



June 1, 1988

15042,016.02

Harbor Tug and Barge Company
Crowley Maritime Corporation
Pacific Division
101 California Street, Suite 4800
San Francisco, California 94111

RECEIVED
JUN 07 1988
RUSS JOHNSON

Attention: Mr. Russ Johnson

Gentlemen:

**Remedial Actions for Soil and Ground Water
Grand Street Fuel Terminal
Alameda, California**

This letter documents the remedial actions taken by Harbor Tug and Barge Company (HT&B) at the marine fuel terminal located at 2051 Grand Street, Alameda, California. The facility consists of eight above-ground tanks located within a concrete wall containment structure (tank farm), two pump houses, and an underground pipeline leading from the tanks to the pier where vessels are fueled. Investigations conducted by Crowley Environmental Services (CES) and Harding Lawson Associates (HLA) during the period April through June, 1987, detected petroleum hydrocarbons in shallow subsurface soils and fuel constituents in ground water at the facility. Based on the laboratory analysis of soil samples and information concerning past operating practices at the facility, the source of the petroleum contamination was believed to be spills of diesel fuel that occurred during tank truck off-loading operations in the area adjacent to the north side of the tank farm.

These investigations were described in HLA's July 17, 1987 report "Petroleum Hydrocarbons in Soils and Ground Water, Fuel Storage Area, Encinal Marina, Alameda, California." This report recommended removal of petroleum contaminated soils located between the tank farm and the shoreline and pumping of free product and contaminated ground water during the soil excavation process.

On October 27, 1987, prior to the start of remedial action at the site, HLA contacted the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) at the request of CES, and attempted to obtain concurrence with the remedial action strategy proposed in the July 17, 1987 report. Mr. Peter Johnson, Water Resources Control engineer, indicated that the RWQCB staff was so overloaded that fuel contamination cases were not being reviewed;

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reports that were received were simply being filed for possible review at a later date. He stated that it would not be possible for the RWQCB to review reports related to this site or provide concurrence for the proposed remedial action program. He advised that HT&B undertake a remedial action program consistent with current RWQCB guidelines for fuel leaks, and requested that he receive copies of any reports describing future work at the site. Following this discussion HT&B elected to proceed with implementation of the recommended remedial action program.

SOIL EXCAVATION

On November 16 and 17, 1987, CES excavated soil from the area on the north side of the tank farm. Excavation activities on November 17 were observed by HLA geologist Brent Dostert. Anatec Laboratories, Santa Rosa, California, was also retained by CES to provide a mobile laboratory on site to analyze soil samples to evaluate when the limits of soil contamination had been reached in the excavation. The excavation extended to depths ranging from approximately 4 to 5 feet below existing ground surface; the lateral limits of the excavation are shown on Plate 1.

On November 17, oily material was observed seeping into the excavation from under the tank farm structure at depths of approximately 1.5 feet and 4.5 to 5.0 feet below ground surface. Free oily material was also observed on water that had accumulated in the west end of the excavation. Because it was raining while soil was being excavated, it was not possible to determine whether water within the excavation was due to ground-water seepage or surface water run-in. However, as ground water was encountered approximately 3 feet below ground surface during the previous investigation, it is likely that at least some of the standing water resulted from ground-water seepage.

Six soil samples (numbered 1 through 6) were collected from the bottom and side walls of the excavation on November 17 at the locations shown on Plate 1, and five were analyzed by Anatec's mobile laboratory. Anatec reported that the mobile laboratory could not detect hydrocarbons that matched their diesel standard; however, the samples contained a heavy oily material that could not be readily quantified in the mobile laboratory due to excessive loading of the gas chromatograph column. Portions of samples 1 through 6 were subsequently analyzed for total petroleum hydrocarbons (TPH) as diesel and waste oil by the Anatec Laboratory in Santa Rosa, California.

On November 18, 1987, six additional samples (numbered 7 through 12) were collected from the side walls and bottom of the excavation at locations shown on Plate 1. The samples were transported to Wesco Laboratories, Novato, California by HLA geologist Brent Dostert, where they were analyzed for TPH as diesel and total oil and grease (TOG). Portions of these samples were subsequently submitted to Anatec Laboratories by CES and were analyzed for TPH as diesel and motor oil.

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Harbor Tug and Barge Company
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All samples were collected in 6-inch x 2 1/2-inch diameter stainless steel tubes. The ends were covered with aluminum foil and plastic caps, which were taped in place. Samples 7 to 12 were placed in a cooler with ice immediately after collection; samples 1 to 6 were submitted directly to the Anatec Mobile Laboratory.

