Post-it® Fax Note 7671	Date 1/4/99	# of pages ▶ 3
To Juliett Shin	From Chuck Headlee	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 337-9335	Fax #	

CalEPA

San Francisco Bay Regional Water Quality Control Board

2101 Webster Street
Suite 500
Oakland, CA 94612
(510) 286-1255
FAX (510) 286-1380

Pete Wilson
Governor

To: Interested Parties

January 31, 1997
File: 1123.64

SUBJECT: **Utilization of Non-Purge Approach for Sampling of Monitoring Wells Impacted by Petroleum Hydrocarbons, BTEX, and MTBE**

REFERENCE: "The California Groundwater Purging Study for Petroleum Hydrocarbons", Report for Western States Petroleum Association by SECOR International Incorporated, Dated October 28, 1996

Finding and Recommendation

The WSPA study concludes that selection of a non-purge sampling methodology will not affect the overall variability of analytic data, and will provide a comparable, and in many cases, conservative estimate of petroleum hydrocarbons in groundwater. Based upon our review of the study, we conclude that for monitoring wells at fuel UST sites purging is not required providing the conditions we have outlined below are met. Our rationale is provided below.

Rationale

Since the release of the Western States Petroleum Association (WSPA) study on the effects of purging or not purging gasoline impacted monitoring wells prior to sampling there have been questions posed as to the validity and applicability of the study. Board staff acknowledge the concerns of some towards the possible bias in the study because of variations in data quality due to differing purging and sampling techniques utilized in the study, the lack of specific well design information or water quality parameter information, and the questions of statistical bias introduced into the study by the inclusion of non-detect data. However, we believe that these concerns are mitigated by the overall environmental and economic benefits discussed below.

Section 13267 (b) of the Water Code states that for technical or monitoring program reports the board may specify that ... "The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports". From an environmental perspective, there is an advantage in reducing the environmental burden by virtue of reducing the volumes of purge water for treatment and disposal, which in turn reduces secondary impacts to air and water quality from waste handling, transport, and treatment of the purge water. In

addition, there is a positive cost savings and, consequently, a potential savings to the State's limited Clean Up Fund resources. We therefore believe that this approach is consistent with Section 13267.

We recognize at least one disadvantage from not purging is that, if true, higher analytic readings from non-purged samples may result in unnecessarily prolonging remediation and monitoring. In the worst case, some minor changes in water quality may be missed on a timely basis, such as those due to changes resulting from utilizing effective remediation techniques or, conversely, missing the detection of a new release from on or off site. Also, if further refinement of the WSPA study provides new information in conflict to the present study, we are prepared to modify our requirements accordingly.

Conditions on Using the Non-Purging Approach

In consideration of the above, we will now require the following for any Responsible Party or consultant proposing to utilize the non-purging approach:

1. The non-purging approach shall be used only for monitoring wells where groundwater has been impacted by Petroleum Hydrocarbons, BTEX, and MTBE.

2. Non-purge sampling shall be utilized for unconfined aquifers only.

3. The monitoring well shall be properly permitted, constructed (in this case, screened across the water table), and developed.

4. The well is not presently in use for groundwater or soil vapor extraction.

5. The well does not have free product.

6. For new wells or wells brought into monitoring for the first time, the first round of groundwater sampling performed at a site shall be with both non-purged and purged samples. The purging and sampling method used shall be documented. This shall include the rate of purge and sampling details. For these wells we require measurements of dissolved oxygen, specific conductance, pH, and temperature whether purged or not purged. Also, if biodegradation is being tracked at the well, our requirements do not preclude the measurement of other parameters.

7. Existing wells which have already been routinely purged in previous sampling events immediate to being switched to a non-purging mode do not require an initial duplicate non-purged and purged sample.

8. Monitoring data frequency shall be as required by the appropriate regulatory oversight agency.

9. Should a Responsible Party request site closure where the non-purged approach has been used, the final confirmation sampling event shall include both non-purged and purged samples from each well or as agreed upon with the appropriate regulatory oversight agency.

