

ENVIRON

January 18, 1991

Mr. Lawrence Seto
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, Rm. 200
Oakland, CA 94621

Re: Underground Storage Tank Closure Status Report, Curoco Steel Systems, 536
Cleveland Avenue, Albany, California; ENVIRON Contract No. 03-1332D

Dear Mr. Seto:

At your request, we are herewith documenting activities associated with the closure of a 550-gallon underground storage tank at the Curoco Steel Systems facility located at 536 Cleveland Avenue in Albany, California. A final closure report will be submitted when backfill and compaction are completed.

Underground Storage Tank Removal; Soil and Ground Water Sampling

On May 25, 1990, ENVIRON observed the removal of a 550-gallon underground tank formerly used to store gasoline at the Curoco facility. Tank excavation and removal were performed by R.S. Eagan & Company. A Case 580K backhoe was used to excavate and remove the tank. Eagan utilized H & H Ship Service Company to haul away the tank and its liquid contents. A shipment certification and manifest copy will be sent at a later date.

Mr. Jack Jennings, Curoco plant manager, Mr. Scott Anderson, ENVIRON Associate Engineer, and Mr. Dennis Rivers, Lieutenant with the Albany Fire Department, observed the excavation to expose the tank. Upon initial excavation in the area where the tank was believed to be located, a 2-1/2 inch diameter plastic sewer line was ruptured at a depth of 2 feet, and the job was temporarily shut down until the source(s) could be turned off and the spillage cleaned up. Additional excavation approximately 10 feet to the north located and exposed the storage tank. The tank was of steel construction and its upper surface was approximately 4 feet below ground surface. A 1-3/4 inch diameter steel product line and smaller diameter vent line were cut and removed, and the top of the tank was cut open to allow access to the tank's contents. An H & H Ship Service Company vacuum truck was used to remove the liquid contents from the opened tank, and after chaining the tank to the backhoe bucket, the tank was lifted out of the excavation at 12:00 p.m. and placed on a visqueen-covered paved area

nearby. Its contents, consisting of approximately 25 cubic feet of wet fill sand, were emptied onto the visqueen pending sampling and analysis.

Mr. Andrew Seutter, ENVIRON Senior Associate Geologist, inspected the tank and performed soil and ground water sampling. ENVIRON observed that the tank was originally oriented with its long dimension running east-west and measured 6 feet 8 inches long by 3 feet 9 inches in diameter. Upon removal from the excavation, two large holes (approximately 3 inches in diameter) and approximately ten smaller holes (up to 1/4 inch diameter) resulting from corrosion were noted in the tank's bottom. In addition, the tank's midseam had apparently split along the bottom due to corrosion. A hydrocarbon odor was noted in the work area and a slight hydrocarbon sheen was observed on ground water which seeped into the excavation.

An organic vapor analyzer (OVA) and a photoionization detector (PID) were utilized to screen samples from the sand which had been in the tank, spoils removed from above and around the tank during excavation, and soil from the excavation sidewall. The field instrument results are reported below:

<u>SAMPLE LOCATION</u>	<u>OVA (ppm)</u>	<u>PID (ppm)</u>
tank contents sand	75	220
tank excavation spoils	20	25
tank excavation spoils	60	20
north sidewall @ 2 ft	30	5.9

At approximately 1:45 p.m., Mr. Lawrence Seto of Alameda County Health Care Services Agency arrived to inspect the tank and the excavation, and to observe the soil and ground water sampling. The excavation was approximately 7 to 7.5 feet deep along the low point of the underground tank. Ground water which had seeped into the excavation stood at a depth of approximately 5 feet below the surface at the time of sampling. Excavation pit water samples intended for analysis of aromatic hydrocarbons were collected by entering the excavation, submerging a capped 1-liter amber bottle below the surface, removing the cap to allow water from below the surface to fill the bottle, then recapping the bottle, lifting it above the water's surface, and transferring to the 40-milliliter sample bottles. The water samples intended for extractable hydrocarbon analysis were collected from below the water surface in the 1-liter bottles. The samples were labeled and placed in an iced cooler for transport to the laboratory.