On November 19, 1987 the excavation was extended to the east in the area shown on Plate 1 in order to evaluate the extent of soil contamination between the previously excavated area and the location of Boring B-1. The trench was excavated to a depth of approximately 4 feet. Soil samples from the floor and walls of the trench were collected by Scott Gibson of Wesco Laboratories. Information concerning this excavation was provided by CES; it was not observed by HLA.

Sample depths, results of chemical analyses, and analytical methods are summarized in Table 1. Laboratory reports are attached.

A total of approximately 285 tons of contaminated soil was excavated from the area shown on Plate 1. This soil was transported by Dart Trucking to the Envirosafe Services of Idaho (ESI) site in Grandview, Idaho for disposal. Completed Uniform Hazardous Waste Manifests documenting disposal of this material are also attached.

GROUND-WATER EXTRACTION SYSTEM

Because hydrocarbon-contaminated soils were observed to extend under the tank farms and could not be removed without demolishing the structure, CES elected to halt soil excavation on November 17, 1987. A ground-water extraction system was subsequently installed within the existing excavation by CES to capture any free hydrocarbons migrating from beneath the tank farm. The system consisted of the following elements:

Faccor did work

- o Six 4-inch-diameter lengths of slotted PVC well casing (0.040 inch slot size) were placed at the locations shown on Plate 1;
- o the excavation was backfilled with 3/8-inch-diameter pea gravel to within 1 foot of the existing ground surface;
- o the remainder of the excavation was backfilled with Class III aggregate base;
- o the area will be paved in the near future.

Design details for the ground-water extraction system were provided by CES; installation of the system was not directly observed by HLA.

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DISCUSSION OF ANALYTICAL RESULTS

Several discrepancies exist between analysis of soil samples from the excavation area performed by different laboratories concerning the identity of the hydrocarbons present and the concentrations of hydrocarbons in specific areas. Samples collected from this area by CES and HLA between April and June, 1987 were analyzed for TPH by Brown and Caldwell laboratories, who quantified the fuel hydrocarbons present in terms of diesel fuel. Both the Anatec Laboratory in Santa Rosa and the Anatec Mobile Laboratory failed to identify diesel fuel in all but one sample collected from the excavation when performing their TPH analysis, and instead quantified the hydrocarbons present in terms of motor oil or waste oil. Wesco Laboratories quantified hydrocarbons in samples 7 to 12 in terms of diesel fuel when performing their TPH analysis, and also identified hydrocarbons using the TOG method.

Anatec identified hydrocarbons in concentrations above 100 parts per million (ppm) in samples 11 and 12, while Wesco identified hydrocarbons above 100 ppm in samples 9, 10, 11, and 12. Sample 7 was found by Anatec to contain 180 ppm hydrocarbons as diesel, while Wesco reported 20 ppm as diesel. Anatec reported 100 ppm hydrocarbons as motor oil for sample 9, while Wesco reported 550 ppm hydrocarbons as diesel and 615 ppm as total oil and grease. Anatec did not detect hydrocarbons in sample 10, while Wesco reported 160 ppm as diesel and 218 ppm as total oil and grease. Anatec reported 110 ppm hydrocarbons as motor oil in samples 11 and 12, while Wesco reported 476 ppm as diesel for sample 11, and 56 ppm as diesel and 137 ppm as total oil and grease for sample 12.

The following factors could contribute to the variability in analytical results:

- The laboratory only analyzes a small portion of the total sample submitted. If hydrocarbons are not uniformly distributed within the sample, analysis of different portions of the sample will yield different results. Because the excavation and sampling were conducted during rainy weather, portions of the samples may have been contaminated with hydrocarbons that accumulated in the excavation due to surface water run-in.
- Although both laboratories used RWQCB-approved analytical methods, the methods themselves allow some variability in such areas as sample preparation procedures and the choice of standards. In addition, determining the concentration of aged hydrocarbons can be difficult because they are not easily comparable with available standards. This may result in different laboratories reporting different values for the same sample

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- o Results from TPH analysis using different standards (e.g., diesel, motor oil, waste oil) or results from TPH and TOG analysis cannot be directly compared.

