

01-1439



Uriah Inc.

An Environmental Services Company

July 17, 1991

7/17 ^{SL} Bio rem. Rpt.

CALIFORNIA REGIONAL WATER

OCT 25 1991



QUALITY CONTROL SHEET

01

Mr. Ron Sadler
Sunol Development
1333 Willow Pass Road
Concord, CA 94520

RE: Final Report Regarding Bioremediation of Diesel Fuel Contaminated Soil at 3700 Palomares Road, Sunol, CA

Dear Mr. Sadler:

SUNOL COMMUNICATION CENTER

As previously reported, the 12 cubic yards of diesel fuel contaminated soil located at the referenced site was formed into a quadrilateral bed atop a bermed, hydrocarbon resistant liner during the latter part of December, 1990. The treatment bed was subsequently inoculated with a consortium of common, non-pathogenic, hydrocarbon utilizing soil bacteria capable of thoroughly aerobically degrading (mineralizing) fuel hydrocarbons to form the non-toxic end products of carbon dioxide, minerals, and water. When applied, the inoculum was contained within a dilute nutrient solution based upon a common commercial fertilizer rich in nitrogen, phosphorus, and potassium.

Although the unusually low ambient temperatures of January 1991 killed the majority of hydrocarbon-utilizing bacteria present within the treatment beds during this period, the beds were re-inoculated and the project successfully begun again. Subsequent monitoring for essential parameters such as pH, temperature, nutrients, moisture, and sampling for hydrocarbon degradation rates, biological activity, and nutrient levels revealed a degradation curve which confirmed that remediation was proceeding at the projected rate.

Discrete samples for certified analyses were acquired during May and June (1991) by driving a clean brass sampling tube 1.9 inches in diameter by 6.0 inches in length into the treatment bed until each tube was completely filled with a consolidated volume of material. The tubes were then withdrawn from the bed and the ends of each were covered with teflon pads, fitted

talked to Jeff Schafers on 11/4/91 that (1) further work was req'd to prove that the Non-diesel range compounds are not hazardous & would not cause impact to Environmental + Human receptor. (2) if the SL were to be disposed of on site (left it there on permanent basis, ~~and~~ waste discharge leg't was req'd from ENOCB. I gave the name of John Tang to him. (3) ACHD may have their own comment on top of my mine.

ES 11/4

with plastic caps, and wrapped with black electrical/duct tape. Each tube was then marked, placed on blue ice, and transported to a State certified hazardous waste analytical laboratory under chain of custody. Despite the presence of conditions conducive to thorough bioremediation, the laboratory reported Total Petroleum Hydrocarbons in the diesel range at 70 parts per million (ppm) and 71 ppm. However, as the laboratory indicated the diesel pattern was atypical, it was suspected that organic interferences were present. In order to determine the nature of this interference, a soil sample was sent to Friedman and Bruya, Inc. of Seattle, Washington...a laboratory recognized nationally for its specialty work in the environmental field. Friedman and Bruya's analyses did, in fact, confirm that the soil under remediation was free of detectable concentrations of diesel fuel by stating, in part, that "...there was no indication of the presence of saturated hydrocarbons that are major components of petroleum products such as diesel, motor oil, and asphalt." A copy of this report is included within Appendix "A", attached.

the organic components might be the result of bio-degraded diesel, intermediate products.

For your convenience, additional copies of this report are enclosed. It is recommended that one be forwarded to each of the following agencies for their review and comment:

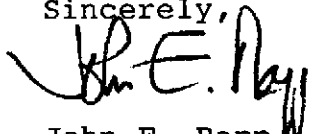
San Francisco Bay Region Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, CA 94612

Alameda County Health Care Services Agency
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621

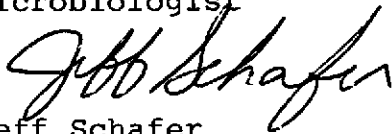
Should you have any questions regarding the work performed, or if we may otherwise be of assistance, please contact either of the undersigned at (415) 455-4991.

∴ Additional effort shall be exercised to prove that these compounds will not impact the subsurface environment.

Sincerely,



John E. Rapp
Microbiologist



Jeff Schafer
Project Engineer

JER/JS:dr
enc.

Leave message to Jeff.

want to talk to him about

(1) How the treated soil be disposed of on long term basis.

