CALIFORNIA GEOPHYSICAL GROUP, INC.
12709 Poway Road, Suite 202, Poway, CA 92064 Tel: (619) 486-1323

February 13, 1991

Department of Environmental Health
Alameda County
80 Swan Way Rm 200
Oakland, Ca 94621

Attn: Mr. Scott Seery

91 FEB 22 PM 1:49

RE: Xtra Oil Co. Service Station, 3495 Castro Valley Blvd. Castro Valley Ca.

QUARTERLY REPORT

Nov. and Dec. 1990 & Jan. 1991

This report describes the work and sampling done at the site for November and December 1990 and January 1991. Water samples were taken on January 14, 1991, and are listed in Table II. Water level measurements were taken on Dec. 17th and Jan. 14th. The results are listed in Table I. Table III lists all measured Hydraulic gradients and their directions.

TABLE I

WATER TABLE ELEVATIONS

Well No.	12/17/90	1/14/91
MW-1	167.00	166.43
MW-2	166.12	165.70
MW-3	166.40	166.00

During this quarter we measured the Hydraulic Conductivity at Well MW-2 using the Bouwer and Rice Slug Test. A copy of our work sheet is attached.

We also endeavored to run a sieve analysis for a grab sample of soil taken from the pit excavations. Due to the clay adherence to the pebbles we were unable to run an exact analysis but we did obtain the following data about this soil.

Sand & Rock Fragments	35%
Silt	30%
Clay	35%

TABLE II

CHEMICAL ANALYSIS
REPORTED IN MG/L OR PPM

Sampling Date 1/14/91

Well No.	TPH	Benzene	Toluene	Xylenes	E.Benzene
MW-1	33	3.9	2.9	5.3	0.21
MW-2	78	11.0	8.7	8.0	0.58
MW-3	160	48.0	25.0	16.0	1.00
Detection Limits	0.03	0.003	0.003	0.003	0.003

TABLE III

HYDRAULIC GRADIENT INFORMATION

Date	Direction	Gradient (Ft/FT.)
2/20/90	N55E	0.0036
3/19/90	N72E	0.0100
7/20/90	S5W	0.0056
8/23/90	S70E	0.0065
9/27/90	S58E	0.0051
12/17/90	S16E	0.0049
1/14/91	S66E	0.0064

FINDINGS

We find the hydraulic gradient direction to remain, as expected, to the Southeast. Disregarding the July 20, 1990 reading, it appears that as the hydraulic gradient becomes less the gradient direction moves to a more southerly direction. Due to December rains and partial recharging, the aquifer gradient rose 0.0015 Ft/Ft. and the gradient direction rotated 50 degrees to the North.

Groundwater contamination increased in January. This we believe was due to the unauthorized release reported in October, 1990.

We found the hydraulic conductivity to be about 0.6 Ft./Day. This value of conductivity would place it in the Clayey, Silty, Sand category, which agrees with the logs of the material at the site. Using this data we note the specific discharge of the aquifer is 3 to 5 feet per year. This figure does not correlate well with the rapid variations in contamination in wells 2 and 3.

Our suspicion that the high readings in January were caused by the October release are not sustainable if the material is homogeneous under the site, therefore, we believe there are natural and man-made channels at the site which have hydraulic conductivities two or more magnitudes greater than that calculated.

We will continue our monthly water sampling and perform our submitted work plan once we receive approval to continue.

