93 NOV -1 AM 11:57

REPORT OF TRENCH SAMPLING AND REQUEST FOR SITE CLOSURE 105TH STREET UST SITE OAKLAND, CALIFORNIA

CWEC 20533-001-01

OCT 1993

Prepared For:

Mr. Carlo Christensen
CP Development Company
18367 Reamer Road
Castro Valley, California 94546

Prepared By:

Century West Engineering Corporation
7950 Dublin Blvd, Suite 203
Dublin, California 94568

October 26, 1993

centurywest
ENGINEERING CORPORATION

September 26, 1993

Alameda County Department of Environmental Health
UST Local Oversight Program
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Ms. Eva Chu

Subject: Report of Trench Sampling and
Request for Site Closure
342- 344 105th Avenue UST Site
Oakland, California
CWEC 20533-001-01

Ladies and Gentlemen:

Century West Engineering was contracted by Mr. Carlo Christensen to assist with closure of the underground storage tank (UST) site on 105th Street, in Oakland, California. Mr. Christensen is currently developing the subject property for low-income housing. This letter provides a summary of previous site activities, documents recent soil sampling from three trenches in 105th Avenue, and requests that Alameda County UST Local Oversight Program recommend closure of this site to the San Francisco Bay Regional Water Quality Control Board.

Brief Site Background

The former UST, which was located on the north side of the site approximately five feet south from the 105th Avenue sidewalk, apparently consisted of a 2,500-gallon single-walled steel tank. Records indicate that buried piping ran from the former UST approximately 100 feet southeast to a boiler which was used to heat flower nursery buildings formerly located at the site (see Figure 1). In addition to heating oil, the UST was apparently used to store waste oil more recently. The UST, which was installed in the 1930s, was removed by Verl's Construction, Inc. on December 29, 1989. Soil samples taken during the UST removal contained elevated levels of Total Oil and Grease (TOG) and Total Petroleum Hydrocarbons as diesel (TPH-diesel).

Three four-inch diameter ground water monitoring wells (GW-1, GW-2, and GW-3, shown on Figure 1) were installed at the site in February 1990 by SCS Engineering. According to

7950 Dublin Blvd , Suite 203 Dublin, California 94568 Phone (510) 551-7774 FAX, (510) 551-7776

the well installation report, subsurface soils consisted primarily of firm clays down to about 18 feet below grade. Ground water depth in the three wells was approximately 11 feet below grade, and ground water flow direction, based on relative ground water elevations in the three wells, was to the west (see Figure 1). The well installation report indicates that proper development of GW-3 was not possible, probably due to the large amount of low permeability clayey soils beneath the site. Both soil and ground water samples from the three wells showed no detectable levels of TPH-diesel or TOG. (Low levels of some phthalate esters were detected in almost all soil samples; however, these results appear to have resulted from laboratory or equipment contamination.)

Due to the elevated TPH-diesel and TOG levels encountered during the UST removal, overexcavation of the UST cavity was conducted in August and September 1990. According to Mr. Verl Rothlisberger of Verl's Construction, Inc., hydrocarbon-stained soils, which were readily observable in subsurface soils, extended in a southeast direction beneath the former UST delivery piping. The final excavation dimensions were approximately 100 feet by 100 feet by 25 feet in depth. According to Mr. Rothlisberger, only a very small volume of ground water seeped into the excavation pit during excavation activities, making it unnecessary to purge ground water from the pit during excavation.

During excavation activities, a total of at least 5,000 cubic yards of soil was excavated and segregated into visibly clean and dirty stockpiles. The visibly dirty stockpiled soil was remediated onsite using enhanced microbial degradation. After soil sampling of excavation pit bottom soils showed no significant levels of hydrocarbons, the excavation pit was backfilled and compacted using remediated soil and clean excavated soil from elsewhere on the site. The excavation activities resulted in the destruction and removal of GW-2. On August 26, 1992, Alameda County UST Local Oversight Program (LOP) issued a letter stating: *"Most of the soil contaminated with petroleum hydrocarbons has been excavated from the former underground storage tank (UST) pit. Other soil from onsite was used to backfill the pit. No further excavation is required within the property lines of the site at this time."*

The two remaining ground water monitoring wells (GW-1 and GW-3) were sampled on April 9, 1991, July 29, 1991, and October 14, 1991. The two wells contained no detectable TPH-diesel for these three sampling events. The two wells contained no detectable TOG for the first two sampling events; however, the October 1991 sample for GW-1 contained 1.1 ppm of TOG (method detection limit and Regional Board reporting limit for TOG in water samples is 5 ppm). In addition, the October 1991 sample from GW-3 contained 0.0063 ppm of TPH-gasoline (method detection level and Regional Board reporting limit is 0.0050 ppm). The laboratory data report for this sample states that this TPH-gasoline result is *"primarily due to the presence of discrete hydrocarbon peaks not indicative of gasoline"*.