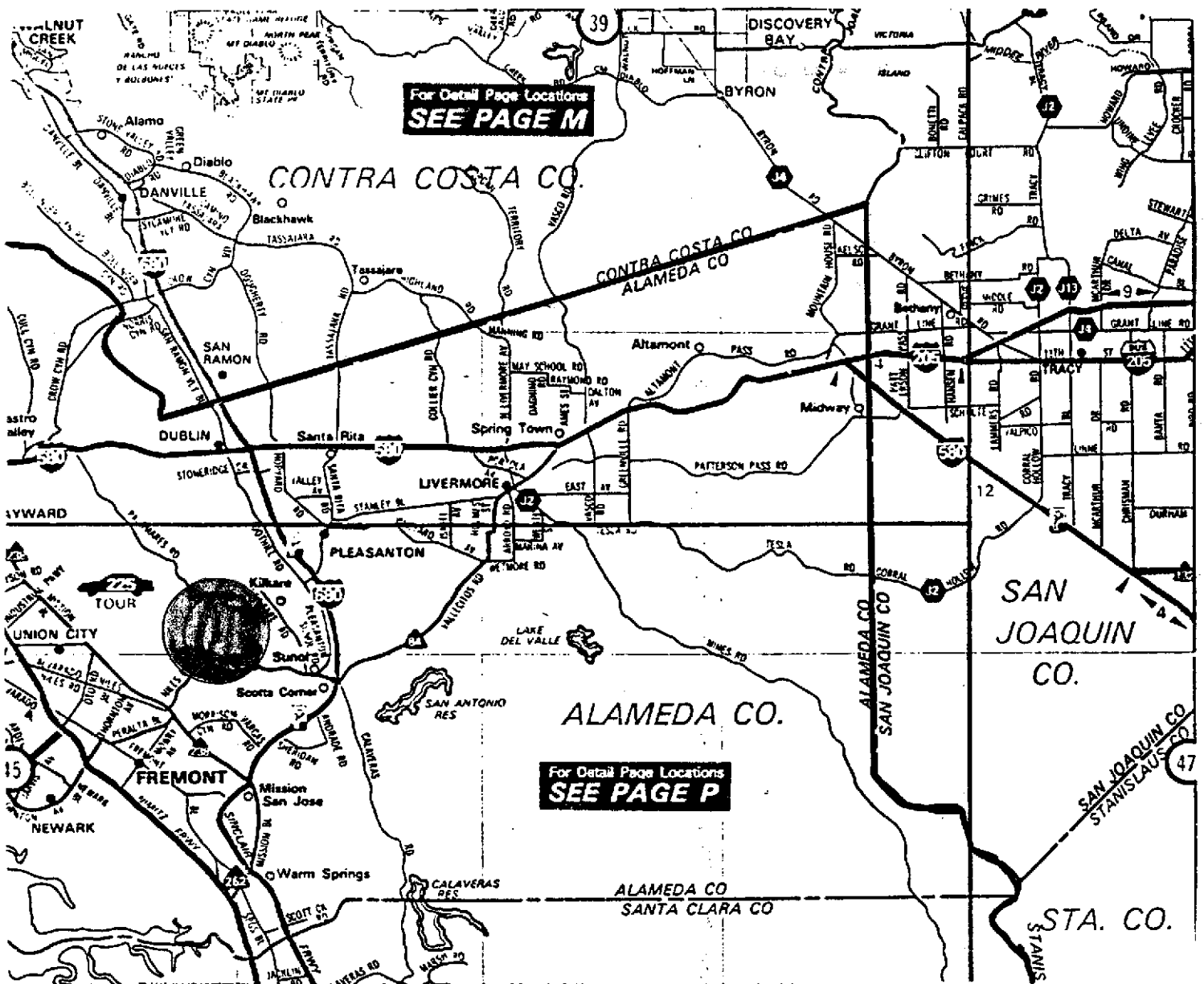
(4) Waste Discharge Requirements are required if the soil is left on site or a

(2) Additional work is needed to determine if the intermediate

organics are hazardous to

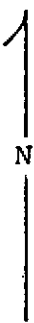
the subsurface environment if they are going to backfill.

(3) Additional aeration req'd.