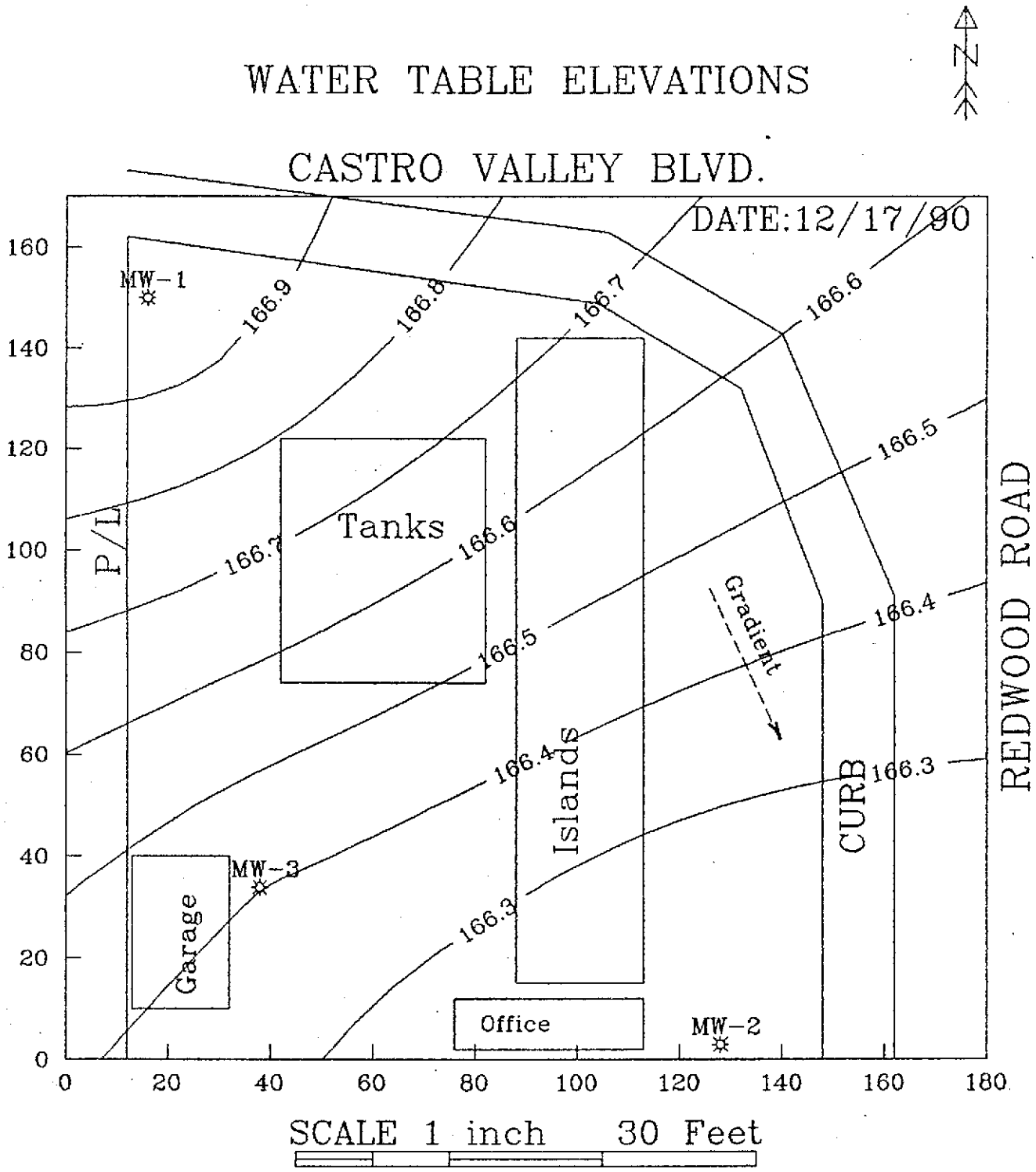
Yours truly,

John Cussen
Project Engineer

REGISTERED ENVIRONMENTAL ASSESSOR
JOHN H. CUSSEN
NO. 01979
Expires: 6/91
STATE OF CALIFORNIA

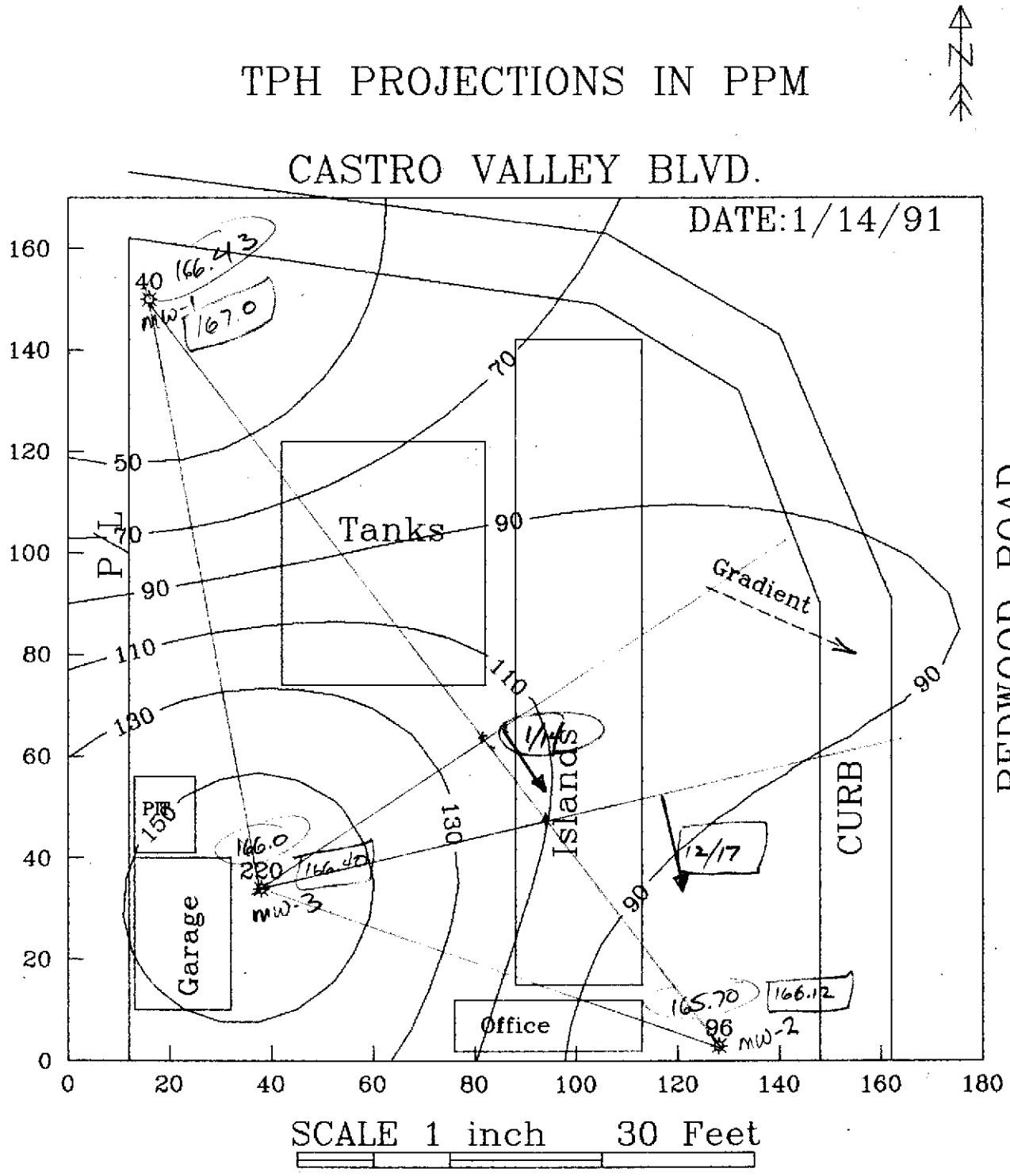
Gilein Steensma Cal. Reg. Geophysicist GP-946

WATER TABLE ELEVATIONS



California Geophysical Group, Inc. Engineering & Environmental Geophysics	
SCALE	DATE
CHK'D	

TPH PROJECTIONS IN PPM



166.0 - 1/14/91 G.W. Levels

167 - 12/17/91 " "

California Geophysical Group, Inc.
Engineering & Environmental Geophysics

SCALE	DATE
CHK'D	

BOUWER and RICE SLUG TEST. - CASTRO Valley SITE

WELL MW-2. Jan. 23, 1991.

$$K = \frac{r_c^2 \ln(R_e/R_w)}{2 L_e} \times \frac{1}{T} \ln\left(\frac{y_0}{y_1}\right)$$

$$K = \frac{(0.1667)^2 \times 2.18 \times 0.138}{2 \times 9.55}$$

$= 4.37 \times 10^{-4}$ FT/min.