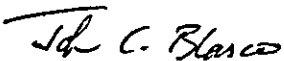
In summary, two laboratories (Brown & Caldwell and Wesco) have identified diesel fuel hydrocarbons in soil samples from the area excavated by CES. Anatec Laboratories, using both their mobile laboratory and Santa Rosa facility, has identified hydrocarbons that more closely resemble waste oil or motor oil (with the exception of sample 7). When analyzing portions of the same sample, Wesco's results were generally higher than those obtained by Anatec (with the exception of sample 7). While it is possible to identify several factors that could contribute to these differences in results, there is insufficient evidence to reject the results of one laboratory in favor of another.

CONCLUSIONS

In spite of the differences in laboratory results, it is clear that the vast majority of hydrocarbon contaminated soil identified during HLA's previous investigation has been removed by CES. Hydrocarbons remain under the tank farm structure. Lower levels of hydrocarbons remain around the edges and at the bottom of the excavated area. A ground water collection and extraction system has been installed to intercept any hydrocarbons that may migrate to the north from under the tank farm structure.

Yours very truly,

HARDING LAWSON ASSOCIATES



John C. Blasco
Associate Waste Management Specialist

BD/JCB/ljc/B3244-CT

Attachments: Plate 1
Laboratory Reports
Uniform Hazardous Waste Manifests

Table 1. Soil Sample Data

Sample No.	Depth	Anatec Laboratory			Wesco Laboratory	
		Mobile Lab TPH-Diesel	Santa Rosa Lab TPH-Diesel	TPH-Oil	TPH-Diesel	TOG
1	Bottom	ND	ND	65 ^b	NA	NA
2	Sidewall	NA	ND	18 ^b	NA	NA
3	Bottom	ND	ND	22 ^b	NA	NA
4	3.5	ND	ND	31 ^b	NA	NA
5	5.0	ND	ND	51 ^b	NA	NA
6	6.0	ND	ND	25 ^b	NA	NA
7	4.0	NA	180	ND ^a	20	ND
8	3.5	NA	ND	ND ^a	17	99
9	4.0	NA	ND	100 ^a	550	615
10	3.0	NA	ND	ND ^a	160	218
11	4.5	NA	ND	110 ^a	476	ND
12	3.0	NA	ND	110 ^a	56	137
1119-1	Floor	NA	NA	NA	ND	39
1119-2	Sidewall	NA	NA	NA	ND	ND
1119-3	Floor	NA	NA	NA	ND	59

Notes:

^a TPH as motor oil.

^b TPH as waste oil.

All results expressed in parts per million (ppm).

TPH - total petroleum hydrocarbons by EPA Methods 3550/8015.

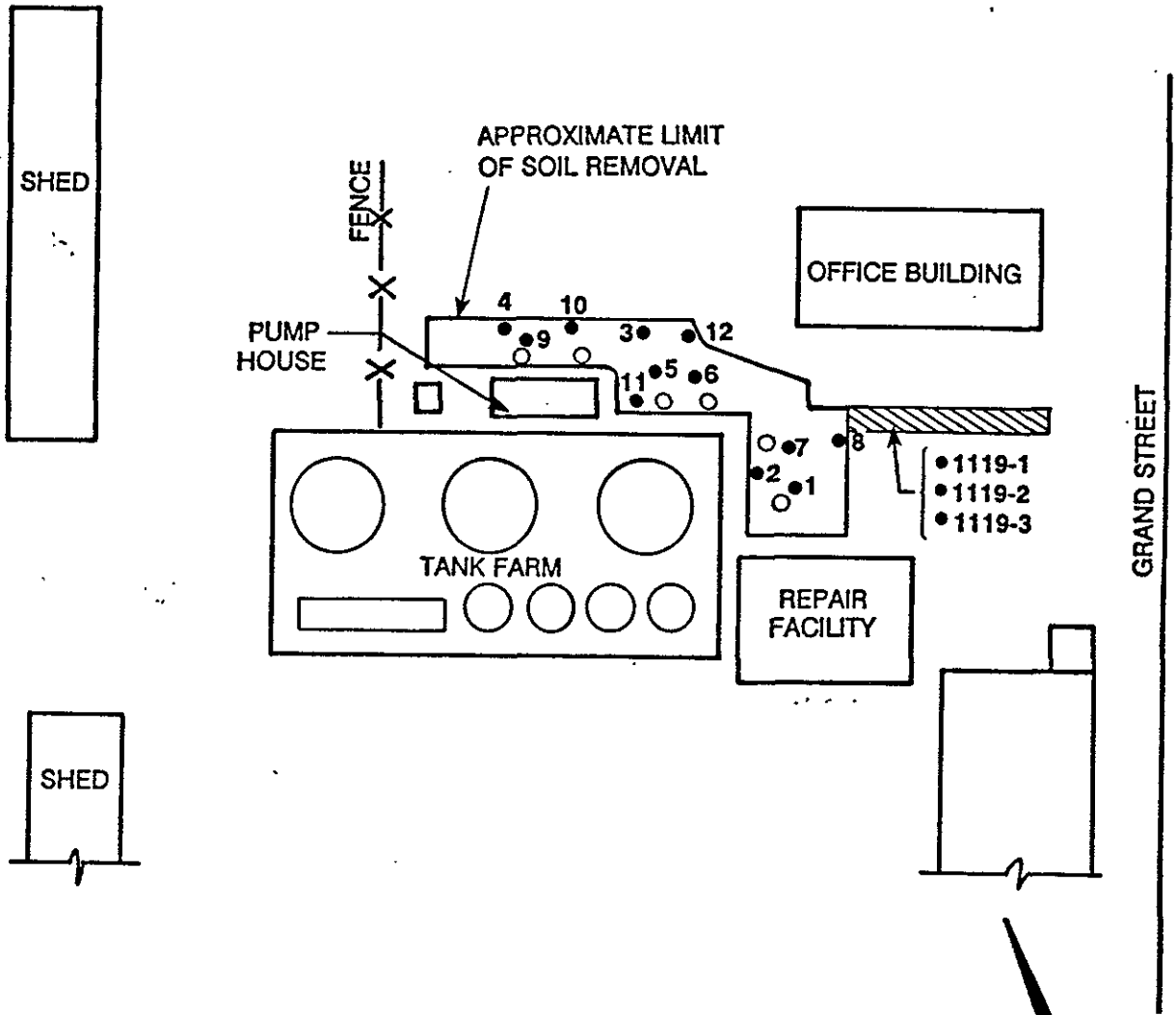
TOG - total oil and grease by EPA Methods 3550/503E.