Before the two wells could be sampled in January 1992, for the forth quarterly sampling, both wells were filled with debris by vandals.

Sampling of 105th Avenue Trenches

As part of the development of low-income housing on the subject parcel, three trenches were excavated in 105th Avenue between November 1992 and March 1993. The trenches ran perpendicular to 105th Avenue and were spaced approximately ten feet from each other (see Figure 2). The east trench, the closest trench to the backfilled UST, was located approximately five feet west from the former UST pit. After excavation of each of the trenches, Century West Engineering examined the trench and collected soil samples from each trench for laboratory analysis. The purpose of these activities was to document whether or not possible leaked hydrocarbons from the former UST have impacted soils in a downgradient (westerly) direction from the former UST. Alameda County UST Local Oversight Program was notified prior to conducting each of these sampling activities, and Ms. Eva Chu, from your office, was present during some of the sampling events.

A total of three soil samples were taken from the east trench: ET-1 at three feet in depth, ET-2 at 8.5 feet in depth, and ET-3 at 12 feet in depth. Two samples were taken from the middle trench: MT-1 at 9 feet in depth and MT-2 at 13 feet in depth. One sample (WT-1) was taken from the west trench at a depth of 12 feet below grade. Each of the trench soil samples was taken directly from the backhoe bucket using a 2-inch by 6-inch brass tube sampler as follows: (1) Approximately three inches of exposed soil was be scraped away and a clean brass tube was driven into the soil; (2) The sampling tube was completely filled with soil to eliminate any void space in the tube; (3) The tube was then quickly sealed with teflon tape and plastic end caps, wrapped tightly with tape, labeled, and immediately placed in cold storage for transport to the laboratory under formal chain-of-custody. Care was taken to insure that all sampling equipment was clean prior to sampling.

Results of 105th Avenue Trenching

Soils in the three trenches consisted of dark grey hard clay down to approximately 9 feet below grade. Light grey clay and silty clay was present in the three trenches below 9 feet in depth. Both of these units were dense, with no apparent hydrocarbon staining or odors.

A total of six soil samples were analyzed for total petroleum hydrocarbons as diesel and motor oil (TPH-diesel and TPH-motor oil); benzene, toluene, xylenes, and ethylbenzene (BTXE); and total oil and grease (TOG).

Table 1
SUMMARY OF SOIL ANALYTICAL RESULTS
105th Street UST Site

Sample ID	Sample Depth	Constituent (ppm) TPH-D	TPH-MO	B	T	X	E	TOG
East Trench								
ET-1	3.0 ft	ND(1)[1]	ND(10)	ND(.0025)	0.003	ND(.0025)	ND(.0025)	ND(50)[2]
ET-2	8.5 ft	ND(1)	ND(10)	ND(.0025)	ND(.0025)	ND(.0025)	ND(.0025)	73
ET-3	12.0 ft	ND(1)	ND(10)	ND(.0025)	ND(.0025)	ND(.0025)	ND(.0025)	ND(50)
Middle Trench								
MT-1	9.0 ft	40[3]	ND(10)	ND(.0025)	ND(.0025)	ND(.0025)	ND(.0025)	130
MT-2	13.0 ft	ND(1)	ND(10)	ND(.0025)	ND(.0025)	ND(.0025)	ND(.0025)	ND(50)
West Trench								
WT-1	13.0 ft	ND(1)	ND(10)	ND(.0025)	ND(.0025)	ND(.0025)	ND(.0025)	ND(50)

1 - Not detected above the value expressed in the parentheses.
2 - The NET Pacific data report for this sample reports TOG both as polar (animal greases) and nonpolar (hydrocarbons). However, because this investigation is only concerned with hydrocarbon-derived oil and grease, we are only reporting nonpolar oil and grease. Laboratory data reports for all other samples report only nonpolar oil and grease.
3 - The NET Pacific data report states that "The positive result for Petroleum Hydrocarbons as Diesel appears to be due to a combination of heavier hydrocarbons and Diesel."

