



# CAMBRIA

Mr. Don Hwang  
Alameda County Department of Environmental Health  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, CA 94502-6577  
Via Facsimile (510) 337-9432

September 5, 1997

FILE COPY

7335

Re: **Underground Storage Tank Removal**  
Shell Service Station  
2160 Otis Drive  
Alameda, California  
WIC #204-0072-0502  
Cambria Project #240-0627-4

Dear Mr. Hwang:

On September 4, 1997, Shell Oil Products Company (Shell) removed three 10,000-gallon gasoline tanks and one 550-gallon used-oil tank from the site referenced above. Mr. Don Hwang of the Alameda County Department of Environmental Health and Paul Waite of Cambria Environmental Technology, Inc. (Cambria) were on site to observe the tank removal.

As we agreed on site, there was no significant petroleum staining of soils in the area of the tanks. Because of this, you stated that no over-excavation of soils in the area of the tanks was required. You also stated that the soils that were excavated during the tank removals were not visibly impacted. We reviewed the results of the geoprobe sampling conducted on August 1, 1997, and you agreed that no significant concentrations of hydrocarbons were detected in the samples. The summary tables of the soil analytical results are attached along with a site plan showing the boring locations. Based on your observations and your review of geoprobe sampling results, you stated that the soils excavated during the tank removals could be replaced within the tank pits as backfill. Based upon your approval, Paradiso Mechanical, the site contractor, is backfilling the excavations.

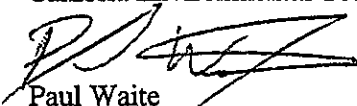
*11-6-97  
Hwang said  
he doesn't  
remember  
reviewing  
results, or saying  
they can  
back fill.*

CAMBRIA  
ENVIRONMENTAL  
TECHNOLOGY, INC.

Cambria collected soil from the dispenser island, hoists, and oil-water separator areas, along with soil and water samples from the tank pits. We will submit a report summarizing these results along with the results of the geoprobe sampling. If you have any comments or would like additional information, please contact me at (510) 420-3305. Thank you for your assistance with this project.

1144 65TH STREET,  
SUITE B  
OAKLAND,  
CA 94608

Sincerely,  
Cambria Environmental Technology, Inc.

  
Paul Waite  
Project Engineer

PH: (510) 420-0700  
FAX: (510) 420-9170

cc: A. E. Perez, Shell Oil Products Company  
Lisa Maglines, Shell Oil Products Company  
Paul Paradiso, Paradiso Mechanical