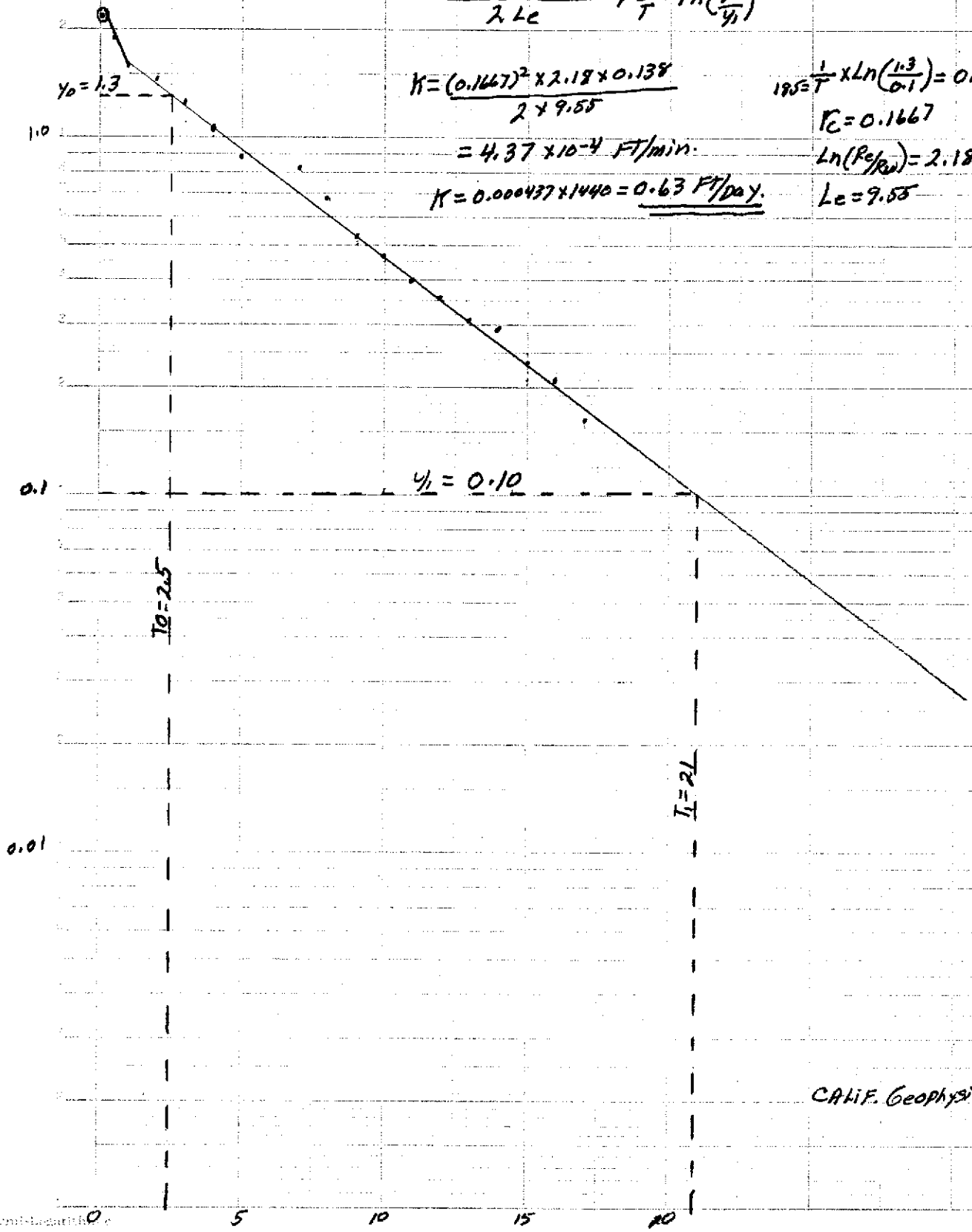
$K = 0.000437 \times 1440 = 0.63$ FT/day.

$\frac{1}{T} \times \ln\left(\frac{1.3}{0.1}\right) = 0.138$ FT/min.

$r_c = 0.1667$

$\ln(R_e/R_w) = 2.18$

$L_e = 9.55$



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680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Xtra Oil Company	Client Project ID:	-	Sampled: Jan 14, 1991
2307 Pacific Avenue	Matrix Descript:	Water	Received: Jan 14, 1991
Alameda, CA 94501	Analysis Method:	EPA 5030/8015/8020	Analyzed: Jan 24, 1991
Attention: Ted Simas	First Sample #:	101-1319 A-C	Reported: Feb 1, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
101-1319	Well #1	33,000	3,900	2,900	210	5,300
101-1320	Well #2	78,000	11,000	8,700	580	8,000
101-1321	Well #3	160,000	48,000	25,000	1,000	16,000
Detection Limits:		30	0.30	0.30	0.30	0.30

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Marie A. McBirney
Project Manager