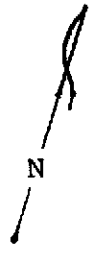


URIAH ENVIRONMENTAL SERVICES, INC.
 AT:
 SUNOL COMMUNICATIONS CENTER
 3700 PALOMARES ROAD, SUNOL, CA

Scale:
 1" = 5 miles

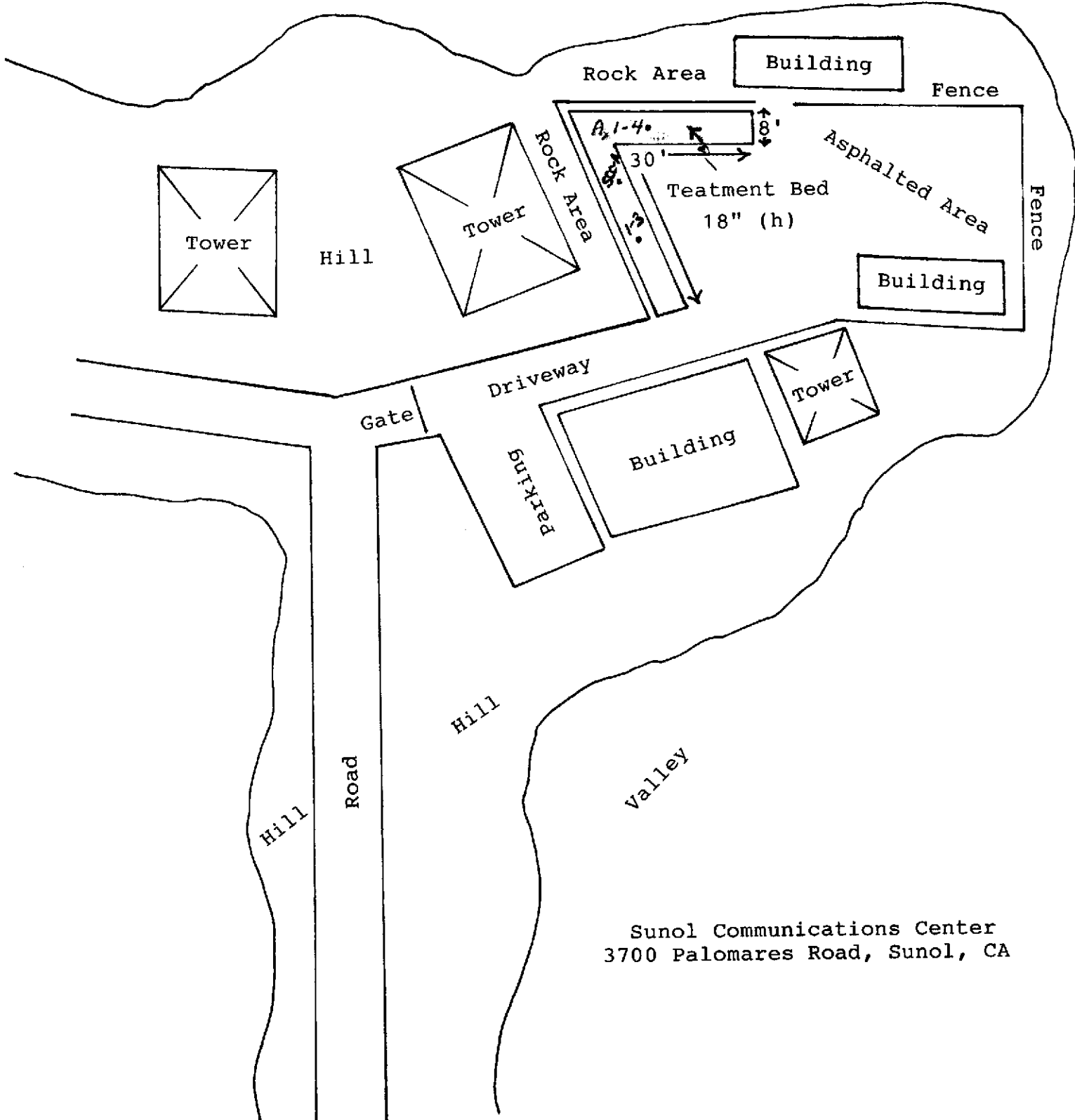


Site Sketch



Valley

Not To Scale



Sunol Communications Center
3700 Palomares Road, Sunol, CA

SUPERIOR ANALYTICAL LABORATORIES, INC.

