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CONSULTING ENGINEERS AND HYDROGEOLOGISTS

91 MAY 9 16490035

May 6, 1991

Mr. Dennis Byrne
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California 94621

Subject: Results of Fish Bioassay
TPH-Affected Soils
Yerba Buena Site
Emeryville and Oakland, California

Dear Mr. Byrne:

Enclosed on behalf of Catellus Development Corporation (Catellus) are the results of recent soil sampling and chemical analysis conducted in Area A of the Yerba Buena Project Site (the "Site") in Emeryville and Oakland, California. The soil sampling and analysis were conducted on behalf of Catellus to obtain representative soil samples for use in a fish bioassay test. The bioassay was performed to assess the toxicity of total petroleum hydrocarbon (TPH) concentrations present in site soil in accordance with Title 22, California Code of Regulations, Article 11. The results of the fish bioassay indicate that the TPH-affected soils in Area A are not toxic. A description of the sampling methods and results of TPH analysis of the soil samples used in the fish bioassay is presented below.

Soil Sampling

To obtain representative samples for the fish bioassay, four soil samples were collected on March 8, 1991, from three locations in the vicinity of Phase I soil sampling locations identified as containing elevated concentrations of TPH (up to 17,000 mg/kg). Three of the samples were submitted to BC Analytical of Emeryville, California (a state-certified laboratory), for analysis of TPH as oil and diesel using modified EPA Method 8015.

The analytical results for the March 8 sampling were unexpectedly low (less than 10 mg/kg at each sampling location). Historically, results of soil samples collected at comparable depths in this area and submitted to Med-Tox Associates of Pleasant Hill, California (a state-certified laboratory), for analysis of TPH as diesel and oil, reported much higher concentrations. Therefore, a split sample from

16

1900 Powell Street, 12th Floor
Emeryville, California 94608
(415) 652-4500
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the March 8 sampling event (BB-35A-4.0) was submitted to Med-Tox for confirmatory TPH analysis. The results subsequently reported by Med-Tox for the split sample supported the BC Analytical results. Laboratory certificates for these analyses are attached.

Because of the unexpectedly low TPH concentrations reported for the March 8 sampling, a second round of soil sampling was conducted on March 21, 1991; 13 soil samples were collected from 8 additional locations. Three samples (BB-35A-4.0, BB-31A-4.0, and A9A-4.5) were submitted to BC Analytical for TPH analysis using modified EPA Method 8015. The results indicated that two of the samples (BB-35A-4.0 and A9A-4.5) contained concentrations of TPH below laboratory detection limits (less than 100 mg/kg) and that one sample (BB31D-4.0) contained 1,800 mg/kg TPH.

Again, split samples (BB31D-4.0 and BB31D-3.0) were submitted to Med-Tox for confirmatory TPH analysis. Med-Tox reported concentrations of 10,200 mg/kg for BB31D-4.0 and 500 mg/kg for BB31D-3.0. These concentrations are similar to TPH as oil concentrations previously detected in Area A.

A possible explanation for the discrepancy between results reported by BC Analytical and Med-Tox is that the two laboratories use different sample preparation methods. BC Analytical uses a pentane/water micro-extraction method. Med-Tox uses an acetone/methylene chloride extraction method, which is more efficient in extracting the petroleum hydrocarbons. Consequently, TPH results obtained using the Med-Tox method generally would be more representative of soil conditions at the Site.

Fish Bioassay

Three soil samples with varying concentrations of TPH (i.e., high, intermediate, and low) were selected to be representative of the TPH concentrations in Area A soils. The three soil samples chosen for the composite sample, the depth from which they were collected, and TPH concentrations as diesel and oil are presented below in tabular form:

Sample	Depth (feet)	TPH Concentration (mg/kg)
BB31D-4.0	4.0	10,200
BB31D-3.0	3.0	500
A9A-4.5	4.5	< 10

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These representative soil samples were composited and used by BC Analytical to perform the 96-hour fish bioassay.

