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December 30, 2010

Mrs. Jennifer Maxwell  
El Dorado County Department of Transportation  
2850 Fairlane Court  
Placerville, CA 95667

**Subject: Foundation Investigation – Addendum** 2010-0230  
Green Valley Road Bridge at Tennessee Creek 38120-F8:328N:172W  
El Dorado County, California

Dear Mrs. Maxwell:

This letter presents an addendum to our report of "Foundation Investigation," dated December 19, 2008 with the Taber project number of 1P2/305/13. This addendum is to provide additional information and recommendations for cut slopes and excavations near the intersection of Green Valley Road and North Shingle Springs Road.

### **Site and Project Description**

The site is located along Green Valley Road from approximately 120 feet south of the intersection with Peaceful Garden Way to 200 feet southwest of the intersection with North Shingle Road. The existing site consists of gently rolling terrain, with multiple older roadcuts creating steep slopes along North Shingle Road and Green Valley Road.

The proposed project involves realigning and widening of Green Valley Road and relocation of a 20-inch utility line. The construction will involve numerous cuts into existing slopes and trenching for installation of a new storm water line. Maximum depth of excavation appears to be on the order of 16 feet from existing grade.

### **Seismic Refraction Profiling**

Seven double-ended seismic refraction profiles were completed to supplement the investigation performed for the referenced report (see Figure 2). The seismic refraction profiles were located in areas to be cut for road widening or in areas of planned excavation for installation of new / replacement utility line. The locations of tests were developed in consultation with the County.

Refraction seismic profiling indicates primary wave (compression wave) velocities ranging from 450 fps to as much as 6000 fps. Seismic lines were approximately 50±feet in length and would represent materials to depths of approximately 20-25±feet.

Inferred materials based on these profiles consist of an upper low velocity layer and a lower higher velocity layer. The low velocity layer is likely fill, native soil, or coluvial deposits, except at S13 and S14 which was along an obvious older cut. The low velocity layer has a velocity of between approximately 450 fps to approximately

1400 fps. Some of this material may be thoroughly decomposed rock with consistency similar to soil.

Underlying the low velocity layer in all soundings is a higher velocity layer with seismic velocities of approximately 1500 to 6000 fps. This material is interpreted to be decomposed to intensely weathered and or highly fractured rock. Interpreted results/details of the seismic refraction profiles are summarized in the following table:

<b>Refraction Seismic Profiles</b>			
<b>Seismic Line</b>	<b>Estimated Depth to Bottom of Layer (ft)</b>	<b>Layer Velocity (fps)</b>	<b>Materials Description*</b>
S1-S2	3-6	450-1400	Fill / Native Soil / colloviaal deposits
		4300-5500	Decomposed / intensely weatherd rock
S3-S4	8-9	1000-1200	Fill / Native Soil / colloviaal deposits
		5700-5800	Decomposed / intensely weatherd rock
S5-S6	7-8	1100	Fill / Native Soil / colloviaal deposits
		4800-5300	Decomposed / intensely weatherd rock
S7-S8	7.5-9.5	1100	Fill / Native Soil / colloviaal deposits
		5300-6000	Decomposed / intensely weatherd rock
S9-S10	9-10	1100	Fill / Native Soil / colloviaal deposits
		3300-4000	Decomposed / intensely weatherd rock
S11-S12	8-9	1100	Fill / Native Soil / colloviaal deposits
		2000-3300	Decomposed / intensely weatherd rock
S13-S14	3-4	1500-2000	Decomposed / intensely weatherd rock
		3100-3800	intensely weatherd rock

\* Materials description is interpreted, based on site observations and layer velocities.

Location of the seismic profile is shown in Figure-2. Time-distance graphs for refraction seismic profiles are shown on Figure-3.

### **Geologic Conditions**

Regional and project specific geologic conditions were discussed in our December 19, 2008 report. A brief supplemental geologic reconnaissance was performed along with the seismic refraction surveys and was meant to supplement the findings of the referenced report.

Rock outcrop was noted along both sides of North Shingle Road along existing road cuts and along Green Valley road just east of the intersection with North Shingle Road (also in cut). Exposed rock was highly to intensely fractured / jointed and highly weathered to decomposed. The exposed rock was easily excavated with a geologist pick. Areas that appeared to be original grade were covered in soil / decomposed rock and consisted of sand and clay.

### **Groundwater**

Evidence of seeps or springs was not observed during our site visit. However the presence of near surface groundwater cannot be precluded, especially during the wet season. The highly fractured / jointed nature of the rock may allow significant seepage of water into excavations if groundwater levels are high.

### **Conclusions and Recommendations**

The low seismic velocities ranging from approximately 450 to 6000 fps indicated that the materials near the surface (within 20 to 25 feet of existing grade) are rippable by conventional heavy duty construction equipment (Caterpillar. Handbook of Ripping, 8<sup>th</sup> Edition).

Jennifer Maxwell  
El Dorado County Department of Transportation  
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\* \* \* \* \*

Please call if you have any questions regarding the foregoing or earth materials and foundation conditions at the site. We appreciate this opportunity to be of service.

**Taber Consultants**



David A. Kitzmann  
C.E.G. 2412



Ronald E. Loutzenhiser  
R.C.E. 64089

DAK/REL  
December 30, 2010  
Attachments:

Figure 1  
Figure 2  
Figure 3

"General Conditions"  
"Site Plan"  
"Location of Field Tests"  
"Refraction Seismic Record," (4 sheets)

## **GENERAL CONDITIONS**

The conclusions and recommendations of this study are professional opinion based upon the indicated project criteria and the limited data described herein. It is recognized there is potential for variation in subsurface conditions and that modification of conclusions and recommendations might emerge from further, more detailed study.

This report is intended only for the purpose, site location and project description indicated and assumes design and construction in accordance with Caltrans practice.