825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 83132
CLIENT: Uriah Environmental, Inc.
CLIENT JOB NO.: SUNOL CORN

DATE RECEIVED: 05/20/91
DATE REPORTED: 05/25/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (mg/Kg) Diesel Range
1	1-3	70

Method Detection Limit for Gasoline and Diesel in Soil: 10 mg/Kg

QAQC Summary:

Daily Standard run at 200mg/L: RPD Gasoline = NA
RPD Diesel = 12
MS/MSD Average Recovery = 108%: Duplicate RPD = 6

Richard Srna, Ph.D.


Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

Uriah, Inc.

An Environmental Services Company

(415) 455-4991 Office
(415) 455-4995 FAX

83132

Chain of Custody

DATE 5/20/91 PAGE 1 OF 1

PROJ. MGR. <u>Gene Painter</u>					ANALYSIS REQUEST													NUMBER OF CONTAINERS	
COMPANY <u>Uriah, Inc.</u>					17H - Gasoline (EPA 5030)	17H - Gasoline (EPA 5030) W/TEX (EPA 602, 8080)	17H - Diesel (EPA 3510, 3550)	FURANOL ANALYTES (EPA 602, 8080)	FURANOL HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 604, 8040)	BARS/MUTUALS, ACIDS (EPA 601/607, 8070)	TOTAL OIL & GREASE (EPA 8060)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	METALS: Cd, Cr, Pb, Zn	CAR METALS (10) W/C-VI	PRIORITY POLLUTANT METALS (13)		
ADDRESS <u>464 Lindbergh Avenue</u> <u>Livermore, CA 94550</u>																			
SAMPLERS SIGNATURE: <u>Gene Painter</u> (PHONE NO.) <u>455-4991</u>																			
SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.															
1-3	5/15/91	3:05	Soil		X														
PROJECT INFORMATION					SAMPLE RECEIPT				RELINQUISHED BY		1. RELINQUISHED BY		2. RELINQUISHED BY						
<u>Genol Perm. Center</u>					TOTAL NO. OF CONTAINERS	<u>Gene Painter</u> 845		<u>Jeff Schaffer</u>											
					CHAIN OF CUSTODY SEALS	(Signed) <u>Gene Painter</u> 5/20/91	(Date)	(Signed) <u>JEFF SCHAFER</u> 5/20	(Date)	(Signed)	(Date)	(Signed)	(Date)	(Signed)	(Date)	(Signed)	(Date)		
					RECD GOOD CONDITION/COLD	(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)		
					CONFORMS TO RECORD	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)		
SPECIAL INSTRUCTIONS/COMMENTS:					RECEIVED BY				1. RECEIVED BY		2. RECEIVED BY (LABORATORY)								
<u>Please report only the diesel</u>					(Signed) <u>Uriah</u> 5/20/91	(Date)	(Signed) <u>Gene Painter</u>	(Date)	(Signed) <u>Gene Painter</u>	(Date)	(Signed) <u>Gene Painter</u>	(Date)	(Signed)	(Date)	(Signed)	(Date)	(Signed)	(Date)	
					(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)	(Print Name)	(Date)			
					(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)	(Company)			
										(Signed)	(Date)	(Signed)	(Date)	(Signed)	(Date)	(Signed)	(Date)	(Signed)	(Date)

15-28-91 04:34PM F01

SUPERIOR ANALYTICAL LABORATORY, INC.

1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

DOHS #1332

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 53744
CLIENT: URIAH, INC
CLIENT JOB NO.: SUNOL COMMUNICATION CENTER

DATE RECEIVED: 06/10/91
DATE REPORTED: 06/17/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 8015

LAB

#	Sample Identification	Concentration (mg/kg) Diesel Range
1	A, 1-4	71*

* - Does not match typical Diesel pattern.
mg/kg - parts per million (ppm)

Minimum Detection Limit for Diesel in Soil: 10mg/kg

QAQC Summary:

Daily Standard run at 200mg/L: %DIFF Diesel = <15%

MS/MSD Average Recovery = 100%: Duplicate RPD = 2%

Richard Srna, Ph.D.

Cecilia G. Jouquin (for)
Laboratory Director

OUTSTANDING QUALITY AND SERVICE

Uriah, Inc.