Results of the Fish Bioassay

In accordance with the fish bioassay requirement outlined in Title 22 of the California Code of Regulations, Section 66696, the results of the fish bioassay indicate that the TPH-affected soils in Area A are not toxic. Laboratory certificates for the TPH analyses and the fish bioassay are attached.

If you have questions, please call me, Cindy Barclay, or Jenifer Beatty of Levine•Fricke, or Mr. Ric Notini of Catellus.

Sincerely,



Amanda L. Spencer
Senior Project Hydrogeologist

Enclosures

cc: Ric Notini, Catellus
Pat Cashman, Catellus
Don Marini, Catellus

LABORATORY CERTIFICATES

1647.03



BC Analytical

1255 POWELL STREET • EMERYVILLE, CA 94608 • (415) 428-2300 • Fax (415) 547-3643

TOXICITY BIOASSAY

Levine - Fricke
1900 Powell Street, 12th Floor
Emeryville, CA 94608

Report To:

ATTN: Mr. Glenn Leong

Log No.: E91-04-194-1

Date Sampled: Not Given

Date Received: 04/09/91

Date Mailed:

APR 23 1991

L. Densley
Laboratory Director

cc:

CALIFORNIA HAZARDOUS WASTE ASSESSMENT BIOASSAY: SCREEN

Sample Description A9A-4.5, BB31D-4.0, BB31D-3.0 Comp.
 Test Organism Pimephales promelas, fathead minnow Source Thomas Fish Company
 Dilution Water Fresh Source Emeryville Dechlorinated Temperature Range 19.5 - 20.2 °C
Tap Water with Matrix Modifiers
 Aeration: Air Oxygen None Test initiated 04.11.91 Control initial hardness 48 mg/L

Bioassay Conditions	Time, Hrs	Control		Dilution													
				250 mg/L		250 mg/L		750 mg/L		750 mg/L							
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Organisms Surviving	Start	10	100	10	100	10	100	10	100	10	100						
	24	10	100	10	100	10	100	10	100	10	100						
	48	10	100	10	100	9	90	10	100	10	100						
	72	10	100	10	100	9	90	10	100	10	100						
	96	10	100	10	100	9	90	10	100	10	100						
Dissolved Oxygen mg/L	Start	7.7		8.5		8.8		8.8		8.7							
	24	8.3		8.5		8.6		8.7		8.5							
	48	7.9		8.4		8.6		8.6		8.5							
	72	8.7		9.0		9.1		9.1		9.0							
	96	9.0		9.0		9.0		9.4		8.9							
pH	Start	8.0		8.0		8.0		8.0		8.0							
	24	7.9		7.9		8.0		8.0		7.9							
	48	7.8		7.8		7.8		7.9		7.8							
	72	7.9		7.9		7.9		7.9		7.9							
	96	8.0		8.0		8.0		8.0		8.0							
Temperature	Start	19.7		19.6		19.5		19.5		19.6							
	24	20.1		20.1		20.1		20.1		20.2							
	48	20.1		20.0		20.0		20.0		20.1							
	72	20.1		20.1		20.0		20.1		20.1							
	96	20.1		20.1		20.1		20.1		20.1							

RESULTS TL_m* >750 mg/L Toxicity Units Not Established 95% confidence limits of TL_m Not Applicable Percent survival in undiluted sample Not Applicable

Length of fish, cm: Max. 3.7 Min. 3.0 Mean 3.4
 Weight of fish, g.: Max. 0.49 Min. 0.27 Mean 0.41

* In cases where 96 hour mortality does not equal or exceed 50% in at least one dilution of the sample, no TL_m value is established.

