proposed project. One test pit log shows silt to a depth of 3 feet and highly weathered gabbro to a depth of 8 feet. A total of six percolation holes were tested. Percolation test hole depths were not provided, however this analyses presumes that they extended to a depth as deep as 5 feet. The slowest percolation rate was 39 minutes per inch. Given an estimated 300 gallon per day loading for the office, this equates to a required sidewall area of 375 square feet. Assuming disposal trench depths of 4 feet and discounting the upper 1½ feet of sidewall (which would be above typical distribution laterals), this equates to 5 square feet of sidewall per lineal foot of trench. One 75-foot long trench would be needed for the office. However, El Dorado County requires a minimum of a 300% replacement area for commercial septic systems, so an area to support a total of 300 lineal feet of trench needs to be available. Trenches would have to be installed no closer than 10 feet on centers with all other setback requirements as required in Reference No.1. Based on this analysis, the office septic system appears to be feasible.

The horse washing may generate as much as 1,500 gallons per day. Based on the above assumptions, this may require as much as 375 lineal feet of trench. This system would not be regulated as a septic system, so a 300% replacement area would not be necessary. Base on this analysis, the onsite disposal of wash water from the horses appears to be feasible.

Recommendations

Based upon a review of Reference No.3, the onsite wastewater disposal system for the office would require that effluent be pumped to trenches at a higher elevation than the office. The horse wash water disposal system will also require pumping to the disposal area. The system for the horse wash water should be completely separate and in no way connected to the system for the office. The horse wash water system should be installed at least twice the estimated minimum size and equipped with a valve system designed to isolate parts of the system to allow individual trenches to periodically rest. The horse wash water should pass through one or more settling tanks and an effluent filter to retain hair before being pumped to the disposal field. Settling tanks and filtration systems will require periodic maintenance. Other options for the filtered horse wash water may be considered, such as for reuse as landscaping irrigation or for dust suppression in riding arenas. However, any surface discharge may be subject to storm water discharge requirements and restrictions.

When the project progresses to a more detailed design phase, the availability of suitable soils and disposal areas should be confirmed by additional subsurface exploration. Wastewater disposal system designs should be prepared as appropriate and necessary.

Closure
This feasibility review has been prepared following standards of practice commonly in use at the time and for the locale that these services were provided. The feasibility review is based solely on the information provided and on the listed references. No warranties are expressed of implied.

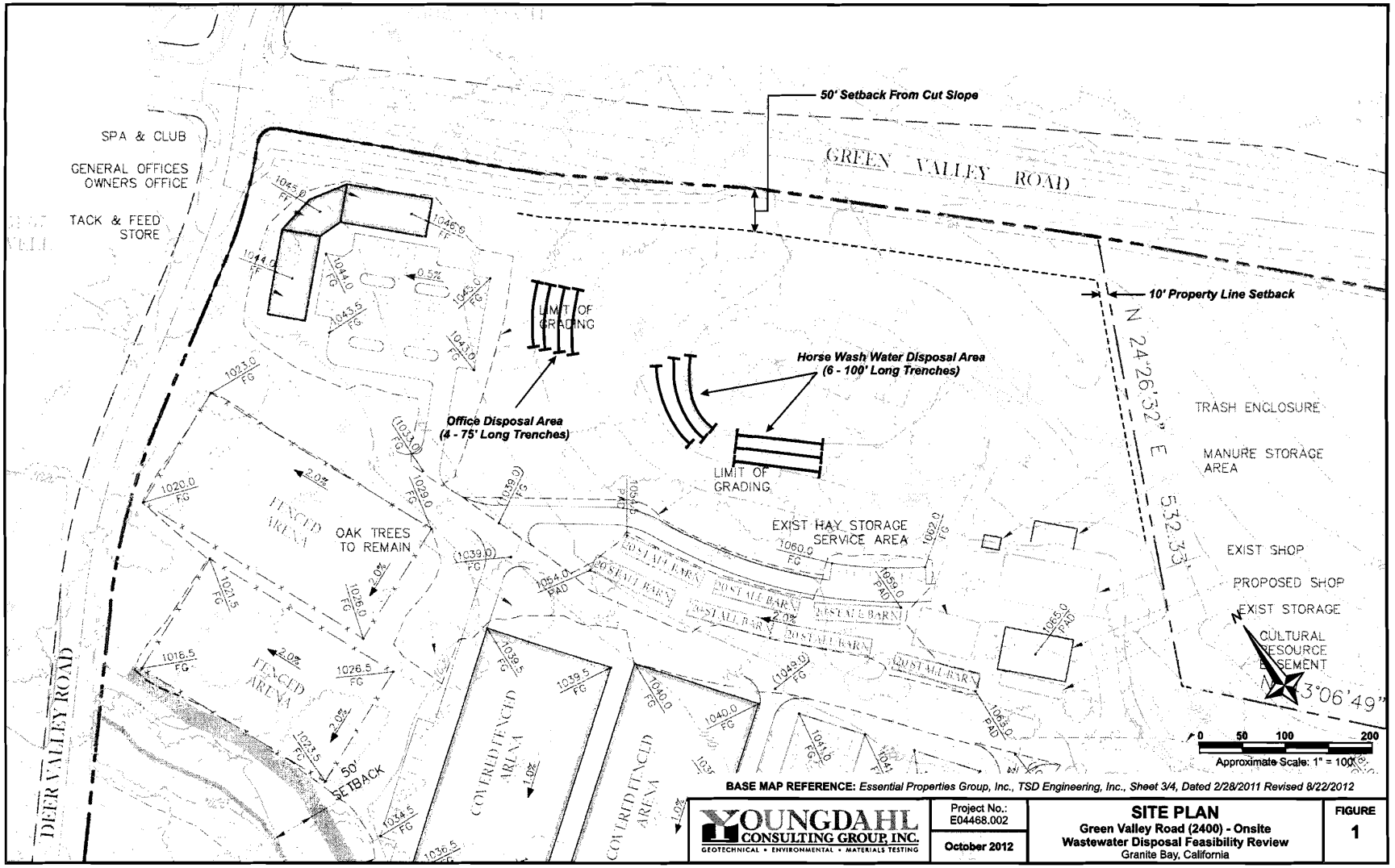
Thank you for the opportunity to provide our services, Please do not hesitate to contact us if you have any questions.

Very truly yours,
Youngdahl Consulting Group, Inc.

David C. Sederquist, C.E.G, C.HG.
Senior Engineering Geologist/Hydrogeologist

Attachment: Figure 1 – Onsite Wastewater Disposal Feasibility Review

Distribution: 2 copies to TSD Engineering, Inc., attention Mr. Casey Feickert



BASE MAP REFERENCE: *Essential Properties Group, Inc., TSD Engineering, Inc., Sheet 3/4, Dated 2/28/2011 Revised 8/22/2012*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E04468.002	**SITE PLAN** Green Valley Road (2400) - Onsite Wastewater Disposal Feasibility Review Granite Bay, California	FIGURE 1
	October 2012		

ATTACHMENT 17

YOUNGDAHL CONSULTING GROUP, INC.
Geotechnical • Geoscience • Materials Testing • Storm Water Compliance

1234 Glenhaven Court, El Dorado Hills, CA 95762
PH 916.933.0633 FX 916.933.6482

502 Giuseppe Court, Suite 2, Roseville, CA 95678
PH 916.773.7633 FX 916.773.7833
EM mail@youngdahl.net

Project No. E04468.1
30 November 2004

Springs Equestrian Center
23333 Avenida La Caza
Coto de Caza, CA 92679

Attention: Mr. Robert Fish

Subject: **SPRINGS EQUESTRIAN CENTER**
2400 Green Valley Road
Rescue, El Dorado County, California
GEOTECHNICAL ENGINEERING STUDY

References:
1. Proposal and contract for Springs Equestrian Center Green Valley Road (2400), prepared by Youngdahl Consulting Group, Inc., dated 25 October 2004.
2. Preliminary Evaluation of the Potential for Naturally Occurring Asbestos Letter Report for the Springs Equestrian Center, prepared by Youngdahl Consulting Group, Inc., dated 25 October 2004.

Dear Mr. Fish:

In accordance with your authorization, Youngdahl Consulting Group, Inc., has performed a geotechnical engineering study for the Springs Equestrian Center located at 2400 Green Valley Road in Rescue, El Dorado County, California. The purpose of this study was to explore and evaluate the surface and subsurface soil conditions at the site and to develop geotechnical information and design criteria for the proposed project. Our scope was limited to a subsurface investigation, laboratory testing, and preparation of this report per our proposal dated 25 October 2004.

Based upon our field study, subsurface exploration program, laboratory testing and engineering analysis, we believe the primary geotechnical issues to be addressed consist of expansive soil mitigation, the excavatability of the underlying bedrock materials, and potential seepage through bedrock fractures. Other geotechnical issues may become more apparent during mass grading operations which are not listed above. The descriptions, findings, conclusions and recommendations provided in this report are formulated as a whole and specific conclusions or recommendations should not be derived or used out of context. Please review the limitations and uniformity of conditions section of this report.

This report has been prepared for the exclusive use of Springs Equestrian Center and their consultants, for specific application to this project, in accordance with generally accepted geotechnical engineering practice. Should you have any questions or [illegible]ional information, please contact our office at your convenience.

Very truly yours,
Youngdahl Consulting Group, Inc.

Daniel T. Wolfe
Staff Engineer

Reviewed by:

Brandon K. Shimizu, P.[illegible]
Project Engineer

Dave C. Sederquist, C.E.G.
Senior Engineering Geologist

REGISTERED PROFESSIONAL ENGINEER BRANDON KIYOMI SHIMIZU NO. C 61780 Exp. 06-30-05 CIVIL STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST DAVID C. SEDERQUIST NO. 2133 EXPIRATION DATE 9/30/04 STATE OF CALIFORNIA

Distribution: (4) to Client

GEOTECHNICAL ENGINEERING STUDY
for
SPRINGS EQUESTRIAN CENTER
2400 Green Valley Road
Rescue, California

1.0 INTRODUCTION

This report presents the results of our Geotechnical Engineering Study performed for the proposed equestrian center planned to be constructed south of Green Valley Road, in Rescue, California. Refer to Figure A-1 for a vicinity map for the project site.

1.1 Purpose and Scope

The purpose of this study was to explore and evaluate the surface and subsurface conditions at the site and to develop geotechnical information and design criteria for the proposed project. The scope of this study includes the following:

1. A review of geotechnical and geologic data available to us at the time of our study.
2. A field study consisting of a visual site reconnaissance, followed by an exploratory test pit program to characterize the subsurface conditions.
3. A laboratory testing program performed on representative samples collected during our field study.
4. Engineering analysis of the data and information obtained from our field study, laboratory testing, and literature review. Development of recommendations for site preparation and grading, and geotechnical design criteria for foundations, slabs on grade, retaining structures, underground facilities, and roadways.
5. Preparation of this report summarizing our findings, conclusions, and recommendations regarding the geotechnical aspects for the project.

2.0 PROJECT DESCRIPTION

Based upon the preliminary plans, proposed development is expected to include the construction of 5 modular barns, a covered arena, guest house cottages, and a combined office facility/tack and feed store/club and spa building. Appurtenant construction is anticipated to include uncovered arenas, decomposed granite (DG) access drives and parking areas, and underground utilities.

It is our understanding that the covered arena and barns will be of modular steel construction supported on pier footings. The office building will be of wood frame construction and supported by a conventional shallow foundation and concrete slab on grade floor. It is our understanding that the guest cottages will be either modular structures or wood framed supported by conventional shallow foundations and concrete slabs-on-grade.

In order to maintain a natural surrounding, it is our understanding that cuts and fills on the order of 2 feet or less are anticipated for this project. Foundation loads, once available, should be made available for our review and to confirm the applicability of our current recommendations.

3.0 SITE DESCRIPTION

3.1 Background

In general, the project site has remained undeveloped except for the minor grading operations that may have occurred during construction of the existing one-story single family residence and various barns and storage buildings with associated roadways.

TABLE OF CONTENTS

If studies or plans exist that pertain to the site which are not cited as a reference in this report, we should be afforded the opportunity to review and modify our conclusions and recommendations as necessary.

3.2 Surface Observations

The project site is situated south of the intersection of Deer Valley Road and Green Valley Road in Rescue, California. The project site is an irregular shaped parcel with site boundaries generally delineated by Deer Valley Road to the northwest, by Green Valley Road to the northeast, by an existing school to the southeast, and by Howard Drive and rural residential development to the south and southwest. The project site is currently being used as rural farmland. The property currently contains a small home, several covered areas for feed, a work shed, a barn, and a single wide trailer. The hilly terrain slopes gently to moderately steep, and drains to the south via multiple incised drainages towards Green Springs Creek that runs along the southern perimeter of the site. Bedrock outcrops are visible on the hilltops. Vegetation generally includes a moderate growth of weeds, grasses, and trees with sporadic bushes in the drainages. The aforementioned site description was based on our site reconnaissance, as well as a review of the site plan provided by the client, which forms the basis for our site plan, Figure A-2, Appendix A.

3.3 Subsurface Exploration

Our field study included a site reconnaissance by a Youngdahl Consulting Group, Inc. representative followed by a subsurface exploration program conducted on 3 November 2004, which included the excavation of 12 test pits under his direction at the approximate locations shown on Figure A-2, Appendix A. Excavation of the test pits was accomplished with a John Deere 310SG rubber tire-mounted backhoe equipped with a 24 inch wide bucket. As the excavation proceeded, bulk and bag samples were collected from the pits and returned to our laboratory for additional examination and testing. The test pits were not backfilled with engineered fills and will require re-excavation and compaction of the soils during site development. Refer to Appendix A for a more detailed description of the subsurface exploration procedure.

3.4 Subsurface Conditions

The test pits completed for this investigation encountered relatively similar soil and rock conditions within the maximum 13 foot depth of exploration. Test Pits TP-1 through TP-5, TP-7, TP-8 and TP-12 typically encountered surface soils consisting of silty SANDS/sandy SILTS in a loose to medium dense and slightly moist condition to depths approaching ½ to 6 feet below current site grades. Underlying the surface soils in Test Pit TP-12 and from the surface in Test Pits TP-9 through TP-11, fat CLAY in a medium stiff to stiff and slightly moist condition was encountered to depths approaching 3 to 8 feet.

Underlying the surface soils, and from the surface in Test Pit 6, completely to moderately weathered bedrock was encountered to the maximum depth explored in each pit. Effective refusal was encountered with the equipment used for our study. A detailed seismic refraction study can provide more information regarding subsurface rock conditions and rippability if more specific and detailed rippability information is desired.

Groundwater seepage was encountered at 9 ½ and 10 feet below current site grades in Test Pits TP-11 and TP-12, respectively during our exploration. However, subsurface water conditions typically vary in the foothill region. Our experience in the area shows that water may be perched on less weathered rock and present in the fractures, and seams of the weathered rock found beneath the site at varying times of the year.

A more detailed description of the subsurface conditions encountered is presented graphically on the "Exploratory Test Pit Logs", Figures A-3 through A-14, presented in Appendix A. These logs show a graphic interpretation of the subsurface profile, and the location and depths at which samples were collected.

3.5 Geologic Conditions

The geologic portion of this report included a review of geologic data pertinent to the site, and an interpretation of our observations and the Logs of Exploratory Test Pits excavated during the field study.

The site is located within the western foothills region of the Sierra Nevada Mountain Range. According to the 1:48,000 scale General Geologic Map of the Folsom 15-minute Quadrangle (CDMG: R.C. Loyd, et. al., 1984, OFR 84-50) the project area is primarily underlain by mostly ultramafic, gabbroic, and metasedimentary units of the Foothill Melange-Ophiolite Sequence.

According to the Fault Activity Map of California and Adjacent Areas (Jennings, 1994) and the Peak Acceleration from Maximum Credible Earthquakes in California (CDMG, 1992), no active faults or Earthquake Fault Zones (Special Studies Zones) are located on the project site. The nearest mapped faults to the site are related to the Foothills Fault System, which includes the East and West Branches of the Bear Mountains Fault, located from 8 kilometers east and 3 kilometers west of the site, respectively. The nearest mapped active fault to the site is the Dunnigan Hills fault located about 71 kilometers to the west-northwest.

3.6 Naturally Occurring Asbestos (NOA)

Evaluation for Asbestiform Materials: Asbestos is classified by the EPA as a known human carcinogen. Naturally occurring asbestos has been identified as a potential health hazard. Western El Dorado County has, in recent years, been closely scrutinized regarding areas that potentially contain naturally occurring asbestos. The California Geological Survey published a map in 2000 (Open File Report 2000-02) that qualitatively indicates the likelihood for naturally occurring asbestos east of the project site.

The USEPA regulates two basic types of asbestiform minerals, chrysotile and amphibole. Chrysotile asbestos is most commonly associated with serpentinites. The nearest serpentinites exist on the property. Amphibole asbestos is commonly found to be associated with faults and shear zones. It can be found in association with serpentinites, talc (soapstone), and as hydrothermal fracture filling associated with shear zones.

The Soil Survey of the El Dorado Area, California (1974) notes the subject property to consist of Auburn Series soils in the western portion and Rocklin Series soils in the eastern portion. Also noted is Placer diggings along Green Springs Creek. The nearest occurrence of Serpentine Rock Land soils, associated with a higher potential for NOA, is south and adjacent to the project site.

Youngdahl Consulting Group, Inc. prepared an evaluation for the potential of NOA in the 25 October 2004 letter report listed as Reference 2. During this study, a registered geologist performed surface observations and reviewed pertinent references in order to evaluate the potential for NOA to be distributed by the planned improvements for the Springs Equestrian Center. A registered geologist mapped the site, reviewed published geologic and soil maps, and reviewed historical photographs. The published references lists the project site as being underlain by rocks of the Foothill Melange - Ophiolite Terrane with the eastern portion of the site mapped as gabbroic

rocks, the central portion mapped as an intermixture of metasedimentary rocks, the western portion of the site mapped as gabbroic rocks, and the southwest edge mapped as ultramafic rocks. The eastern portion of the site contains materials that are possible, but unlikely to contain NOA. The western portion is in an area mapped as being more likely to contain asbestos. The northern portion of the site consists of gabbroic rocks and the southwestern edge consists of serpentine/ultramafic rocks. Altered gabbroic rocks containing visible fibrous minerals was observed in the Green Valley Road roadcut immediately north of the project site.

On 3 November 2004, a geologist from Youngdahl Consulting Group, Inc. performed sample collection of onsite soil and rock materials within planned development areas in order to test for NOA by the California Air Resources Board test method 435 (ARB 435) to a quantification limit of 0.25%. No obviously visible indications of NOA were observed during the field investigations.

