STANDARD GEOTECHNICAL MODEL FOR THE TURKEY FLAT, USA SITE EFFECTS TEST AREA

Tables 1 and 2 summarize the geotechnical properties of the near surface geology at four site locations in the test area, where ground motion data are being acquired in an effort to validate methods of estimating the effects of local geology on earthquake ground motion for shallow stiff-soil sites. Figure 1 shows the locations of each site and three lines of profile. Figure 2 shows a cross sectional view along the three lines of profile to provide some knowledge of the three-dimensional structure of the test area.

The standard model was derived by a systematic procedure of data acquisition, analysis, and interpretation involving seven U.S. and two Japanese geotechnical firms and the California state government. Results of extensive field and laboratory tests, including state-of-the-art geophysical surveys, were selectively evaluated by members of an oversight committee of experts, leading to an average model of the test area that was reached by a consensus.

While this model represents a consensus of several experts in the geotechnical industry, it is not necessarily the most "accurate" model possible from the available data. Nonetheless, it serves as a standard against which various ground motion prediction methods can be compared with one another. For this reason each participant in the prediction phase of the experiment is being asked to make one set of predictions using this model. Investigators wishing to make additional predictions using their own alternative models based on the geotechnical data collected may do so at their own discretion. For this reason, individual geotechnical reports by each contributor are included in the appendices.

The remainder of this report provides a brief overview of the project, a more detailed description of the site characterization program, the regional geologic setting and local geology of the site, and a brief narrative on the geotechnical properties of the Turkey Flat Test Area.

Table 1A. Dynamic Soil Properties at Valley Center and Valley North (G-curve I).

% Shear Strain	G/Gmax	% Damping
10^{-4}	1.00	1.5
10^{-3}	0.96	2
10^{-2}	0.75	4
3×10^{-2}	0.60	6.5
10^{-1}	0.40	10
3×10^{-1}	0.22	13

Table 1B. Seismic Velocities at soil site Valley Center.

Depth Range (m)	Shear Wave Velocity (m/sec)	Compression Wave Velocity (m/sec)	Density (gm/cm^3)
0 - 2.4	135	320	1.50
2.4 - 7.6	460	975	1.80
7.6 - 21.3	610	975	1.90
Below 21.3	1340	2715	2.20

Table 1C. Seismic Velocities at soil site Valley North.

Depth Range (m)	Shear Wave Velocity (m/sec)	Compression Wave Velocity (m/sec)	Density (gm/cm^3)
0 - 2.1	150	305	1.55
2.1 - 5.5	275	915	1.75
5.5 - 11.0	610	975	1.90
Below 11.0	1340	2715	2.20

Table 2A. Dynamic Rock Properties at Rock South and Rock North (G-curve II).

Parameter	Value	Shear Strain
G/Gmax	1	all strain levels
Damping	1%	all strain levels

Table 2B. Seismic Velocities at Rock South and Rock North.

Depth Range (m)	Shear Wave Velocity (m/sec)	Compression Wave Velocity (m/sec)	Density (gm/cm^3)
0 - 2.4	825	1980	2.10
Below 2.4	1340	2715	2.20