An Environmental Services Company

50744

(415) 455-4991 Office
(415) 455-4995 FAX

Chain of Custody

DATE 6/10/91 PAGE 1 OF 1

PROJ. MGR. <u>Bene Painter</u> COMPANY <u>Uriah, Inc.</u> ADDRESS <u>464 Lindbergh Avenue</u> <u>Livermore, CA 94550</u>					ANALYSIS REQUEST												NUMBER OF CONTAINERS <u>1</u>
SAMPLERS (SIGNATURE) <u>Bene Painter</u> (PHONE NO.) <u>455-4991</u>					<input type="checkbox"/> TPH - Gasoline (EPA 5030)	<input type="checkbox"/> TPH - Gasoline (9030) W/TEX (EPA 602, 8080)	<input checked="" type="checkbox"/> TPH - Diesel (EPA 3510, 3550)	<input type="checkbox"/> FURCABLE AROMATICS BTX (EPA 602, 8020)	<input type="checkbox"/> FURCABLE HALOCARBONS (EPA 601, 8010)	<input type="checkbox"/> VOLATILE ORGANICS (EPA 624, 8240)	<input type="checkbox"/> BASE/NEUTRAL, ACIDS (EPA 624/627, 8270)	<input type="checkbox"/> TOTAL OIL & GREASE (EPA 50085)	<input type="checkbox"/> PESTICIDES/PCB (EPA 608, 8080)	<input type="checkbox"/> METALS (EPA 604, 8040)	<input type="checkbox"/> METALS: Cd, Cr, Pb, Zn	<input type="checkbox"/> CAR METALS (10) W/CF VI	
SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.													
A-1-4	6/8/91	10:35	Soil														
<p style="font-size: 2em; opacity: 0.5;">SOIL IS BIOREMEDIATED</p>																	
PROJECT INFORMATION <u>Send Communication Center</u>				SAMPLE RECEIPT TOTAL NO. OF CONTAINERS CHAIN OF CUSTODY SEALS RECD GOOD CONDITION/COLD CONFORMS TO RECORD LAB NO.		RELINQUISHED BY 1. <u>Bene Painter</u> 9/15 (Signature) (Time) <u>Bene Painter</u> (Printed Name) (Date) 6/10/91 (Company) URIAH, Inc.			RELINQUISHED BY 2. <u>Tony Faver</u> (Signature) (Time) <u>Tony Faver</u> 6/10/91 (Printed Name) (Date) (Company)			RELINQUISHED BY 3. <u>B. Woods</u> (Signature) (Time) <u>B. Woods</u> 6/10 (Printed Name) (Date) (Company)					
SPECIAL INSTRUCTIONS/COMMENTS: <u>Report discal on 1g Soil</u> <u>Sample is Bio remediated</u> <u>Normal Turnaround Time</u>				RECEIVED BY 1. <u>Tony Faver</u> (Signature) (Time) <u>Tony Faver</u> 9/15 (Printed Name) (Date) 6/10/91 (Company)			RECEIVED BY 2. <u>E. Galano</u> (Signature) (Time) <u>E. Galano</u> 11/10 (Printed Name) (Date) (Company) EXPRESS-IT			RECEIVED BY (LABORATORY) 3.							

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3008-B 16th Avenue West
Seattle, WA 98119
FAX: (206) 283-5044

June 28, 1991

Jeff Schafer, Project Leader
Uriah, Inc.
464 Lindbergh Avenue
Livermore, CA 94550

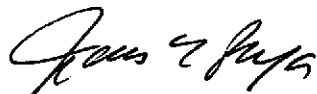
Dear Mr. Schafer:

This letter is to summarize the data that was reported on June 25, 1991 regarding the analyses of the sample submitted on June 21, 1991 from Project Sunol Communications Center.

This sample was analyzed for volatile, semi-volatile and non-volatile organic compounds by gas chromatography (GC) and thin-layer liquid chromatography (TLC.) Semi-volatile compounds were seen using the GC, however the pattern seen was not indicative of fresh diesel fuel. This assignment was substantiated by the TLC analysis which showed an absence of saturated hydrocarbons, major constituents of diesel fuels.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, or if you just want to discuss any aspect of your projects, please do not hesitate to contact me.

Sincerely,



James E. Bruya, Ph.D.

JEB

Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3008-B 16th Avenue West
Seattle, WA 98119
FAX: (206) 283-5044

June 25, 1991

Jeff Schafer, Project Leader
Uriah, Inc.
464 Lindbergh Avenue
Livermore, CA 94550

Dear Mr. Schafer:

Enclosed are the results of the analyses of the sample submitted on June 21, 1991 from Project Sunol Communications Center.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, or if you just want to discuss any aspect of your projects, please do not hesitate to contact me.