At the time of sampling, earthwork construction for this project had not begun. In general, Youngdahl Consulting Group, Inc. has found in our past experience that naturally occurring asbestos tends to weather easily and is thus very limited in near surface soils. Excavations into deeper soil and rock horizons can sometimes encounter asbestos in less weathered material. The main focus of this site assessment was to determine if naturally occurring asbestos is present at the depths planned for construction.

Samples of soils and weathered rock were collected from backhoe test pits. A duplicate was also collected for each sample. A channel sample, cut vertically with a rock hammer across the native soil and weathered bedrock in one face of each pit, was first collected into a new 1-gallon plastic bag. The soil and rock were then homogenized. Approximately 16 ounces of material was then placed into an 18-ounce sterilized sample bag. Approximately 16 ounces of material was also placed into a new 1-gallon plastic bag to be archived as a duplicate sample. The rock hammer was decontaminated between each sampling event with disposable pre-moistened wipes.

3.7 Results of NOA Investigation

The methods for our investigation included site observations by a staff geologist experienced in the identification of naturally occurring asbestos and visible geologic or faulting features that would be indicative of a higher likelihood for NOA. The collection of soil and rock samples representative of the materials that would be encountered during construction activities at the proposed project site was also included in the scope of our investigation.

Results of Laboratory Analysis

The sampling information is provided in Table 1 and test pit logs are provided in Appendix A, Figures A-3 through A-14. The samples were sent by overnight delivery by chain of custody rules to Forensic Analytical of Hayward (ELAP No. 1202). The six samples were analyzed for asbestos by Forensic Analytical using the ARB TM 435 method. The California Air Resources Board reports a detection limit of 0.25% for ARB TM 435. Asbestos was not detected in any of the samples. Copies of the Laboratory analytical reports are contained in Appendix C.

Results of QA/QC Procedures

An archive duplicate of each soil/rock sample was obtained. The archive duplicate samples will be retained for further additional analysis if necessary and will be stored for a period of 1 year.

Recommendations
Asbestos was not identified in the areas of planned improvements using the ARB 435 test method. We recommend that the excavation contractors working on the Springs Equestrian Center project site observe for rocks or soil with visible fibrous minerals during construction. If fibrous minerals are observed, work should stop in that area and YCG should be contacted immediately to perform a geologic evaluation. Earthwork contractors should be made aware of OSHA rules regarding work in soils with asbestos. Earthwork in the southwest portion of the property, outside of the currently planned improvements, is still likely to encounter NOA.

Table 1 - Sample Collection Information

Sample Identification	Asbestos ARB TM 435	Description
TP-2	ND	Highly weathered, closely fractured, sheared METASEDIMENTARY rock at ~4.5' below original grade. Sample taken from 0-5 feet.
TP-3	ND	Completely to moderately weathered, closely fractured GABBRO 1-2 feet below original grade. Dark, fine-grained rock with amorphous plagioclase crystals. Sample taken from 0-5 feet.
TP-5	ND	Completely to moderately weathered, very closely fractured GABBRO at <1 foot below original grade. Sample taken from 0-5 feet.
TP-6	ND	Moderately weathered, closely fractured, sheared GABBRO ~1.5 feet below original grade. Sample taken from 0-5 feet.
TP-9	ND	Completely weathered METASEDIMENTARY rock, altered to a very stiff sandy CLAY at 3 feet below original grade. Moderately weathered bedrock not encountered. Sample taken from 0-5 feet.
TP-10	ND	Completely weathered METASEDIMENTARY rock, altered to a very stiff sandy CLAY at 2 feet below original grade. Moderately weathered bedrock not encountered. Sample taken from 0-5 feet.

ND = None Detected
ARB TM 435, Limit of Quantification = 0.25%

3.8 Geotechnical Laboratory Testing
The geotechnical laboratory testing of collected samples was directed towards determining the physical and engineering properties of the soil underlying the site. A description of the tests performed and their results are presented in Appendix B.

4.0 CONCLUSIONS
We offer the following general geotechnical conclusions concerning this development project.

Site Suitability: The native soils, rock, and/or engineered fills composed of like materials and processed and compacted as recommended below are considered suitable for support of the planned improvements.

Expansive Soils: We encountered a layer of fat clay at a varying depths up to 8 feet in Test Pits TP-9 through TP-12. In concentrated amounts, such clays could cause distress to concrete slab-on-grade floors and foundations if present in the upper 3 feet of the structural improvement areas. These expansive soils can cause significant distress to structural improvements if present within the upper 3 feet of grade. Expansive soils can shrink and swell with changes of moisture content resulting in structural distress of improvements supported on these materials. Improvement areas should be mitigated as described in the recommendations section of this report.

Groundwater and Drainage (Building Pads): In order to maintain the engineering strength characteristics of the soil presented for use in the Geotechnical Engineering Study, maintenance of the building pads will need to be performed. This maintenance generally includes, but is not limited to, proper drainage and control of surface and subsurface water which could affect structural support and fill integrity. A difficulty exists in determining which areas are prone to the negative impacts resulting from high moisture conditions due to the diverse nature of potential sources of water; some of which are outlined in the paragraph below. We suggest that measures be installed to minimize exposure to the adverse effects of moisture, but this will not guarantee that excessive moisture conditions will not affect the structure. In general, engineered fills constructed as recommended in the geotechnical report are not designed to endure prolonged inundation of water without some adverse impact.

Some of the diverse sources of moisture could include water from landscape irrigation, annual rainfall, offsite construction activities, runoff from impermeable surfaces, collected and channeled water, and water perched in the subsurface soils on the bedrock horizon. Some of these sources can be controlled through drainage features installed either by the developer. Others may not become evident until they, or the effects of the presence of excessive moisture, are visually observed on the property.

Some measures that can be employed to minimize the build up of moisture include, but are not limited to; proper backfill materials and compaction of utility trenches on the building pads and within the footprint of the proposed structures to minimize the transmission of moisture through these areas; grout plugs at foundation penetrations; collection and channeling of drained water from impermeable surfaces (i.e. roofs, concrete or asphalt paved areas); installation of subdrainage/cut-off drain provisions; utilization of low flow irrigation systems; education to the developer of proper design and maintenance of landscaping and drainage facilities that they or their landscape contractor installs.

Groundwater and Drainage (Roadway Improvements): In areas built on relatively poor draining soils (i.e. bedrock), prolonged water seepage into roadway sections can result in softening of subgrade soils and subsequent distress. In addition, where shallow impermeable soil/bedrock conditions are present, water can become perched on the relatively impermeable horizons and eventually inundate utility trench backfill. The variable support condition between native soils and compacted trench backfill materials, coupled with prolonged water exposure can lead to subsidence of trench backfill materials if bridging of trench backfill occurs during placement or natural jetting of soils into voids around pipes occurs. Joint utility trenches are generally more susceptible to the jetting issues due to the quantity of pipe placed in the trench.

Due to the relatively flat nature of equestrian (commercial) developments, it is anticipated that water could enter and pond against or within the proposed decomposed granite roadways and parking areas. As detailed above, prolonged seepage within the decomposed granite section could cause distress. Higher maintenance should be anticipated.

Some measures that can be employed to minimize the saturation of the subgrade and decomposed granite materials include, but are not limited to, construction of cut-off drains or moisture barriers alongside the roadways adjacent to landscape areas, installation of French drains in parking areas, and installation of plug and drain systems within utility trenches. Due to the elusive and discontinuous nature of drainage related issues, a risk based approach should be determined by the developer based upon the amount of protection of facilities that the developer may want to provide against potential moisture related issues.

Excavation: The test pits were excavated using a backhoe equipped with a 24 inch wide bucket. The degree of difficulty encountered in excavating our test pits is an indication of the effort that will be required for excavation during construction. Based on our test pits, we expect that the site soils can be excavated using conventional earthmoving equipment such as a Caterpillar D6 to D8 for mass grading and rubber tired backhoe for trench excavations. The underlying rock materials can likely be excavated to depths of several feet using dozers equipped with rippers. We anticipate that a ripper equipped D8 can penetrate at least as deep as our test pits at most locations with moderate effort. Deeper excavation into the less weathered rock may require heavier equipment, such as a D9R, or a D10.

Where hard rock cuts in fractured rock are proposed, the orientation and direction of ripping will likely play a large role in the rippability of the material. When hard rock is encountered, we should be contacted to provide additional recommendations prior to performing an alternative such as blasting.

Utility trenches will likely encounter hard rock excavation conditions especially in deeper cut areas. Utility contractors should be prepared to use special rock trenching equipment such as rock wheel excavators or large excavators such as a CAT 235 or CAT 245. Blasting to achieve utility line grades, especially in planned cut areas, cannot be precluded. Water inflow into any excavation approaching hard rock surface is likely to be experienced in all but the driest summer and fall months. Pre-ripping during mass grading may be beneficial and should be considered with the Geotechnical Engineer prior to, or during mass grading.

Liquefaction: Liquefaction is the sudden loss of soil shear strength and sudden increase in porewater pressure caused by shear strains, as could result from an earthquake. Research has shown that saturated, loose to medium-dense sands with a silt content less than about 25 percent located within the top 40 feet are most susceptible to liquefaction. Due to the absence of a permanent elevated groundwater table, the relatively shallow depth to bedrock, and the relatively low seismicity of the area, the potential for site liquefaction is considered negligible.

Slope Stability: Generally a cut slope orientation of 2H:1V is considered stable with the material types encountered on the site. A fill slope constructed at the same orientation is considered stable if compacted to the engineered fill recommendations as stated in the recommendations section of this report. All slopes should have appropriate drainage and vegetation measures to minimize erosion of slope soils.

Seismic Considerations: Based on our literature review and subsurface interpretations, we recommend that the project be designed in accordance with the latest applicable California Building Code (CBC), Chapter 16. This site is located within Seismic Risk Zone 3 and based on our subsurface interpretations is classified as Soil Profile Type S_B.

Corrosive Soils: Soil pH, resistivity, sulfate and chloride content was performed on a selected soil sample. The test results are attached in Appendix B and should be evaluated by a qualified corrosion specialist for use on the project site.

5.0 RECOMMENDATIONS

5.1 General

The site is suitable for the proposed improvements provided the recommendations presented in this report are incorporated into the project plans and specifications.

All grading, foundation, and landscape drainage plans should be reviewed by Youngdahl Consulting Group, Inc., hereinafter described as the Geotechnical Engineer, prior to contract bidding. A review should be performed to determine whether the recommendations contained within this report are incorporated into the project plans and specifications.

The Geotechnical Engineer should be notified at least two working days before site clearing or grading operations commence, and should observe the stripping of deleterious material and provide consultation to the Grading Contractor in the field.

Our recommendations are based on limited windows into the subsurface conditions. Field observation and testing during the grading operations should be provided by the Geotechnical Engineer so that an opinion may be formed regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the project geotechnical specifications. Any work related to grading performed without the full knowledge of, and under direct observation by the Geotechnical Engineer may render the conclusions and recommendations of this report invalid.

Section 3317.8 in Appendix Chapter 33 of the latest California Building Code states that, in regard to the transfer of responsibility, if the Geotechnical Engineer of Record for the project site is not maintained through the grading phase of the project, the work shall be stopped until the replacement has agreed in writing to accept their responsibility within the area of technical competence for approval upon completion of the work. Our design recommendations should not be relied upon without our consultation, observation and testing services during all aspects of grading on the site.

We recommend that the applicable chapters of the latest edition of the CBC be adhered to during the design and construction of the proposed structures.

5.2 Site Preparation

Preparation of the project site should involve temporary drainage, dust control, demolition, clearing, stripping, existing fills, subgrade compaction, and groundwater considerations. The following paragraphs state our geotechnical comments and recommendations concerning site preparation.

Temporary Drainage: We recommend that initial site preparation involve intercepting and diverting any potential sources of surface or near-surface water within the construction zones. Because the selection of an appropriate drainage system will depend on the water quantity, season, weather conditions, construction sequence, and contractor's methods, final decisions regarding drainage systems are best made in the field at the time of construction. All drainage and/or water diversion performed for the site should be in accordance with the Clean Water Act and applicable Storm Water Pollution Prevention Plan.

Dust Control: Dust control provisions should be provided for as required by the local jurisdiction's grading ordinance (i.e. water truck or other adequate water supply during grading). We

recommend that the excavation contractors observe for rocks or soil with visible fibrous minerals coupled with periodic observation by a registered geologist. If fibrous minerals are observed, work should stop in that area and we should be contacted immediately to perform a geologic evaluation.

If NOA is identified, although not specifically required by regulatory agencies, Youngdahl Consulting Group, Inc. recommends that a Certified Asbestos Consultant be contracted to provide periodic air monitoring during construction activities. The purpose of such monitoring would be to verify that the construction work is not generating asbestos fibers that may adversely impact the construction workers and neighboring properties.

Demolition: As part of the demolition operation, all foundation and structural improvement elements should be exhumed and removed from the site. In addition, any underground storage tanks, abandoned wells or other utilities not intended for reuse should be removed or backfilled in accordance with the appropriate regulations.

Concrete and asphalt separated from the other debris, and adequately broken down in particle size, may be mixed thoroughly with native soils and placed as engineered fill as described below. If this option is exercised, a representative from our firm should be contacted to observe the adequacy of grading operations associated with the breaking and mixing of these elements.

Clearing and Stripping: Clearing and stripping operations should remove all organic laden materials including trees, bushes, root balls, root systems, and any soft or loose material generated from removal operations. Surface grass stripping operations are necessary based upon our observations during our site visit. Short or mowed dry grasses may be pulverized and lost within fill materials provided no concentrated pockets of organics result. It is the responsibility of the grading contractor to remove excess organics from the fill materials. No more than 2 percent of organic material, by weight, should be allowed within the fill materials at any given location.

General site clearing should also include removal of any loose or saturated materials from the proposed structural improvement and pavement areas. A representative of our firm should be present during site clearing operations to identify the location and depth of potential fills not disclosed by this report, to observe removal of deleterious materials, and to identify any existing site conditions which may require mitigation prior to site development. Preserved trees may require tree root protection which should be addressed on an individual basis by a qualified arborist.

Existing Fills: Although not encountered during our subsurface exploration, any fills and fill stockpiles, if encountered, should be over-excavated down to firm native materials. Any depressions extending below final grade resulting from the removal of fill materials or other deleterious materials should be properly prepared as discussed below and backfilled with engineered fill. Prior to placement of engineered fill, the exposed soil surfaces receiving fills should be scarified to a minimum depth of 8 inches, moisture conditioned as necessary, and compacted to at least 90 percent of the maximum dry density based on the ASTM D1557 test method. Additionally, test pits should be re-excavated and backfilled with engineered fill.

Exposed Grade Compaction: Exposed soil grades following initial site preparation activities should be scarified to a minimum depth of 8 inches and compacted to the requirements for engineered fill. Prior to placing fill, the exposed subgrades should be in a firm, unyielding state. Any localized zones of soft or pumping soils observed within a subgrade should either be scarified and recompacted or be overexcavated and replaced with engineered fill as defined below in Section 5.3.

Groundwater Considerations: Due to the nature of the soils encountered in the area of the project site, we anticipate that a perched groundwater table will be encountered near the bedrock contact. Where cuts are proposed, subdrains may need to be installed to catch the water flowing along the soil/bedrock contact.

Swales and natural hillside drainage proposed to receive engineered fill may require the installation of a canyon style drain. Close coordination between the design professionals for placement and discharge of canyon style drains should be performed.

5.3 Engineered Fills

All materials placed as fills on the site should be placed as "Engineered fill" observed and compacted as described in the following paragraphs.

On-site Soils: We anticipate that a moderate amount of on-site soils will be generated during mass grading operations. We expect that soil generated from excavations on the site, excluding deleterious material, may be used as engineered fill provided the material does not exceed the maximum size specifications listed below.

Rock fragments or boulders exceeding 24 inches in maximum dimension should not be placed within the upper five feet of building pad or roadway grades. The upper two feet of builidng pad or roadway grades should consist of predominantly rocks and rock fragments less than 12 inches in maximum dimension. The rock fragments should be thoroughly mixed with soil so that a uniform mixture of rocks and compacted soil is obtained without voids.

Fill Placement and Compaction: All areas proposed to receive fill should be scarified to a minimum depth of 8 inches, moisture conditioned as necessary, and compacted to at least 90 percent of the maximum dry density based on the ASTM D1557 test method. The fill should be placed in thin horizontal lifts not to exceed 12 inches in uncompacted thickness. The fill should be moisture conditioned as necessary and compacted to a relative compaction of not less than 90 percent based on the ASTM D1557 test method. The upper 8 inches of fills placed under proposed pavement areas should be compacted to a relative compaction of not less than 95 percent based on the ASTM D1557 test method.

Compaction of Expansive Soils: If clays are the predominate component of the soil in the upper 3 feet of the proposed building pads, they should be addressed as a potentially expansive material and compacted using a different approach as stated above. Expansive clays should be compacted to 88 to 92 percent of the maximum dry density based on the ASTM D1557 test method at a moisture content of about 4 percent over optimum. If expansive clay fills thicker than 5 feet are proposed, supplemental compaction recommendations may be necessary.

Compaction Equipment: In areas to receive structural fill, a Caterpillar 815 steel-wheel compactor, or approved equivalent should be employed as a minimum to facilitate breakdown of oversize bedrock materials and generation of soil fines during the fill placement process. If the quantity of rock fragments in the fills preclude traditional compaction testing, then the proposed fills should be compacted using method specifications as indicated below.

Soils exposed in excavations should be moisture conditioned and compacted in place by a minimum of four completely covering passes with a Caterpillar 815, or approved equivalent. The compactor's last two passes should be at 90 degrees to the initial passes. In areas where 95%

relative compaction is designated, an additional two passes should be applied, with three completely covering passes made at 90 degrees to the initial three passes. Engineered fill should be constructed in lifts not exceeding 12 inches in uncompacted thickness, moisture conditioned and compacted in accordance with the above specification. Additional passes as deemed necessary during fill placement to achieve the desired condition based upon field conditions, may be recommended.

Import Materials: If imported fill material is needed for this project, import material should be approved by the Geotechnical Engineer prior to transporting it to the project. It is preferable that import material meet the following requirements:

1. Plasticity index not to exceed 12.
2. "R"-value of equal to or greater than 25.
3. Should not contain rocks larger than 6 inches in diameter.
4. Not more than 15% passing through the No. 200 sieve.

If these requirements are not met, additional testing and evaluation may be necessary to determine the appropriate design parameters for foundations, pavement and other improvements.