Conclusions

Based on our review of previous site investigation reports and upon the results of recent trench sampling, we conclude the following:

1) Laboratory and field evidence shows that the only significant release from the UST system occurred along the approximate 100-foot length of the product delivery piping. Results from the three 105th Avenue trenches show some downgradient (westerly) migration of low levels of hydrocarbons, however, these levels do not warrant additional remediation because: (1) The hydrocarbons are primarily oil and grease, with only minor diesel in one sample; (2) The levels detected are below regulatory action levels for these constituents; and (3) No detectable hydrocarbons were found in the west trench sample, indicating that possible releases from the tank area were small and did not migrate a significant distance downgradient.

2) All evidence has shown (and Alameda County has concurred) that all significant levels of fuel-laden soil beneath the former product piping (southeast from the former UST) have been satisfactorily remediated. The remediation, which included the excavation and onsite remediation of at least 5,000 cubic yards of soil, represented a substantial effort and monetary expenditure for the property owner. By taking this extraordinary measure, the property owner has removed all significant levels of fuel-laden soil which could contribute to a possible ground water contamination problem in the future.

3) Ground water flow direction, measured in March 1990, is to the west. This westerly ground water flow direction agrees with the expected ground water flow direction towards San Francisco Bay.

4) Soils beneath the site are clay-dominated, with no significant sandy aquifer materials. Clays are poor ground water aquifers because they typically have high porosity (ability to store water) but low permeability (ability to transmit water). Thus, when soil beneath the water table was excavated at the project site, ground water was removed with the excavated soil and, as attested by Mr. Rothlisberger, very little water was present in the excavation pit, even though excavation depths reached 25 feet below grade.

5) All ground water sampling at the project site has shown that there has been no impact to ground water from the former UST system. GW-2, which was located within the soil contamination plume, was sampled once before destruction and removal and contained no detectable TPH-diesel or TOG. GW-3, which is located approximately 20 feet west (downgradient) from the former UST excavation pit (where the leakage occurred), was sampled in February 1990, April 1991, July 1991, and October 1991 and contained no detectable TPH-diesel or TOG. These results confirm that clayey soils beneath the project site effectively halted any significant downgradient migration of hydrocarbon constituents.

Request for Site Closure

Based on the conclusions summarized above, we believe that the former UST system at the project site has been successfully remediated and that the UST site no longer poses a risk to surrounding soil and ground water quality. Thus, on behalf of Mayer Properties, we request that Alameda County UST Local Oversight Program recommend closure of this site to San Francisco Bay Regional Water Quality Control Board.

We appreciate the opportunity to present this letter report for your review. Please contact us if you have questions or require additional information.