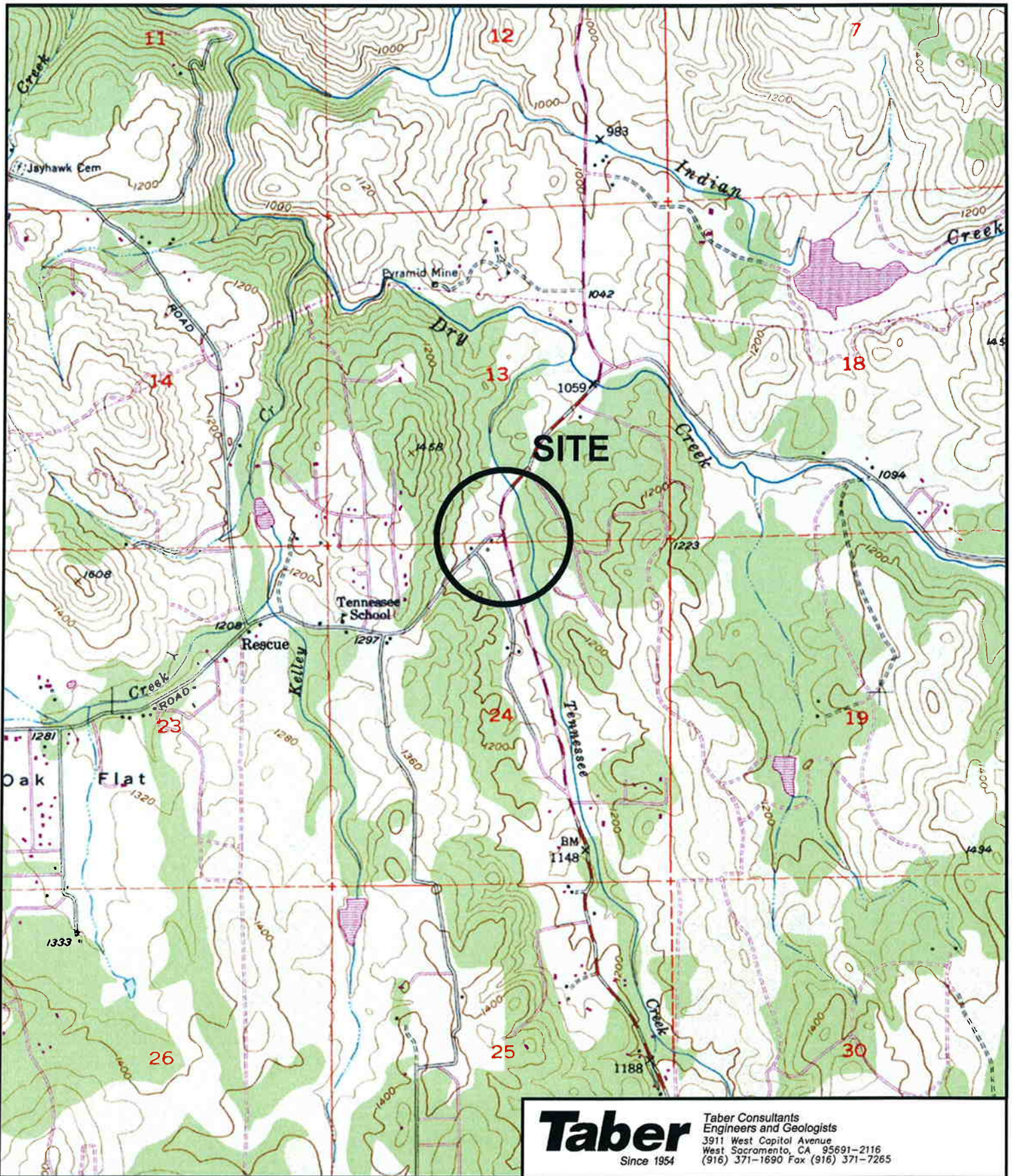
As changes in appropriate standards, site conditions and technical knowledge cannot be adequately predicted, a review of recommendations by this office for use after a period of two years is a condition of this report.

A review by this office of any foundation and/or grading plans and specifications or other work product insofar as they rely upon or implement the content of this report, together with the opportunity to make supplemental recommendations as indicated therefrom is considered an integral part of this study and a condition of recommendations. Subsequently defined construction observation procedures and/or agencies are an element of work, which may affect supplementary recommendations.

Should there be significant change in the project or should soils conditions different from those described in this report be encountered during construction, this office should be notified for evaluation and supplemental recommendations as necessary or appropriate.

Opinions and recommendations apply to current site conditions and those reasonably foreseeable for the described project -- which includes appropriate operation and maintenance thereof. They cannot apply to site changes occurring, made, or induced, of which this office is not aware and has not had opportunity to evaluate.

The scope of this report specifically excluded sampling and/or testing for, or evaluation of the occurrence and distribution of, hazardous substances. No opinion is intended herein regarding the presence or distribution of any hazardous substances at this or nearby sites.



**Taber**  
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USGS  
"Shingle Springs" CA  
QUADRANGLE 7.5 MINUTE  
SERIES (TOPOGRAPHIC),  
DATE 1973