Prior to implementing the non-purge approach, the appropriate regulatory oversight agency shall be contacted, with an information copy to this office. Please call John Kaiser (510 - 286 - 0803) or me (510 - 286 - 0304) if you have any questions regarding this letter.

Loretta K. Barsamian
Executive Officer

Stephen I. Morse, P.E.
Chief,
Toxics Cleanup Division

cc: SWRCB - CWP (Alan Patton and Dave Deaner)
Regional Boards 1,3-9 UST Program Managers
RWQCB Region 2 UST Staff
USEPA, Region 9 (Matt Small)
Region 2 Local Agency UST Managers

Note: A synopsis of the WSPA Report including information on how to obtain the complete report may be found on the Internet at http://www.secor.com/purge.html

CHROMALAB, INC.

Environmental Services (SDB)

January 2, 1997 *Submission #:* 9612245

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: December 18, 1996

re: 6 samples for TPH - Diesel analysis.
Method: *EPA 8015M*

Matrix: WATER *Extracted:* December 30, 1996
Sampled: December 18, 1996 *Run#:* 4714 *Analyzed:* January 1, 1997

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
111407	MW 3	N.D.	50	N.D.	64.5	1
111408	MW 4	N.D.	50	N.D.	64.5	1
111409	MW 5	N.D.	50	N.D.	64.5	1
111410	MW 2	N.D.	50	N.D.	64.5	1
111411	MW 1	N.D.	50	N.D.	64.5	1

Matrix: WATER *Extracted:* December 30, 1996
Sampled: December 18, 1996 *Run#:* 4714 *Analyzed:* December 31, 1996

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
111406	MW 6	N.D.	50	N.D.	64.5	1

Bruce Havlik
Chemist

Alex Tam
Semivolatiles Supervisor

510-243-9501 GC 01/02

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 2, 1997 *Submission #:* 9612245

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: December 18, 1996

re: 3 samples for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Matrix: WATER
Sampled: December 18, 1996 *Run#:* 4666 *Analyzed:* December 26, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
111406	MW 6	770	7.3	1.4	12	16
111407	MW 3	8100	1400	33	60	44

Note: Reporting limits for BTEX (10ug/L) and Gasoline (1000ug/L) were raised due to sample interference.

Matrix: WATER
Sampled: December 18, 1996 *Run#:* 4683 *Analyzed:* December 28, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
111408	MW 4	1100	2.1	2.9	4.6	8.8
Reporting Limits		50	0.50	0.50	0.50	0.50
Blank Result		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)		113	91.3	94.9	95.0	91.8

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 2, 1997 *Submission #:* 9612245

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: December 18, 1996

re: 1 sample for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Matrix: WATER
Sampled: December 18, 1996 *Run#:* 4683 *Analyzed:* December 28, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
111409	MW 5	23000	1500	97	2000	2100
	Reporting Limits	1200	12	12	12	12
	Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
	Blank Spike Result (%)	113	91.3	94.9	95.0	91.8

Note: Surrogate recovery was outside QA/QC limits due to matrix interference. See Surrogate Summary page.

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

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V115 0:0C0406 KAYVAN 13:10

CHROMALAB, INC.

Environmental Services (SDB)

January 2, 1997 *Submission #:* 9612245

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: December 18, 1996

re: 1 sample for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Matrix: WATER
Sampled: December 18, 1996 *Run#:* 4683 *Analyzed:* December 28, 1996

Spl# CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
111410 MW 2	34000	930	420	2100	6500
Reporting Limits	5000	50	50	50	50
Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)	113	91.3	94.9	95.0	91.8

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

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V116 Q:QC0405 KAYVAN 13:11

CHROMALAB, INC.