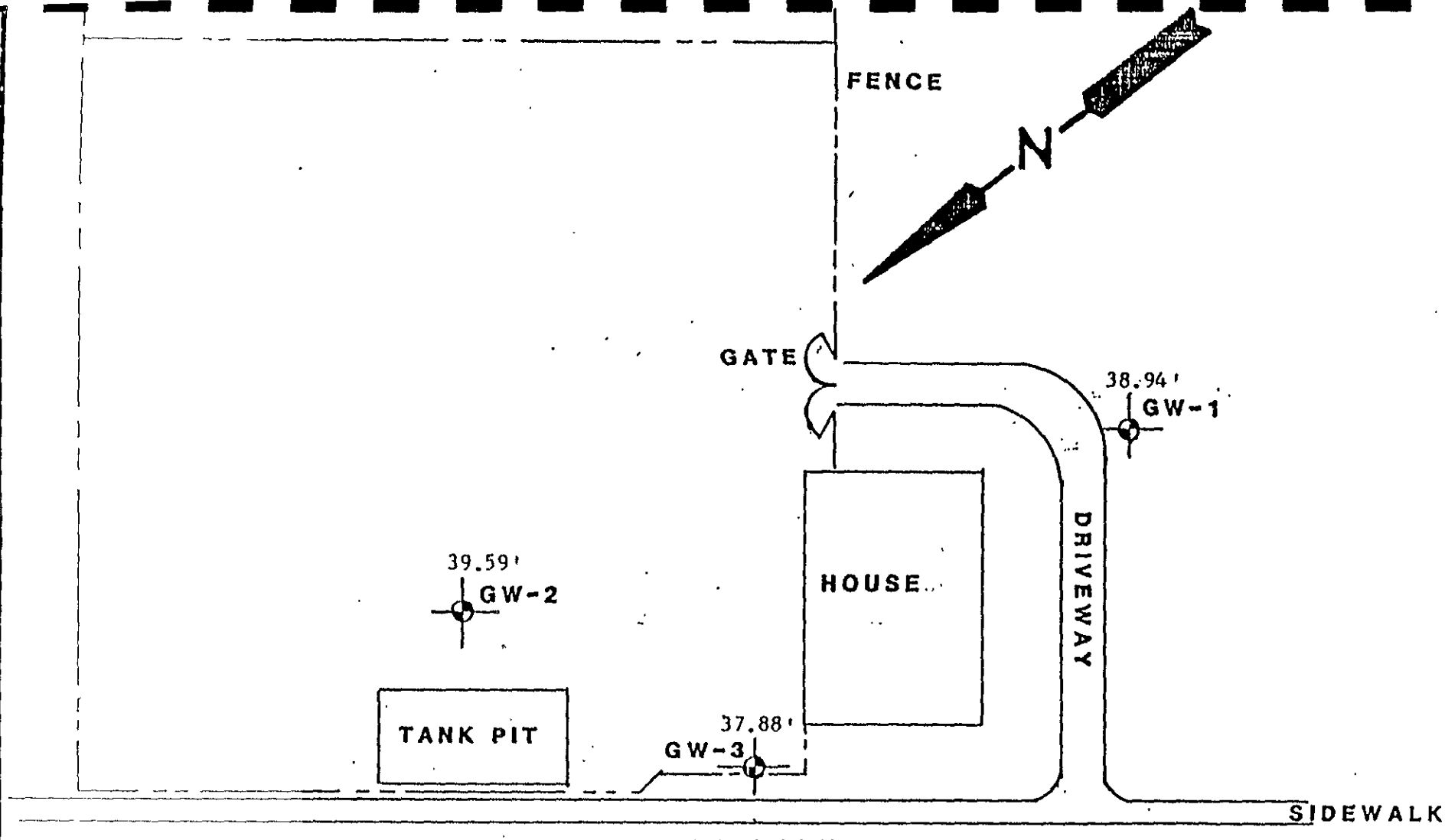
Very truly yours,

James E. Gribi
Geologist

Helen Ling
Registered Civil Engineer
California No. 35014

JEG/HL:ct
Enclosure

c Mr. Carlo Christiansen
Rich Hiett, Regional Board



GROUNDWATER MONITORING WELL

SCALE: 1" = 30'