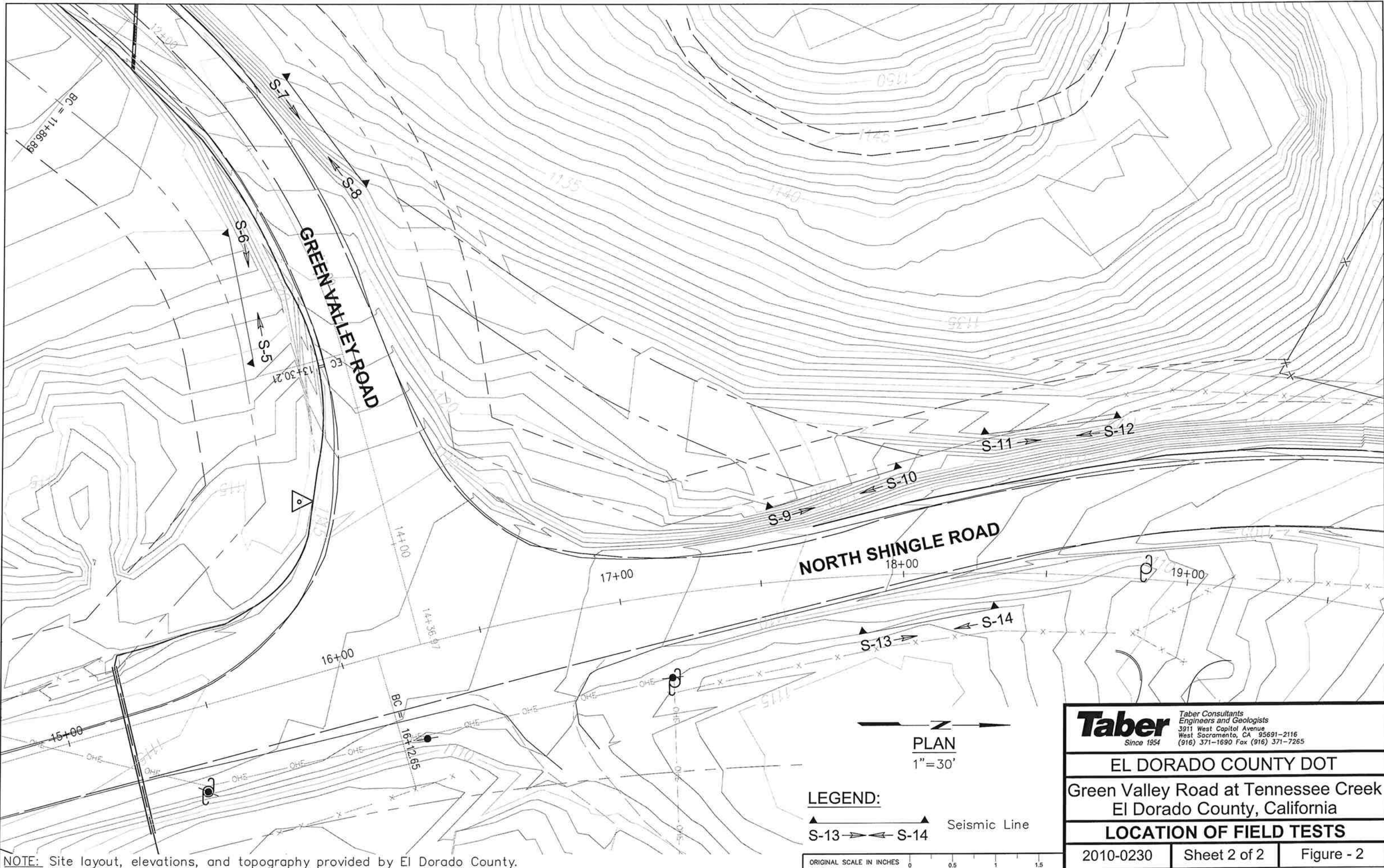
El Dorado County DOT  
Green Valley Road at Tennessee Creek  
El Dorado County, California

Vicinity Map

2010-0230

January 2011

Figure - 1



NOTE: Site layout, elevations, and topography provided by El Dorado County.

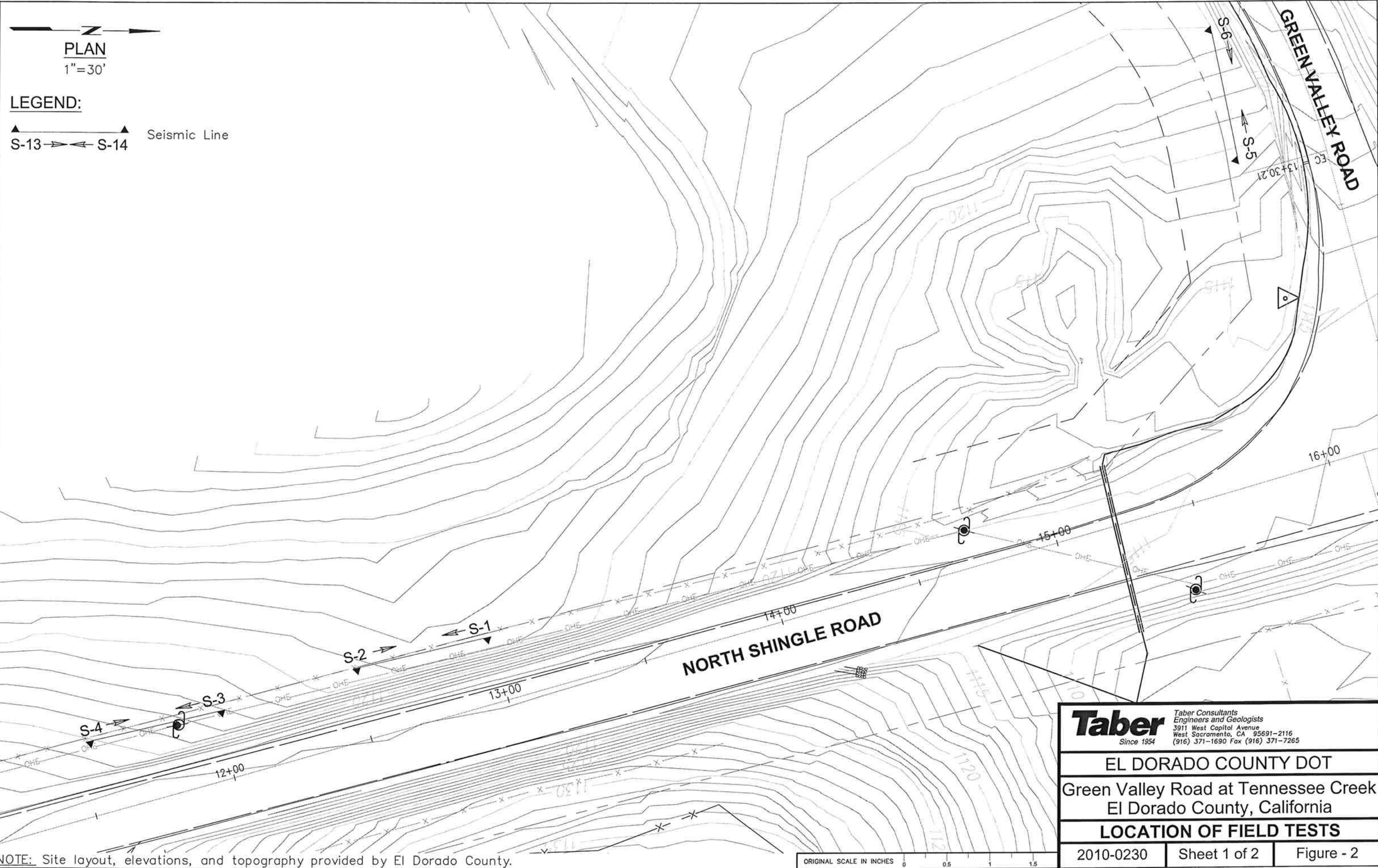
**LEGEND:**

▲ ——— ▲ Seismic Line  
 S-13 ——— S-14

PLAN  
 1" = 30'

ORIGINAL SCALE IN INCHES 0 0.5 1 1.5

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<p><b>EL DORADO COUNTY DOT</b></p>		
<p>Green Valley Road at Tennessee Creek          El Dorado County, California</p>		
<p><b>LOCATION OF FIELD TESTS</b></p>		
2010-0230	Sheet 2 of 2	Figure - 2



PLAN  
1"=30'

LEGEND:  
▲ ——— ▲ Seismic Line  
S-13 ——— S-14

NOTE: Site layout, elevations, and topography provided by El Dorado County.