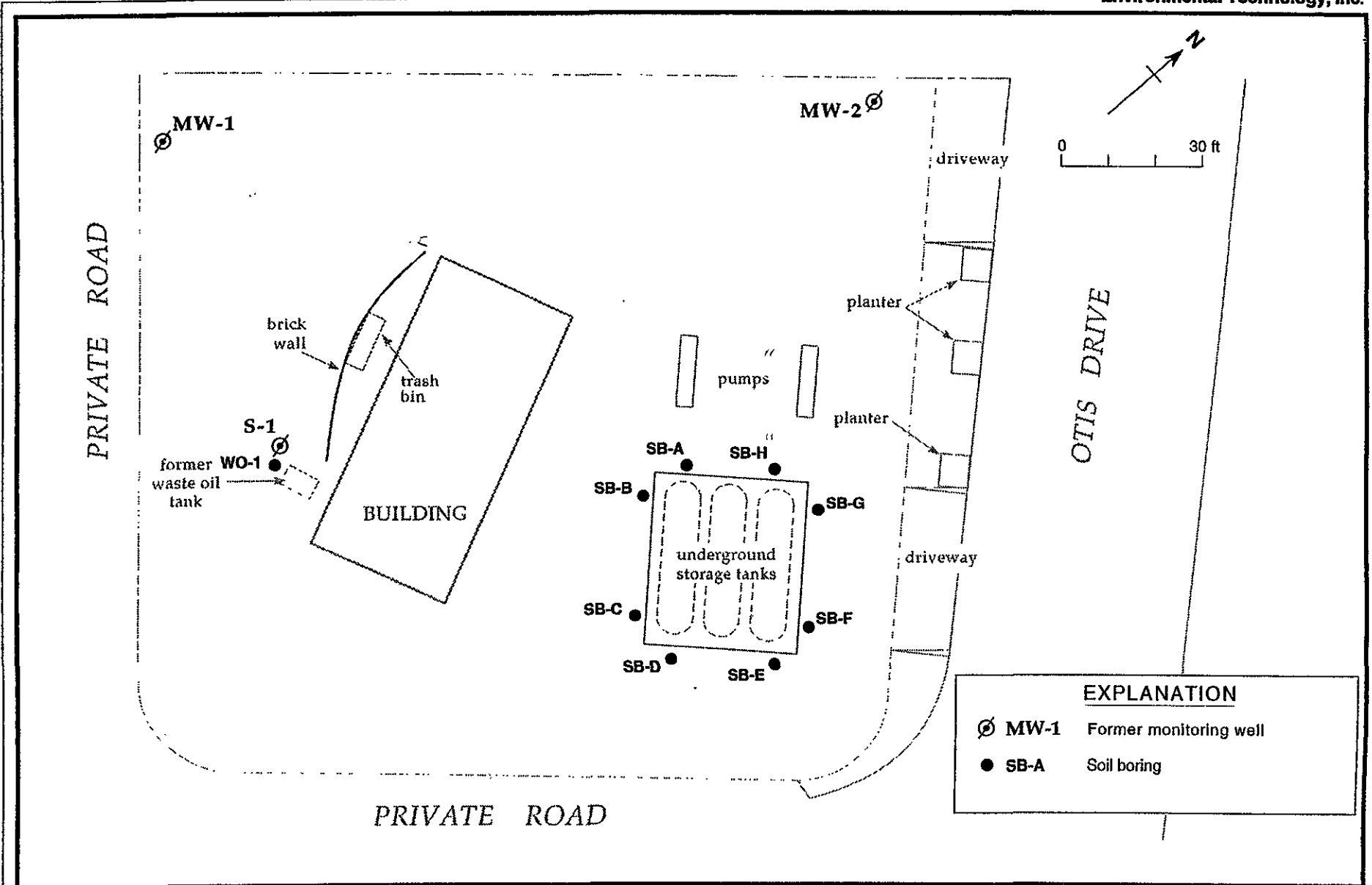


Figure 2. Monitoring Well Locations and Soil Boring Locations - August 1, 1997 - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

**Table 1. Soil Analytic Data for Petroleum Hydrocarbons - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Depth (ft-BGS)	TPPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
SB-A	8/1/97	5.0	46	0.15	0.064	0.23	1.2
SB-A	8/1/97	7.5	14	<0.012	0.052	0.14	0.67
SB-A	8/1/97	10.0	<1.0	<0.0050	<0.0050	<0.0050	0.017
SB-A	8/1/97	12.5	71	<0.050	<0.050	0.098	0.85
SB-A	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-B	8/1/97	4.0	1.2	0.013	<0.0050	0.014	0.088
SB-B	8/1/97	7.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-B	8/1/97	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-B	8/1/97	12.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-B	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-C	8/1/97	6.0	13	<0.0050	<0.0050	0.032	0.019
SB-C	8/1/97	7.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-C	8/1/97	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-C	8/1/97	14.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-C	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-D	8/1/97	5.5	16	<0.012	0.036	0.096	0.17
SB-D	8/1/97	7.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-D	8/1/97	9.5	2.6	<0.0050	0.0052	0.0080	0.043
SB-D	8/1/97	11.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-D	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-E	8/1/97	6.0	1.1	0.031	0.13	<0.0050	0.25
SB-E	8/1/97	7.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-E	8/1/97	10.5	1.3	0.0061	0.042	<0.0050	0.13
SB-E	8/1/97	12.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-E	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-F	8/1/97	4.0	1.1	0.0059	0.011	<0.0050	0.025
SB-F	8/1/97	7.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-F	8/1/97	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-F	8/1/97	12.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-F	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