Subgrade Verification and Compaction Testing: Fill soil compaction should be verified by means of in-place density tests performed during fill placement so that adequacy of soil compaction efforts may be evaluated as earthwork progresses, or by method specification if the quantity of rock fragments in the fills preclude traditional compaction testing. This will likely include the excavation of test pits within the fill materials to verify that a uniform over-optimum moisture condition, and absence of large and/or concentrated voids has been achieved prior to additional fill placement.

Soil Moisture Considerations: The near-surface fine grained soils may become partially or completely saturated during the rainy season. Grading operations during this time period may be difficult since compaction efforts may be hampered by saturated materials. It is, therefore, suggested that consideration be given to the seasonal limitations and costs of winter grading operations on the site.

5.4 Slope Grading

Placement of Fills on Slopes: Placement of fill material on natural slopes should be stabilized by means of keyways and benches. Where the slope of the original ground equals or exceeds 5H:1V, a keyway should be constructed at the base of the fill. The keyway should consist of a trench excavated to a depth of at least two feet into firm, competent materials. The keyway trench should be at least eight feet wide or as designated by the Geotechnical Engineer. Benches should be cut into the original slope as the filling operation proceeds. Each bench should consist of a level surface excavated at least six feet horizontally into firm soils or four feet horizontally into rock. The rise between successive benches should not exceed 36 inches. The need for subdrainage should be evaluated at the time of construction.

Slope Face Compaction: All slope fills should be laterally overbuilt and cut back such that the required compaction is achieved at the proposed finish slope face. As a less preferable alternative, the slope face could be track walked or compacted with a wheel. If this second alternative is used, additional slope maintenance may be necessary.

Slope Drainage: Surface drainage should not be allowed to flow uncontrolled over any slope face. Adequate surface drainage control should be designed by the project civil engineer in accordance

with the latest applicable edition of the CBC. All slopes should have appropriate drainage and vegetation measures to minimize erosion of slope soils.

Cut/Fill Transition: When grading operations result in a transition from cut to fill on a building pad, special grading recommendations may be required depending upon the actual cuts and fills. Youngdahl Consulting Group, Inc. should be afforded the opportunity to review the grading plans to determine if special grading recommendations are required.

5.5 Finish Soilgrade Preparation

Finish building pad soilgrades should be compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557 test method. Pavement subgrades compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557 test method and should be proof-rolled with a full water truck or equivalent immediately before paving, in order to verify their condition.

5.6 Drainage Considerations

Special attention should be given regarding the drainage of the project site. If the project is expected to work through the wet season, the contractor should install appropriate temporary drainage systems at the construction site and should minimize traffic over exposed subgrades due to the moisture-sensitive nature of the on-site soils. If the project improvements are constructed prior to the wet season, but are not proposed to be fine graded for permanent drainage until the next dry season, temporary drainage or erosion protection provisions should be made to address the possibility of erosion to cut and fill slopes. During wet weather operations, the soil should be graded to drain and should be sealed by rubber tire rolling to minimize water infiltration.

Temporary and permanent dewatering measures may be necessary to mitigate the shallow perched water conditions. These measures may include the installation of plug and drains within the site utility trenches to drain shallow subsurface water to the storm drain system. See "Groundwater and Drainage" under Section 4.0 for further considerations. We should review the preliminary grading plans when available in order to determine the location of any permanent subdrains.

After site development, channelized and/or concentrated water is typically the largest source of water infiltration into the subgrade. For this type of development, these sources include, but are not limited to, rain water sheeting off of roofs and collected in gutters and down spouts, wash water from cleaning stables/stalls, and water used for dust control. Given the shallow impermeable horizons on the project site (clay soils/bedrock), the water sources can contribute to groundwater levels rising, which could contribute to moisture related problems and/or cause distress to foundations and slabs, roadways, and underground utilities, as well as creating a nuisance where seepage occurs. In order to mitigate the shallow groundwater conditions both during and after development, surface and subdrainage measures should be considered and implemented accordingly by the design professionals. Refer to "Groundwater and Drainage" under Section 4.0 for further discussions.

Finish grading should include positive drainage away from all foundations. Section 1806.5.5 of the latest applicable edition of the California Building Code states that for graded soil sites, the top of any exterior foundation shall extend above the elevation of the street gutter at the point of discharge or the inlet of an approved drainage device a minimum of 12 inches plus 2 percent. Downspouts should be tight piped via an area drain network and discharged to an appropriate non-erosive outlet.

All final grades should provide rapid removal of surface water runoff; ponding water should not be allowed on building pads or adjacent to foundations or other structural improvements.

In commercial developments, finished exterior grades (finished soil grades, pavements, flatwork, etc.) are typically situated slightly above interior building pad subgrades. Where this condition exists, there is a higher likelihood of moisture to become trapped within the concrete underlayment materials (crushed rock and sand). This condition is particularly prevalent in commercial developments due to ADA requirements that mandate interior and exterior site grades to be kept essentially equal for wheel chair access.

To mitigate the potential for moisture to become trapped within the concrete underlayment materials, consideration should be given to lowering exterior soil subgrades such that they are at least below the moisture retarding plastic membrane, preferably below the interior soil subgrade. Where asphalt concrete or hardscape improvements are proposed, additional aggregate base or crushed rock may be used in lieu of soil as fill to raise grades, but maintain a permeable drainage layer on top of the compacted soil grade which is sloping away from the structure. Whether or not soil subgrades are lowered, exterior soil subgrades should be graded such that positive drainage away from the foundations is maintained. Where low points are created within the subgrade, shallow plug and drain provisions should be constructed to collect the water and direct it into a drop inlet, or other appropriate discharge point.

Regardless of which alternative is selected for mitigating the potential for moisture to become trapped within the underlayment materials, slab underlayment should be in accordance with ASTM E1643 and E1745, and is the purview of the project civil/structural engineer.

5.7 Seismic Design Criteria

Based on the latest applicable edition of the California Building Code, Chapter 16, Division IV, and our site investigation findings, the following seismic parameters are recommended from a geotechnical perspective for structural design. The final choice of design parameters, however, remains the purview of the project structural engineer.

CBC - CHAP. 16 TABLE NO.	SEISMIC PARAMETER	RECOMMENDED VALUE
16-I	Seismic Zone Factor Z	0.30
16-J	Soil Profile Type	S_B
16-Q	Seismic Coefficient (C_a)	0.30
16-R	Seismic Coefficient (C_v)	0.30
16-S,-T	Near Source Factors (N_a, N_v)	1.0
16-U	Seismic Source Type	C

5.8 Foundations

In our opinion, isolated and/or continuous shallow spread footings will provide adequate support for the proposed buildings if the subgrades are properly prepared as described in the Site Preparation section. We offer the following comments and recommendations for purposes of footing design and construction. **Our firm should be afforded the opportunity to review the project grading and foundation plans to confirm the applicability of the recommendations**

provided below. Modifications to these recommendations may be made at the time of our review. To date, it appears that the structures proposed to be constructed with conventional foundations will be within non-expansive soil conditions within the upper topographic elevations. However, if conventional foundations are constructed within the expansive soil materials on the site, foundation recommendations to account for the expansive materials has also been provided.

Conventional Foundations - Non-Expansive Conditions
Footing Configuration: Continuous spread footing foundations should be reinforced with a minimum of four No. 4 reinforcing bars, two located near the bottom of the footing and two near the top of the stem wall.

Footing Depths and Widths: Foundations for one and two-story concrete slab-on-grade structures should be a minimum of 12 inches in width, and be founded a minimum of 18 inches below the lowest adjacent grade; based on seismic loading, footings for multi-story structures may require additional depth.

Conventional Foundations - Expansive Soil Conditions
Footing Configuration: Continuous spread footing foundations should be reinforced with a minimum of four No. 4 reinforcing bars, two located near the bottom of the footing and two near the top of the stem wall.

Footing Depths and Widths: Foundations for one and two-story concrete slab-on-grade structures should be a minimum of 12 inches in width, and be founded a minimum of 24 inches below the lowest adjacent grade. Foundations in expansive soils should be excavated such that excavation walls are kept neat and vertical, and not allowed to "mushroom". If excavations are not kept neat and vertical, additional form work to maintain uniform foundation sidewalls should be anticipated. The depth and width of footings should be based on the actual loads being supported.

Where expansive soil is encountered, all foundation and slab areas should be presaturated and verified by a representative of our firm prior to concrete placement.

Conventional Foundations - All Conditions
All footings should be founded below an imaginary 2.5H:1V plane projected up from the bottoms of adjacent footings, downhill slopes and/or parallel utility trenches, or to a depth that achieves a minimum horizontal clearance of 6 feet from the outside toe of the footings to the slope face.

Bearing Capacities: An allowable dead plus live load bearing pressure of 1,500 p.s.f. may be used for design of footings based on native soils or engineered fills. An allowable dead plus live load bearing pressure of 3,500 p.s.f. may be used for design of footings based on weathered bedrock. A total settlement of less than 1 inch with ½ inch of differential is anticipated for similarly loaded foundations bearing on like materials. This settlement is based upon the assumption that foundation loads will be typical of wood framed construction with foundations sized in accordance with the provided allowable bearing capacities. Footings for the structure should adhere to the applicable sections of the California Building Code, Chapters 16 and 18.

Transient Bearing Capacities: The above allowable pressures are for support of dead plus live loads and may be increased by 1/3 for short term wind and seismic loads.

Subgrade Conditions: Footings should never be cast atop soft, loose, organic, slough, debris, nor atop subgrades covered by ice or standing water. A representative of our firm should be retained

to observe all subgrades during footing excavations and prior to concrete placement so that a determination as to the adequacy of subgrade preparation can be made.

Shallow Footing / Stemwall Backfill: We recommend that all footing or stemwall excavations be backfilled after the concrete has been poured. Either imported engineered fill or non-organic on-site soils can be used for this purpose. All footing backfill soil should be compacted to at least 90 percent of the maximum dry density (based on ASTM D1557).

Finish Grading Following Foundation Construction: All soils placed against foundations during finish grading should be compacted to at least 90 percent of the maximum dry density (based on ASTM D1557).

We recommend that any soils placed within areas alongside the structure be placed a minimum of 6 inches (for a 4 inch slab) below slab grade. If any proposed improvements preclude the lowering of grades, or as an alternative to lowering soil grades, a cutoff subdrain may be constructed in areas adjacent to the building and directed to a drop inlet, or other appropriate outlet location. If a raised floor is proposed, and the interior subgrade is lower than the exterior subgrade, a subdrain should be constructed at the exterior of the proposed stemwall.

We recommend that spoils generated from excavated footings and utility trenches be reused as engineered backfill within the trenches (if suitable as trench backfill materials), incorporated as engineered fill within the building pad and/or landscape areas, or removed from the project site. *Loose soils should not be deposited on the pads unless placed as engineered fills.*

Lateral Pressures: Lateral forces on structures may be resisted by passive pressure acting against the sides of shallow footings and/or friction between the soil and the bottom of the footing. For resistance to lateral loads, a friction factor of 0.30 may be utilized for sliding resistance at the base of spread footings in undisturbed native materials or engineered fill. A passive resistance of 350 pcf equivalent fluid weight may be used against the side of shallow footings. If friction and passive pressures are combined, the lesser value should be reduced by 50%.

Pier Foundations

It is our understanding that pier foundations are proposed for support of the covered arena and barn structures. The following recommendations have been provided to address pier foundation design.

Non-Expansive Soil Considerations: Pier foundations should be a minimum of 18 inches in diameter to allow for cleaning. The piers should be designed for end bearing, and should be founded into firm native or engineered fill materials at a minimum depth of 3 feet. Additional excavation depth, as indicated by our representative in the field at the time of drilling, may be required if it is determined that adequate bearing materials are not present within the excavation. For the above configuration, an allowable dead plus live load bearing capacity of 3,000 psf may be used for design. The above values are for total loads, and may be increased by one-third for short term wind and seismic loads.

Casing may be required if piers extend below the groundwater table, or where excessive sloughing of the upper materials is observed. In addition, the drilled piers should be cleaned as necessary so that no more than 1 to 2 inches of slough remains at the bottom, and any residual slough should be tamped. A representative from our firm should be present during drilling operations to observe and document that adequate bearing materials have been exposed, and provide additional recommendations as field conditions dictate.

No reduction in the capacity of an individual pier is required, provided that a center to center spacing of a least three pier diameters is used. Total settlement of cast-in-place piers is estimated to be less than 1/2 inch.

Resistance to lateral loads will be provided by the resistance of the soil against the pier, pier cap and grade beam (if applicable). Passive pressures in engineered fill or native materials may be taken as 350 pounds per cubic foot (pcf) acting over one and one-half pier diameters. For pier design, the upper 2 feet of soil should be neglected when considering the effects of passive pressure.

Expansive Soil Considerations: A review of our test pit logs indicates that expansive clay soils were encountered along the south end of the project site (where the covered arena and barns are proposed). Where expansive soils are encountered, the pier excavations should be excavated through the expansive soil and bear a minimum of 12 inches into the underlying bedrock materials.

It is our understanding that the modular barns and covered arena structures are constructed such that differential foundation movements can be tolerated. If differential movements of the foundations resulting from expansive soil conditions is acceptable, the proposed piers could be excavated to the minimum recommended depths, with the understanding that additional mitigative measures may be required at some future time. These mitigative measures will likely include stabilization of the building pad subgrades and re-leveling of the structures.

Review of a typical covered arena improvement plan indicates that a 4 inch high by 8 inch wide non-structural curb is to be installed between the piers, beneath the walls. It is our understanding that the curbs are intended to hold the bedding materials in place. It should be noted that any sort of shallow unreinforced concrete improvements constructed within the expansive soil materials have a high potential for becoming distressed (i.e. cracked) with fluctuations of moisture content. If on-going repairs to any distressed curbs are not desired, consideration should be given to construction of a structural grade beam.

5.9 Slab-on-Grade Construction

It is our opinion that soil supported slab-on-grade floors could be used for the main floor, contingent on proper subgrade preparation. We offer the following comments and recommendations concerning support of slab-on-grade floors.

Slab Underlayment: As a minimum for slab support conditions, the slab should be underlain by a minimum 4 inch crushed rock layer and covered by a moisture retarding plastic membrane. An optional blotter sand layer of 1 inch above the plastic membrane is sometimes used in aiding curing of the concrete, however, if omitted, special curing procedures may be necessary. Slab design is the purview of the structural engineer. Slab underlayment should be in accordance with ASTM E1643 and E1745, and is the purview of the project structural engineer.

Slab Moisture Protection: Our experience has shown that vapor transmission through concrete is controlled through proper concrete mix design. As such, proper control of moisture vapor transmission should be considered in the design of the slab as provided by the project architect, structural or civil engineer. It should be noted that placement of the recommended plastic membrane, proper mix design, and proper slab underlayment and detailing per ASTM E1643 and E1745 will not provide a waterproof condition. If a waterproof condition is desired, we recommend that a waterproofing expert be consulted for slab design.

Slab thickness and Reinforcement: Interior concrete slabs-on-grade not subject to heavy loads should be a minimum of 4 inches thick. A 4 inch thick slab should be reinforced with a minimum of No. 3 deformed reinforcing bars placed at 24 inches on center both ways, at the center of the structural section. The aforementioned reinforcement may be used for anticipated floor loads not exceeding 250 psf. If floor loads greater than 250 psf are anticipated, the slab should be evaluated by a structural engineer. Joints should be provided at a spacing of less than 30 times the slab thickness for unreinforced slabs to divide the slab into nearly square sections.

For expansive soil conditions, the spacing of reinforcing bars should be 18 inches on center in both directions. All foundation and slab areas on expansive soils should be presaturated and verified by a representative of our firm prior to concrete placement.

Vertical Deflections: Soil-supported slab-on-grade floors can deflect downward when vertical loads are applied, due to elastic compression of the subgrade. For design of concrete floors, a modulus of subgrade reaction of k = 150 psi per inch would be applicable for native soils and engineered fills.

Exterior Flatwork: Exterior concrete flatwork need not be underlain by a rock cushion where non-expansive soils are encountered. However, some vertical movement of concrete should be anticipated when arranging outside concrete flatwork joints where rock is omitted. Where expansive soils are encountered, a 4 inch rock cushion under concrete flatwork and presaturation is recommended.

5.10 Underground Facilities Construction

We offer the following comments and recommendations concerning underground facility construction.

Trench Sidewalls: Trenches or excavations in soil should be shored or sloped back in accordance with current OSHA regulations prior to persons entering them. Where clay rind in combination with moist conditions is encountered in fractured bedrock, the project engineering geologist should be consulted for appropriate mitigation measures. The potential use of a shield to protect workers cannot be precluded.

Backfill Materials: Backfill materials for utilities should conform to the local jurisdiction's requirements. It should be realized that permeable backfill materials will likely carry water at some time in the future. The need for drainage of some of these facilities may be necessary.

When selecting backfill materials within structural areas, planning for proper drainage should be considered. Due to the relatively flat nature of building pad grades and the surrounding exterior grades associated with commercial/retail developments, an impermeable backfill is useful to keep moisture out from underneath the structure. As a minimum, trench backfill materials within the building pad and extending a minimum of 5 feet outside the pad, should consist of select soil materials compacted to a low permeability. In addition, grout cutoffs around all utility penetrations under the building footprint are also useful. Once the orientation of the structures are known, consultation and review can be provided at your request to address these issues.

If free draining materials are used for utility backfill under the proposed structures, drainage of these trenches will be required. It may also be possible to use the utility trench network under the building as a drain. This would entail construction of plug and drain provisions within the utility trenches to capture and convey seepage water to an appropriate discharge facility (i.e. storm drain

system). If this option is selected, utility trenches within the building pad should be excavated such that adequate grades are maintained within the bottom of the trench (minimum one percent) to convey the water to appropriate discharge points. Backfill materials within these trenches should consist of vibra-plated crushed rock.

Backfill Compaction: All backfill, placed after the underground facilities have been installed, including lot wet/dry utilities and lateral connections, should be compacted a minimum of 90 percent relative compaction. Compaction should be accomplished using lifts which do not exceed 12 inches. However, thickness of the lifts should be determined by the contractor. If the contractor can achieve the required compaction using thicker lifts, the method may be judged acceptable based on field verification by a representative of our firm using standard density testing procedures. Light weight compaction equipment may require thinner lifts to achieve the required densities.

A common problem occurs on building pads graded with large equipment and rocky fill materials where the excavated spoils from utilities are too rocky to place as engineered fill back in the trench with the common compaction practices employed by the subcontractors installing these utilities. We recommend that where excavated soils are too rocky to place and compact to a tight condition with low void space, these materials be replaced with a proper import material for compaction. If rocky materials are placed in trenches as backfill without adequate fines content to fill the voids and allow proper compaction, these trenches can become collection points or transmission conduit for excessive water and could cause areas within or adjacent to the trenches to undergo moisture or settlement related problems.