ORIGINAL SCALE IN INCHES 0 0.5 1 1.5

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EL DORADO COUNTY DOT Green Valley Road at Tennessee Creek El Dorado County, California		
<b>LOCATION OF FIELD TESTS</b>		
2010-0230	Sheet 1 of 2	Figure - 2



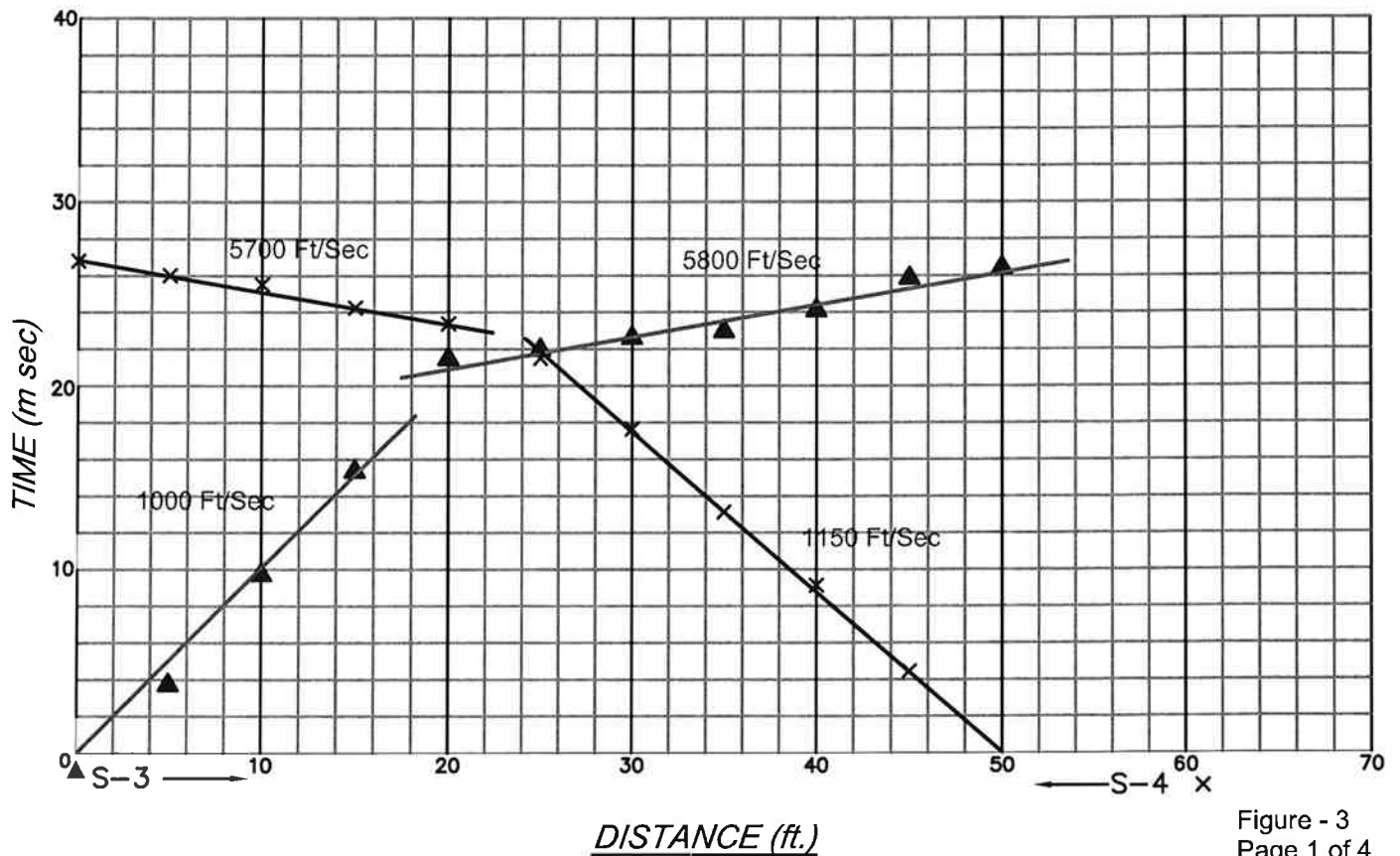
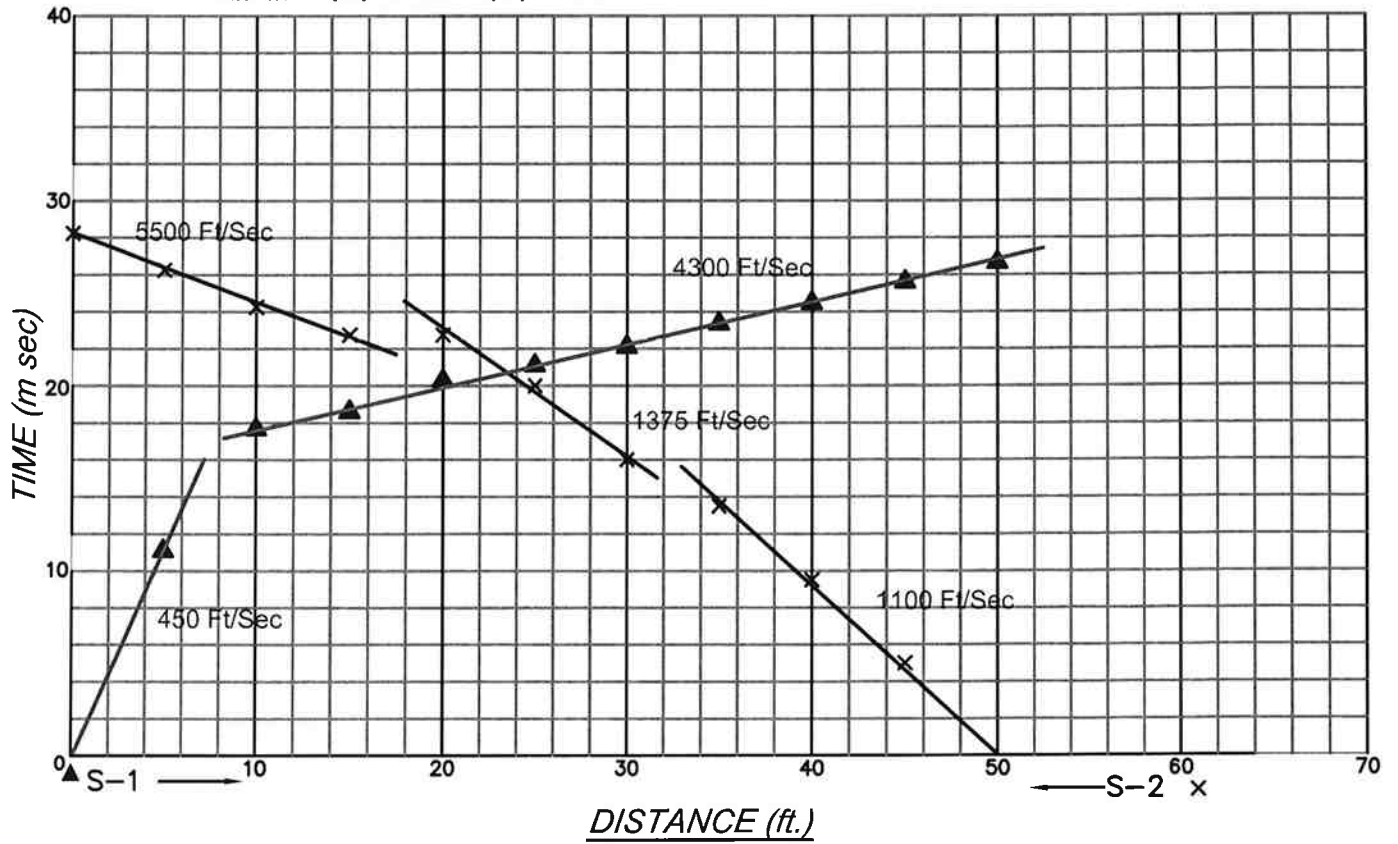