ND = No detected. See laboratory reports for detection limits.

NA = Not analyzed.

All depths expressed as feet below existing ground surface

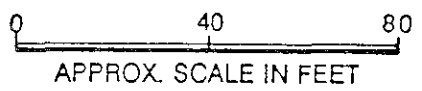
ILLUSTRATIONS



EXPLANATION

- 1 Soil sample locations
- Extractions wells installed by Crowley Environmental Services
- ▨ Area excavated on 11-19-87

*Locations approximate



Harding Lawson Associates
Engineers and Geoscientists

Site Map & Sample Location Plan
Harbor Tug & Barge Fuel Terminal
Alameda, California

PLATE
1

Attachment 1

LABORATORY REPORTS



WESCO Laboratories

Report Date: 07-Dec-87
 Client: Crowley Environmental Services
 Attn: Gary Keyes
 Sampled by: Brent Dostert
 Submitted by: Brent Dostert
 Preservatives: none
 Analyst: Attalla
 WESCO JOB #: CES 8701-L
 Analytical Method: EPA 3550/8015

Client Contract/PO: verbal
 Date Sampled: 18-Nov-87
 Site: Crowley Maritime
 Date Received: 18-Nov-87
 Extract/Digest/Purge Date: 01-Dec-87
 Analysis Completion Date: 02-Dec-87
 Hold Time: 13 days

LAB #: 7-10610-7-10615
 MATRIX: soil


Lab #	Client ID	Result (mg/kg)	Detection limit (mg/kg)
7-10610	7@ 4.0'	20	10
7-10611	8@ 3.5'	17	10
7-10612	9@ 4.0'	550	10
7-10613	10@ 3.0'	160	10
7-10614	11@ 4.5'	476	10
7-10615	12@ 3.0'	56	10

Note: Quantified as diesel.

 Analytical Supervisor

BLANK, DUPLICATE AND SPIKE REPORT JOB # CES 8701-L
METHOD: EPA 3550/8015

COMPOUND	Blank (mg/kg)	Duplicate % deviation	Spike % recovery	Detection Limit(mg/kg)
Sample #		7-10670 PEI 8949-L	7-10670 PEI 8949-L	
Diesel	N.D.	0	121	10



Analytical Supervisor

Report Date: 07-Dec-87
 Client: Crowley Environmental Services
 Attn: Gary Keyes
 Sampled by: Brent Dostert
 Submitted by: Brent Dostert
 Preservatives: none
 Analyst: Ermatinger
 WESCO JOB #: CES 8701-L
 Analytical Method: EPA 3550/503e