Excavation: Based on our test pits, we expect that utility trenches will likely encounter hard rock excavation conditions especially in deeper cut areas. Utility contractors should be prepared to use special rock trenching equipment such as rock wheel excavators or large excavators such as a CAT 235 or CAT 245. Blasting to achieve utility line grades, especially in planned cut areas, cannot be precluded. Water inflow into any excavation approaching hard rock surface is likely to be experienced in all but the driest summer and fall months. Pre-ripping during mass grading may be beneficial and should be considered with the Geotechnical Engineer prior to, or during mass grading.

Utility Penetration Through Foundations: We suggest that all utility penetrations through or beneath foundations should be backfilled with low permeability materials, such as slurry, grout, or concrete in order to minimize moisture migration through trench backfill materials when the utility trenches under the structure are not intended to be used as drains.

5.11 Retaining Walls

Our design recommendations and comments regarding retaining walls for the project site are discussed below.

Retaining Wall Foundations: For footings founded in engineered fill or native soil, an allowable dead plus live load bearing capacity of 1,500 p.s.f. should be used. The following allowable pressures may be increased by 1/3 for short term wind or seismic loads.

Resisting Forces: Lateral forces on the retaining walls may be resisted by passive pressure acting against the side of the wall footing and/or friction between the soil and the bottom of the footing. A passive equivalent fluid weight of 350 pcf may be used against the sides of shallow footings founded in native soil or engineered fill. A friction factor of 0.30 may be used at the base of footings founded on soil or engineered fill. If friction and passive pressures are combined, the

lesser value should be reduced by 50%. All backfill placed behind retaining walls or against retaining wall footings should be compacted in accordance with the "Engineered Fill" section of this report. The allowable bearing pressure and depth of foundation should be as given in the "Foundations" section of this report.

Retaining Wall Lateral Pressures: Based on our observations and testing, the retaining wall should be designed to resist lateral pressure exerted from a soil media having an equivalent fluid weight as follows.

Wall Type	Wall Slope Configuration	Equivalent Fluid Weight (pcf)	Surcharge Load (psf)*	Lateral Pressure Coefficient
Free Cantilever	Flat	40	per structural	0.30
	2H:1V	60	NA	NA
Restrained**	Flat	60	per structural	0.47

* The surcharge loads should be applied as uniform loads over the full height of the walls as follows: Surcharge Load (psf) = (q) (K), where q = surcharge in psf, and K = coefficient of lateral pressure. Final design is the purview of the project structural engineer.

** Restrained conditions shall be defined as walls which are structurally connected to prevent flexible yielding, or rigid wall configurations (i.e. walls with numerous turning points) which prevent the yielding necessary to reduce the driving pressures from an at-rest state to an active state.

Wall Drainage: The above criteria is based on fully drained conditions. For these conditions, we recommend that a blanket of filter material be placed behind all proposed walls. The blanket of filter material should be a minimum of 12 inches thick and should extend from the bottom of the wall to within 12 inches of the ground surface. The filter material should conform to Class One, Type B permeable material as specified in Section 68 of the California Department of Transportation Standard Specifications, current edition. A typical 1"x#4 concrete coarse aggregate mix approximates this specification. A clean pea gravel or crushed rock is also acceptable, provided filter fabric is used to separate the open graded gravel/rock from the surrounding soils. The top 12 inches of wall backfill should consist of a compacted native soil cap. A filter fabric should be placed on top of the gravel filter material to separate it from the native soil cap. A 4 inch diameter drain pipe should be installed near the bottom of the filter blanket with perforations facing down. The drain pipe should be underlain by at least 4 inches of filter-type material. As an alternative to drain pipe, where deemed appropriate, weep holes may be provided. Adequate gradients should be provided to discharge water that collects behind the retaining wall to a controlled discharge system. Prior to placement of the drainage blanket, additional consideration should be given to the use of a waterproofing membrane such as bituthene or equivalent membrane system on the outside of the wall.

5.12 Roadway Design

We understand that decomposed granite (DG) will be used for the associated roadways and parking areas. The following comments and recommendations are given for roadway design and construction purposes. All roadway construction and materials used should conform to applicable sections of the latest edition of the California Department of Transportation Standard Specifications.

Subgrade Compaction: After installation of any underground facilities, the upper 8 inches of subgrade soils under pavements or DG sections should be compacted to a minimum relative compaction of 95 percent based on the ASTM D1557 test method at a moisture content above optimum. All subgrades should be proof-rolled with a full water truck or equivalent immediately before roadway construction (either asphalt or decomposed granite), in order to verify their condition. If used, aggregate bases should also be compacted to a minimum relative compaction of 95 percent based on the aforementioned test method.

According to the Rescue Fire Protection District, fire access roads must be all weather and capable of supporting a 40,000 pound load. The minimum recommended surfacing on compacted soil subgrade is 6 inches of aggregate base. Alternate surfacing designs may be permitted provided the road is capable of supporting a 40,000 pound road, and is all weather.

It is our understanding that in other equestrian developments, a 10 inch section of compacted DG is placed over 6 inches of compacted aggregate base (AB). The use of compacted DG over the compacted AB is considered an acceptable section provided that increased regular maintenance intervals compared to the use of only exposed AB is acceptable. It should be noted that either alternative will require more frequent maintenance compared to asphalt pavements.

The actual thickness of DG remains the purview of the client, however, from a geotechnical perspective as it relates to short-term support of light vehicle applications, a minimum of 6 inches of DG should be used. Please note that thicker DG sections are anticipated to provide enhanced durability provided that surface grades are maintained to allow water to sheet flow off to an appropriate discharge facility. In order to help maintain the longevity of the DG surfaces, care should be taken to prevent water from flowing in channelized concentration over the surfaces and subsequently eroding the materials.

It is our understanding that maintaining all-weather capabilities is of concern for the fire access roads. It is anticipated that the use of cement treated DG will provide enhanced structural support and all weather capabilities while still providing a surface suitable for horse traffic. If this option is selected along fire access roads or any roads subjected to heavy channelized traffic, the following recommendations have been provided to address cement treatment of the DG materials.

Design Criteria: Critical features that govern the durability of a roadway section include the stability of the subgrade; the presence or absence of moisture, free water, and organics; the fines content of the subgrade soils; the traffic volume; and the frequency of use by heavy vehicles. Soil conditions can be defined by a soil resistance value, or "R"-Value, and traffic conditions can be defined by a Traffic Index (TI).

Design Values: Laboratory testing was performed on a bulk sample representative of the silty SAND materials expected to be exposed at subgrade within the parking lots and roadways as well as our experience with similar materials in the area. An R-value of 37 was determined for the materials tested. However, to account for expansion pressures developed during laboratory testing, a design R-Value of 25 was used for roadway design purposes.

Design values provided are based upon properly drained subgrade conditions. Although the R-Value design to some degree accounts for wet soil conditions, proper surface and landscape drainage design is integral in performance of the roadway sections with respect to stability and degradation of the roadway.

The following recommendations are preliminary and intended for estimating purposes only. Final cement treat recommendations, including percentages and actual section thickness will be required once a DG source is obtained. In evaluating the use of the DG materials, we have assumed certain pavement design criteria so that an equivalent alternative structural roadway section could be designed. For this evaluation we have assumed that the roadways will have a Traffic Index (TI) of 6.0, and the supporting subgrade soils will have a design R-Value of 25.

Based on the above information, a cement treated section of 12 inches of DG material has been determined for the proposed fire access roads. The cement treated DG materials should also be compacted to a minimum relative compaction of 95% based on the ASTM D1557 test method.

The road should be maintained as required and as dictated by the conditions observed. Please note that the use of cement treated roadway sections without asphalt concrete will require more regular maintenance due to the unraveling tendencies of DG. Although the degree of unraveling is anticipated to be greatly reduced with the cement treatment, regular maintenance including spot cement treatment is likely necessary.

6.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. This report has been prepared for the exclusive use of Springs Equestrian Center for specific application to the Springs Equestrian Center project. Youngdahl Consulting Group, Inc. has endeavored to comply with generally accepted geotechnical engineering practice common to the local area. Youngdahl Consulting Group, Inc. makes no other warranty, express or implied.

2. As of the present date, the findings of this report are valid for the property studied. With the passage of time, changes in the conditions of a property can occur whether they be due to natural processes or to the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may cause this report to be invalid, wholly or partially. Therefore, this report should not be relied upon after a period of three years without our review nor should it be used or is it applicable for any properties other than those studied.

3. Section 3317.8 in Appendix Chapter 33 of the latest edition of the California Building Code is applicable to this report. This section states that, in regard to the transfer of responsibility, if the Geotechnical Engineer of Record for the project site is not maintained into and through the grading phase of the project, the work shall be stopped until the replacement has agreed in writing to accept their responsibility within the area of technical competence for approval upon completion of the work.

   WARNING: Do not apply any of this report's conclusions or recommendations if the nature, design, or location of the facilities is changed. If changes are contemplated, Youngdahl Consulting Group, Inc. must review them to assess their impact on this report's applicability. Also note that Youngdahl Consulting Group, Inc. is not responsible for any claims, damages, or liability associated with any other party's interpretation of this report's subsurface data or reuse of this report's subsurface data or engineering analyses without the express written authorization of Youngdahl Consulting Group, Inc.

4. The analyses and recommendations contained in this report are based on limited windows into the subsurface conditions and data obtained from subsurface exploration. The

methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. Should any variations or undesirable conditions be encountered during the development of the site, Youngdahl Consulting Group, Inc., will provide supplemental recommendations as dictated by the field conditions.

5. The recommendations included in this report have been based in part on assumptions about strata variations that may be tested only during earthwork. Accordingly, these recommendations should not be applied in the field unless Youngdahl Consulting Group, Inc. is retained to perform construction observation and thereby provide a complete professional geotechnical engineering service through the observational method. Youngdahl Consulting Group, Inc. cannot assume responsibility or liability for the adequacy of its recommendations when they are used in the field without Youngdahl Consulting Group, Inc. being retained to observe construction. Unforseen subsurface conditions containing soft native soils, loose or previously placed non-engineered fills should be a consideration while preparing for the grading of the property. It should be noted that it is the responsibility of the owner or his/her representative to notify Youngdahl Consulting Group, Inc., in writing, a minimum of 48 hours before any excavations commence at the site.

6. Our experience has shown that vapor transmission through concrete is controlled through proper concrete mix design. As such, proper control of moisture vapor transmission should be considered in the design of the slab as provided by the project architect, structural or civil engineer. It should be noted that placement of the recommended plastic membrane, proper mix design, and proper slab underlayment and detailing per ASTM E1643 and E1745 will not provide a waterproof condition. If a waterproof condition is desired, we recommend that a waterproofing expert be consulted for slab design.

7. Following site development, additional water sources (ie. landscape watering, downspouts) are generally present. The presence of low permeability materials can prohibit rapid dispersion of surface and subsurface water drainage. Utility trenches typically provide a conduit for water distribution. Provisions may be necessary to mitigate adverse effects of perched water conditions. Mitigation measures may include the construction of cut-off systems and/or plug and drain systems. Close coordination between the design professionals regarding drainage and subdrainage conditions may be warranted.

   Seepage may be observed emanating from the cut slopes following their excavation during the following rainy season or following development of the areas above the cut. Generally this seepage is not enough flow to be a stability issue to the cut slope, but may be an issue for the owner of the lot at the base of the cut from a surface drainage and standing water (damp spot) standpoint. This amount of water is generally collected easily with landscaping drainage, surface drainage at the toe of the slope, or subsurface toe drains. Recommendations may be provided at the time of observed seepage, however, we recommend that the developer of the property disclose this possibility to future owners.

CHECKLIST OF RECOMMENDED SERVICES

	Item Description	Recommended	Not Anticipated
1	Provide foundation design parameters	Included	
2	Review grading plans and specifications	✓	
3	Review foundation plans and specifications	✓	
4	Observe and provide recommendations regarding demolition	✓	
5	Observe and provide recommendations regarding site stripping	✓	
6	Observe and provide recommendations on moisture conditioning removal, and/or precompaction of unsuitable existing soils	✓	
7	Observe and provide recommendations on the installation of subdrain facilities	✓	
8	Observe and provide testing services on fill areas and/or imported fill materials	✓	
9	Review as-graded plans and provide additional foundation recommendations, if necessary	✓	
10	Observe and provide compaction tests on storm drains, water lines and utility trenches	✓	
11	Observe foundation excavations and provide supplemental recommendations, if necessary, prior to placing concrete	✓	
12	Observe and provide moisture conditioning recommendations for foundation areas and slab-on-grade areas prior to placing concrete	✓	
13	Provide design parameters for retaining walls	Included	
14	Provide finish grading and drainage recommendations	Included	
15	Provide geologic observations and recommendations for keyway excavations and cut slopes during grading	✓	
16	Excavate and recompact all test pits within structural areas	✓	

APPENDIX A

Field Study

Vicinity Map
Site Plan
Logs of Exploratory Test Pits

Introduction

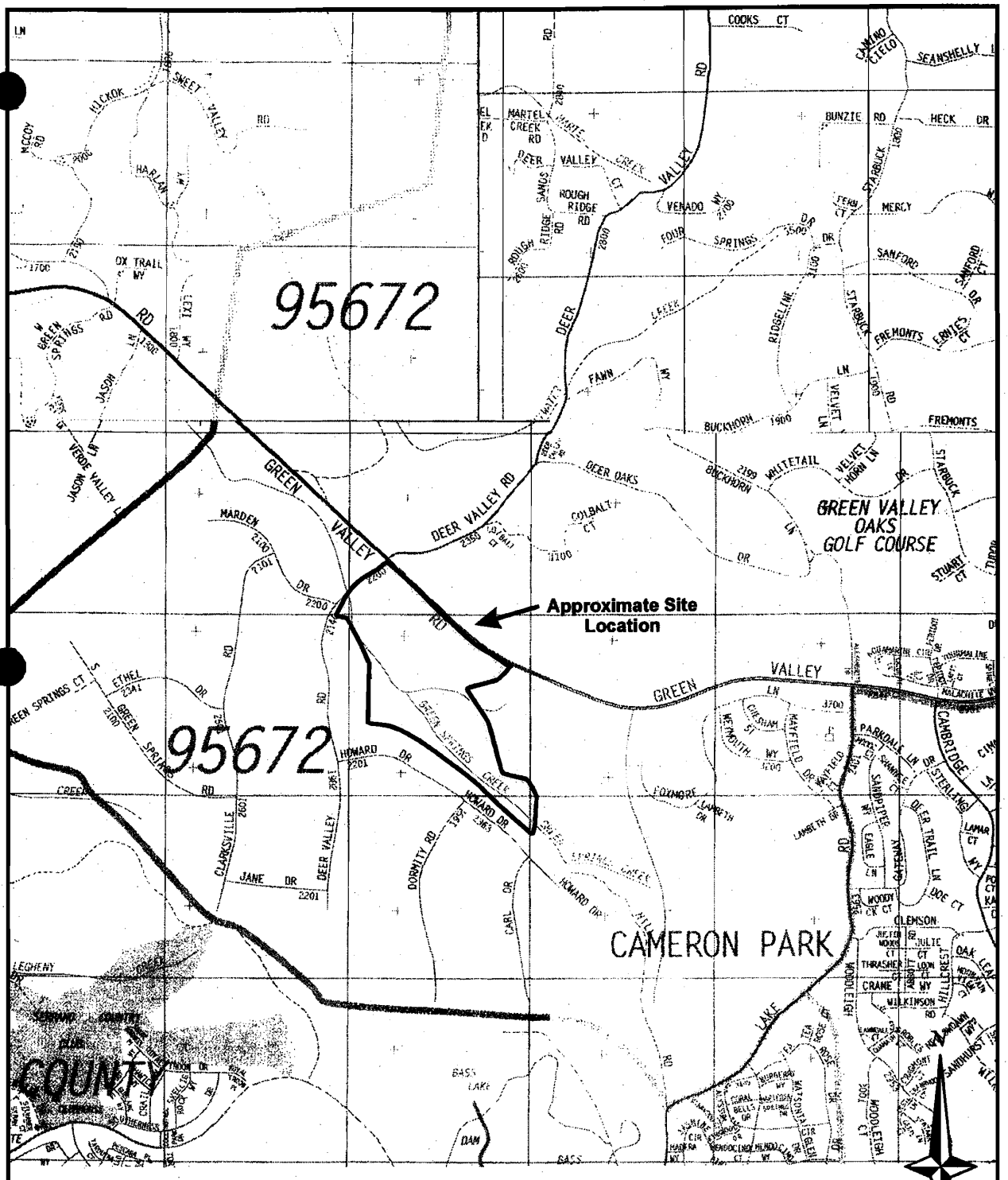
The contents of this appendix shall be integrated with the geotechnical engineering study of which it is a part. They shall not be used in whole or in part as a sole source for information or recommendations regarding the subject site.

Field study

Our field study included a site reconnaissance by a Youngdahl Consulting Group, Inc., representative followed by a subsurface exploration program conducted on 3 November 2004, which included the excavation of 12 test pits under his direction at the approximate locations shown on Figure A-2, Appendix A. Excavation of the test pits was accomplished with a John Deere 310SG rubber tire-mounted backhoe equipped with an 24 inch wide bucket. As the excavation proceeded, bulk and bag samples were collected from the pits and returned to our laboratory for additional examination and testing.