As required by the Regional Water Quality Control Board and Alameda Health Care Services Agency, two soil samples were collected from the tank excavation sidewalls. Also, because the total length of the product line was approximately 15 feet, one soil sample was collected from beneath the line. Additionally, ENVIRON collected a sample

of the fill sand contained in the tank and a soil sample from approximately 2 feet west of the tank excavation at 3 feet depth. See Figure 1 for the locations of these soil samples. The soil samples were collected by exposing fresh soil on the excavation sidewalls or under the pipeline, hand driving a sampler containing a 2-inch diameter by 6-inch long brass sample tube into the soil, then removing the sampler and brass tube containing the soil, sealing with Teflon™ film, plastic cap, and adhesiveless silicon tape. The samples were labeled and placed into an iced cooler for transport to the laboratory under strict chain-of-custody.

After analytical sampling, workers from R.S. Eagan & Co. barricaded the excavation, cordoned it off with plastic flagging, and covered the spoils pile and tank contents piles with visqueen. The excavation was left open pending laboratory analysis results. The product pipeline was left in place and it was discussed with Mr. Seto that it would be cut off where exposed and washed with water prior to backfilling the excavation.

Laboratory Analysis

Laboratory analysis was performed by BC Analytical Laboratory in Emeryville, California, a State-certified hazardous materials testing laboratory. The analytical program consisted of analysis of all soil, sand, and water samples for purgeable aromatics (benzene, toluene, ethylbenzene, and xylenes) by EPA Method 8020, analysis of four soil samples for total petroleum hydrocarbons by EPA Method 418.1, analysis of the soil sample from the north pit wall for total lead and organic lead by EPA Methods 6010 and the DHS LUFT Manual 1988 method, respectively, and analysis of the pit water and tank contents (sand) samples for total volatile hydrocarbons (as gasoline) and total extractable hydrocarbons (as diesel), both by modified EPA Method 8015. Complete laboratory analytical results are summarized in Table 1. The laboratory analytical reports and chain-of-custody records are included as Attachment A.

Soil Aeration

Stockpiled soils from the tank excavation and the tank contents were spread on the asphalt-paved area behind the onsite building (see Figure 1) for aeration of petroleum hydrocarbons. These soils were periodically turned with a rubber-tired loader to expose fresh soil. On July 23, 1990, ENVIRON collected three aerated soil samples (A, B, and C; see Figure 1) for laboratory analysis of total petroleum hydrocarbons by EPA Test Method 8015. Analytical results are summarized in Table 1. Because of detectable heavier hydrocarbon fractions in the samples (especially in a sample collected from the former tank contents), additional aeration was performed.

The aerated soil was resampled on August 17, 1990. Two samples (D and E; see Figure 1) were collected from the aeration pile near where previous samples (A, B and C) had

laboratory-detected petroleum hydrocarbons. These samples were analyzed by EPA Test Method 8015 modified for volatile and semivolatile hydrocarbons. Analytical results are included in Table 1 and the laboratory report is included as Attachment A.

Additional Excavation

Because the north wall of the excavation contained detectable hydrocarbons, additional excavation was advised. On August 17, 1990, Mr. Todd Stein, ENVIRON Associate Geologist, observed additional soil excavation on the north side of the existing tank excavation. Excavation with a backhoe continued an additional 3 feet northward. Soils were stockpiled in the northwest corner of the paved area pending laboratory analysis results. An organic vapor monitor was used to monitor soil vapors during the excavation. The field instrument results are reported below (note that "sidewall sample location" refers to the distance excavated into the north sidewall on that particular day):

<u>SIDEWALL SAMPLE LOCATION</u>	<u>OVA (ppm)</u>
1.5 ft northward	100
2.0 ft northward	40
2.5-3.0 ft northward	70

A confirmatory laboratory soil sample (F; see Figure 1) was collected after completing the additional excavation. Table 1 lists the analytical results, and the laboratory report is included in Attachment A.

Hand Auger Borings and Soil Samples

Soil sample F indicated that the north limits of hydrocarbons in soils had not been reached, so additional soil samples were advised. On August 30, 1990, Mr. Scott Anderson drilled three hand auger borings at distances of 5, 10 and 15 feet north of the existing edge of the tank excavation. One soil sample was collected from a depth of two feet in each boring (G-2, H-2, and I-2; see Figure 1). Sample G-2 was analyzed by EPA Test Method 418.1 for total petroleum hydrocarbons. The other two samples were held at the laboratory for analysis only if hydrocarbons were detected in the first sample. Analytical results are listed in Table 1 and the laboratory report is included as Attachment A.

Additional Excavation and Soil Treatment

Petroleum hydrocarbons were not detected above 50 mg/kg in soil sample G-2, collected from the hand auger boring. Additional excavation, as depicted by the hatched area on Figure 1, will enlarge the tank excavation northward to the location of soil sample G-2.