Analyst M.L. Parris

Analytical Report

ALS

LOG NO: E91-03-218

Received: 08 MAR 91

Mailed : 15 MAR 91

Mr. Glenn Leong
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608

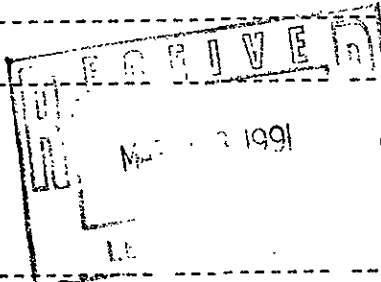
Requisition: 7964

Project: 1649

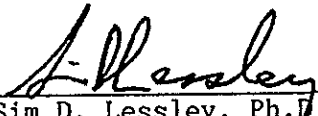
REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED		
03-218-1	BB-35A-4.0	08 MAR 91		
03-218-2	BB-31A-4.0	08 MAR 91		
03-218-3	A9A-4.5	08 MAR 91		
PARAMETER		03-218-1	03-218-2	03-218-3
TPH - Modified 8015				
Date Analyzed		03.11.91	03.11.91	03.11.91
Dilution Factor, Times		1	1	1
Total Fuel Hydrocarbons, mg/kg		<10	<10	<10
Other TPH - Modified 8015		---	---	---



Verbal results were reported to Jenifer Carter on 03.12.91. T. Blake


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

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE.... ANALYZED	METHOD.....	EQUIP.	BATCH ID.NO
103218*1	BB-35A-4.0	8015	03.11.91	8015	516-08	55 7754
103218*2	BB-31A-4.0	8015	03.11.91	8015	516-08	55 7754
103218*3	A9A-4.5	8015	03.11.91	8015	516-08	55 7754

**

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.
ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

BATCH QC REPORT

ORDER: E9103218

Page 1

REPORTED : 03/14/91

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
- Modified 8015	03.11.91	55	1	1	Times	100
Dilution Factor	03.11.91	55	160	250	mg/kg	64
Total Fuel Hydrocarbons						

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9103218

Page 1

REPORTED : 03/14/91

MATRIX QC PRECISION (DUPLICATE SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	S1 RESULT	S2 RESULT	UNIT	RELATIVE %DIFF
- Modified 8015	03.11.91	55	1	1	Times	0
Dilution Factor	03.11.91	55	140	150	mg/kg	7
Total Fuel Hydrocarbons						

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9103218

Page 1

REPORTED : 03/14/91

MATRIX QC ACCURACY (SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	SBAR RESULT	TRUE RESULT	RBAR RESULT	UNIT	PERCENT RECOVERY
- Modified 8015 Total Fuel Hydrocarbons	03.11.91	55	145	250	<10	mg/kg	58

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9103218

Page 1

DATE REPORTED : 03/14/91

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
- Modified 8015 Total Fuel Hydrocarbons	03.11.91	55	2.6	10	mg/kg

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

206 9103218
9103219

Project No.: <u>1649</u>	Field Logbook No.:	Date: <u>3/8/91</u>	Serial No.: <u>7964</u>
Project Name: <u>VERBA BUENA</u>	Project Location: <u>EMERYVILLE</u>		

Sampler (Signature): <u>Donna Carter</u>	ANALYSES	Samplers: <u>JJC</u>
--	----------	----------------------

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	ANALYSES										REMARKS	
						EPA 601	EPA 624	Hexachlorocyclopentadiene (HCH)	Lead + Zn	Lead	PbS	HOLD	RUSH				
BB-35A-4.0																	* Sample Relinquished to Med. Tox m 03.13.91 per Amanda Spencer
<u>BB-35A-4.0</u>	<u>3/8/91</u>	<u>1135</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>										<u>Total TPH ON</u>
<u>BB-35A-2.5</u>	<u>"</u>	<u>1150</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>						3 samples BB-35A, BB-31A (4.0), and A9A - (48 hr TAT)
<u>BB-31A-4.0</u>	<u>"</u>	<u>1155</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>										
<u>A9A-4.5</u>	<u>"</u>	<u>1225</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>										<u>Tom - Fish Blooming</u>
<u>C-17A-1.0</u>	<u>"</u>	<u>1000</u>		<u>1</u>	<u>Soil</u>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>						<u>ON a composite of these 3 samples on Normal TAT</u>
C-17A-1.5					Soil			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>						
<u>A-5-4.5</u>	<u>"</u>	<u>1030</u>		<u>1</u>	<u>Soil</u>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
<u>BB-14-2</u>	<u>"</u>	<u>1015</u>		<u>1</u>	<u>Soil</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<u>Will call about C-17A + A-5 samples + analyses.</u>
<u>BA-14-1.5</u>	<u>"</u>	<u>1015</u>		<u>1</u>	<u>Soil</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<u>Will call w/ BB-14 Analysis.</u>