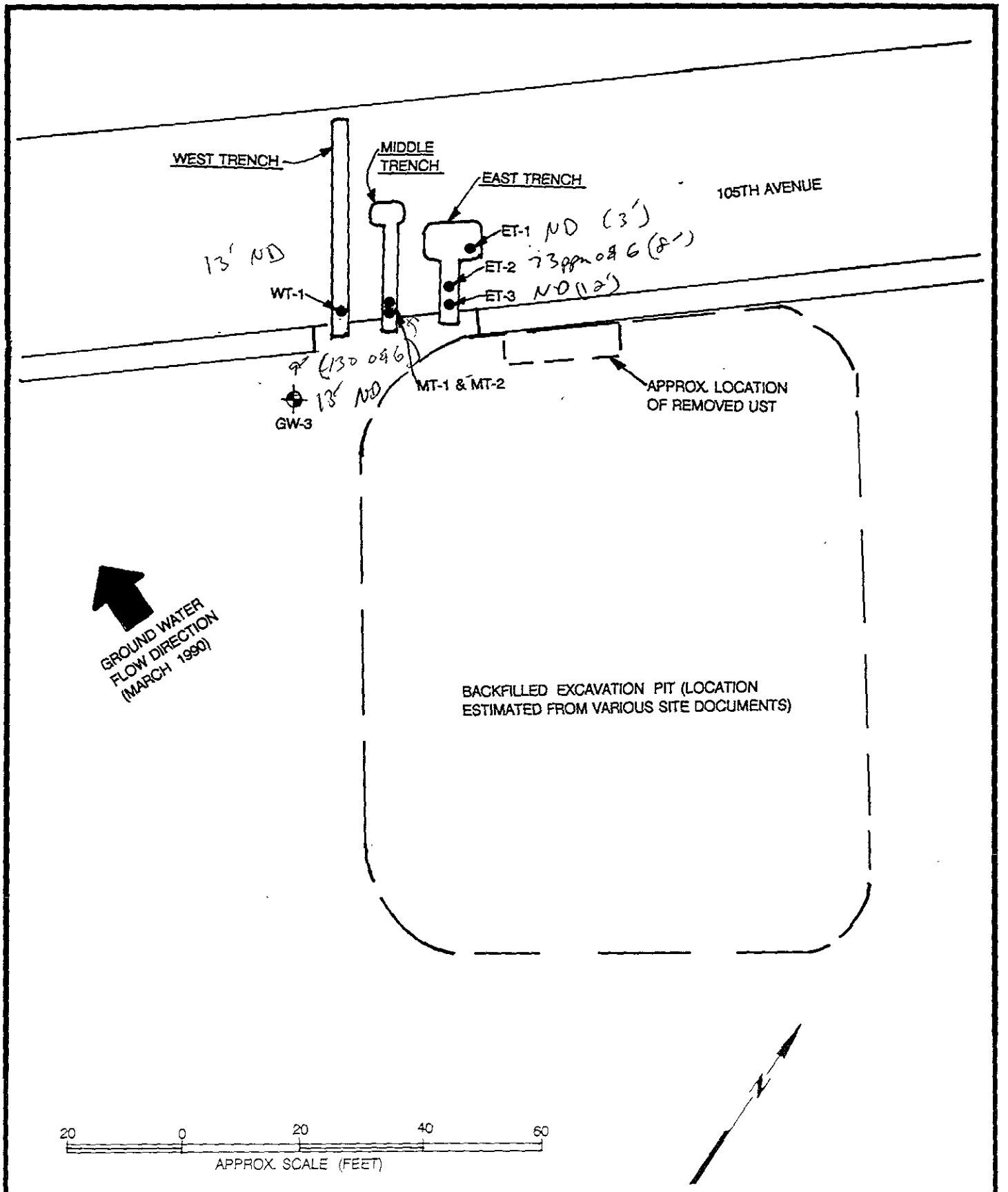
CWEC FIGURE 1

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
8761 D SIERRA COURT
DUBLIN, CA 94568

RELATIVE GROUNDWATER ELLEVATIONS
342-105th Avenue
Oakland, California

Project No. 0389060.01 Date: 3-13-90

Plate 3



DESIGNED BY:	CHECKED BY:	FIGURE 2 SITE PLAN - NOV. 1993 CWEC 20533-001-01	DATE:	FIGURE:
DRAWN BY:	SCALE:		CENTURY WEST ENGINEERING	
DWG. NO.:				

APPENDIX A

LABORATORY DATA REPORTS FOR TRENCH SAMPLING

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Jim Gribi
Century West Engineering
7950 Dublin Blvd., Ste 210
Dublin, CA 94568

Date: 11/24/1992
NET Client Acct. No: 75300
NET Pacific Job No: 92.49290
Received: 11/13/1992

Client Reference Information

MPI/105th St. EA, Project No: 20533-001-01

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

Enclosure(s)

Ref: MPI/105th St. EA, Project No: 20533-001-01

SAMPLE DESCRIPTION: WT-1 West Trench 13'
Date Taken: 11/07/1992
Time Taken:
LAB Job No: (-143891)

Parameter	Method	Reporting Limit	Results	Units
Oil & Grease (Non-Polar)	5520D/F	50	ND	mg/Kg
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)			--	
DATE ANALYZED			11-17-92	
DILUTION FACTOR*			1	
as Gasoline	5030	1	ND	mg/Kg
METHOD 8020 (GC,Solid)			--	
DATE ANALYZED			11-17-92	
DILUTION FACTOR*			1	
Benzene	8020	2.5	ND	ug/Kg
Ethylbenzene	8020	2.5	ND	ug/Kg
Toluene	8020	2.5	ND	ug/Kg
Xylenes (Total)	8020	2.5	ND	ug/Kg
SURROGATE RESULTS			--	
Bromofluorobenzene	5030		80	% Rec.
METHOD 3550 (GC,FID)				
DILUTION FACTOR*			1	
DATE EXTRACTED			11-14-92	
DATE ANALYZED			11-16-92	
as Diesel	3550	1	ND	mg/Kg