**Table 1. Soil Analytic Data for Petroleum Hydrocarbons - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Depth (ft-BGS)	TPPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
SB-G	8/1/97	4.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-G	8/1/97	7.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-G	8/1/97	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-G	8/1/97	12.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-G	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-H	8/1/97	4.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-H	8/1/97	7.5	<1.0	<0.0050	<0.0050	<0.0050	0.0056
SB-H	8/1/97	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-H	8/1/97	12.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-H	8/1/97	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

mg/kg = milligrams per kilogram

TPPH = Total purgable petroleum hydrocarbons by modified EPA Method 8015

Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020

<n = Below detection limit of n mg/kg

ft-BGS = Feet below ground surface

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**Table 2. Soil Analytic Data for Metals - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Sample Depth (ft-BGS)	Barium Ba (mg/kg)	Chromium Cr (mg/kg)	Cobalt Co (mg/kg)	Copper Cu (mg/kg)	Mercury Hg (mg/kg)	Nickel Ni (mg/kg)	Silver Ag (mg/kg)	Vanadium V (mg/kg)	Zinc Zn (mg/kg)
SB-(A,B,C,D,)	8/1/97	15.5	35	27	4.7	6.3	<0.020	25	<0.50	22	20
SB-(E,F,G,H)	8/1/97	15.5	34	25	4.5	6.0	<0.020	25	<0.50	20	22
SB-A	8/1/97	5.0,7.5,10.0,12.5	60	39	7.3	13	<0.020	46	<0.50	28	33
SB-B	8/1/97	4.0,7.5,10.0,12.0	48	25	4.8	5.9	<0.020	23	<0.50	20	19
SB-C	8/1/97	6.0,7.5,10.0,14.0	29	23	3.9	4.0	0.021	18	<0.50	17	14
SB-D	8/1/97	5.5,7.5,9.5,11.5	43	19	4.1	6.7	0.040	18	<0.50	15	16
SB-E	8/1/97	6.0,7.5,10.5,12.5	29	20	4.5	6.1	<0.020	22	<0.50	18	20
SB-F	8/1/97	4.0,7.5,10.0,12.0	42	24	4.5	5.0	<0.020	23	<0.50	18	18
SB-G	8/1/97	4.0,7.5,10.0,12.0	39	24	5.6	15	<0.020	21	<0.50	18	17
SB-H	8/1/97	4.0,7.5,10.0,12.0	43	20	3.6	4.3	<0.020	18	47	15	14

**Notes:**

Samples analyzed for inorganic persistent and bioaccumulative toxic substances per Title 22

mg/kg = milligrams per kilogram

Only constituents that were detected are reported here. For the complete suite of analytes, see lab report.

<n = below detection limit of n mg/kg

ft-BGS = feet below ground surface

**Table 3. Soil Analytic Data for Waste Oil Petroleum Hydrocarbons - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Depth (ft-BGS)	TRPH (mg/kg)	TPPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
WO	8/1/97	4.0	650	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
WO	8/1/97	7.5	26	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
WO	8/1/97	10.0	26	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
WO	8/1/97	12.0	33	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
WO	8/1/97	15.5	72	4.3	0.0095	0.026	0.12	0.54
WO	8/1/97	17.0	35	<1.0	<0.0050	<0.0050	0.0098	0.018
WO	8/1/97	18.0	37	<1.0	<0.0050	<0.0050	0.0077	0.015