RELINQUISHED BY: (Signature) <u>Donna Carter</u>	DATE <u>3/8/91</u>	TIME	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE <u>3/8/91</u>	TIME <u>1317</u>
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector: <u>LEVINE-FRICKE</u> 1900 Powell Street, 12th Floor Emeryville, Ca 94608 (415) 652-4500	Analytical Laboratory: <u>BCA</u>
--	--------------------------------------

Analytical Report

LOG NO: E91-03-536

Received: 21 MAR 91

Mailed: APR 11 1991

Mr. Glenn Leong
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608

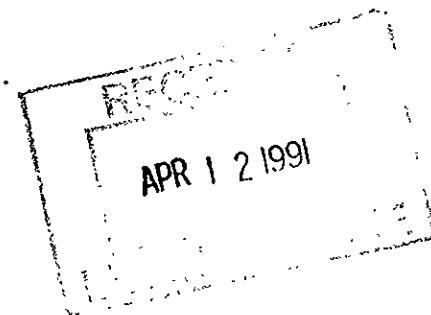
Requisition: 4078
Project: 1649

REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED				
03-536-1	BB31D-4.0	21 MAR 91				
03-536-2	BB31D-3.0	21 MAR 91				
03-536-3	BB32C-4.0	21 MAR 91				
03-536-4	BB35C-3.5	21 MAR 91				
03-536-5	BB35C-4.0	21 MAR 91				
PARAMETER	03-536-1	03-536-2	03-536-3	03-536-4	03-536-5	
Sample Held, Not Analyzed	---	---	---	HELD	HELD	
TPH - Modified 8015						
Date Analyzed	03.26.91	03.26.91	03.22.91	---	---	
Dilution Factor, Times	1	1	1	---	---	
Total Fuel Hydrocarbons, mg/kg	1800	<100	<100	---	---	
Fuel Characterization, .	OIL	OIL	---	---	---	
Other TPH - Modified 8015	---	---	---	---	---	

This Fuel characterization is a tentative identification based upon a visual comparison of sample chromatograms with those from authentic standards.



Analytical Report

LOG NO: E91-03-536

Received: 21 MAR 91

Mr. Glenn Leong
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608

Requisition: 4078
Project: 1649

REPORT OF ANALYTICAL RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED				
03-536-6	BB35B-3.5	21 MAR 91				
03-536-7	BB35B-4.0	21 MAR 91				
03-536-8	BB35D-4.0	21 MAR 91				
03-536-9	BB35D-4.5	21 MAR 91				
03-536-10	BB31B-2.0	21 MAR 91				
PARAMETER	03-536-6	03-536-7	03-536-8	03-536-9	03-536-10	
Sample Held, Not Analyzed	HELD	HELD	HELD	HELD	HELD	

Analytical Report

LOG NO: E91-03-536

Received: 21 MAR 91

Mr. Glenn Leong
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608

Requisition: 4078
Project: 1649

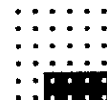
REPORT OF ANALYTICAL RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED		
03-536-11	BB31C-4.0	21 MAR 91		
03-536-12	BB32A-4.0	21 MAR 91		
03-536-13	BB32C-4.5	21 MAR 91		
PARAMETER		03-536-11	03-536-12	03-536-13
Sample Held, Not Analyzed		HELD	HELD	HELD

Preliminary results for samples BB31D-4.0, BB31D-3.0, and BB32C-4.0 were originally reported to Amanda Spencer on March 22, 1991. Re-analysis of these same samples on March 26, 1991 using a motor oil calibration are reported on this final report. T. Blake 04.09.91

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: Levine - Fricke 9103536 :
: BC ANALYTICAL : EMVL LAB : 09:34:55 11 APR 1991 - P. 1 :
=====