Ref: MPI/105th St. EA, Project No: 20533-001-01

SAMPLE DESCRIPTION: MT-1 Middle Trench 9'
Date Taken: 11/11/1992
Time Taken:
LAB Job No: (-143892)

Parameter	Method	Reporting Limit	Results	Units
Oil & Grease (Non-Polar)	5520D/F	50	130	mg/Kg
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)			--	
DATE ANALYZED			11-17-92	
DILUTION FACTOR*			1	
as Gasoline	5030	1	ND	mg/Kg
METHOD 8020 (GC,Solid)			--	
DATE ANALYZED			11-17-92	
DILUTION FACTOR*			1	
Benzene	8020	2.5	ND	ug/Kg
Ethylbenzene	8020	2.5	ND	ug/Kg
Toluene	8020	2.5	ND	ug/Kg
Xylenes (Total)	8020	2.5	ND	ug/Kg
SURROGATE RESULTS			--	
Bromofluorobenzene	5030		75	% Rec.
METHOD 3550 (GC,FID)				
DILUTION FACTOR*			1	
DATE EXTRACTED			11-14-92	
DATE ANALYZED			11-16-92	
as Diesel	3550	1	40**	mg/Kg

** The positive result for Petroleum Hydrocarbons as Diesel appears to be due to a combination of heavier hydrocarbon and Diesel.

Ref: MPI/105th St. EA, Project No: 20533-001-01

SAMPLE DESCRIPTION: MT-2 Middle Trench 13'
Date Taken: 11/11/1992
Time Taken:
LAB Job No: (-143893)

Parameter	Method	Reporting Limit	Results	Units
Oil & Grease (Non-Polar)	5520D/F	50	ND	mg/Kg
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)			--	
DATE ANALYZED			11-17-92	
DILUTION FACTOR*			1	
as Gasoline	5030	1	ND	mg/Kg
METHOD 8020 (GC,Solid)			--	
DATE ANALYZED			11-17-92	
DILUTION FACTOR*			1	
Benzene	8020	2.5	ND	ug/Kg
Ethylbenzene	8020	2.5	ND	ug/Kg
Toluene	8020	2.5	ND	ug/Kg
Xylenes (Total)	8020	2.5	ND	ug/Kg
SURROGATE RESULTS			--	
Bromofluorobenzene	5030		80	% Rec.
METHOD 3550 (GC,FID)				
DILUTION FACTOR*			1	
DATE EXTRACTED			11-14-92	
DATE ANALYZED			11-16-92	
as Diesel	3550	1	ND	mg/Kg

Ref: MPI/105th St. EA, Project No: 20533-001-01

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1.0	mg/Kg	108	ND	108	100	7.5
Benzene	2.5	ug/Kg	95	ND	101	99	2.4
Toluene	2.5	ug/Kg	90	ND	101	99	1.6
Diesel	1	mg/Kg	107	ND	72	93	26
O&G,non-polar	50	mg/Kg	94	ND	N/A	N/A	N/A

COMMENT: Blank Results were ND on other analytes tested.

NET®

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

[redacted]

435 TESCONI CIRCLE
SANTA ROSA, CA 95401

TEL: 707-526-7200
FAX: 707-526-9623

9753

CHAIN OF CUSTODY RECORD

PROJ NO: 20533-001-01

PROJECT NAME: MP1/105th Street EA

SAMPLERS (Signature): [signature] Jim Grib, Century West ENG.

STA NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	TPH-G & BTXE	TPH-D	TOG (NON POLAR)				REMARKS
WT-1	11/7	Soil			West Trench 13'	1	X	X	X				5-Day TAT
MT-1	11/11	"			Middle Trench 9'	1	X	X	X				" "
MT-2	11/11	"			Middle Trench 13-ft	1	X	X	X				" "

CUSTODY SEALED 11/12/92 @ 1400 MWT seals intact. A-L.