Figure - 3  
Page 1 of 4

**REFRACTION SEISMIC RECORD**

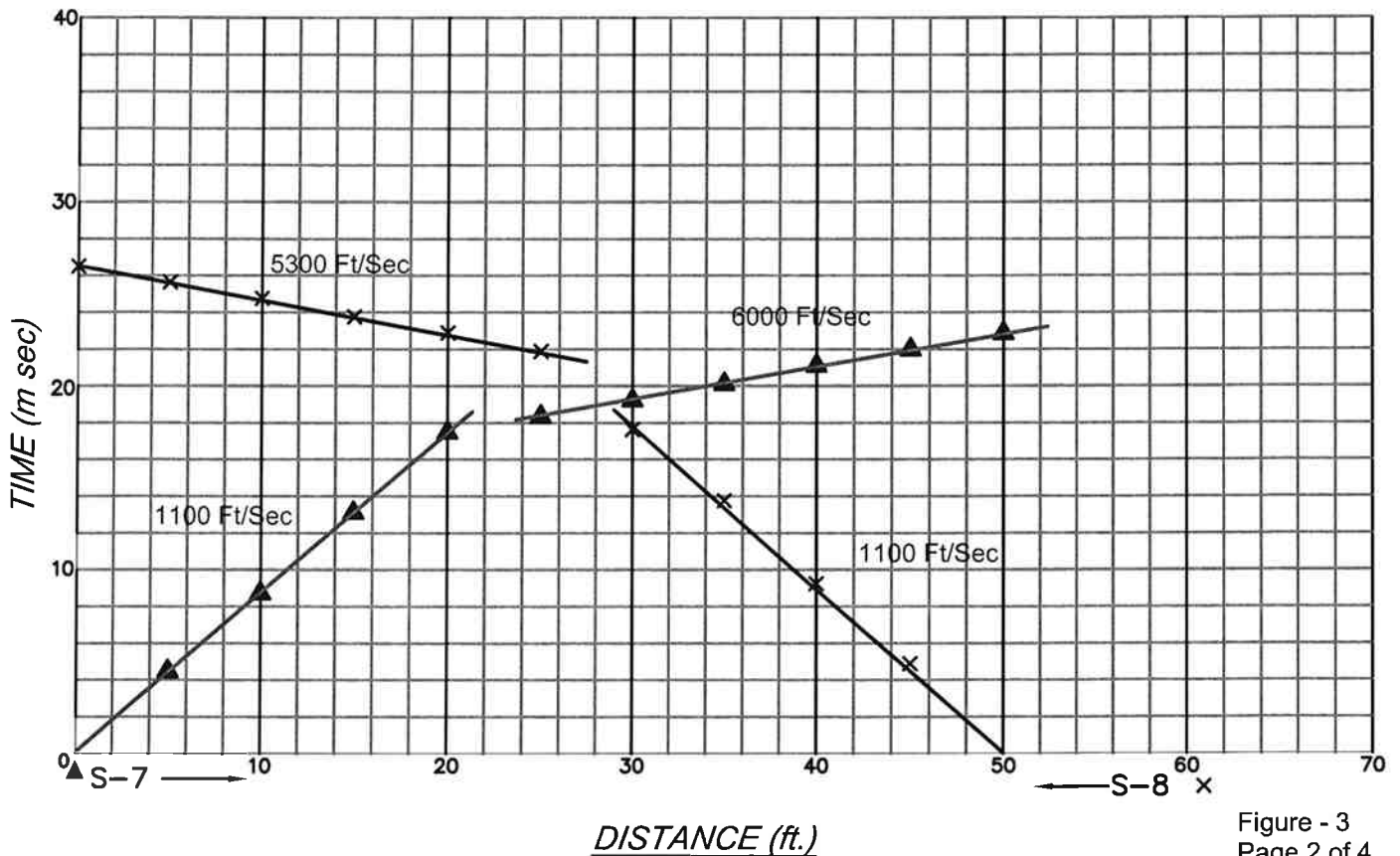
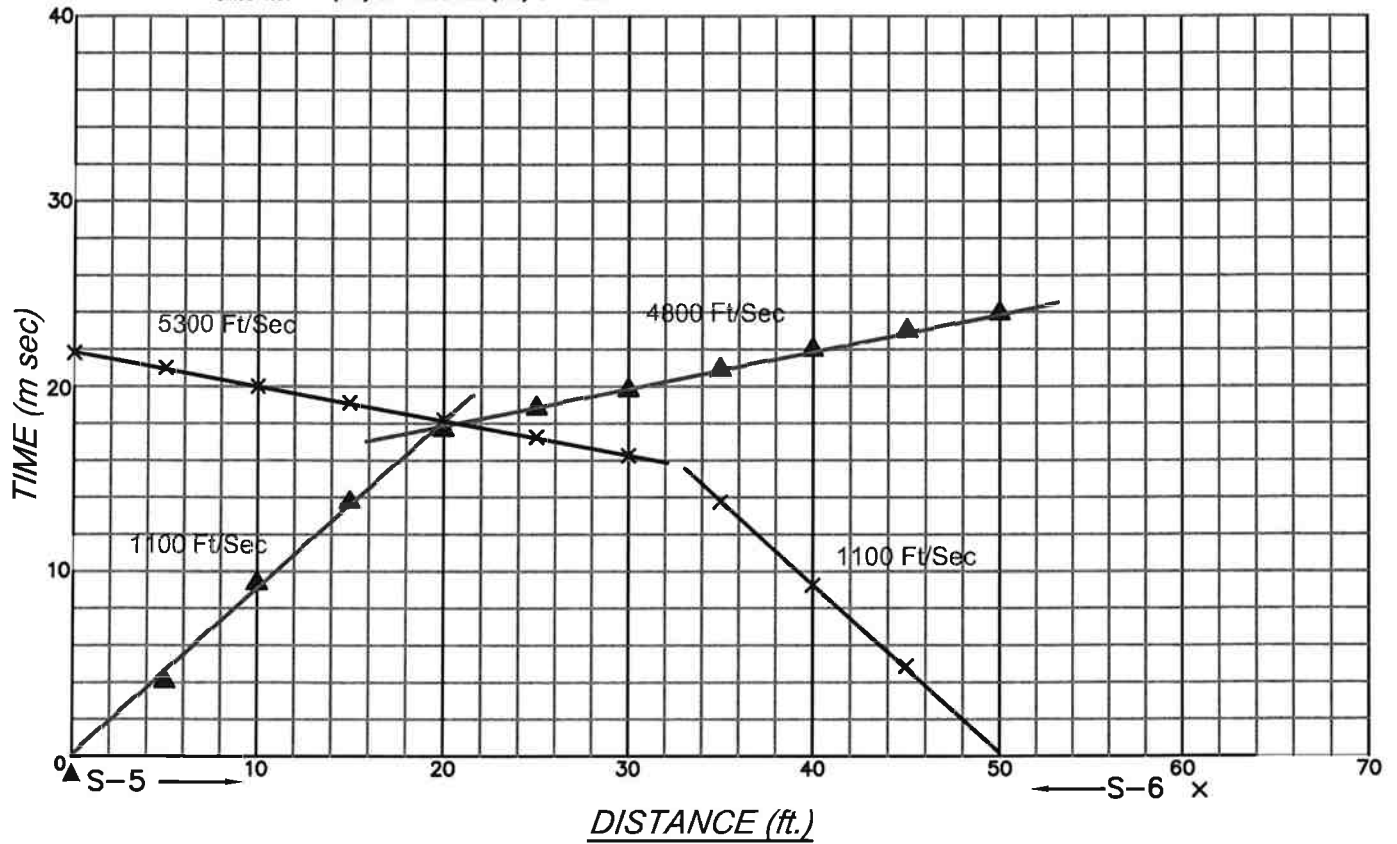