The proposed additional excavation will be approximately 4.5 feet in depth and will remove all soils believed to be affected by hydrocarbons. This soil, along with the tank contents and soils removed during the August 17 additional excavation, will be treated by SITETM to non-detect concentrations of total petroleum hydrocarbons.

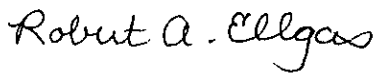
Excavation Backfill and Final Closure

The aerated and treated soils will be used by SITE to backfill the excavation. Soil will be placed in lifts of no more than 8 inches and compaction will be to the 90% ASTM standard. A final closure report will be certified and submitted by SITE. This status report constitutes ENVIRON's certification for the activities thus far implemented.

If you have any questions about this tank closure status report, please do not hesitate to call either of the undersigned.

Sincerely,

 EG 1485
exp 6/30/92
Andrew E. Seutter
Senior Associate Geologist


Robert A. Ellgas, Ph.D.
Manager

AES:RAE/ojt

Attachments

TABLE 1

**SOIL AND GROUND WATER SAMPLE ANALYSIS RESULTS
UNDERGROUND STORAGE TANK REMOVAL
CUROCO STEEL SYSTEMS
ALBANY, CALIFORNIA**

Sample Number	Sample Date	TPH by IR ⁵ (mg/kg)	TPH by GC ² -Volatile and Semivolatile			Benzene (mg/kg)	Ethylbenzene (mg/kg)	Toluene (mg/kg)	Xylenes (mg/kg)	Lead (mg/kg)	Organic Lead (mg/kg)
			C4 to C12 (mg/kg)	C12 to C25 (mg/kg)	C25-C35 (mg/kg)						
South Wall @ 3'	5/25/90	<50				<0.1	<0.1	<0.1	<0.1		
North Wall @ 2'	5/25/90	50				<0.1	<0.1	<0.1	<0.1	10	<0.5
Pipeline @ 1½'	5/25/90	<50				<0.1	<0.1	<0.1	<0.1		
2' West @ 3'	5/25/90	<50				<0.1	<0.1	<0.1	<0.1		
Pit Water #1	5/25/90		3.5 ¹	6.5 ¹	<5.0 ¹	<0.003 ¹	<0.003 ¹	0.0035 ¹	0.012 ¹		
Tank Contents	5/25/90		250	500	<100	<1	<1	<1	1.1		
A: Tank Contents	7/23/90		1.1	80 ³							
B: Stockpile	7/23/90		0.1	<5 ³							
C: Stockpile	7/23/90		<0.1	<5 ³							
D (Stockpile)	8/17/90		<0.1	<5							
E (Tank Contents)	8/17/90		0.4	100 ⁴							
F (North Wall @ 2')	8/17/90	230				<0.005	<0.005	<0.005	<0.005		
G - 2	8/30/90	<50									
H - 2	8/30/90	sample held without analysis									
I - 2	8/30/90	sample held without analysis									

¹concentrations in mg/l (water sample)

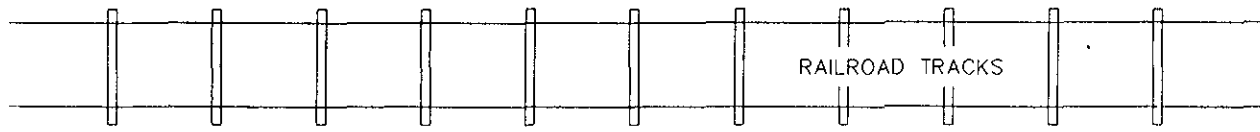
²Total Petroleum Hydrocarbons by Gas Chromatograph

³C12 to C16 compounds

⁴C12 to C18 compounds

⁵Total Petroleum Hydrocarbons by Infrared Spectrometry

Part of original extract.