Relinquished by (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	11/12/92 1055	[signature]	[signature]	11/12/92 1400	
Relinquished by (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		[signature]	11/13/92 0800		

NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Jim Gribi
Century West Engineering
7950 Dublin Blvd., Ste 210
Dublin, CA 94568

Date: 03/16/1993
NET Client Acct No: 75300
NET Pacific Job No: 93.00848
Received: 03/06/1993

Client Reference Information

MD/105th St. EA, Project No: 20533-001-01

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

Ref: MD/105th St. EA, Project No: 20533-001-01

Descriptor, Lab No. and Results

Parameter	ET-1 03/05/1993 152320	ET-2 03/05/1993 152321	Reporting Limit	Units	Method
Oil & Grease (Total)	59	79	50	mg/Kg	5520E
Oil & Grease (Non-Polar)	ND	73	50	mg/Kg	5520E/F
TPH (Gas/BTXE,Solid)					
METHOD 5030 (GC,FID)	--	--			
DATE ANALYZED	03-08-93	03-08-93			
DILUTION FACTOR*	1	1			
as Gasoline	ND	ND	1	mg/Kg	5030
METHOD 8020 (GC,Solid)	--	--			
DATE ANALYZED	03-08-93	03-08-93			
DILUTION FACTOR*	1	1			
Benzene	ND	ND	2.5	ug/Kg	8020
Ethylbenzene	ND	ND	2.5	ug/Kg	8020
Toluene	3.0	ND	2.5	ug/Kg	8020
Xylenes (Total)	ND	ND	2.5	ug/Kg	8020
SURROGATE RESULTS	--	--			
Bromofluorobenzene	76	78		% Rec.	5030
METHOD 3550 (GC,FID)					
DILUTION FACTOR*	1	1			
DATE EXTRACTED	03-08-93	03-08-93			
DATE ANALYZED	03-08-93	03-08-93			
as Diesel	ND	ND	1	mg/Kg	3550
as Motor Oil	ND	ND	10	mg/Kg	3550

Ref: MD/105th St. EA, Project No: 20533-001-01

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1.0	mg/Kg	105	ND	96	92	5.1
Benzene	2.5	ug/Kg	95	ND	87	91	3.9
Toluene	2.5	ug/Kg	88	ND	91	88	3.6
Diesel	1	mg/Kg	95	ND	99	89	11
Motor Oil	10	mg/Kg	90	ND	N/A	N/A	N/A
O&G,total	50	mg/Kg	102	ND	110	105	4.7
O&G,non-polar	50	mg/Kg	97	ND	N/A	N/A	N/A

COMMENT: Blank Results were ND on other analytes tested.

NET®

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

WEST
Western Environmental Science & Technology

1046 Olive Drive, Suite 3
Davis, CA 95616

916-753-9500
FAX #: 916-753-6091
LAB#: 916-757-4650

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Jim Gribi
Phone #: (510) 551-7774

Company/Address: Century West Eng
FAX #: (510) 551-7776

Project Number: 20533-001-01
P.O.#:
Project Name: MD / 105th Street EA

Project Location: Oakland CA
Sampler Signature: [signature]

ANALYSIS REQUEST 2458

W.E.T. (✓)
TOTAL (✓)

Sample ID	Sampling DATE	Sampling ~~TIME~~ Depth	Container: VOA	Container: SLEEVE	Container: 1L GLASS	Container: 1L PLASTIC	Method Preserved: HCl	Method Preserved: HNO_3	Method Preserved: ICE	Method Preserved: NONE	Matrix: WATER	Matrix: SOIL	BTEX (602/8020)	BTEX/TPH as Gasoline (602/8020/8015)	TPH as Diesel/Oil (8015)	Total Oil & Grease (5520 B/E,F) Non Polar	Total Oil & Grease IR (5520 B/E,F,C)	96 - Hour Fish Bioassay	EPA 601/8010	EPA 602/8020	EPA 615/8150	EPA 608/8080 - Pesticides	EPA 608/8080-PCBs	EPA 624/8240	EPA 625/8270	ORGANIC LEAD	Reactivity, Corrosivity, Ignitibility	CAM - 17 Metals	EPA - Priority Pollutant Metals	LEAD (7420/7421/239.2)	Cd, Cr, Pb, Zn, Ni	TAT: RUSH SERVICE (12 hr) or (24 hr)	TAT: EXPEDITED SERVICE (48 hr) ~~(1 wk)~~	TAT: STANDARD SERVICE (2wk)
ET-1	3/5	~~10~~ 3'		X					X			X		X	X	X																	X	
ET-2	3/5	8.5'		X					X			X		X	X	X																	X	

Relinquished by	Date	Time	Received by	Date	Time
[signature]	3/5/93	4:53 p.	Paula [signature]	3-5-93	4:53

Remarks: FAX Results

Relinquished by	Date	Time	Received by Laboratory
	3/6/93	10:30	[signature]

Bill To:

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Jim Gribi
Century West Engineering
7950 Dublin Blvd., Ste 210
Dublin, CA 94568