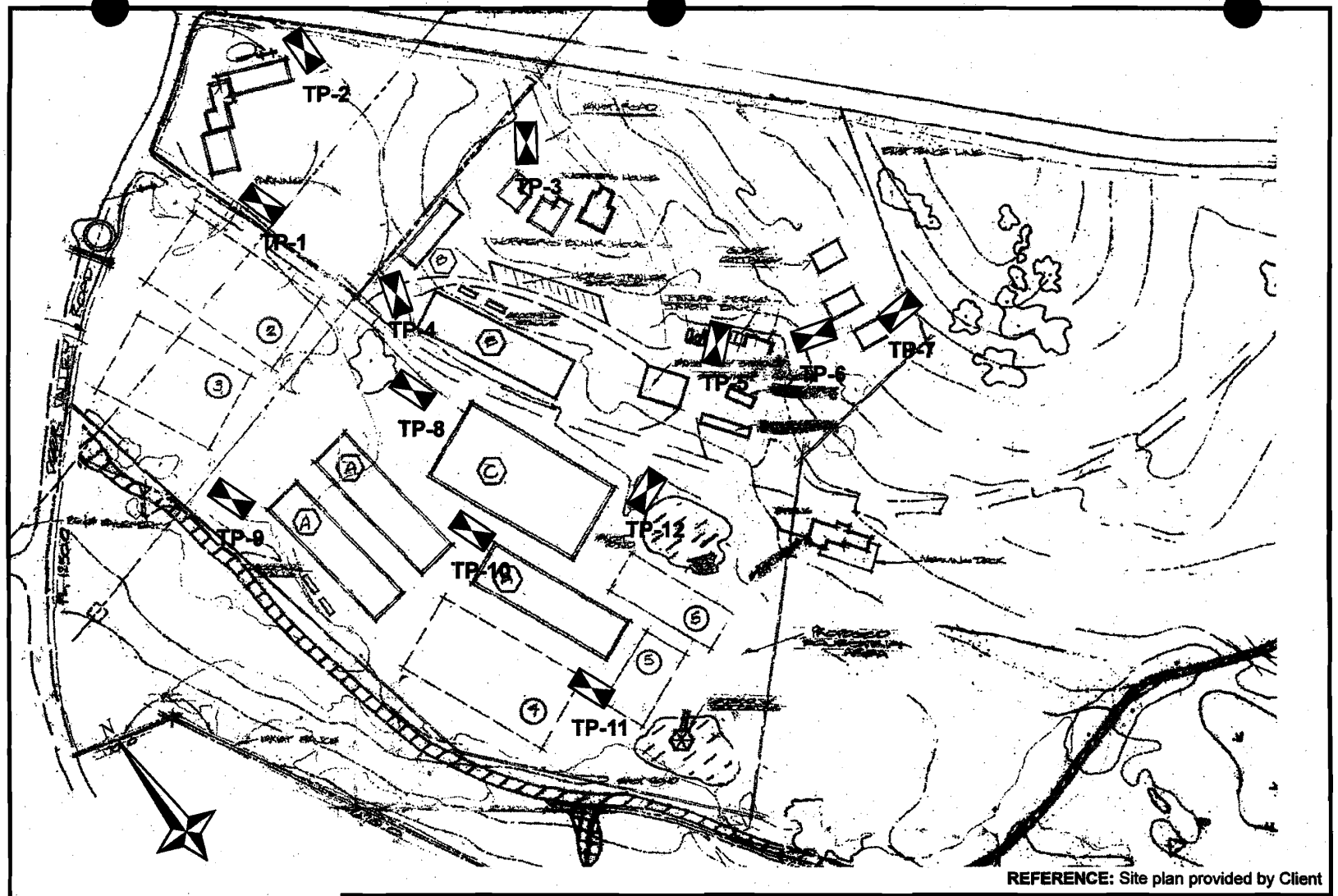
The Exploratory Test Pit Logs describe the vertical sequence of soils and materials encountered in each test pit, based primarily on our field classifications and supported by our subsequent laboratory examination and testing. Where a soil contact was observed to be gradual, our logs indicate the average contact depth. Our logs also graphically indicate the sample type, sample number and approximate depth of each soil sample obtained from the test pits.

The soils encountered were logged during excavation and provide the basis for the "Logs of Test Pits", Figures A-3 through A-14, this Appendix. These logs show a graphic representation of the soil profile, the location and depths at which samples were collected.



REFERENCE: Sacramento Counties Thomas Guide 2004 Pages242,243,262 & 263

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E04468.1 November 2004	**VICINITY MAP** **Springs Equestrian Center** Rescue, California	FIGURE A-1



YOUNGDAHL CONSULTING GROUP, INC.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Project No.: E04468.1

November 2004

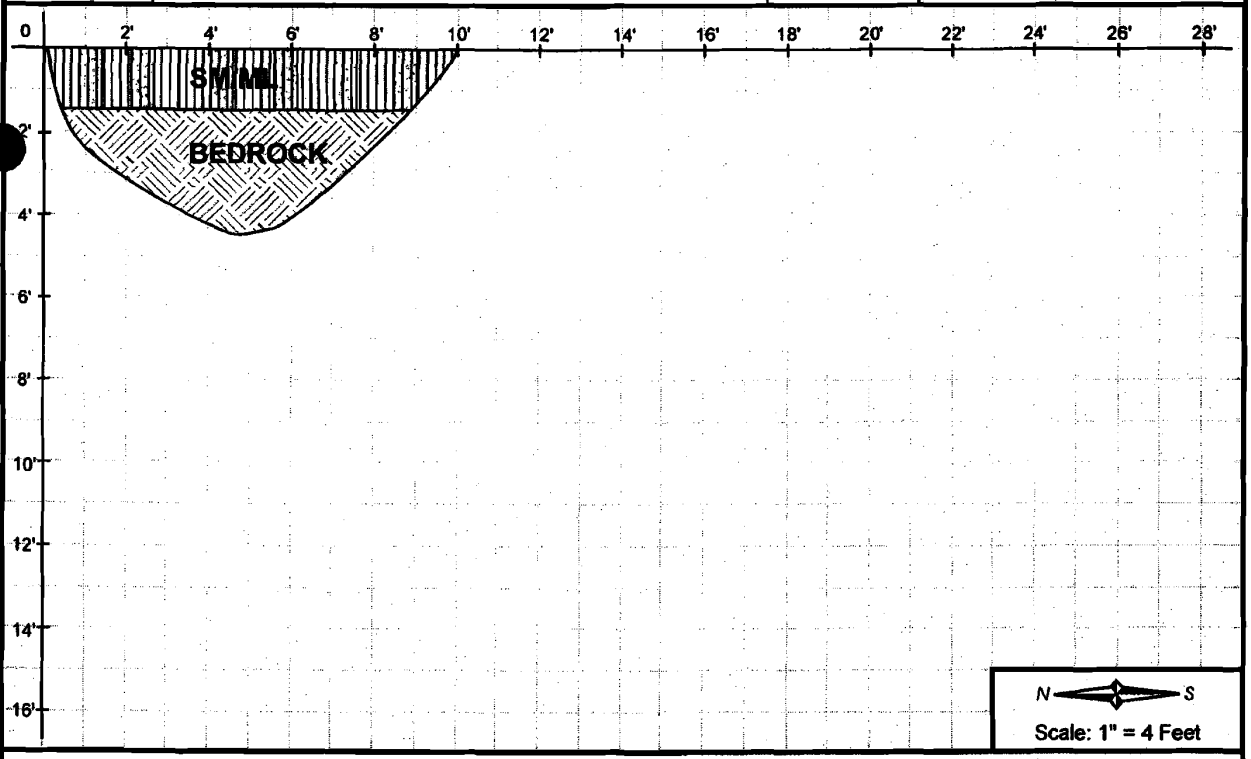
SITE PLAN

Springs Equestrian Center
Rescue, California

FIGURE A-2

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-1**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **N-S**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1.5'	Dark red brown silty **SAND**/sandy **SILT(SM/ML)**, loose, moist	**Bulk 1** @ 0 - 1.5'	*Grass*
@ 1.5' - 4.5'	Light yellow brown **BEDROCK**, completely to moderately weathered with 6" minus rock fragments, slightly moist	**Bulk 2** @ 1.5'- 4.5'	
	Test pit terminated at 4.5' (Practical refusal) No free groundwater encountered No caving noted		



Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations. Note, too, that the passage of time may affect conditions at the sampling locations.

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FIGURE A-3

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-2**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **S-N**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 2'	Dark red brown silty **SAND**/sandy **SILT(SM/ML)**, loose to medium dense, slightly moist	**Combined with Bulk 1**	*Grass*
@ 2' - 11'	Light yellow brown **BEDROCK**, completely to moderately weathered with 6" minus rock fragments, slightly moist	**Combined with Bulk 2**	
	Test pit terminated at 11' (Practical refusal) No free groundwater encountered No caving noted		

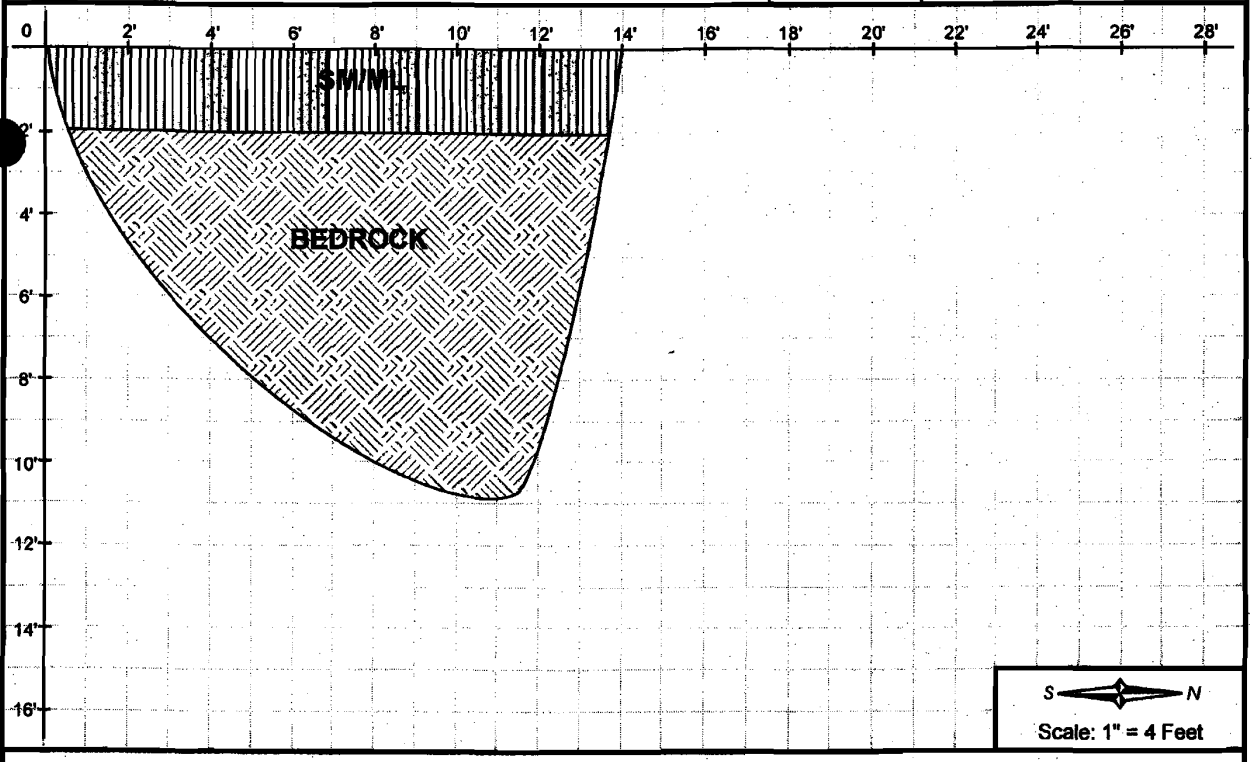

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FIGURE A-4

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-3**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **NE-SW**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1'	Dark red brown silty **SAND**/sandy **SILT(SM/ML)**, loose to medium dense, slightly moist		*Grass*
@ 1' - 2'	*Grades red yellow*		
@2' - 11'	Light yellow brown **BEDROCK**, completely weathered with 6" minus rock fragments, slightly moist		
	Test pit terminated at 11' (Partial refusal < 6" in 1 min) No free groundwater encountered No caving noted		

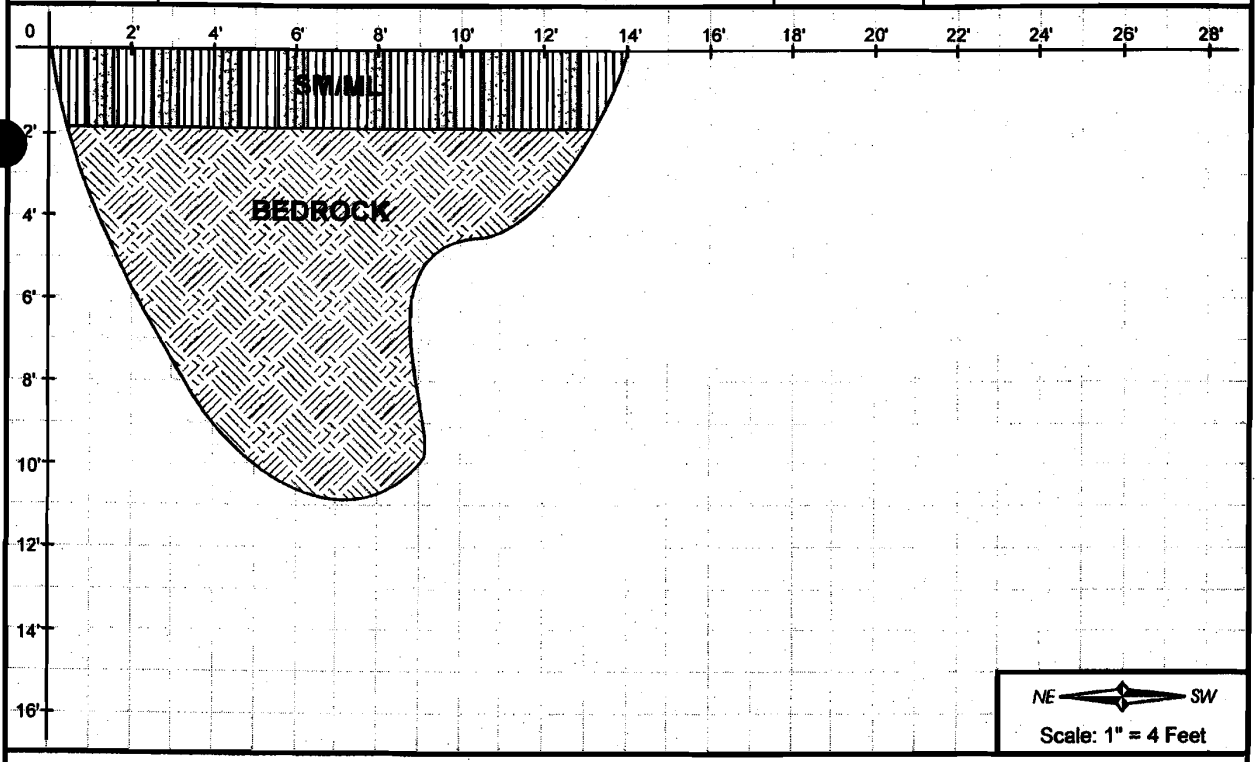

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FIGURE: A-5

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-4**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **N-S**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 2'	Brown silty **SAND(SM)**, loose to medium dense, slightly moist	**Bulk 3 @ 0 - 2'**	*Grass*
@ 2' - 3'	Yellow to red brown **BEDROCK**, completely to moderately weathered with 6" minus rock fragments, slightly moist		
	Test pit terminated at 3' (Practical refusal) No free groundwater encountered No caving noted		

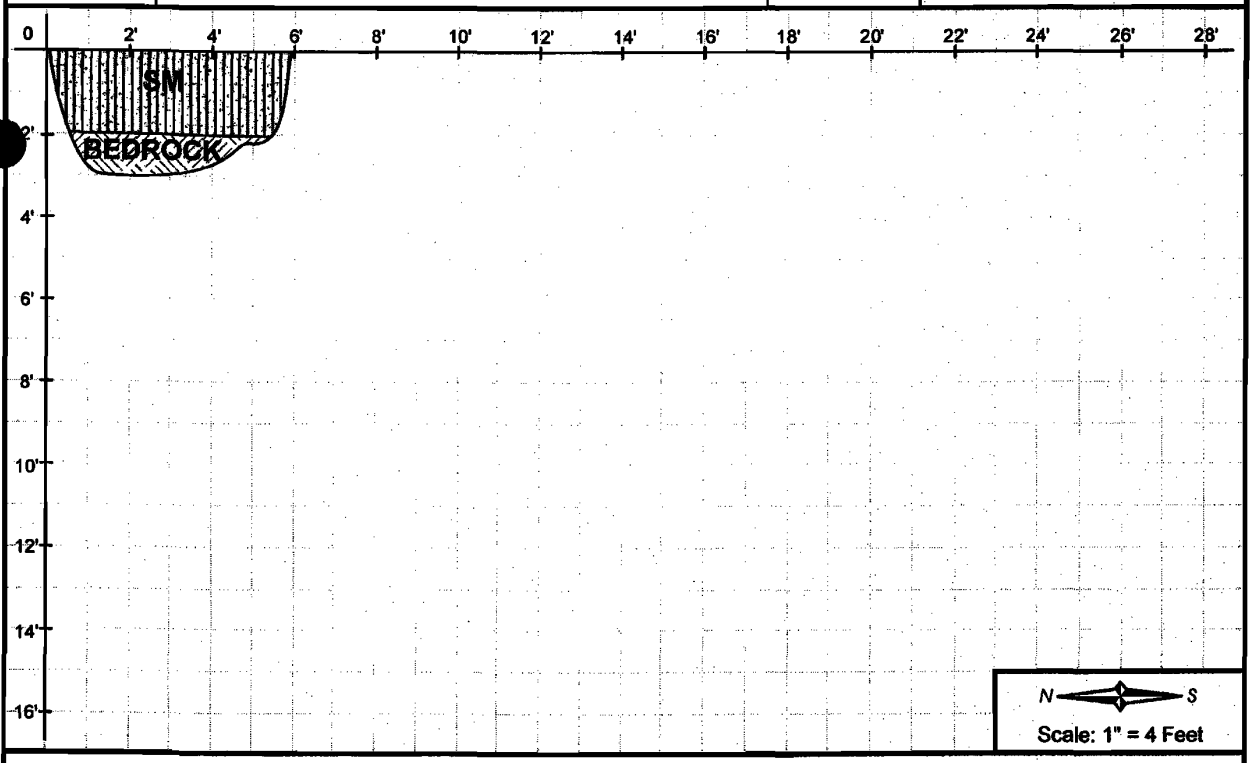

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FIGURE A-6

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-5**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **NE-SW**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 6"	Brown silty **SAND(SM)**, medium dense, slightly moist		
@ 6" - 10'	Light yellow brown **BEDROCK**, completely to moderately weathered with 6" minus rock fragments, slightly moist	**Bulk 2** @ 6" - 10'	
	Test pit terminated at 10' (Partial refusal < 6" in 1 min) No free groundwater encountered No caving noted		