RAILROAD TRACKS

EXPLANATION

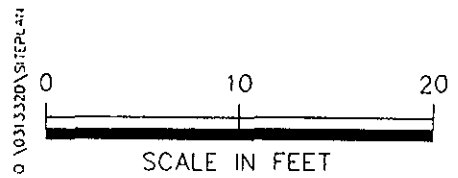
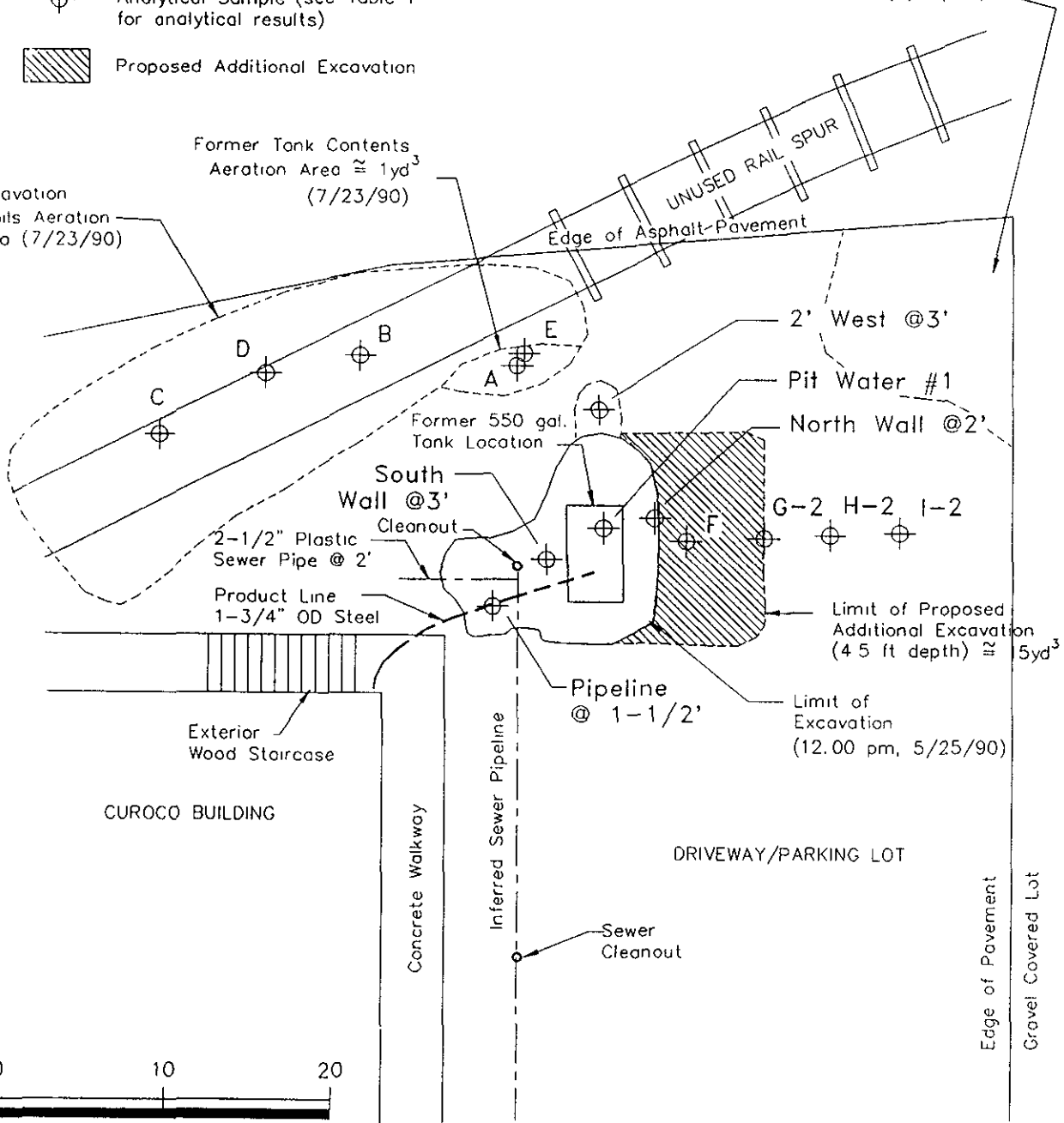
⊕ Analytical Sample (see Table 1 for analytical results)

▨ Proposed Additional Excavation

Stockpiled Additional Excavation Spoils $\approx 3\text{yd}^3$ (8/17/90)

Former Tank Contents Aeration Area $\approx 1\text{yd}^3$ (7/23/90)

Excavation Spoils Aeration Area (7/23/90)

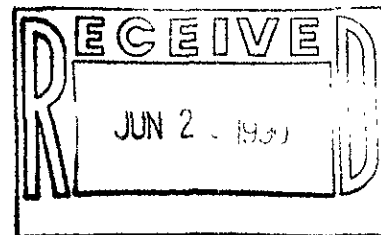


ENVIRON
Counsel in Health and Environmental Science

Sample Locations and Proposed Additional Excavation
Underground Storage Tank Removal
Curoco Steel Systems
Albany, California