mg/kg = milligrams per kilogram

TRPH = Total recoverable petroleum hydrocarbons by EPA Method 418.1

TPPH = Total purgable petroleum hydrocarbons by modified EPA Method 8015

Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020

<n = Below detection limit of n mg/kg

ft-BGS = feet below ground surface

**Table 4. Soil Analytic Data for Waste Oil Metals - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Sample Depth (ft-BGS)	Barium Ba (mg/kg)	Chromium Cr (mg/kg)	Cobalt Co (mg/kg)	Copper Cu (mg/kg)	Mercury Hg (mg/kg)	Nickel Ni (mg/kg)	Silver Ag (mg/kg)	Vanadium V (mg/kg)	Zinc Zn (mg/kg)
WO	8/1/97	4.0,7.5,10.0,12.0	38	25	4.3	5.3	<0.020	21	<0.50	18	15
WO	8/1/97	15.5,17.0,18.0	18	22	3.8	4.5	<0.020	18	<0.50	16	17

**Notes:**

Samples analyzed for inorganic persistent and bioaccumulative toxic substances per Title 22

mg/kg = milligrams per kilogram

Only constituents that were detected are reported here. For the complete suite of analytes, see lab report.

<n = below detection limit of n mg/kg

ft-BGS = feet below ground surface

**Table 5. Soil Analytic Data for Waste Oil Polychlorinated Biphenyls - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Depth (ft-BGS)	PCB -1016 (mg/kg)	PCB - 1221 (mg/kg)	PCB - 1232 (mg/kg)	PCB - 1242 (mg/kg)	PCB - 1248 (mg/kg)	PCB - 1254 (mg/kg)	PCB - 1260 (mg/kg)
WO	8/1/97	4.0,7.5,10.0,12.0	<0.020	<0.080	<0.020	<0.020	<0.020	<0.020	<0.020
WO	8/1/97	15.5,17.0,18.0	<0.020	<0.080	<0.020	<0.020	<0.020	<0.020	<0.020

mg/kg = milligrams per kilogram

PCB = Polychlorinated Biphenyls by EPA Method 8080

<n = Below detection limit of n mg/kg

ft-BGS = Feet below ground surface



**Table 6. Soil Analytic Data for Waste Oil TCLP Metals - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Sample Depth (ft-BGS)	Arsenic As (mg/L)	Barium Ba (mg/L)	Cadmium Cd (mg/L)	Chromium Cr (mg/L)	Lead Pb (mg/L)	Mercury Hg (mg/L)	Selenium Se (mg/L)	Silver Ag (mg/L)
WO	8/1/97	4.0,7.5,10.0,12.0	<0.10	0.56	<0.010	<0.010	<0.10	<0.00020	<0.10	<0.010
WO	8/1/97	15.5,17.0,18.0	0.12	0.31	<0.010	<0.010	<0.10	<0.00020	<0.10	2.3

**Notes:**

Samples analyzed by Toxicity Characteristic Leaching Procedures, EPA Method 6010/7470

mg/L = milligrams per liter

<n = Below detection limit of n mg/L

ft-BGS = Feet below ground surface

**Table 7. Soil Analytic Data by TCLP Semivolatiles- Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Sample Depth (ft-BGS)	Total Creosote (mg/L)	1,4 DCB (mg/L)	2,4 DTT (mg/L)	HCB (mg/L)	HC 1,3-BD (mg/L)	HCE (mg/L)	NB (mg/L)	PCP (mg/L)	Pyridine (mg/L)	2,4,5 TCP (mg/L)	2,4,6 TCP (mg/L)
WO	8/1/97	4.0,7.5,10.0,12.0	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.040	<0.040	<0.040	<0.0080
WO	8/1/97	15.5,17.0,18.0	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.040	<0.040	<0.040	<0.0080