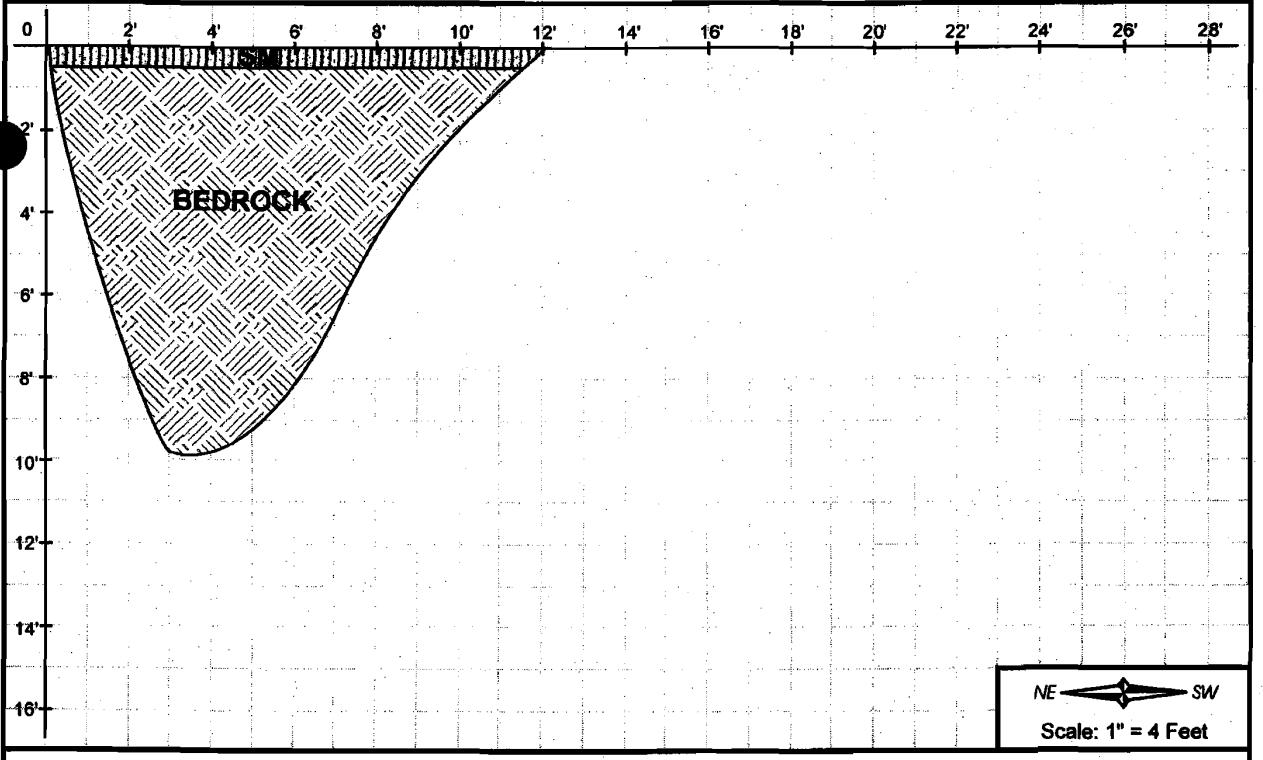

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FIGURE **A-7**

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-6**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **W-E**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 10.5'	Light yellow brown **BEDROCK**, completely to moderately weathered with 6" minus rock fragments, slightly moist		Light grass Rock outcropping on surface
	Test pit terminated at 10.5' (Partial refusal < 6" in 1 min) No free groundwater encountered No caving noted		

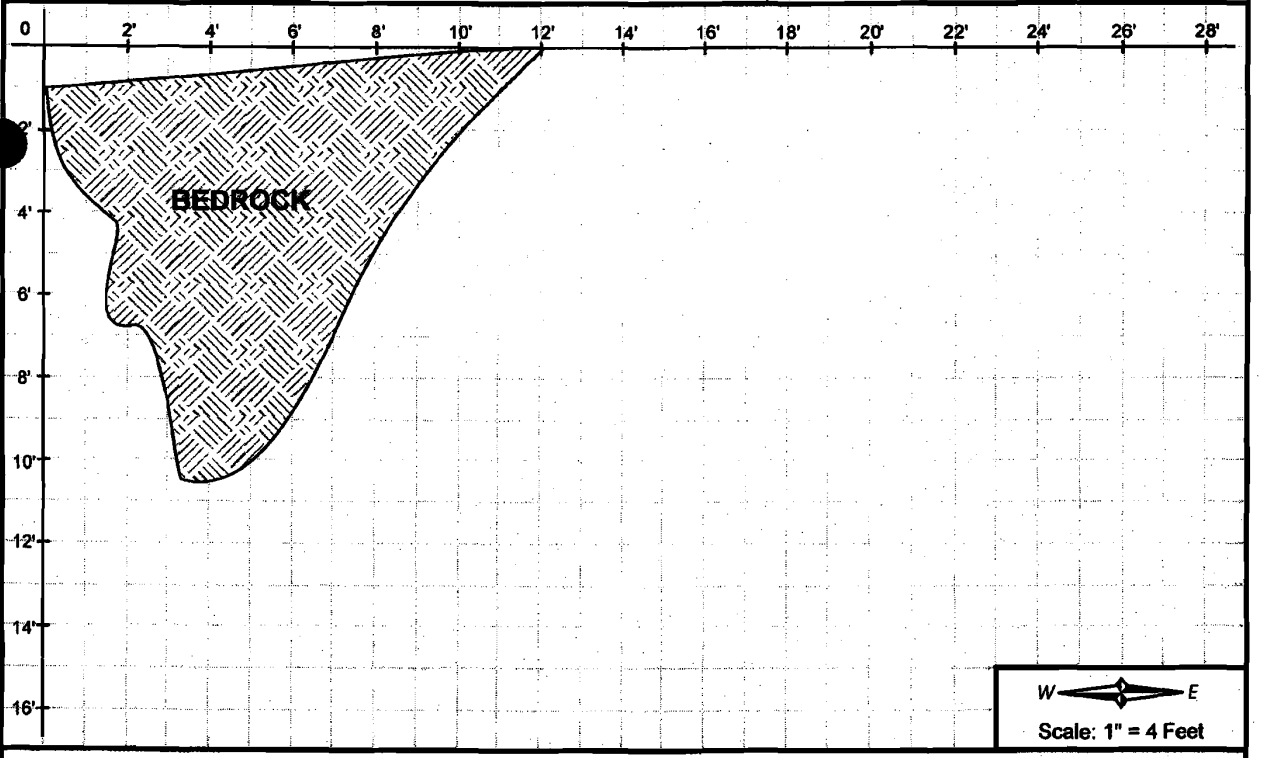

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FIGURE A-8

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-7**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **W-E**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1.5'	Dark red brown silty **SAND/sandy SILT(SM/ML)**, loose to medium dense, slightly moist		Grass
@ 1.5'-10.5'	Light yellow brown **BEDROCK**, completely to moderately weathered with 6" minus rock fragments, slightly moist		
	Test pit terminated at 10.5' (Practical refusal) No free groundwater encountered No caving noted		

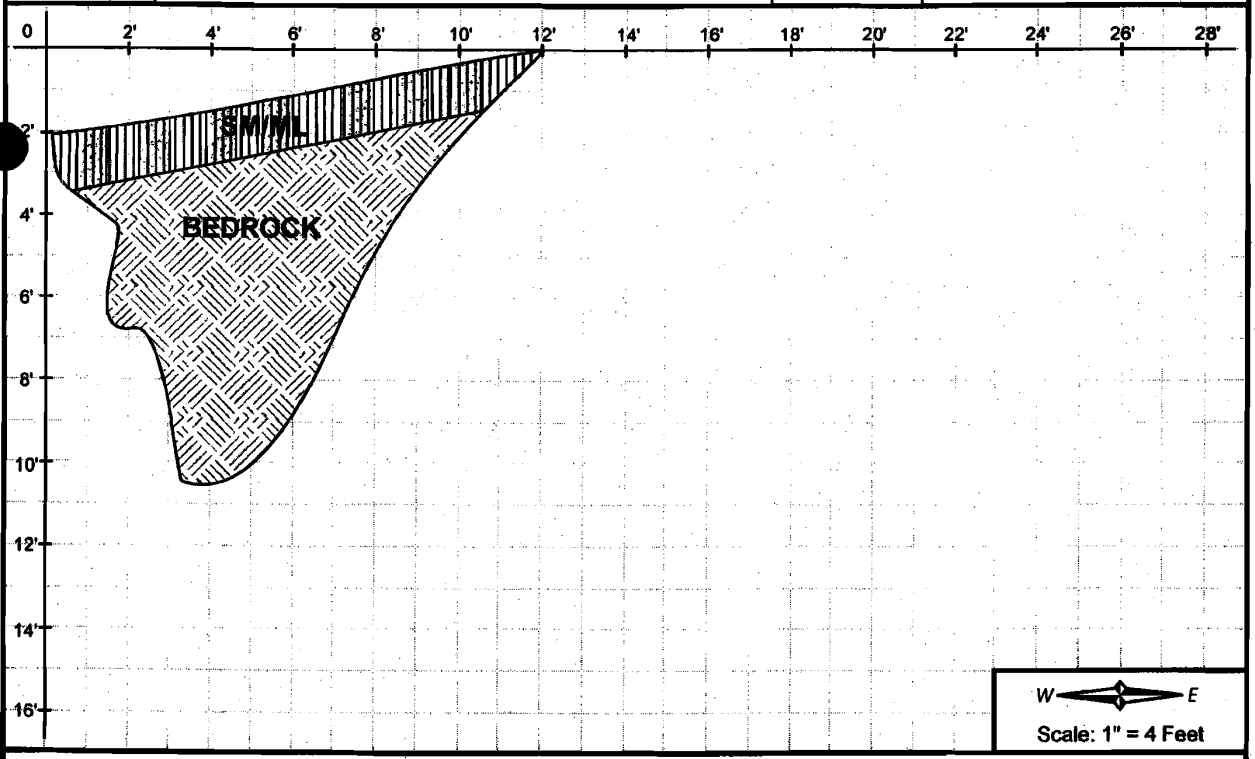

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FIGURE A-9

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-8**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **S-N**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1'	Dark red brown silty **SAND**/sandy **SILT(SM/ML)**, loose to medium dense, slightly moist		
@ 1'-2'	Light yellow brown **BEDROCK**, completely to moderately weathered with 6" minus rock fragments, slightly moist		
	Test pit terminated at 2' (Practical refusal) No free groundwater encountered No caving noted		

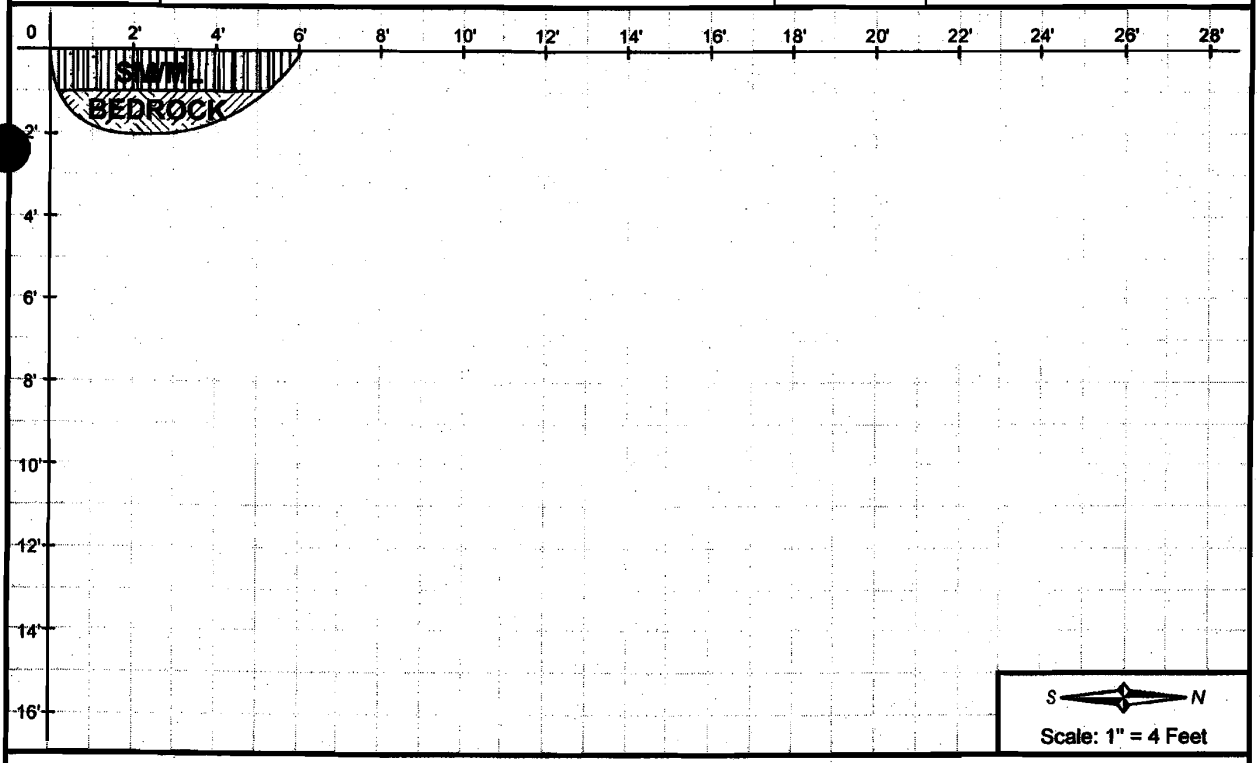

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FIGURE A-10

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-9**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **N-S**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 2.5'	Black brown silty **CLAY(CH)**, medium stiff to stiff, slightly moist	**Bulk 4** @ 0 - 2.5'	
@ 2.5' - 3'	*Grades dark brown*		
@ 3' - 13'	Light yellow brown **BEDROCK**, completely to moderately weathered with no rock fragments, slightly moist		
	Test pit terminated at 13' (Partial refusal < 6" in 1 min) No free groundwater encountered No caving noted		

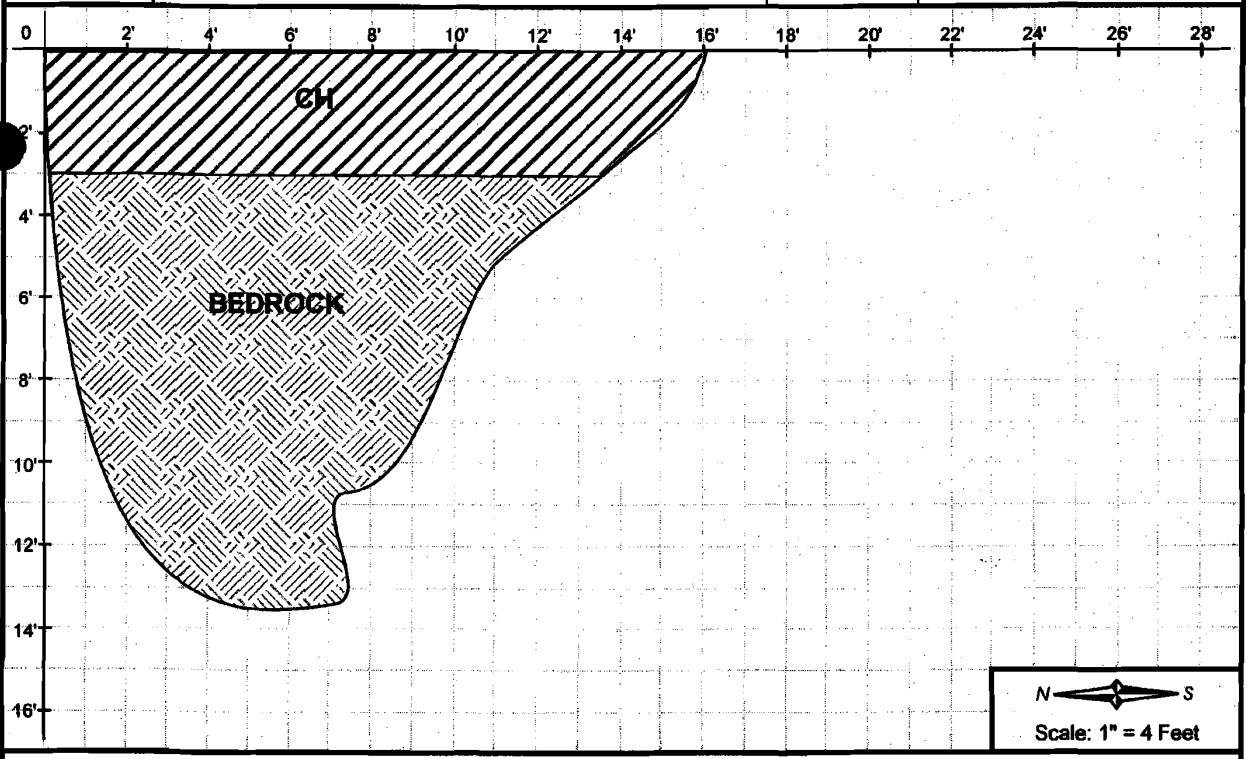

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FIGURE A-11

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-10**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **S - N**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 3.5'	Black silty **CLAY(CH)**, medium stiff to stiff, moist	**Combine with Bulk 4**	
@ 3.5' - 6'	*Grades dark brown*		
@ 6' - 13'	Light yellow brown **BEDROCK**, completely weathered with no rock fragments, slightly moist		
	Test pit terminated at 13' (Partial refusal < 6" in 1 min) No free groundwater encountered No caving noted		