Figure
1

Analytical Report



LOG NO: E90-05-792

Received: 25 MAY 90

Reported: 12 JUN 90

Dr. Robert Elgas
Environ Corporation
5820 Shellmound Street, Suite 700
Emeryville, California 94608

Project: 03-1332C

REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED		
05-792-1	South Wall @ 3'	25 MAY 90		
05-792-2	Pipeline @ 1.5'	25 MAY 90		
05-792-3	2' West @ 3'	25 MAY 90		
PARAMETER		05-792-1	05-792-2	05-792-3
Petroleum Hydrocarbons by IR, mg/kg		<50	<50	<50
Aromatic Hydrocarbons				
Date Analyzed		05.30.90	05.30.90	05.30.90
Dilution Factor, Times		1	1	1
Benzene, mg/kg		<0.1	<0.1	<0.1
Ethylbenzene, mg/kg		<0.1	<0.1	<0.1
Toluene, mg/kg		<0.1	<0.1	<0.1
Total Xylene Isomers, mg/kg		<0.1	<0.1	<0.1

Analytical Report

LOG NO: E90-05-792

Received: 25 MAY 90

Reported: 12 JUN 90

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Environ Corporation
5820 Shellmound Street, Suite 700
Emeryville, California 94608

Project: 03-1332C

REPORT OF ANALYTICAL RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-792-4	North Wall @ 2'	25 MAY 90
PARAMETER	05-792-4	
Petroleum Hydrocarbons by IR, mg/kg	50	
Lead, mg/kg	10	
Organic Lead, mg/kg	<0.5	
Nitric Acid Digestion, Date	05.29.90	
Aromatic Hydrocarbons		
Date Analyzed	06.04.90	
Dilution Factor, Times	1	
Benzene, mg/kg	<0.1	
Ethylbenzene, mg/kg	<0.1	
Toluene, mg/kg	<0.1	
Total Xylene Isomers, mg/kg	<0.1	

Analytical Report

LOG NO: E90-05-792

Received: 25 MAY 90

Reported: 12 JUN 90

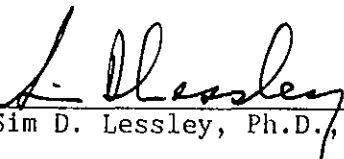
Dr. Robert Elgas
Environ Corporation
5820 Shellmound Street, Suite 700
Emeryville, California 94608

Project: 03-1332C

REPORT OF ANALYTICAL RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
05-792-6	Pit Water #1	25 MAY 90
PARAMETER	05-792-6	
TPH - Semivolatile Hydrocarbons		
Date Analyzed	05.30.90	
Dilution Factor, Times	10	
C12 to C25 Hydrocarbons, ug/L	6500	
C12-C25 Fuel characterization, .	---	
C25 to C35 Hydrocarbons, ug/L	<5000	
Other TPH - Semivolatile Hydrocarbons	---	
TPH-Volatile Hydrocarbons/BTEX		
Date Analyzed	05.31.90	
Dilution Factor, Times	10	
Benzene, ug/L	<3	
Ethylbenzene, ug/L	<3	
Toluene, ug/L	3.5	
Total Xylene Isomers, ug/L	12	
C4 to C12 Hydrocarbons, ug/L	3500	
Other TPH-Volatile Hydrocarbons/BTEX	---	

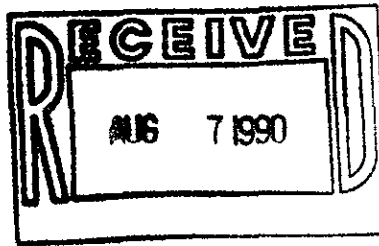

Sim D. Lessley, Ph.D., Laboratory Director

CHAIN-of-CUSTODY FORM

PROJECT NAME: <u>Curoco</u>		COLLECTION DATE	COLLECTED BY (Initials)	MATRIX	TOTAL NO. OF CONTAINERS	ANALYSES:										COMMENTS			
CASE NO.: <u>03-1332C</u>						TVH 8015 mod	TEH 8015 mod	BTEX 8020	TPH 418.1	total lead	organic lead								
ENVIRON SAMPLE ID.																			
South Wall @ 3'		5/25	DS	soil	1		X	X								1			
North Wall @ 2'		}	}	}	1		X	X	X	X						4			
Pipeline @ 1 1/2'					1		X	X										2	
2' West @ 3'					1		X	X										3	
Pit Water #1							Water	6	X	X	X								6
Tank Contents						DS	soil	1	X	X	X								5
TOTAL		X	X	X	10														