Figure - 3  
Page 2 of 4

**REFRACTION SEISMIC RECORD**

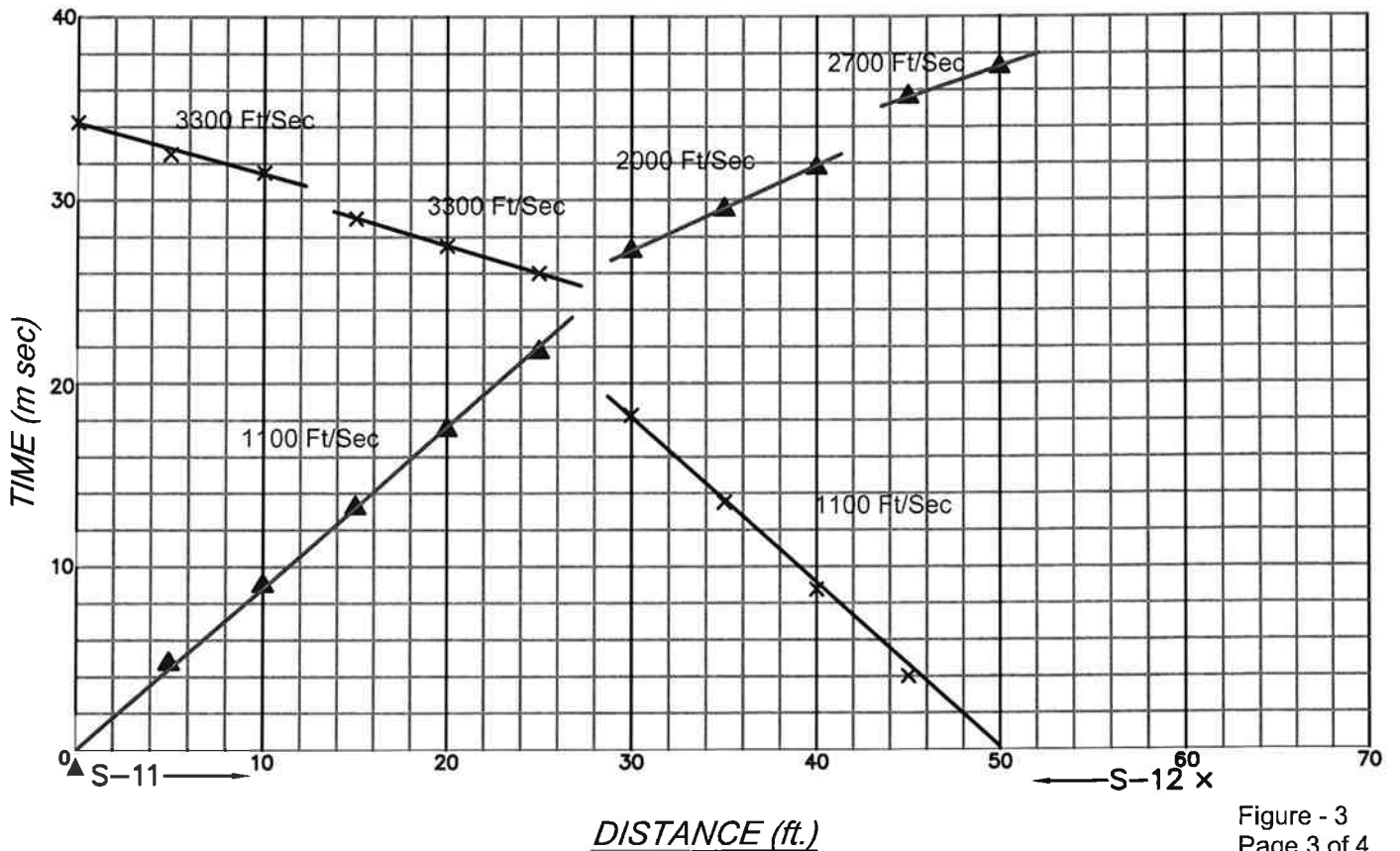
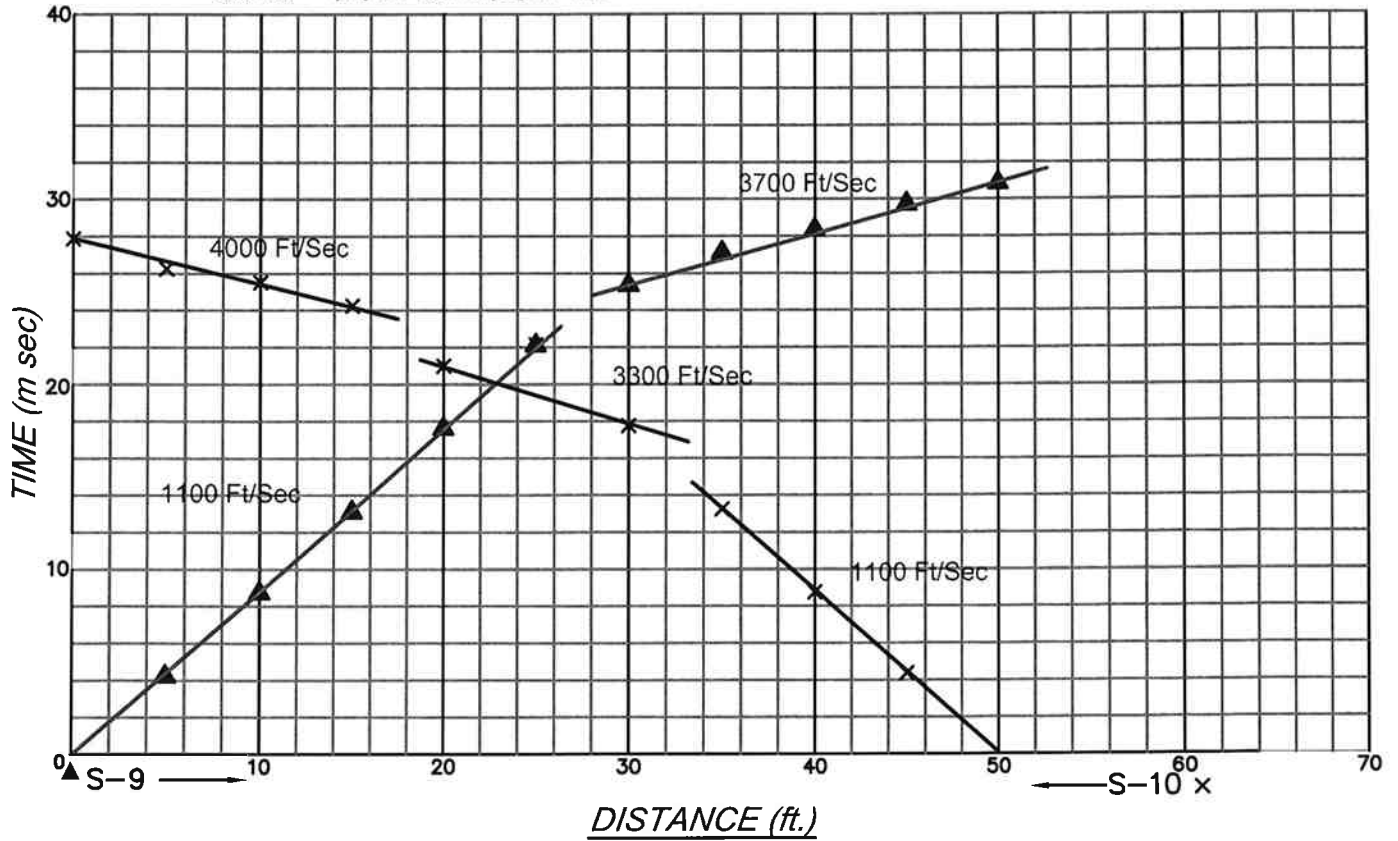