Sincerely,


James E. Bruya, Ph.D.

JEB

Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: June 25, 1991
Date Submitted: June 21, 1991
Project: Sunol Communications Center

RESULTS OF ANALYSES OF THE SOIL SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY

Sample #

GC Characterization

SCC-A

The gas chromatographic trace showed the presence of medium boiling compounds, such as those found in a hydraulic fluid of other light oil. This characterization is based on the presence of a relatively smooth envelope of peaks present from ca $n\text{-C}_{12}$ to $n\text{-C}_{24}$ with a maximum near $n\text{-C}_{20}$.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: June 25, 1991
Date Submitted: June 21, 1991
Project: Sunol Communications Center

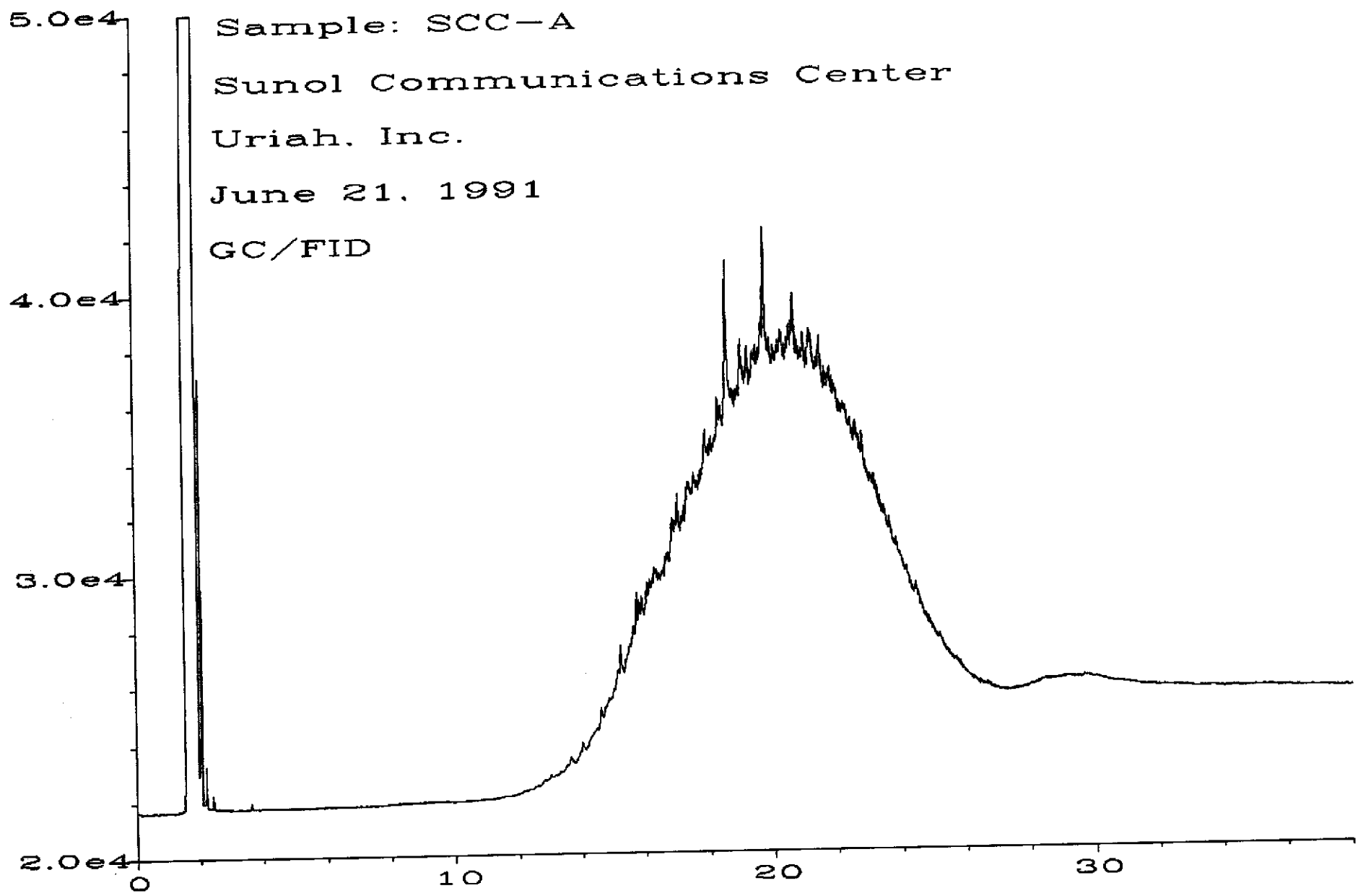
RESULTS OF ANALYSES OF THE SOIL SAMPLE
FOR CONTAMINANT CHARACTERIZATION
BY THIN LAYER CHROMATOGRAPHY