Relinquished by: Andrew Smith Date: 5/25/90 Time: 3:43 pm Received by: [Signature] Company: _____ Date: _____ Time: _____

Analytical Report



LOG NO: E90-07-525

Received: 23 JUL 90

Reported: 02 AUG 90

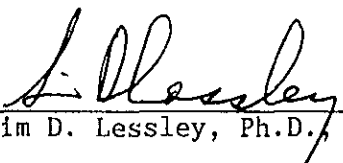
Dr. Robert Ellgas
Environ Corporation
5820 Shellmound Street, Suite 700
Emeryville, California 94608

Project: 03-1332C

REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED		
07-525-1	A: Tank Contents	23 JUL 90		
07-525-2	B: Stockpile	23 JUL 90		
07-525-3	C: Stockpile	23 JUL 90		
PARAMETER		07-525-1	07-525-2	07-525-3
TPH - Modified 8015				
Date Analyzed		07.25.90	07.25.90	07.25.90
Dilution Factor, Times		1	1	1
Carbon Range, .		C12-C16	---	---
Total Fuel Hydrocarbons, mg/kg		80	<5	<5
Fuel Characterization, .		---	---	---
Other TPH - Modified 8015		---	---	---
TPH - Volatile Hydrocarbons				
Date Analyzed		07.31.90	07.31.90	07.31.90
Dilution Factor, Times		1	1	1
C4 to C12 Hydrocarbons, mg/kg		1.1	0.1	<0.1
Fuel Characterization, .		---	---	---


Sim D. Lessley, Ph.D., Laboratory Director

CHAIN OF CUSTODY RECORD

BCA Log Number E9007525

Client name <u>ENVIRON Corporation</u>				Project or PO# <u>03-1332C</u>		Analyses required							
Address <u>5820 Shellmound St. Suite 700</u>				Phone # <u>655-7400</u>		<div style="display: flex; justify-content: space-around; font-size: small;"> Mod. 8015 TVH Mod 8015 TEH 418-Y-7744* </div>							
City, State, Zip <u>Emeryville, A 94608</u>			Report attention <u>Robert Ellgas</u>										
Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by <u>D. Seutter</u>	Number of containers								
Sample description (ID)						Remarks							
	<u>7-23</u>	<u>10:50</u>	<u>SO</u>	<u>A: tank contents</u>	<u>1</u>	<u>X</u>	<u>X</u>	<u>X</u>					<u>1 week</u>
	<u>7-23</u>	<u>10:50</u>	<u>SO</u>	<u>B: stock pile</u>	<u>1</u>	<u>X</u>	<u>X</u>	<u>X</u>					<u>turn around</u>
	<u>7-23</u>	<u>10:50</u>	<u>SO</u>	<u>C: stock pile</u>	<u>1</u>	<u>X</u>	<u>X</u>	<u>X</u>					<u>time please</u>
													<u>* Cancelled</u>
													<u>Based on verbal</u>
													<u>agreement</u>
													<u>w/ Robert Ellgas</u>
													<u>07.23.90</u>

Signature	Print Name	Company	Date	Time
Relinquished by <u>Drew Seutter</u>	<u>Drew Seutter</u>	<u>ENVIRON</u>	<u>7/23/90</u>	<u>12:02</u>
Received by <u>P. THONGKHAM</u>	<u>P. THONGKHAM</u>	<u>RCA</u>	<u>7/23/90</u>	<u>12:02</u>
Relinquished by				
Received by				
Relinquished by				
Received by Laboratory				

BC ANALYTICAL

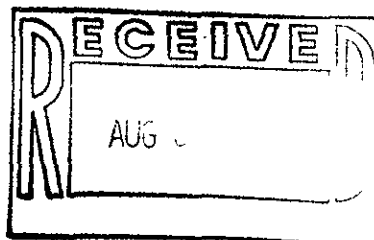
- 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
- 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
- 1200 Pacific Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge
GW—Groundwater SO—Soil OT—Other PE—Petroleum