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE....	METHOD.....	EQUIP.	BATCH	ID.NO
			ANALYZED				
9103536*1	BB31D-4.0	8015	03.22.91	8015	516-08	66	7754
9103536*2	BB31D-3.0	8015	03.22.91	8015	516-08	66	7754
9103536*3	BB32C-4.0	8015	03.22.91	8015	516-08	66	7754
9103536*4	BB35C-3.5	HOLD	03.22.91			1	7356
9103536*5	BB35C-4.0	HOLD	03.22.91			1	7356
9103536*6	BB35B-3.5	HOLD	03.22.91			1	7356
9103536*7	BB35B-4.0	HOLD	03.22.91			1	7356
9103536*8	BB35D-4.0	HOLD	03.22.91			1	7356
9103536*9	BB35D-4.5	HOLD	03.22.91			1	7356
9103536*10	BB31B-2.0	HOLD	03.22.91			1	7356
9103536*11	BB31C-4.0	HOLD	03.22.91			1	7356
9103536*12	BB32A-4.0	HOLD	03.25.91				6926
9103536*13	BB32C-4.5	HOLD	03.25.91				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

BATCH QC REPORT
ORDER: E9103536

DATE REPORTED : 04/11/91

Page 1

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
TPH - Modified 8015						
Dilution Factor	03.22.91	66	1	1	Times	100
Total Fuel Hydrocarbons	03.22.91	66	180	250	mg/kg	72

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9103536

DATE REPORTED : 04/11/91

Page 1

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
TPH - Modified 8015 Total Fuel Hydrocarbons	03.22.91	66	0	10	mg/kg

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

9103536

Project No.: 1649	Field Logbook No.:	Date: 3/21/91	Serial No.:
Project Name: Yerba Buena	Project Location:	No. 4078	

Sampler (Signature): Jennifer Carter	ANALYSES	Samplers: JJC
--------------------------------------	----------	---------------

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	ANALYSES						REMARKS	
						EPA 601	EPA 624	TPH as oil	H ₂ O	H ₂ O ₂	RUSH		
4-20 BB-35C-3.5	3/21/91	930		1	Soil								
5 BB-35C-4.0		930											
6 BB-35B-3.5		950											
7 BB-35B-4.0		950											
8 BB-35D-4.0		940											
9 BB-35D-4.5		940											
10 BB31B-2.0		1025											
11 BB31B-4.0		1025											
1 BB31D-4.0		1045											
2 BB31D-3.0		1045											
12 BB32A-4.0		1140											
3 BB-32C-4.0		1205											
13 BB-32C-4.5		1205											

TINY conc ALS about 45hr vs 24hr TAT
oil ~ diesel

Aranda Spencer on Jennifer Carter
Please Call with results - We will then want to do a Fish Bioassay on a composite of the 3 samples on Normal TAT -

RELINQUISHED BY: (Signature) Jennifer Carter	DATE	TIME	RECEIVED BY: (Signature) [Signature]	DATE 3/21/91	TIME 1234
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT: Hand Delivered	DATE 3/21/91	TIME	LAB COMMENTS:		
Sample Collector: LEVINE-FRICKE 1900 Powell Street, 12th Floor Emeryville, Ca 94608 (415) 652-4500	Analytical Laboratory: BIC Analytical				

A Division of Gillis International

LABORATORY ANALYSIS REPORT

LEVINE-FRICKE
1900 POWELL ST., 12TH FLOOR
EMERYVILLE, CA 94608

ATTN: JENNIFER CARTER

CLIENT PROJ. NO: 1649

REPORT DATE: 03/18/91

DATE SAMPLED: 03/08/91

DATE RECEIVED: 03/13/91

MED-TOX JOB NO: 9103080

ANALYSIS OF: SOIL SAMPLES

Sample Identification		Extractable Hydrocarbons as Diesel (mg/kg)	Extractable Hydrocarbons as Oil (mg/kg)
Client Id.	Lab No.		