**Notes:**

Samples analyzed by Semivolatile Toxicity Characteristic Leaching Procedures, EPA Method 6010/7470

mg/L = milligrams per liter

<n = below detection limit of n mg/L

ft-BGS = feet below ground surface

DCB = Dichlorobenzene

DTT = Dinitrotoluene

HCB = Hexachlorobenzene

HC 1,3 BD = Hexachloro-1,3-butadiene

HCE = Hexachloroethane

NB = Nitrobenzene

PCP = Pentachlorophenol

TCP = Trichlorophenol

**Table 8. Soil Analytic Data by TCLP Volatiles- Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

Boring Number	Date Sampled	Sample Depth (ft-BGS)	Benzene (mg/L)	Carbon tetrachloride (mg/L)	Chloro-benzene (mg/L)	Chloro-form (mg/L)	1,2 DCA (mg/L)	1,1 DCE (mg/L)	MEK (mg/L)	PCE (mg/L)	TCE (mg/L)	Vinyl Chloride (mg/L)
WO	8/1/97	4.0,7.5,10.0,12.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.020	<0.020	<0.020
WO	8/1/97	15.5,17.0,18.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.10	<0.020	<0.020	<0.020

**Notes:**

Samples analyzed by Volatile Toxicity Characteristic Leaching Procedures, EPA Method 8240

mg/L = milligrams per liter

<n = below detection limit of n mg/L

ft-BGS = feet below ground surface

DCA = Dichloroethane

DCE = Dichloroethylene

MEK = Methyl ethyl ketone

PCE = Tetrachloroethylene

TCE = Trichloroethylene

" "

**ATTACHMENT D**

**Standard Tank Removal Sampling Procedures**

## STANDARD TANK REMOVAL SAMPLING PROCEDURES

Cambria Environmental Technology, Inc. (Cambria) has developed standard operating procedures for collecting soil and ground water samples during underground storage tank removal. These procedures ensure that the samples are collected, handled, and documented in compliance with California Administration Code Title 23: Waters; Chapter 3: Water Resources Control Board; Subchapter 16: Underground Storage Tank Regulations (Title 23). Cambria's sampling procedures are based on guidelines contained in the California State Regional Water Quality Control Board Tri-Regional Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites dated August 10, 1990.

### Tank Removal Sampling

The objective of sample collection during routine underground storage tank removals is to determine whether hydrocarbons or other stored chemicals have leaked to the subsurface. If no ground water is encountered within the tank excavation, Cambria will sample native soil 1 to 2 ft beneath the removed tank. Additional soil samples may also be collected at locations of obvious spillage to determine maximum concentrations in the surrounding soils. For underground storage tanks with a capacity of less than 1,000 gallons, one soil sample is collected beneath the fill end of the tank. For tanks with a capacity of between 1,000 and 10,000 gallons, one soil sample is collected beneath each end of the tank. For tanks larger than 10,000 gallons, 3 or more soil samples are collected beneath the removed tank. We also collect one soil sample for every 20 ft of product piping.

In cases where ground water is encountered within underground storage tank excavations, Cambria will collect confirmatory soil samples from the excavation sidewalls just above the soil/ground water interface and a representative ground water sample from the excavation. The excavation is typically purged and allowed to recover prior to collecting the water sample. For tanks with capacities of 10,000 gallon or less, one soil sample is collected from the wall at each end of the tank excavation. For tanks with capacities greater than 10,000 gallons, or tank clusters, at least four soil samples are collected from the excavation walls next to the tank ends. Piping samples are collected in native soil 1 to 2 ft beneath the removed piping. One sample is typically collected for every 20 lineal ft of piping unless regulatory agencies approve of different sampling requirements.

The soil samples are collected in steam cleaned brass or steel tubes from either a driven split-spoon type sampler or the bucket of a backhoe. When a backhoe is used, approximately three inches of soil are scraped from the surface and the tube is driven into the exposed soil.

Upon removal from the split-spoon sampler or the backhoe, the samples are trimmed flush, capped with Teflon sheets and plastic end caps, labeled, logged and refrigerated for delivery under chain of custody to a State certified analytic laboratory.

The ground water sample is collected using steam cleaned Teflon or PVC bailers, decanted into a volatile organic analysis (VOA) bottle or other appropriate clean sample container, refrigerated and transported under chain of custody to a State certified analytic laboratory.