Client Contract/PO: verbal
 Date Sampled: 18-Nov-87
 Site: Crowley Maritime
 Date Received: 18-Nov-87
 Extract/Digest/Purge
 Date: 02-Dec-87
 Analysis Completion
 Date: 03-Dec-87
 Hold Time 14 days

LAB #: 7-10610-7-10615
 MATRIX: soil

Lab #	Client ID	Result (mg/kg)	Detection limit(mg/kg)
7-10610	7@ 4.0'	N.D.	10
7-10611	8@ 3.5'	99	10
7-10612	9@ 4.0'	615	10
7-10613	10@ 3.0'	218	10
7-10614	11@ 4.5'	N.D.	10
7-10615	12@ 3.0'	137	10

[Signature]
 Analytical Supervisor

BLANK, DUPLICATE AND SPIKE REPORT JOB # CES 8701-L
METHOD: EPA 3550/503e

COMPOUND	Blank (mg/kg)	Duplicate % deviation 7-10615	Spike % recovery 7-10615	Detection Limit(mg/kg)
Oil and Grease	N.D.	7	61	10




Analytical Supervisor

Report Date: 07-Dec-87
Client: Crowley Environmental Services
Attn: Gary Keyes
Sampled by: T.S. Gibson
Submitted by: T.S. Gibson
Preservatives: none
Analyst: Ermatinger
WESCO JOB #: CES 8702-L
Analytical Method: EPA 3550/503e

Client Contract/PO: verbal
Date Sampled: 20-Nov-87
Site: Crowley Maritime
Date Received: 20-Nov-87
Extract/Digest/Purge
Date: 02-Dec-87
Analysis Completion
Date: 03-Dec-87
Hold Time 12 days

=====
LAB #: 7-10625-7-10627
MATRIX: soil
=====


Lab #	Client ID	Result (mg/kg)	Detection limit(mg/kg)
7-10625	1119-1 floor	39	10
7-10626	1119-2 wall	N.D.	10
7-10627	1119-3 floor	59	10



Analytical Supervisor

BLANK, DUPLICATE AND SPIKE REPORT JOB # CES 8702-L
METHOD: EPA 3550/503e

COMPOUND	Blank (mg/kg)	Duplicate % deviation	Spike % recovery	Detection Limit(mg/kg)
Sample #		7-10615 CES 8701-L	7-10615 CES 8701-L	
Oil and Grease	N.D.	7	61	10



Analytical Supervisor



Report Date: 07-Dec-87
 Client: Crowley Environmental Services
 Attn: Gary Keyes
 Sampled by: T.S. Gibson
 Submitted by: T.S. Gibson
 Preservatives: none
 Analyst: Attalla
 WESCO JOB #: CES 8702-L
 Analytical Method: EPA 3550/8015

Client Contract/PO: verbal
 Date Sampled: 20-Nov-87
 Site: Crowley Maritime
 Date Received: 20-Nov-87
 Extract/Digest/Purge
 Date: 01-Dec-87
 Analysis Completion
 Date: 02-Dec-87
 Hold Time 11 days

LAB #: 7-10625-7-10627
 MATRIX: soil

Lab #	Client ID	Result (mg/kg)	Detection limit(mg/kg)
7-10625	1119-1 floor	N.D.	10
7-10626	1119-2 wall	N.D.	10
7-10627	1119-3 floor	N.D.	10

 Analytical Supervisor

BLANK, DUPLICATE AND SPIKE REPORT JOB # CES 8702-L
METHOD: EPA 3550/8015

COMPOUND	Blank (mg/kg)	Duplicate % deviation	Spike % recovery	Detection Limit(mg/kg)
		7-10670 PEI 8949-L	7-10670 PEI 8949-L	
Diesel	N.D.	0	121	10



Analytical Supervisor



ANATEC
LABORATORIES
INC.

435 Tesconi Circle
Santa Rosa, CA 95401
707-526-7200
Fax 707-526-9623

Gary Keyes
Crowley Environmental
321 Embarcadero
Oakland, CA 94606

January 27, 1988
ANATEC Log No: 1983 (1-4)
Series No: 482/003
Client Ref: (V) Keyes

Subject: Analysis of Four Samples Identified as "Encinal
Mar-Fuel" Received January 7, 1988. (Samples
Originally Submitted December 18, 1987 Under
ANATEC Log No. 1867)

Dear Mr. Keyes:

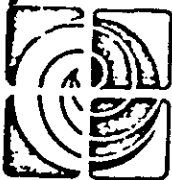
Analysis of the samples referenced above has been completed. This report is written to confirm results transmitted verbally on January 20, 1988.

On receipt at the laboratory, sample custody was transferred to ANATEC sample control personnel who subsequently documented receipt and condition of the samples and placed them in secured storage at 4°C until analysis commenced.

Samples were prepared for extractable hydrocarbons measurements by thorough mixing and subsequent extraction with methylene chloride; extraction, aided by sonication, was performed three successive times for each sample. Extracts were then combined, dried over sodium sulfate and concentrated in Kuderna-Danish apparatus.

Extracts were then analyzed by capillary column gas chromatography with flame ionization detection. Preparation and analysis of samples was accompanied by similar treatment of a method blank and a motor oil-fortified sample. Response of the chromatographic system to calibration standards prepared with commercial motor oil was compared with system response to samples for purposes of qualitative and quantitative interpretation.

Details of the analytical methodology are consistent with requirements specified in Method "II" ("Total Fuel Hydrocarbons, Medium-to-High Boiling Point Hydrocarbons,") in "Guidelines for Addressing Fuel Leaks," Regional Water Quality Control Board, San Francisco



Bay Region, revised 1986; the preparation procedures used are described in detail in "Sonication Extraction," Method 3550 for diesel, in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA, SW-846, 2nd edition, revised 1984.

Results of analyses are summarized in Table 1. Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:

Approved by:

John Hembrow-Beach
John Hembrow-Beach
Project Chemist

William G. Rotz
William G. Rotz
Project Manager

/ml

TABLE 1. SUMMARIZED ANALYTICAL RESULTS FOR "ENCINAL MAR-FUEL"

Extractable
Petroleum Hydrocarbons, as
(mg/Kg)^a

	Lab No.	Descriptor	Diesel	Motor Oil
Field sample #7	3441	7-10610 11/18/87	180	<10
#8	3442	7-10611 11/18/87	<10	<10
#10	3443	7-10613 11/18/87	<10	<10
#12	3444	7-10615 11/18/87	<10	110

^amg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.



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Gary Keyes
Crowley Environmental
321 Embarcadero
Oakland, CA 94606

January 27, 1988
ANATEC Log No: 1797B (1-6)
Series No: 482/001
Client Ref: (V) Keyes

Subject: Verification Sample Analysis for Six Soil Samples
Processed by Mobile Lab December 10, 1987.

Dear Mr. Keyes:

Analysis of the samples referenced above has been completed. This report is written to confirm results transmitted verbally on January 7, 1988.

Following collection the samples were immediately sealed with foil and tape and placed under refrigeration for transport to the laboratory. Collection and delivery to the laboratory were conducted under documented chain-of-custody.

On receipt at the laboratory, sample custody was transferred to ANATEC sample control personnel who subsequently documented receipt and condition of the samples and placed them in secured storage at 4°C until analysis commenced.

Samples were prepared for extractable hydrocarbons measurements by thorough mixing and subsequent extraction with methylene chloride; extraction, aided by sonication, was performed three successive times for each sample. Extracts were then combined, dried over sodium sulfate and concentrated in Kuderna-Danish apparatus.

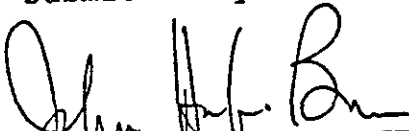
Extracts were then analyzed by capillary column gas chromatography with flame ionization detection. Preparation and analysis of samples was accompanied by similar treatment of a method blank and a diesel and waste oil-fortified sample. Response of the chromatographic system to calibration standards prepared with commercial diesel and waste oil was compared with system response to samples for purposes of qualitative and quantitative interpretation.




Details of the analytical methodology are consistent with requirements specified in Method "II" ("Total Fuel Hydrocarbons, Medium-to-High Boiling Point Hydrocarbons,") in "Guidelines for Addressing Fuel Leaks," Regional Water Quality Control Board, San Francisco Bay Region, revised 1986; the preparation procedures used are described in detail in "Sonication Extraction," Method 3550, in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA, SW-846, 2nd edition, revised 1984.

Results of analyses are summarized in Table 1. Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:


John Hembrow-Beach
Project Chemist

Approved by:


William G. Rotz
Project Manager

/ml

TABLE 1. SUMMARIZED VERIFICATION ANALYSIS

Lab No.	Descriptor	Extractable Petroleum Hydrocarbons (mg/Kg) ^a	
		as Diesel	as Waste Oil
2648	#1	<10	65
2649	#2	<10	18
2650	#3	<10	22
2651	#4	<10	31
2652	#5	<10	51
2653	#6	<10	25

^amg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.