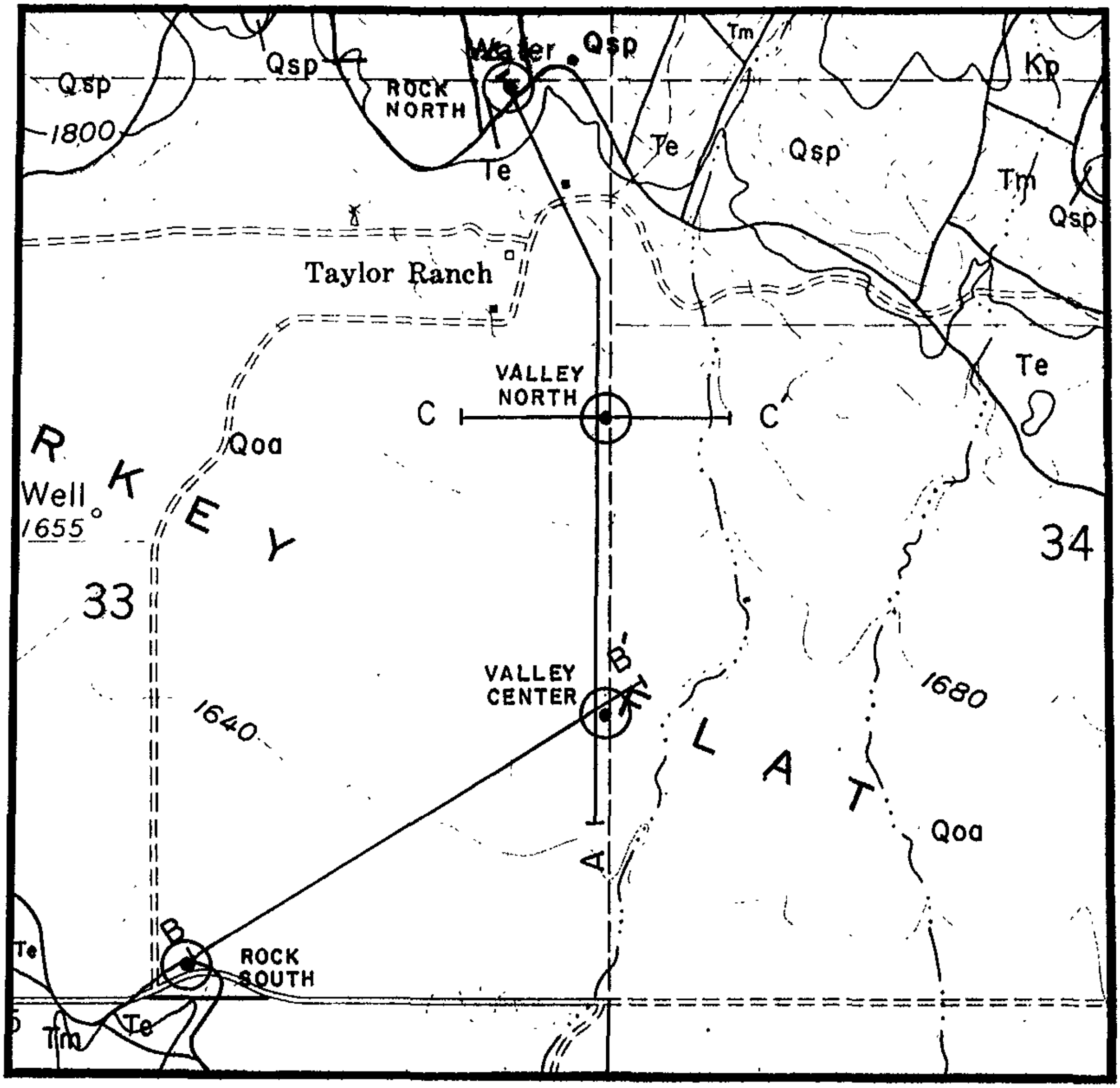
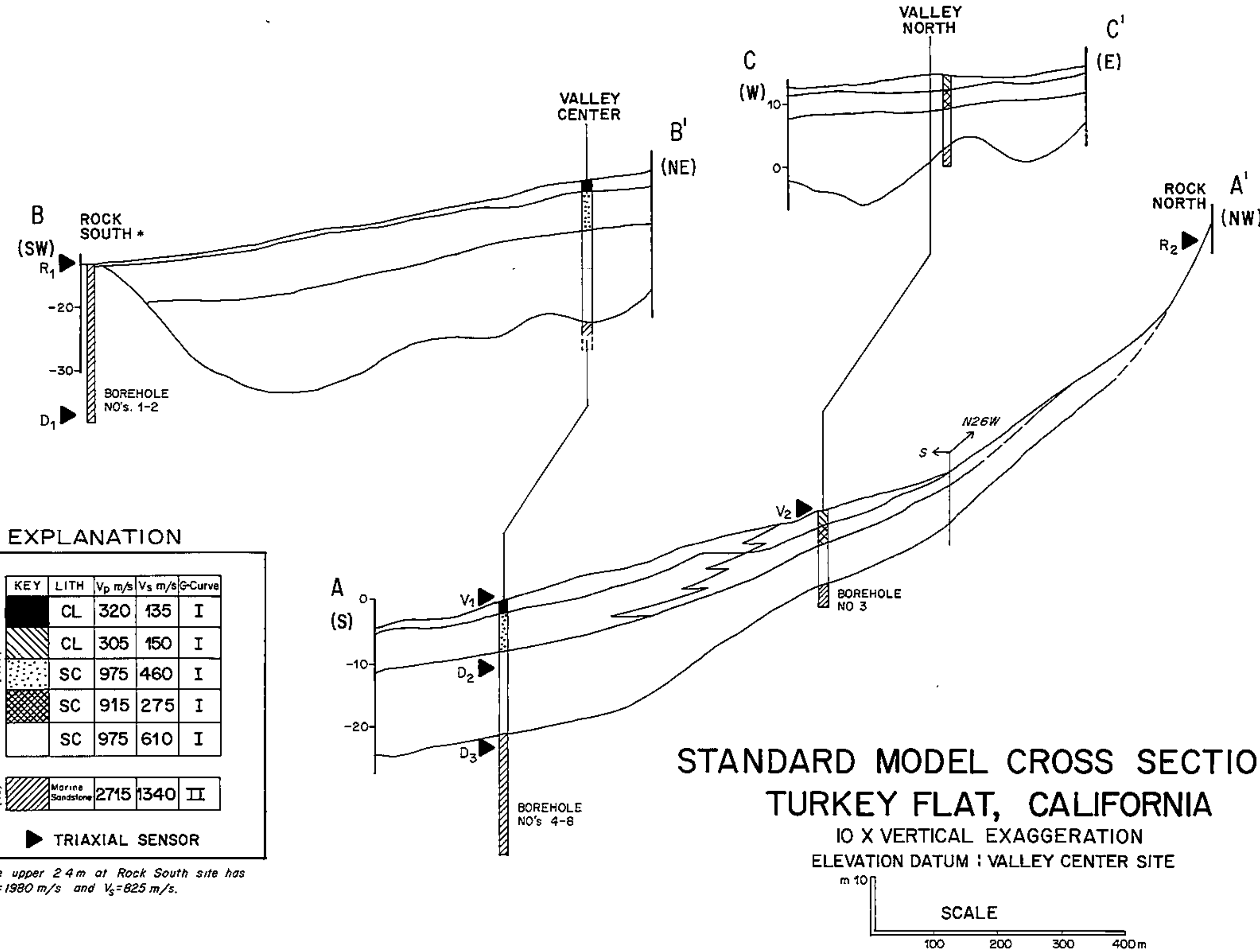


Figure 1. A map of the Turkey Flat Site Effects Test Area showing locations of the four ground motion recording sites, and three lines of profile that correspond to the cross sections shown in figure 2. At these locations, numerous geophysical surveys and laboratory testing of rock and soil samples have been conducted for the purpose of characterizing the test area for analysis of ground response. The remainder of this report describes the site characterization program and its findings in more detail.



STANDARD MODEL CROSS SECTIONS
TURKEY FLAT, CALIFORNIA

IO X VERTICAL EXAGGERATION

ELEVATION DATUM : VALLEY CENTER SITE

EXPLANATION

	KEY	LITH	V_p m/s	V_s m/s	G-Curve
Pleistocene Terrace Deposits (Qoa)	(solid black)	CL	320	135	I
	(diagonal hatch)	CL	305	150	I
	(stippled)	SC	975	460	I
	(cross-hatch)	SC	915	275	I
	(blank)	SC	975	610	I
Upper Pliocene (Tß)	(diagonal hatch)	Marine Sandstone	2715	1340	II

▶ TRIAXIAL SENSOR

Note: The upper 2.4 m at Rock South site has V_p = 1980 m/s and V_s = 825 m/s.