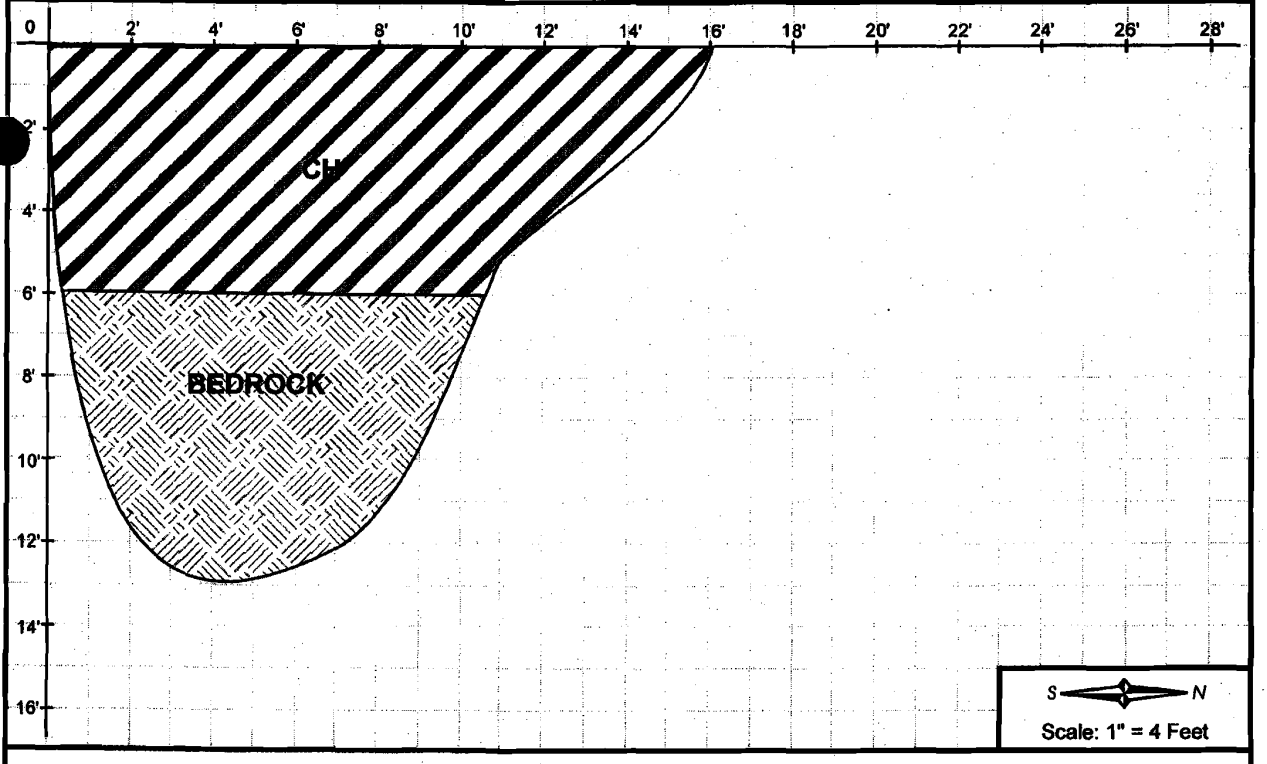

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FIGURE A-12

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-11**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **N-S**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 3'	Black silty **CLAY(CH)**, stiff, slightly moist	**Combine Bulk 4**	
@ 3' - 9'	Yellow brown **BEDROCK**, completely weathered with no rock fragments, slightly moist		
@ 9' - 11.5'	*Grades dark gray with patches of green*		
@ 11.5' -12.5'	*Grades moderately weathered with 6" minus rock fragments*		
	Test pit terminated at 12.5' (Partial refusal < 6" in 1 min) Seepage encountered at 9' No caving noted		

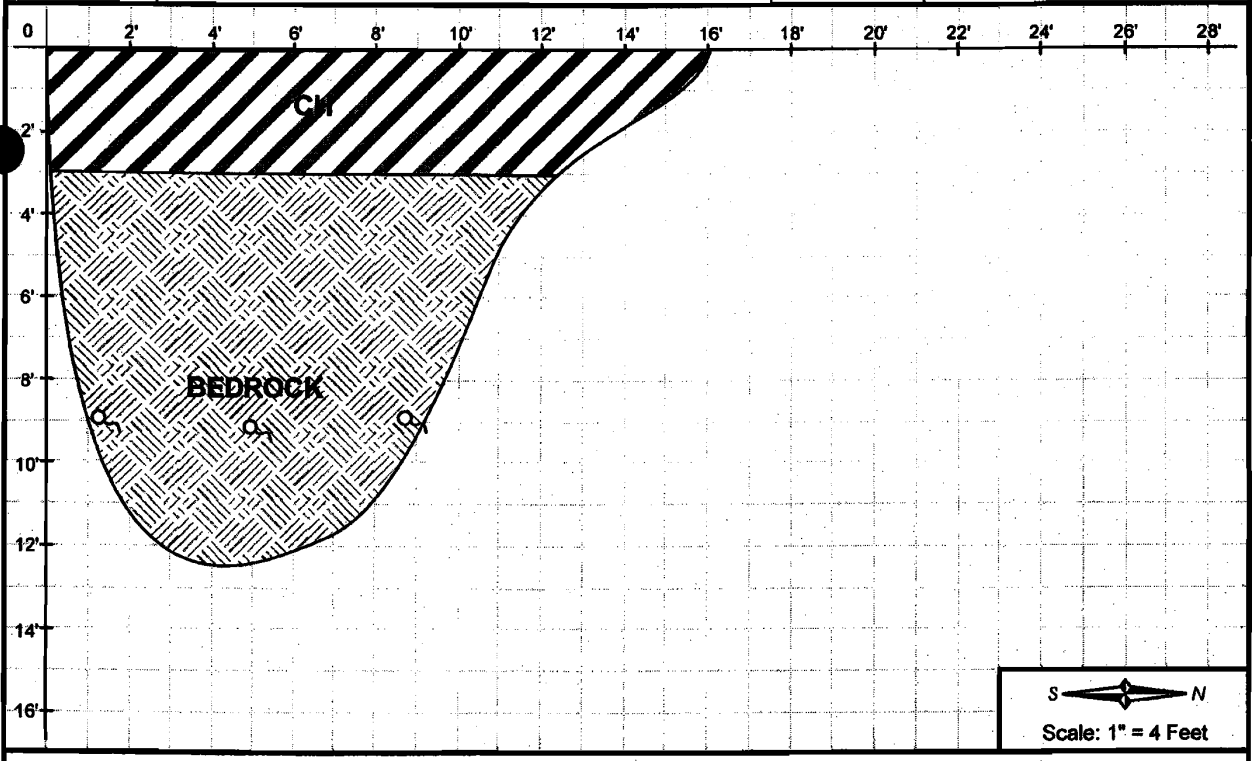

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FIGURE A-13

Logged By: **DTW**	Date: **3 November 2004**	Elevation:	Pit No. **TP-12**
Equipment: **John Deere 310 SG with 24" Bucket**		Pit Orientation: **E-W**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 2'	Dark red brown silty **SAND**/sandy **SILT(SM/ML)**, loose to medium dense, slightly moist		*Grass*
@ 2' - 6'	Light red brown silty **SAND (SM)**, medium dense, slightly moist		
@ 6' - 8'	Yellow brown sandy **CLAY(CH)**, stiff, slightly moist		
@ 8' -12'	Yellow brown **BEDROCK**, completely to moderately weathered with no rock fragments, slightly moist		
	Test pit terminated at 12.5' (Partial refusal < 6" in 1 min) Seepage encountered at 10' No caving noted		

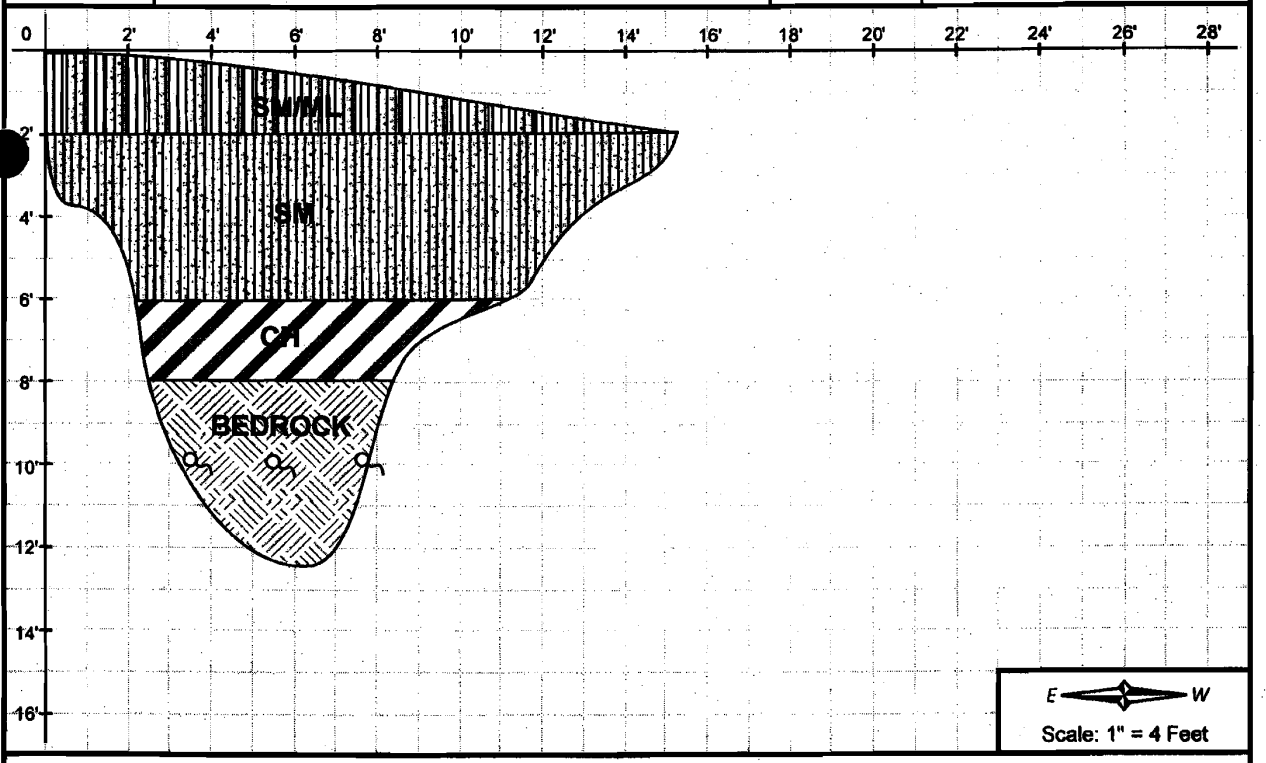

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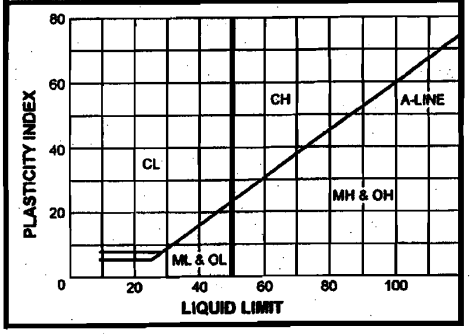
Figure A-14

UNIFIED SOIL CLASSIFICATION SYSTEMS

MAJOR DIVISION			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS Over 50% > #200 sieve	GRAVELS Over 50% > #4 sieve	Clean GRAVELS With Little Or No Fines	GW	Well graded **GRAVELS, GRAVEL-SAND** mixtures
			GP	Poorly graded **GRAVELS, GRAVEL-SAND** mixtures
		GRAVELS With Over 12% Fines	GM	Silty **GRAVELS**, poorly graded **GRAVEL-SAND-SILT** mixtures
			GC	Clayey **GRAVELS**, poorly graded **GRAVEL-SAND-CLAY** mixtures
	SANDS Over 50% < #4 sieve	Clean SANDS With Little Or No Fines	SW	Well graded **SANDS**, gravelly **SANDS**
			SP	Poorly graded **SANDS**, gravelly **SANDS**
		SANDS With Over 12% Fines	SM	Silty **SANDS**, poorly graded **SAND-SILT** mixtures
			SC	Clayey **SANDS**, poorly graded **SAND-CLAY** mixtures
FINE GRAINED SOILS Over 50% < #200 sieve	SILTS & CLAYS Liquid Limit < 50		ML	Inorganic **SILTS**, silty or clayey fine **SANDS**, or clayey **SILTS** with plasticity
			CL	Inorganic **CLAYS** of low to medium plasticity, gravelly, sandy, or silty **CLAYS**, lean **CLAYS**
			OL	Organic **CLAYS** and organic silty **CLAYS** of low plasticity
	SILTS & CLAYS Liquid Limit > 50		MH	Inorganic **SILTS**, micaceous or diamacious 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 CLAYS			PT	PEAT & other highly organic soils

PLASTICITY CHART

USED FOR CLASSIFICATION OF FINE GRAINED SOILS



SAMPLE DRIVING RECORD

BLOWS PER FOOT	DESCRIPTION
25	25 Blows drove sampler 12 inches, after initial 6 inches of seating
50/7"	50 Blows drove sampler 7 inches, after initial 6 inches of seating
50/3"	50 Blows drove sampler 3 inches during or after initial 6 inches of seating

Note: To avoid damage to sampling tools, driving is limited to 50 blows per 6 inches during or after seating interval.

SOIL GRAIN SIZE

U.S. STANDARD SIEVE	6"	3"	¾"	4	10	40	200		
	BOULDER	COBBLE	GRAVEL		SAND			SILT	CLAY
			COARSE	FINE	COARSE	MEDIUM	FINE		
SOIL GRAIN SIZE IN MILLIMETERS	150	75	19	4.75	2.0	.425	0.075	0.002	

KEY TO TEST DATA

- Standard Penetration test
- 2.5" O.D. Modified California Sampler
- 3" O.D. Modified California Sampler
- Shelby Tube Sampler
- 2.5" Hand Driven Liner
- Bulk Sample
- Water Level At Time Of Drilling
- Water Level After Time Of Drilling
- Perched Water

KEY TO TEST DATA

	Water Seepage
MD	Moisture Density Test
NFWE	No Free Water Encountered
FWE	Free Water Encountered
REF	Sampling Refusal
DD	Dry Density (pcf)
MC	Moisture Content (%)
LL	Liquid Limit
PI	Plasticity Index
PP	Pocket Penetrometer
UCC	Unconfined Compression (ASTM D2166)
TVS	Pocket Torvane Shear
EI	Expansion Index (ASTM D4829)
Su	Undrained Shear Strength

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SOIL CLASSIFICATION CHART & LOG EXPLANATION
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FIGURE A-15

APPENDIX B

Laboratory Testing

Direct Shear Test
Atterberg Limit Test
Modified Proctor Test
R-Value Test
Corrosivity Test

Introduction

Our laboratory testing program for this evaluation included numerous visual classifications, Direct Shear, Atterberg Limit, Modified Proctor, Resistence Value, and Corrosivity tests. The following paragraphs describe our procedures associated with each type of test. Graphical results of certain laboratory tests are enclosed in this appendix. The contents of this appendix shall be integrated with the geotechnical engineering study of which it is a part. They shall not be used in whole or in part as a sole source for information or recommendations regarding the subject site.

Laboratory Testing

Visual Classification Procedures

Visual soil classifications were conducted on all samples in the field and on selected samples in our laboratory. All soils were classified in general accordance with the United Soil Classification System, which includes color, relative moisture content, primary soil type (based on grain size), and any accessory soil types. The resulting soil classifications are presented on the exploration logs in Appendix A.

Soil Strength Determination Procedures

The strength parameters of the foundation soils were based on direct shear tests (ASTM D3080-90) performed on a representative sample of the near-surface soils. The results of these tests are presented on Figure B-1, this Appendix.

Atterberg Limit Determination Procedures

Atterberg limits are used primarily for classifying and indexing cohesive soils. The liquid and plastic limits, which are defined as the moisture contents of a cohesive soil at arbitrarily established limits for liquid and plastic behavior, respectively, were determined for a selected sample in general accordance with ASTM D-4318. The results of this test is presented on the enclosed Atterberg limit graphs Figures B-2, this Appendix.

Resistance Value Determination Procedures

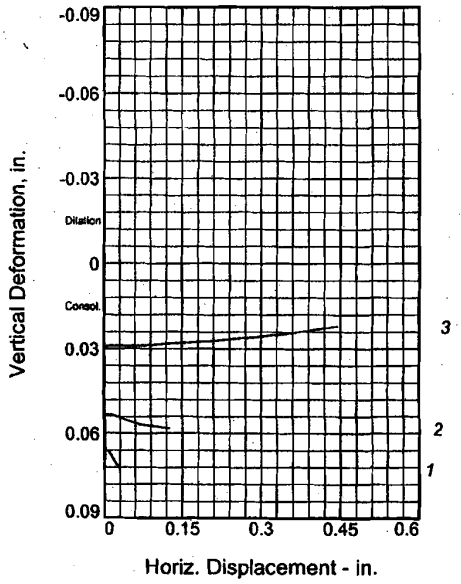
R-Value tests (California Test Method 301 - F) were performed to obtain asphalt concrete pavement design parameters. The results of this test is presented on Figure B-3, this Appendix.

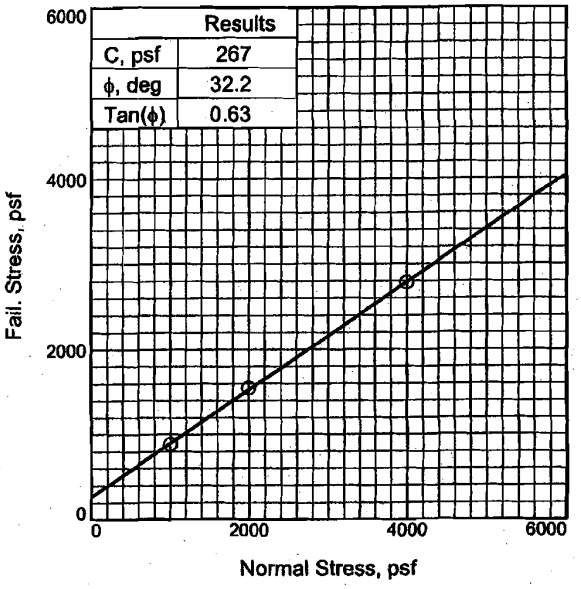
Maximum Dry Density Determination Procedures

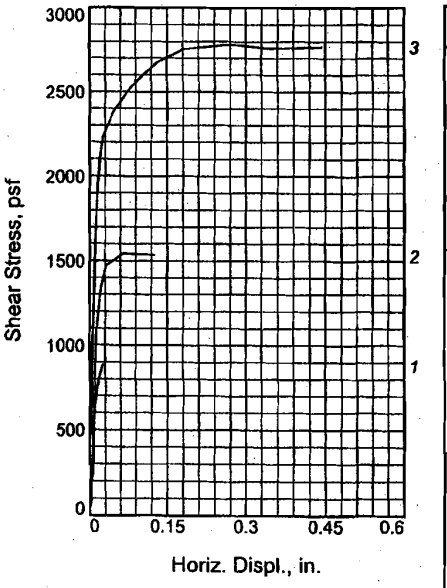
A modified Proctor Test (ASTM D1557-91A) was conducted to provide the optimum moisture and maximum dry density on the near surface material. The results of this test is presented on Figure B-4, this Appendix

Corrosivity Test Procedures

A corrosivity test typically comprises individual measurements of pH, electrical resistivity, sulfate content, and chloride content, which together indicate the corrosiveness of a soil. Corrosivity tests were performed on selected samples by an independent analytical laboratory working under subcontract to Youngdahl Consulting Group, Inc. The results of these tests are presented on the enclosed analytical certificate, this Appendix.







Sample No.		1	2	3
Initial	Water Content, %	12.0	12.0	12.0
	Dry Density, pcf	110.6	110.6	110.6
	Saturation, %	68.4	68.4	68.4
	Void Ratio	0.4507	0.4507	0.4507
	Diameter, in.	2.500	2.500	2.500
	Height, in.	1.000	1.000	1.000
At Test	Water Content, %	16.8	16.6	16.7
	Dry Density, pcf	112.1	112.4	112.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.4312	0.4269	0.4304
	Diameter, in.	2.500	2.500	2.500
	Height, in.	0.987	0.984	0.986
Normal Stress, psf		1000	2000	4000
Fail. Stress, psf		884	1545	2780
Displacement, in.		0.025	0.066	0.263
Ult. Stress, psf				
Displacement, in.				
Strain rate, in./min.		0.003	0.003	0.003

Sample Type: REMOLDED
Description: Red Brown Silty SAND w/ few clay & little gravel
LL= **PL=** **PI=**
Assumed Specific Gravity= 2.57
Remarks:

Figure Number B-1

Client:

Project: SPRINGS EQUESTRIAN CENTER GREEN VALLEY ROAD (2400)
Source of Sample: NATIVE MATERIAL
Sample Number: BK 1, 11/09/04
Proj. No.: E04468.1 **Date:**

DIRECT SHEAR TEST REPORT

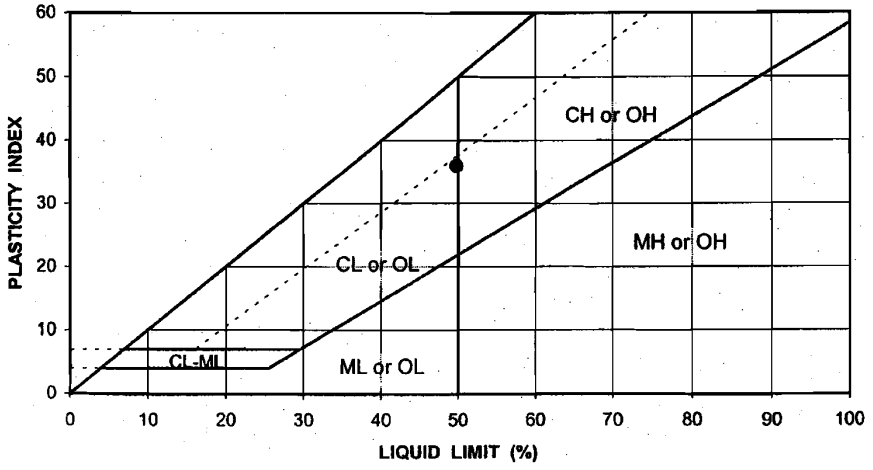
YOUNGDAHL CONSULTING GROUP, INC.

PLASTICITY INDEX TEST (ASTM D 4318)

SAMPLE NO.: **BULK 2** DEPTH:

SAMPLE DESCRIPTION: **Very Dark Brown Fat CLAY**

REMARKS:



LIQUID LIMIT (%):	50
PLASTIC LIMIT (%):	14
PLASTICITY INDEX:	36
GROUP SYMBOL:	CH
GROUP SYMBOL IF >50% #200:	--

TEST PARAMETERS:
1. Atterberg Limit Test is Processed Over #40 Sieve
2. Samples Are Air Dried & Dry Preparation Method Used
3. Estimated Percent Retained on #40 Sieve = 16%

Tested By: DN
Reviewed By: JLC

YOUNGDAHL CONSULTING GROUP, INC.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

SPRINGS EQUESTRIAN CENTER
GREEN VALLEY ROAD (2400) RESCUE, CA

PROJECT NO	DATE
04468.1	**November 2004**

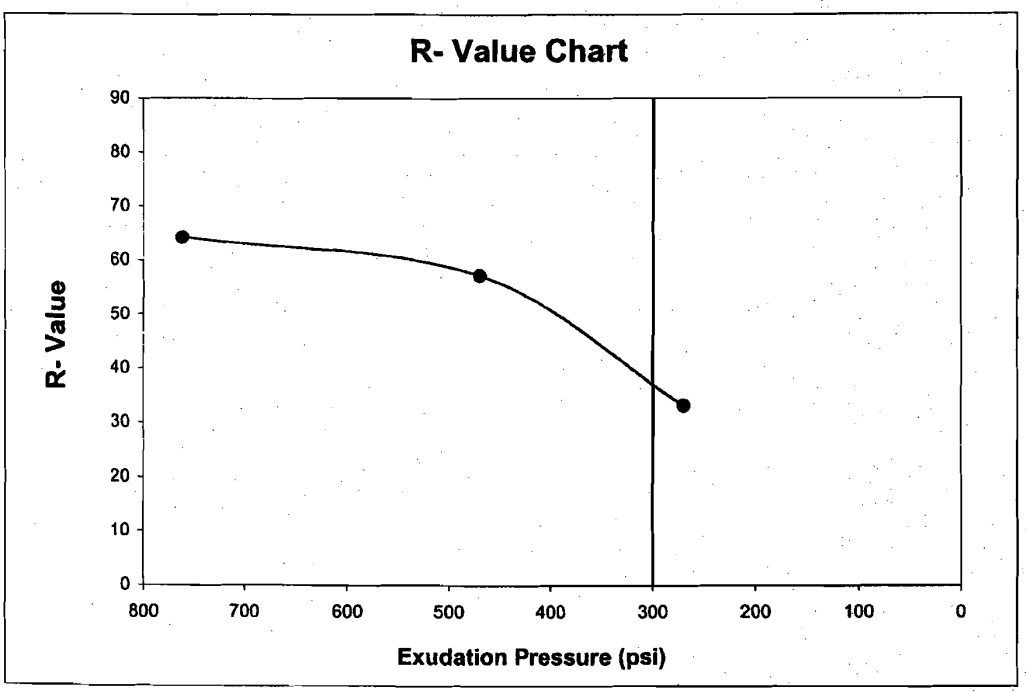
FIGURE NO
B-2

RESISTANCE VALUE TEST (Cal Test 301, ASTM D2844)

Sample I.D.: BULK 1 Depth:

Description: Red Brown Silty SAND w/ few clay & little gravel

Test Specimen	D	M	L
Moisture Content (%)	17.3	15.1	12.9
Dry Density (pcf)	114.9	119.5	120.6
Expansion Dial (0.0001")	25	72	190
Expansion Pressure (psf)	108.3	311.8	822.7
Exudation Pressure (psi)	269.9	470.0	762.0
Resistance Value "R"	33	57	64
R Value at 300 psi Exudation Pressure:			**37**



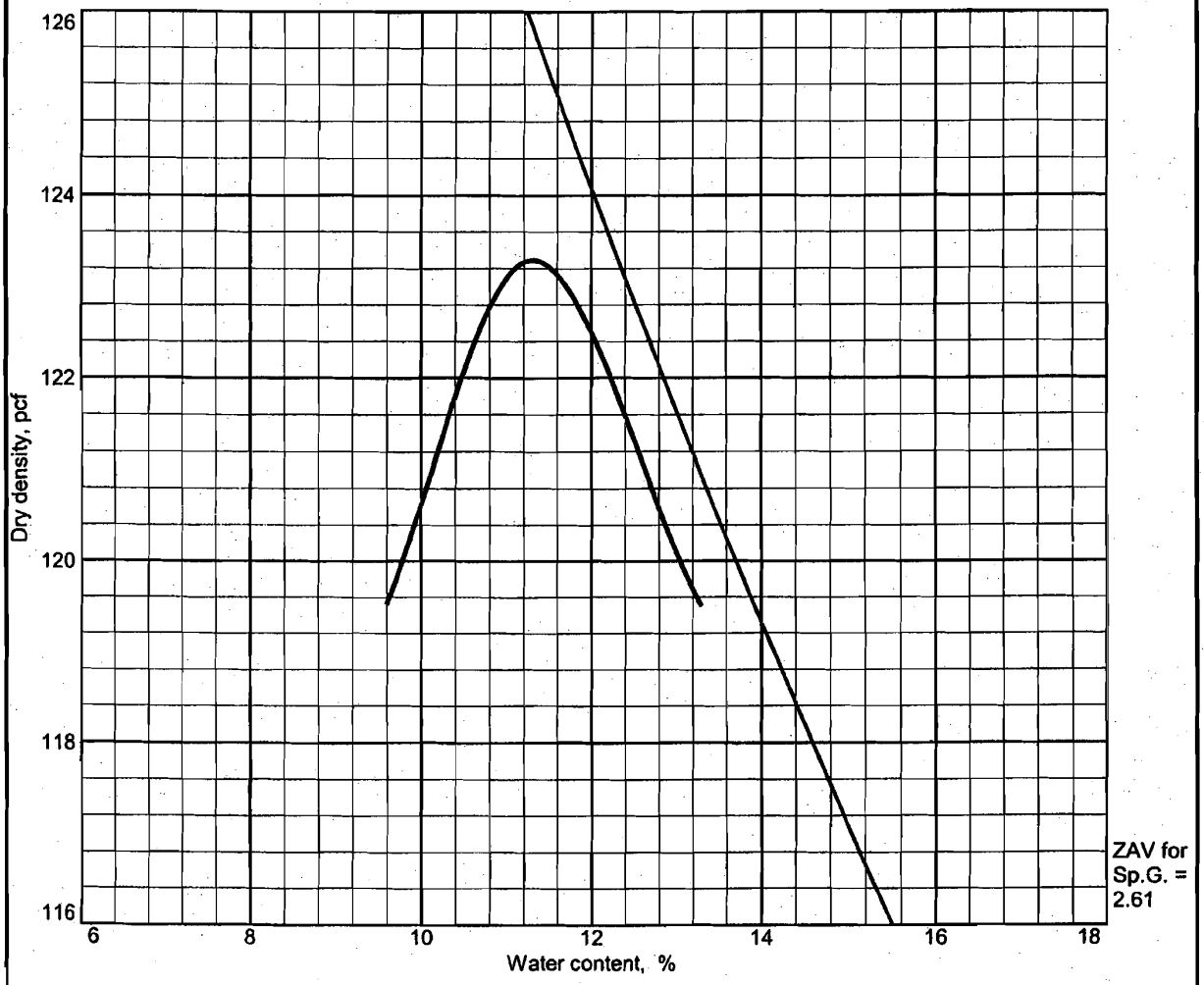
YOUNGDAHL CONSULTING GROUP, INC.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

SPRINGS EQUESTRIAN CENTER
GREEN VALLEY ROAD (2400) RESCUE, CA

PROJECT NO	DATE
E04468.1	November 2004

FIGURE NO
B-3

COMPACTION TEST REPORT



Test specification: ASTM D 1557-91 Procedure A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SM			2.57				

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 123.5 pcf Optimum moisture = 11.5 %	Red Brown Silty SAND w/ few clay & little gravel

Project No. E04468.1 **Client:**

Project: SPRINGS EQUESTRIAN CENTER GREEN VALLEY ROAD (2400)

● **Source:** NATIVE MATERIAL **Sample No.:** BK 1, 11/09/04

Remarks:

COMPACTION TEST REPORT

YOUNGDAHL CONSULTING GROUP, INC.

Figure Number B-4

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 11/19/2004
Date Submitted 11/16/2004

To: Dan Wolfe
Youngdahl Consulting Group
1234 Glenhaven Ct.
El Dorado Hills,CA 95762

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager RH

The reported analysis was requested for the following location:
Location : SPRINGS EQUESTRIAN Site ID : BULK 2.
Thank you for your business.

* For future reference to this analysis please use SUN # 43448-85337.

EVALUATION FOR SOIL CORROSION

Soil pH	6.72		
Minimum Resistivity	1.39	ohm-cm (x1000)	
Chloride	13.5 ppm	00.00135	%
Sulfate	5.2 ppm	00.00052	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

APPENDIX C

NOA Investigation Results
References

Final Report

Forensic Analytical

Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

Youngdahl & Associates, Inc.
David Sederquist
1234 Glenhaven Court

El Dorado Hills, CA 95762

Client ID: 3691
Report Number: B066702
Date Received: 11/05/04
Date Analyzed: 11/11/04
Date Printed: 11/11/04

Job ID/Site: E04468 - Springs Equestrian Center, NOA Assessment

FASI Job ID: 3691-83

Sample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

Sample ID	Lab Number	Layer Description
TP-2	10369810	Brown Soil

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
TP-3	10369811	Brown Soil

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Forensic Analytical

Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

[redacted]ungdahl & Associates, Inc.
[redacted]avid Sederquist
1234 Glenhaven Court
[redacted] Dorado Hills, CA 95762

Client ID: 3691
Report Number: B066702
Date Received: 11/05/04
Date Analyzed: 11/11/04
Date Printed: 11/11/04

Job ID/Site: E04468 - Springs Equestrian Center, NOA Assessment
FASI Job ID: 3691-83

Sample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

Sample ID	Lab Number	Layer Description
TP-5	10369812	Brown Soil

Visual Estimation Results:

Layer percentage of entire sample: 100
[redacted]isual estimation percentage: None Detected
[redacted]estos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
TP-6	10369813	Brown Soil

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Forensic Analytical

Final Report

Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

Youngdahl & Associates, Inc.
David Sederquist
1234 Glenhaven Court

El Dorado Hills, CA 95762

Client ID: 3691
Report Number: B066702
Date Received: 11/03/04
Date Analyzed: 11/11/04
Date Printed: 11/11/04

Job ID/Site: E04468 - Springs Equestrian Center, NOA Assessment

FASI Job ID: 3691-83

Sample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

Sample ID	Lab Number	Layer Description
TP-9	10369814	Brown Soil

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

TP-10	10369815	Brown Soil

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Forensic Analytical

Final Report

Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

[redacted]pungdahl & Associates, Inc.
[redacted]avid Sederquist
1234 Glenhaven Court
[redacted] Dorado Hills, CA 95762

Client ID: 3691
Report Number: B066702
Date Received: 11/05/04
Date Analyzed: 11/11/04
Date Printed: 11/11/04

Job ID/Site: E04468 - Springs Equestrian Center, NOA Assessment

FASI Job ID: 3691-83

[redacted]ample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

[redacted]ample ID	Lab Number	Layer Description

James Flores, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification (LOQ) = 0.25%. Trace denotes the presence of asbestos below the LOQ. ND = None Detected.

2777 Depot Road, Suite 409, Hayward, California 94545-2761 • Telephone: 510/887-8828 800/827-FASI Fax: 510/887-4218

References

- Churchill, R.K. and others, (2000): "Areas More Likely To Contain Natural Occurrences of Asbestos in Western El Dorado County, California", California Department of Conservation, Division of Mines and Geology, Open File Report 2000-002.
- CDMG, (1984), "Mineral Land Classification of the Folsom 15-Minute Quadrangle, Sacramento, El Dorado, Placer, and Amador Counties, California" complied by R.C. Loyd, Open-File Report 84-50.
- Jennings, C.W., (1994), Fault Activity Map of California and Adjacent Areas, Geologic Data Map No. 6, California Division of Mines and Geology.
- U.S. Department of Agriculture (USDA) Soil Conservation Service: "Soil Survey of El Dorado County, California" ,(1974).

EL DORADO COUNTY
ENVIRONMENTAL MANAGEMENT DEPARTMENT

Jon A. Morgan
Director

Environmental Health
Air Quality Management District
Solid Waste & Hazardous Materials
Water Quality & Protection
Tahoe Office/ Vector Control

PLACERVILLE OFFICE
2850 Fairlane Ct.,
Building 'C'
Placerville, CA 95667

Ph. 530.621.5300
Fax 530.642.1531
[illegible] 530.626.7130

SOUTH LAKE TAHOE OFFICE
[illegible] Tahoe Blvd.
Ste. 303
South Lake Tahoe, CA
96150

[illegible] 530.573.3450
[illegible] 530.542.3364

COUNTY OF EL DORADO

ENVIRONMENTAL MANAGEMENT DEPARTMENT

PERMIT
THIS PERMIT IS HEREBY GRANTED TO:

YOUNGDAHL CONSULTING GROUP, INC.
1234 GLENHAVEN COURT
EL DORADO HILLS, CA 95762

FOR
CONDUCT SITE INVESTIGATION
2400 GREEN VALLEY RD.
RESCUE, CA 95672
ASSESSORS PARCEL NUMBER 103-01-001

CONTRACTOR:
VEERKAMP
5000 W. OVIATT RD.
EL DORADO HILLS, CA. 95762

Any person, hazardous material handler, designee of a handler, owner of real property or authorized agent shall, upon discovery or receipt of notification, immediately report any release or threatened release of a hazardous material to the Environmental Management Department. A full written report shall be submitted to the Environmental Management Department within five (5) working days of receiving knowledge of the release.

FEES PAID:

SITE INVESTIGATION	$200.00	**RECEIPT #** 116727
TOTAL PAID	**$200.00**	

THIS PERMIT EXPIRES 11/15/05

Jeffrey A. Rusert,
Senior Environmental Health Specialist

ATTACHMENT 18

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

April 24, 2013

13 APR 26 PM 12:10
RECEIVED
PLANNING DEPARTMENT

Regulatory Division SPK-2011-00708

Mr. Dennis Graham
Essential Properties Group, Inc.
970 Reserve Drive, Building #180
Roseville, California 95868

Dear Mr. Graham:

We are responding to your April 1, 2013, request for a review of the Springs Equestrian Center Development. This approximately 153.39-acre project involves activities in waters of the United States to development of an Equestrian Center Project. The project is located in Section 29, Township 10 North, Range East, Mount Diablo Meridian, Latitude 38.6975333207587°, Longitude -121.029073367145°, Rescue, El Dorado County, California.

We have determined that the enclosed August 22, 2012, *Preliminary Equestrian Site Plan and Preliminary Equestrian Grading Plan,* Sheet 2/4 and Sheet 3/4, for Parcel 1 is a "single and complete project". You may develop Parcel 1 (45.77 acre) after an evidence of parcel split from Parcel 2 & 3 (the remaining 107.62 acre) is provided to this office. Based on the proposed project for Parcel 1, you proposed to avoid discharge fill and dredge material into all waters of the U.S.

You are still under the cease and desist order for Parcel 2 & 3 until the violation is resolved.

Please refer to identification number 201100708 in any correspondence concerning this project. If you have any questions, please contact Mr. Peck Ha at our California North Branch Office, Regulatory Division, Sacramento District, U.S. Army Corps of Engineers, 1325 J Street, Room 1350, Sacramento, California 95814-2922, email *Peck.Ha@usace.army.mil*, or telephone 916-557-6617. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx.*

Sincerely,

Peck Ha
Regulatory Project Manager,
California North Branch

Enclosures

Copy Furnished with enclosures:
Mr. Aaron Mount, El Dorado County Planning Department, 2850 Fairlane Court, Placerville, California 95667-4100

Copy Furnished without enclosures:
Ms. Angela McIntire, First Carbon Solutions - Michael Brandman Associates, 2000 "O" Street, Suite 200, Sacramento, California 95811