Date: 03/30/1993
NET Client Acct. No: 75300
NET Pacific Job No: 93.00914
Received: 03/12/1993

Client Reference Information

MD/105th St., Oakland, Project No: 20533-001-01

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack FOR:
Laboratory Manager

Enclosure(s)

Ref: MD/105th St., Oakland, Project No: 20533-001-01

SAMPLE DESCRIPTION: ET-3
Date Taken: 03/11/1993
Time Taken:
LAB Job No: (-152607)

Parameter	Results	Reporting Limit	Units	Method
Oil & Grease (Total)	ND	50	mg/kg	5520E
Oil & Grease (Non-Polar)	ND	50	mg/kg	5520E/F
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)	--			
DATE ANALYZED	03-16-93			
DILUTION FACTOR*	1			
as Gasoline	ND	1	mg/kg	5030
METHOD 8020 (GC,Solid)	--			
DATE ANALYZED	03-16-93			
DILUTION FACTOR*	1			
Benzene	ND	2.5	ug/kg	8020
Ethylbenzene	ND	2.5	ug/kg	8020
Toluene	ND	2.5	ug/kg	8020
Xylenes (Total)	ND	2.5	ug/kg	8020
SURROGATE RESULTS	--			
Bromofluorobenzene	71		% Rec.	5030
METHOD 3550 (GC,FID)				
DILUTION FACTOR*	1			
DATE EXTRACTED	03-12-93			
DATE ANALYZED	03-15-93			
as Diesel	ND	1	mg/kg	3550
as Motor Oil	ND	10	mg/kg	3550

Ref: MD/105th St., Oakland, Project No: 20533-001-01

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1.0	mg/kg	104	ND	98	103	4.9
Benzene	2.5	ug/kg	102	ND	94	97	3.5
Toluene	2.5	ug/kg	101	ND	96	100	3.8
Diesel	1	mg/kg	94	ND	75	83	9.8
Motor Oil	10	mg/kg	89	ND	N/A	N/A	N/A
O&G,total	50	mg/kg	90	ND	98	97	1.0
O&G,non-polar	50	mg/kg	90	ND	N/A	N/A	N/A

COMMENT: Blank Results were ND on other analytes tested.

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

WEST
Western Environmental Science & Technology

1046 Olive Drive, Suite 3
Davis, CA 95616

916-753-9500
FAX #: 916-753-6091
LAB#: 916-757-4650

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

2514

Project Manager: Jim Gribi
Phone #: (510)551-7774
Company/Address: Century West Eng.
FAX #: (510)551-7776
Project Number: 20533-001-01
P O #:
Project Name: MD/105th Street
Project Location: OAKLAND
Sampler Signature: James C Gribi

Sample ID	Sampling DATE	Sampling TIME (Depth)	Container VOA	Container SLEEVE	Container 1L GLASS	Container 1L PLASTIC	Method Preserved HCl	Method Preserved HNO_3	Method Preserved ICE	Method Preserved NONE	Matrix WATER	Matrix SOIL
ET-3	3/11	12'		X					X		X	

ANALYSIS REQUEST

BTEX (602/8020)	BTEX/TPH as Gasoline (602/8020/8015)	TPH as Diesel/Oil (8015)	Total Oil & Grease (5520 B/E,F)	Total Oil & Grease IR (5520 B/E,F,C)	96 - Hour Fish Bioassay	EPA 601/8010	EPA 602/8020	EPA 615/8150	EPA 608/8080 - Pesticides	EPA 608/8080-PCBs	EPA 624/8240	EPA 625/8270	ORGANIC LEAD	Reactivity, Corrosivity, Ignitibility	W.E.T. (#)	TOTAL (#)	CAM - 17 Metals	EPA - Priority Pollutant Metals	LEAD(7420/7421/239.2)	Cd, Cr, Pb, Zn, Ni
	X	X	X																	

TAT

RUSH SERVICE (12 hr) or (24 hr)	EXPEDITED SERVICE (48 hr) or (1 wk)	STANDARD SERVICE (2wk)
		X

Relinquished by	Date	Time	Received by:
James C Gribi	3-11-93	1620	Andy Mackay
Andy Mackay	3-11-93	1700	
	3/12/93	0800	Received by Laboratory:

Remarks:
CUSTODY SEALED 3-11 @ 1700
Seals intact - A-L.

Bill To: