

May 11, 2005

ICES 3892



Mr. Barney Chan  
Alameda County Health Care Services Agency  
Department of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

Alameda County  
MAY 20 2005  
Environmental Health

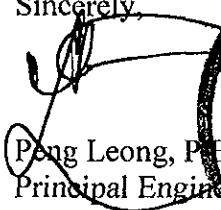
Subject: Site Closure  
Former Chevron Station #9-4816  
301 14<sup>th</sup> Street  
Oakland, California

Dear Barney:

Enclosed please find our responses to your comments dated April 18, 2005.

If you have any questions or concerns, please feel free to contact Derek Wong or me.

Sincerely,

  
Peng Leong, P.E.  
Principal Engineer



cc: Mr. Peter Iwate, Kansai Development

Tel (510) 652-3222  
Fax (510) 652-3555

P. O. Box 99288  
Emeryville CA  
94602-9288



1. The variation of groundwater gradients recorded for the Site was due to onsite groundwater extraction activities that was conducted from approximately March 1992 through early 1997. Groundwater level measurements conducted in June 1999 following completion of groundwater extraction activities indicated that the groundwater gradient was in the westerly direction.
2. No further investigations were conducted east of boring C-8 because sample results indicated that petroleum constituent concentrations were generally below their respective ESLs. (with the exception of TPH-g in groundwater which exceeded the ESL). Additionally, boring C-8 is located upgradient of the Site and petroleum constituents encountered in the soil and groundwater within and in the general vicinity of the Site have attained non-detectable and very low to non-detectable levels, respectively.

No further investigations were conducted west of C-5 and MW-12 because petroleum hydrocarbons detected in the soil samples were below the ESLs. The latest groundwater results collected from C-5 and MW-12 contained petroleum hydrocarbon concentrations below ESLs.

3. *Amount of petroleum removed*

Soil:

1,090 cy (1,417 tons) with average TPHg concentrations of 5,700 ppm  
TPHg removed from soil =  $0.0057 \times 1,417 \times 2,000$   
= 16,200 lbs

(1 cy = 1.3 tons; 1 ton = 2,000 lbs)

Groundwater:

388,800 gallons with average TPHg concentrations of 280 ppm  
49,858 gallons with average TPHg concentrations of 0.26 ppm  
TPHg removed from groundwater =  $0.000280 \times 388,800 \times 8.34 +$   
 $0.00000026 \times 49,858 \times 8.34$   
= 910 lbs

(Density of Water = 8.34 lbs/gal)

Vapor:

TPHg removed from vapor extraction = 32,100 lbs

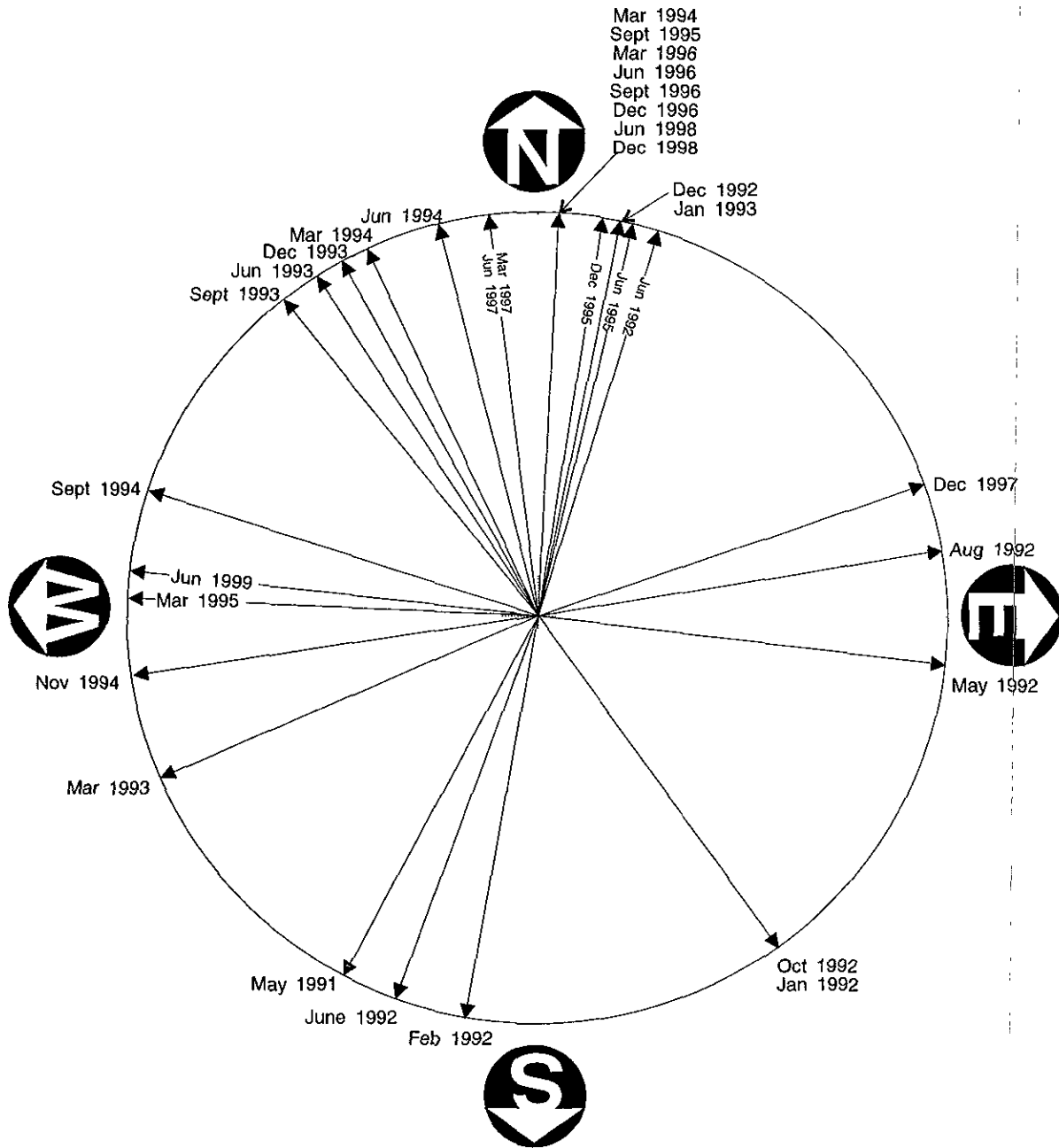
Total:

$16,200 + 910 + 32,100 = 49,200$  lbs or 8,200 gals

(Density of TPHg = 6 lbs/gal)



4. Estimation of petroleum released to site  
Based on the non-detectable concentrations of petroleum constituents in the excavation sidewall and floor samples and very low to non-detectable concentrations of petroleum constituents in the extracted groundwater (during the most recent remedial activities), we estimate that the petroleum released to the site is almost equal to the amount of petroleum removed.
  
5. Soil removed: 1,090 cy  
Groundwater removed:  $388,800 + 49,858 = 438,658$  gallons  
Vapor Extraction: 32,100 lbs of petroleum hydrocarbons
  
6. 4 monitoring wells onsite (C-1, C-2, C-4, C-5)  
6 monitoring wells offsite (MW-10, MW-11, C-6, C-7, C-8, C-9)



# SUMMARY OF GROUNDWATER FLOW DIRECTIONS

Former Chevron Station #9-4816  
 301 14th Street  
 Oakland, California