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Santa Rosa, CA 95401
707-526-7200
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Gary Keyes
Crowley Environmental
321 Embarcadero
Oakland, CA 94606

December 31, 1987
ANATEC Log No. 1797 (1-5)
Series No: 482/001
Client Ref: (V) Keyes

Subject: ASAP Priority On-Site Analysis of Five Soil Samples
Identified as "Harbor Tug and Barge" Collected
November 17, 1987.

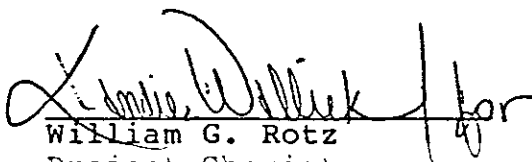
Dear Mr. Keyes:

As per instructions received from Crowley Environmental, ANATEC's mobile lab had been equipped to analyze for petroleum hydrocarbons as diesel and this analysis was performed on-site for the soil samples received on-site. However, it was observed that the soils apparently contained a heavy, very high-boiling mixture of compounds. Determination of oil concentration was accomplished on two of the samples; however, excessive hydrocarbon loading of the chromatographic column precluded quantification of the contaminant in the remaining soil samples.


In order to properly evaluate soils from this site analysis to measure petroleum hydrocarbons as diesel and high-boiling oil should be specified. In addition, the chromatographic analysis should be supplemented with a gravimetric oil and grease determination. Results of analysis are presented in Table 1.

Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:


William G. Rotz
Project Chemist

Approved by:


Greg Anderson, Director
Analytical Laboratories

/ml



TABLE 1. SUMMARIZED ANALYTICAL RESULTS FOR "HARBOR TUG AND BARGE" SAMPLES

<u>Lab No.</u>	<u>Descriptor</u>	<u>Extractable Petroleum Hydrocarbons, as Diesel (mg/Kg)^a</u>
2510	11/17/87 Soil #1	<10
2511	11/17/87 Soil #3	<10
2512	11/17/87 Soil #4	<10
2513	11/17/87 Soil #5	<10
2514	11/17/87 Soil #6	<10

^amg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.

^bNA--Not analyzed.



ANATEC
LABORATORIES
INC.

435 Tesconi Circle
Santa Rosa, CA 95401
707-526-7200
Fax 707-526-9623

Gary Keyes
Crowley Environmental
321 Embarcadero
Oakland, CA 94606

February 1, 1988
ANATEC Log No: 1867 (1-2)
Series No: 482/002
Client Ref: (V) Keyes

Subject: Analysis of Two Soil Samples Identified as "Encinal Mar-Fuel" Received December 18, 1987 (Four Samples Placed "on-hold").

Dear Mr. Keyes:

Analysis of the samples referenced above has been completed. This report is written to confirm results transmitted verbally on January 7, 1988.

Delivery to the laboratory was conducted under documented chain-of-custody. On receipt at the laboratory, sample custody was transferred to ANATEC sample control personnel who subsequently documented receipt and condition of the samples and placed them in secured storage at 4°C until analysis commenced.

Samples were prepared for extractable hydrocarbons measurements by thorough mixing and subsequent extraction with methylene chloride; extraction, aided by sonication, was performed three successive times for each sample. Extracts were then combined, dried over sodium sulfate and concentrated in Kuderna-Danish apparatus.

Extracts were then analyzed by capillary column gas chromatography with flame ionization detection. Preparation and analysis of samples was accompanied by similar treatment of a method blank and a diesel-fortified sample. Response of the chromatographic system to calibration standards prepared with diesel and motor oil was compared with system response to samples for purposes of qualitative and quantitative interpretation.

Details of the analytical methodology are consistent with requirements specified in Method "II" ("Total Fuel Hydrocarbons, Medium-to-High Boiling Point Hydrocarbons") in "Guidelines for Addressing Fuel Leaks," Regional Water Quality Control Board, San Francisco

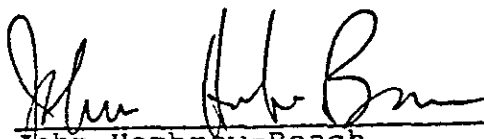


February 1, 1988

Bay Region, revised 1986; the preparation procedures used are described in detail in "Sonication Extraction," Method 3550, in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA, SW-846, 2nd edition, revised 1984.