Analytical Report



LOG NO: E90-08-410

Received: 17 AUG 90

Reported: 27 AUG 90

Dr. Robert Ellgas
Environ Corporation
5820 Shellmound Street, Suite 700
Emeryville, California 94608

Project: 03-1332D

REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED	
08-410-1	D	17 AUG 90	
08-410-2	E	17 AUG 90	
PARAMETER		08-410-1	08-410-2
TPH - Modified 8015			
Date Analyzed		08.22.90	08.22.90
Dilution Factor, Times		1	1
Carbon Range, .		---	C12-C18
Total Fuel Hydrocarbons, mg/kg		<5	100
Other TPH - Modified 8015		---	---
TPH - Volatile Hydrocarbons			
Date Analyzed		08.22.90	08.22.90
Dilution Factor, Times		1	1
C4 to C12 Hydrocarbons, mg/kg		<0.1	0.4
Other TPH - Volatile Hydrocarbons		---	---



Analytical Report

LOG NO: E90-08-410

Received: 17 AUG 90

Reported: 27 AUG 90

Dr. Robert Ellgas
Environ Corporation
5820 Shellmound Street, Suite 700
Emeryville, California 94608

Project: 03-1332D

REPORT OF ANALYTICAL RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
08-410-3	F	17 AUG 90
PARAMETER	08-410-3	
Petroleum Hydrocarbons (418.1), mg/kg	230	
Aromatic Hydrocarbons		
Date Analyzed	08.19.90	
Dilution Factor, Times	1	
Benzene, mg/kg	<0.005	
Ethylbenzene, mg/kg	<0.005	
Toluene, mg/kg	<0.005	
Total Xylene Isomers, mg/kg	<0.005	

Samples were analyzed by BC Analytical's Anaheim laboratory.
Rush results were transmitted by facsimile to Dr. Robert Ellgas on 08.27.90.
T. Blake 08.27.90

Hedy J. Franklin for
Sim D. Lessley, Ph.D., Laboratory Director

CHAIN-of-CUSTODY FORM

204 # 9000710

PROJECT NAME: <u>Cucero</u>		COLLECTION DATE	COLLECTED BY (Initials)	MATRIX	TOTAL NO. OF CONTAINERS	ANALYSES:								COMMENTS
CASE NO.: <u>03-1332D</u>						BTEX (8020)	TPH (418.1)	TVH (Mod 8015)	TEH (Mod 8015)					
ENVIRON SAMPLE ID.														
D		8/17	TL5	SOIL	1		X	X						
E		8/17	TL5	SOIL	1		X	X						Report To
F		8/17	TL5	SOIL	1	X	X							Report Analysis
TOTAL		X	X	X	3	1	1	2	2					

Relinquished by:

Date:

Time:

Received by:

Company:

Date:

Time:

Todd J. Stone

8/17/90

1115

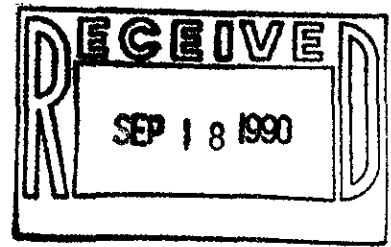
[Signature]

BCA

8/17/90

1115

Analytical Report



LOG NO: E90-08-699

Received: 30 AUG 90

Reported: 11 SEP 90

Dr. Robert Ellgas
Environ Corporation
5820 Shellmound Street, Suite 700
Emeryville, California 94608

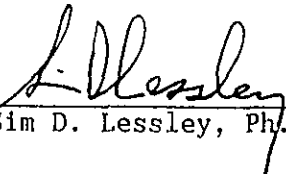
Project: 03-1332D

REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED		
08-699-1	G-2	30 AUG 90		
08-699-2	H-2	30 AUG 90		
08-699-3	I-2	30 AUG 90		
PARAMETER		08-699-1	08-699-2	08-699-3
Sample Held, Not Analyzed		---	HELD	HELD
Petroleum Hydrocarbons (418.1), mg/kg		<50	---	---

Results were reported to Dr. Robert Ellgas by voice mail on 09.07.90.
M. Janney 09.07.90