BB-35A-4.0	01A	ND	30
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Detection Limit		10	20
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Method: 3550 GCFID

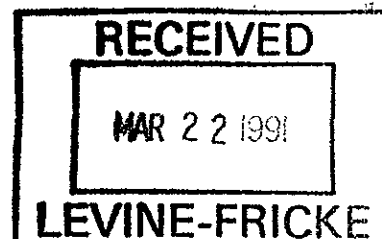
Instrument: C

Date Extracted: 03/13/91

Date Analyzed: 03/14/91

ND = Not Detected


Andrew Bradeen, Manager
Organic Laboratory



Results FAXed to Jennifer Carter 03/15/91

QUALITY CONTROL DATA

LEVINE-FRICKE

CLIENT PROJ. NO: 1649

MED-TOX JOB NO: 9103080

DATE EXTRACTED: 03/13/91
DATE ANALYZED: 03/14/91
INSTRUMENT: C

MED-TOX JOB NO: 9103080

CLIENT REF: 1649

**MATRIX SPIKE RECOVERY SUMMARY
TPH EXTRACTABLE SOILS
METHOD 3550 GCFID
(SOIL MATRIX; EXTRACTION METHOD)**

ANALYTE	Spike Conc. (mg/kg)	Sample Result (mg/kg)	MS Result (mg/kg)	MSD Result (mg/kg)	Average Percent Recovery	RPD
Diesel	84.8	ND	70.9	65.4	80.4	8.1

CURRENT QC LIMITS (Revised 02/12/91)

<u>Analyte</u>	<u>Percent Recovery</u>	<u>RPD</u>
Diesel	(41.5-132.0)	18.8

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

R-4, S-C
CHAIN OF CUSTODY / ANALYSES REQUEST FORM

9103080
206 9103218
9113219

Project No.: <u>1649</u>	Field Logbook No.:	Date: <u>3/8/91</u>	Serial No.: <u>7964</u>
Project Name: <u>YERBA BUENA</u>		Project Location: <u>EMERYVILLE</u>	

SAMPLER (Signature): <u>Joniker Carter</u>						ANALYSES						SAMPLERS: <u>JJC</u>	
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	Metals oil TPH, PCB, Lead Zn.	Local	PCB	HOLD	RUSH	REMARKS
BB-35A-4.0													
<u>BB-35A-4.0</u>	<u>3/8/91</u>	<u>1135</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>						<u>Total TPH on 48hr</u>
<u>BB-35A-2.5</u>	<u>11</u>	<u>1150</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<u>3 samples BB-35A, BB-31A (4.0), and A9A - (48hr TAT)</u>
<u>BB-31A-4.0</u>	<u>11</u>	<u>1155</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>						
<u>A9A-4.5</u>	<u>11</u>	<u>1225</u>		<u>1</u>	<u>Soil</u>		<input checked="" type="checkbox"/>						<u>Then - Fish Blooming on a composite of these 3 samples on Normal TAT</u>
<u>C-17A-1.0</u>	<u>11</u>	<u>1000</u>		<u>1</u>	<u>Soil</u>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			
C-17A-1.5				1	Soil			input checked		input checked			
<u>A-5-4.5</u>	<u>11</u>	<u>1030</u>		<u>1</u>	<u>Soil</u>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>BB-14-2</u>	<u>11</u>	<u>1015</u>		<u>1</u>	<u>Soil</u>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<u>Will call about C-17A + A-5 samples + analyses.</u>
<u>BA-14-1.5</u>	<u>11</u>	<u>1015</u>		<u>1</u>	<u>Soil</u>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
													<u>Will call w/ BB-14 Analysis.</u>

RELINQUISHED BY: (Signature) <u>Joniker Carter</u>	DATE <u>3/8/91</u>	TIME	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE <u>3/8/91</u>	TIME <u>1317</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>	DATE <u>3/13/91</u>	TIME <u>10:00</u>	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE	TIME
RELINQUISHED BY: (Signature) <u>Sesse Lackey</u>	DATE <u>3-13-91</u>	TIME <u>11:00</u>	RECEIVED BY: (Signature) <u>Dense Harrington</u>	DATE <u>3/13/91</u>	TIME <u>1100</u>
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS: <u>rec'd only BB-35A-4.0</u>		
Sample Collector: <u>LEVINE-FRICKE</u> 1900 Powell Street, 12th Floor Emeryville, Ca 94608 (415) 652-4500			Analytical Laboratory: <u>BCA</u>		