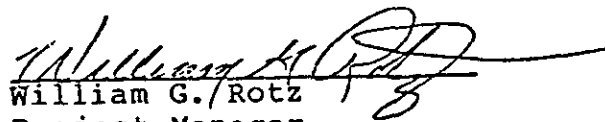
Results of analyses are summarized in Table 1. The sample custody document is attached. Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:



John Hembrow-Beach
Project Chemist

Approved by:



William G. Rotz
Project Manager

/ml

Enc: Sample Custody Document



TABLE 1. SUMMARIZED ANALYTICAL RESULTS FOR EXTRACTABLE PETROLEUM HYDROCARBONS

Parameter	Descriptor, Lab No. & Results (mg/Kg) ^a	
	<u>No 9</u> Depth 4.0 (2922)	<u>No 11</u> Depth 4.5 (2924)
Extractable petroleum hydrocarbons, as		
Diesel	<10	<10
Motor oil	100	110

^amg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.

Attachment 2

UNIFORM HAZARDOUS WASTE MANIFESTS

0177 B

42 1100

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

C-2-09-8-20-2-4-2-1-8-0-0-0-0-0-0

Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

HARBOR TUG & BARGE CO. PIER #9 EMERSON AVENUE
SAN FRANCISCO, CA 94111

4. Generator's Phone (415) 546-2700

A. State Manifest Document Number

6000 2

B. State Generator's ID

C-2-09-8-20-2-4-2-1-8-0-0-0-0-0-0

5. Transporter 1 Company Name

DART TRUCKING CO. INC.

6. US EPA ID Number

C-4-00-0-9-8-6-5-8-2-5

C. State Transporter's ID

1944

D. Transporter's Phone

800 238835

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

ESI 10.5 MILES NW GRANDVIEW
ID 83624

10. US EPA ID Number

ID-0-0-7-3-1-1-4-6-5-4

G. State Facility's ID

H. Facility's Phone

208 395-1500

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

No. Type

13. Total Quantity

14. Unit Wt/Vol

15. Waste No.

a. DIESEL
DIRT CONTAMINATED WITH HYDROCARBONS

0-01 DT

0.29, 5.0 T

STATE CODE
213

J. Additional Descriptions for Materials Listed Above

THIS WASTE IS NOT HAZARDOUS UNDER FEDERAL REGS.

K. Handling Codes for Wastes Listed Above

03

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

William Cook Mgr. Cargo Ops

Signature

William Cook

Month Day Year

11/1/87

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

AS BELOW

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

P. D. TARTER

Signature

P. D. Tarter

Month Day Year

11/16/87

19. Discrepancy Indication Space

Enviroware Services of Soho, Inc called for William Cook 11/9/87 9 am N/A to return my call.

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Stania Pineda

Signature

Stania Pineda

Month Day Year

11/11/98

10/91 30 180

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. P.O.D. 8-20-24-2-1-8
Manifest Document No. 000-23

2. Page 1 of Information in the shaded area not required by Federal law.

3. Generator's Name and Mailing Address
HARBOR TUG & BARGE CO PIER # 9
EMBARCADERO SAN FRANCISCO, CA 94111

A. State Manifest Document Number
00003

5. Transporter 1 Company Name
DART TRUCKING CO. INC. O.H.D.O.O. 9-4-6-5-8-0-5

B. State Generator's ID
CA0985024218

7. Transporter 2 Company Name

C. State Transporter's ID
1947

9. Designated Facility Name and Site Address
EST 10.5 MILES NW OF
GRANDVIEW ID. 83624 V.D.O. 7-3-1-1-41-54

D. Transporter's Phone
800-2382

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone
208 375-1500

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers No. Type
13. Total Quantity
14. Unit Wt/Val
1. Waste No.

a. (DIESEL)
DIRT CONTAMINATED WITH HYDROCARBON 001 D.T.O.O. 2A T

STATE 213

b.

c.

d.

J. Additional Descriptions for Materials Listed Above
THIS WASTE IS NOT HAZARDOUS
UNDER FEDERAL REGS.

K. Handling Codes for Wastes Listed Above
03

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name Signature Month Day
William Cook Mfg. CAHQ OPS William Cook 12/1/87

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Month Day
Charles L. Walters Charles L. Walters 11/1/87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Month Day

19. Discrepancy Indication Space
#2, limited. #4, Phone # omitted. #9, Enviro-safe Services of Idaho One. Contacted Gary Keys at 10:30 11/29/87. Letter of correction to follow.

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name Signature Month Day
Stanla Pineda Stanla Pineda 11/1/87