Figure - 3  
Page 3 of 4

**REFRACTION SEISMIC RECORD**

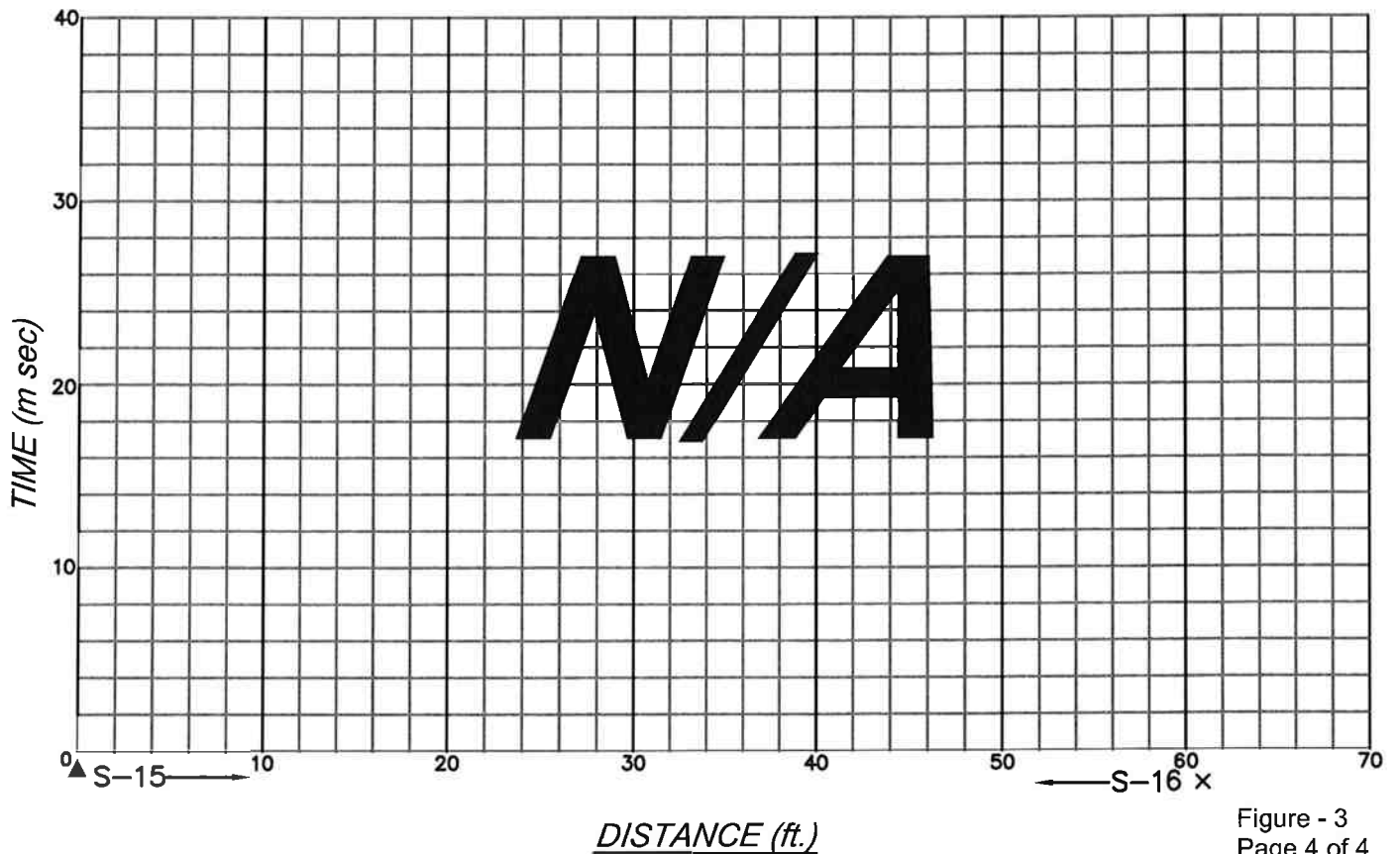
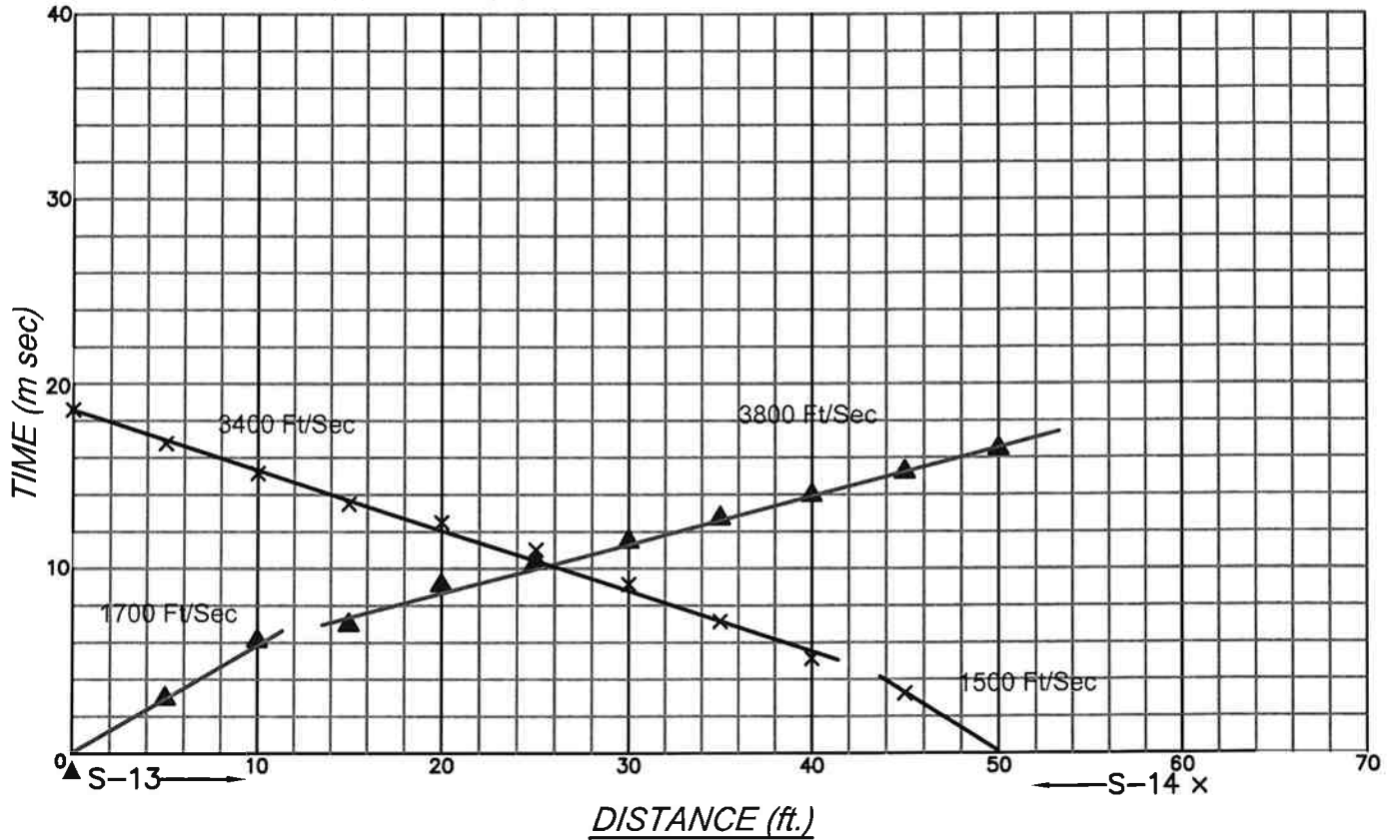


Figure - 3  
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**REFRACTION SEISMIC RECORD**