Sample #

TLC Characterization

SCC-A

The thin layer chromatographic trace showed the presence of moderately polar and highly polar organic compounds, such as those found in a synthetic oil or a mixture of biogenic compounds. This characterization is based on the presence of a band of material at Rf (hexane) 0.8, visible under both short wave UV light, as well as with iodine staining and is indicative of elemental sulfur, a possible by product of biological degradation. There was a second band of material at Rf (hexane) 0.4, visible under both short wave UV light, as well as with iodine staining and is indicative of oxidized 2 to 3-ringed aromatic hydrocarbons or other compounds having a similar unsaturated system such as phenols and quinones that may result from the degradation of diesel. There was a small amount of material showing an Rf (hexane) 0.0 and Rf (methylene chloride) 1.0 that was visible under both short and long wave UV light, as well as with iodine staining. This type of character is seen by high boiling aromatic hydrocarbons, as well as by highly polar unsaturated oxidized hydrocarbons. There was no indication of the presence of saturated hydrocarbons that are major components of petroleum products such as diesel, motor oil and asphalt. The absence of asphalt was further confirmed by the relative absence of the high molecular aromatic hydrocarbons.



Uriah, Inc.

An Environmental Services Company

484 Lindbergh Avenue
 Livermore, CA 94550
 (415) 455-4991 Office
 (415) 455-4995 FAX

60-KMC-B

Chain of Custody

DATE 6/19/91 PAGE 1 OF 1

PROJ. MGR. JEFF SCHAFER
 COMPANY URIAH, INC
 ADDRESS 464 LINDBERGH AVE
LIVERMORE, CA 94550

ANALYSIS REQUEST

SAMPLERS (SIGNATURE) Jeff Schaffer (PHONE NO.) (415) 455-4991

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030) W/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550)	MURGEABLE AROMATICS BTEX (EPA 602, 8020)	MURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 624/827, 8270)	TOTAL OIL & GREASE (EPA 50304E)	PESTICIDES/PCS (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	TPH-D	ASPHALT	METALS: Cd, Cr, Pb, Zn	CAR METALS (18) W/CF VT	PRIORITY POLLUTANT METALS (13)	NUMBER OF CONTAINERS
SCC - A	6/19/91	9:30a	SOIL	20485											✓	✓				

PROJECT INFORMATION	SAMPLE RECEIPT	RELINQUISHED BY		
		1.	2.	3.
Sunol Communications Center	TOTAL NO. OF CONTAINERS	1		
	CHAIN OF CUSTODY SEALS			
	REC'D GOOD CONDITION/COLD			
	CONFORMS TO RECORD			
LAB NO.				
SPECIAL INSTRUCTIONS/COMMENTS: BIO-TREATED SOIL CONTAMINATED WITH FRESH PRODUCT DIESEL. SOYS ANALYSIS SHOWS 71 PPM, BUT IS NOT A TYPICAL DIESEL PATTERN. THE INTERFERENCE IS ASPHALT & PLEASE DISTINGUISH DIESEL FROM ASPHALT.		RECEIVED BY		
		1.	2.	3.
		(Signature)	(Time)	(Signature)
		(Printed Name)	(Date)	(Printed Name)
		(Company)	(Company)	(Company)
		(Signature)	(Time)	(Signature)
		(Printed Name)	(Date)	(Printed Name)
		(Company)	(Company)	(Company)
		(Signature)	(Time)	(Signature)
		(Printed Name)	(Date)	(Printed Name)
		(Company)	(Company)	(Company)

P.S. CALL JEFF SCHAFER TO LET HIM KNOW WHAT ANALYSES WILL BE USE. IF YOU GET ANSW. SVCE, GIVE THEM

M.A. DANFORD
 (Printed Name) 6-21-91
 (Date)
 (Lab)