A Division of Gillis International

LABORATORY ANALYSIS REPORT

LEVINE-FRICKE
1900 POWELL ST., 12TH FLOOR
EMERYVILLE, CA 94608

ATTN: JENNIFER CARTER

CLIENT PROJ. NO: 1649

REPORT DATE: 04/03/91

DATE SAMPLED: 03/21/91

DATE RECEIVED: 03/29/91

MED-TOX JOB NO: 9103180

ANALYSIS OF: SOIL SAMPLES

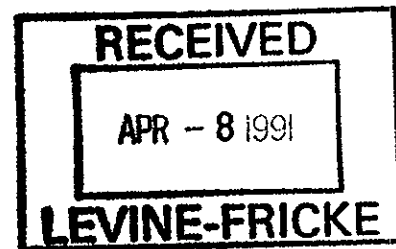
Sample Identification Client Id.	Lab No.	Extractable Hydrocarbons as Diesel (mg/kg)	Extractable Hydrocarbons as Oil (mg/kg)
BB-310-4.0	01A	3,600	6,600
BB-310-3.0	02A	60	440
Detection Limit		10	20

Method: 3550 GCFID

Instrument: C

Date Extracted: 03/29/91

Date Analyzed: 03/29/91



Andrew Bradeen
Andrew Bradeen, Manager
Organic Laboratory

Results FAXed to Jennifer Carter 04/02/91

QUALITY CONTROL DATA

LEVINE-FRICKE

CLIENT PROJ. NO: 1649

MED-TOX JOB NO: 9103180

DATE EXTRACTED: 03/29/91
DATE ANALYZED: 03/29/91
INSTRUMENT: C

MED-TOX JOB NO: 9103180

CLIENT REF: 1649

**MATRIX SPIKE RECOVERY SUMMARY
TPH EXTRACTABLE SOILS
METHOD 3550 GCFID
(SOIL MATRIX; EXTRACTION METHOD)**

ANALYTE	Spike Conc. (mg/kg)	Sample Result (mg/kg)	MS Result (mg/kg)	MSD Result (mg/kg)	Average Percent Recovery	RPD
Diesel	84.8	ND	72.7	72.0	85.3	1.0

CURRENT QC LIMITS (Revised 02/12/91)

<u>Analyte</u>	<u>Percent Recovery</u>	<u>RPD</u>
Diesel	(41.5-132.0)	18.8

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

CHAIN OF CUSTODY RECORD

BCA Log Number 9103180

R-4, S-C

Client name <u>Levine - Fricke</u>				Project or PO# <u>1649</u>		Analyses required (Diagonal lines with text: <u>2015 WAD - POI</u> and <u>Hazardous sample Special handling required</u>)										
Address				Phone #												
City, State, Zip				Report attention <u>Ms. Jennifer Carter</u>												
Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by	Sample description	Number of containers	Remarks									
<u>01A</u>	<u>3/21/91</u>	<u>10:45</u>	<u>SO</u>		<u>BB-310-4.0</u>	<u>1</u>	<u>Rush! => 48hr</u>									
<u>02A</u>	<u>3/21/91</u>	<u>10:45</u>	<u>SO</u>		<u>BB-310-3.0</u>	<u>1</u>	<u>Per Jennifer Carter</u> <u>Levine - Fricke</u>									

Signature	Print Name	Company	Date	Time
Relinquished by				
Received by				
Relinquished by				
Received by				
Relinquished by <u>Jesse Lackey</u>	<u>JESSE LACKEY</u>	<u>BCAL</u>	<u>3-29-91</u>	<u>10:55</u>
Received by Laboratory <u>Denise Harrington</u>	<u>Denise Harrington</u>	<u>Med-Tox</u>	<u>3/29/91</u>	<u>10:55</u>

BC ANALYTICAL

- 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
- 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
- 1200 Pacifico 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