Sim D. Lessley, Ph.D., Laboratory Director



BATCH QC REPORT: Definitions and Terms

Accuracy	The ability of a procedure to determine the "true" concentration of an analyte
Precision	The reproducibility of a procedure demonstrated by the agreement between analyses performed on either duplicates of the same sample or a pair of duplicate spikes
Batch	A group of samples analyzed sequentially using the same calibration curve, reagents, and instrument
Laboratory Control Standard (LCS)	Laboratory reagent water spiked with known compounds and subjected to the same procedures as the samples. The LCS thus indicates the accuracy of the analytical method and, because it is prepared from a different source than the standard used to calibrate the instrument, it also serves to double-check the calibration
Matrix QC	Quality control tests performed on actual client samples. For most inorganic analyses, the laboratory uses a pair of duplicate samples and a spiked sample. For most organic analyses, the laboratory uses a pair of spiked samples (duplicate spikes)
LC Result	Laboratory result of an LCS analysis
LT Result	Expected result, or true value, of the LCS analysis
R1, R2 Result:	Result of the analysis of replicate aliquots of a sample, with R1 indicating the first analysis of the sample and R2 its corresponding duplicate; used to determine precision
S1, S2 Result	Result of the analysis of replicate spiked aliquots, with S1 indicating one spike of the sample and S2 the second spike; used to determine precision and accuracy
R Bar Result	The average of replicate analysis results
S Bar Result:	The average of spike analysis results
True value	The theoretical, or expected, result of a spike sample analysis
Percent Recovery	The percentage of analyte recovered. For LCS, the percent recovery calculation is: $LC \div LT \times 100$ For spike recoveries, the percent recovery calculation is: $\frac{(S \text{ Bar} - \text{Sample Concentration})}{\text{Spike Amount}} \times 100$
Relative Percent Difference (RPD)	Calculated using one of the following: $\frac{(R1 - R2) \times 100}{(R1 + R2) \div 2}$ $\frac{(S1 - S2) \times 100}{(S1 + S2) \div 2}$
Blank Result	The result of the analysis of a method blank, which is reagent water that is analysed using the same reagents, instruments and procedures as the samples in a batch; used to determine laboratory contamination
Reporting Detection Limit (RDL)	BCA-assigned limit based on—but not the same as—method detection limits (MDLs) determined using EPA guidelines

: ORDER PLACED FOR CLIENT: Environ Corporation 9008699 :
: BC ANALYTICAL : EMVL LAB : 11:15:13 12 SEP 1990 - P. 1 :
=====

SAMPLES...	SAMPLE DESCRIPTION..	DETERM CODE....	DATE....	METHOD.....	EQUIP.	BATCH	ID.NO
			ANALYZED				
9008699*1	G-2	IR.PETROHC	09.07.90	418.1	513-03	84	7453
9008699*2	H-2	HOLD	09.05.90				6926
9008699*3	I-2	HOLD	09.05.90				6926

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

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DATE REPORTED : 09/12/90

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
Petroleum Hydrocarbons (418.1)	09.07.90	84	300	300	mg/kg	100

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MATRIX QC PRECISION (DUPLICATES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	R1 RESULT	R2 RESULT	UNIT	RELATIVE %DIFF
Petroleum Hydrocarbons (418.1)	09.07.90	84	<50	<50	mg/kg	NA

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MATRIX QC ACCURACY (SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	SBAR RESULT	TRUE RESULT	RBAR RESULT	UNIT	PERCENT RECOVERY
Petroleum Hydrocarbons (418.1)	09.07.90	84	240	300	<50	mg/kg	80

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METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
Petroleum Hydrocarbons (418.1)	09.07.90	84	0	50	mg/kg

CHAIN-of-CUSTODY FORM

PROJECT NAME: <u>CINCO</u>		COLLECTION DATE	COLLECTED BY (Initials)	MATRIX	TOTAL NO. OF CONTAINERS	ANALYSES: <u>*TPH 418.1*</u>										COMMENTS	
CASE NO.: <u>03-1332D</u>						ENVIRON SAMPLE ID.											
<u>G-2</u>	<u>8/30</u>	<u>SWA</u>	<u>Soil</u>	<u>1</u>	<input checked="" type="checkbox"/>												<u>*One week turn around</u>
<u>H-2</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>1</u>	<u>1</u>												<u>Hold H-2 + I-2 until results are determined.</u>
<u>I-2</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>1</u>	<u>1</u>												
TOTAL		<u>X</u>	<u>X</u>	<u>X</u>	<u>3</u>	<u>3</u>											

Relinquished by:
See W. [Signature]

Date:
8/30/90

Time:
11:00

Received by:
[Signature]

Company:
BCA

Date:
8-30 90

Time:
4:00pm