Environmental Services (SDB)

January 2, 1997 *Submission #:* 9612245

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: December 18, 1996

re: 1 sample for Gasoline and BTEX compounds analysis.
Method: *EPA 8015M SW846 8020A Nov 1990*

Matrix: WATER
Sampled: December 18, 1996 *Run#:* 4666 *Analyzed:* December 26, 1996

Spl# CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
111411 MW 1	N.D.	N.D.	N.D.	N.D.	N.D.
Reporting Limits	50	0.50	0.50	0.50	0.50
Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)	122	95.2	94.3	96.8	96.7

Kayvan Kimyai
Chemist

Marianne Alexander
Gas/BTEX Supervisor

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Federal ID #68-0140157

CHROMALAB, INC.
Environmental Services (SDB)

January 2, 1997 *Submission #:* 9612245

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: December 18, 1996

re: **Surrogate** report for 3 samples for Gasoline and BTEX compounds
Method: EPA 8015M SW846 8020A Nov 1990
Lab Run#: 4683
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
111408-1	MW 4	TRIFLUOROTOLUENE	98.3	65-135
111408-1	MW 4	BROMOFLUOROBENZENE	578	65-135
111409-1	MW 5	TRIFLUOROTOLUENE	136	65-135
111409-1	MW 5	BROMOFLUOROBENZENE	735	65-135
111409-2	MW 5	TRIFLUOROTOLUENE	138	65-135
111409-2	MW 5	BROMOFLUOROBENZENE	89.8	65-135
111410-1	MW 2	TRIFLUOROTOLUENE	122	65-135
111410-1	MW 2	BROMOFLUOROBENZENE	671	65-135
111410-2	MW 2	TRIFLUOROTOLUENE	10.6	65-135
111410-2	MW 2	BROMOFLUOROBENZENE	116	65-135
111410-3	MW 2	TRIFLUOROTOLUENE	102	65-135
111410-3	MW 2	BROMOFLUOROBENZENE	87.5	65-135

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
112449-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	104	65-135
112449-1	*Reagent blank (MDB)*	BROMOFLUOROBENZENE	106	65-135
112450-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	97.6	65-135
112450-1	*Spiked blank (BSP)*	BROMOFLUOROBENZENE	105	65-135
112451-1	*Spiked blank duplicate (BSD)*	TRIFLUOROTOLUENE	92.6	65-135
112451-1	*Spiked blank duplicate (BSD)*	BROMOFLUOROBENZENE	103	65-135
112452-1	*Matrix spike (MS)*	TRIFLUOROTOLUENE	90.0	65-135
112452-1	*Matrix spike (MS)*	BROMOFLUOROBENZENE	95.9	65-135
112453-1	*Matrix spike duplicate (MSD)*	TRIFLUOROTOLUENE	65.5	65-135
112453-1	*Matrix spike duplicate (MSD)*	BROMOFLUOROBENZENE	75.2	65-135

V115
QCSURR1229 KAYVAN 02-Jan-97 13

1220 Quarry Lane • Pleasanton, California 94566-4756
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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 2, 1997 *Submission #:* 9612245

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: December 18, 1996

re: **Surrogate** report for 3 samples for Gasoline and BTEX compounds
Method: EPA 8015M SW846 8020A Nov 1990
Lab Run#: 4666
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
111406-1	MW 6	TRIFLUOROTOLUENE	93.9	65-135
111406-1	MW 6	BROMOFLUOROBENZENE	93.0	65-135
111406-2	MW 6	TRIFLUOROTOLUENE	94.9	65-135
111406-2	MW 6	BROMOFLUOROBENZENE	131	65-135
111407-1	MW 3	TRIFLUOROTOLUENE	91.2	65-135
111407-1	MW 3	BROMOFLUOROBENZENE	103	65-135
111407-2	MW 3	TRIFLUOROTOLUENE	83.7	65-135
111407-2	MW 3	BROMOFLUOROBENZENE	113	65-135
111411-1	MW 1	TRIFLUOROTOLUENE	60.3	65-135
111411-1	MW 1	BROMOFLUOROBENZENE	66.1	65-135
111411-2	MW 1	TRIFLUOROTOLUENE	95.0	65-135
111411-2	MW 1	BROMOFLUOROBENZENE	97.5	65-135

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
112330-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	106	65-135
112330-1	*Reagent blank (MDB)*	BROMOFLUOROBENZENE	106	65-135
112331-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	108	65-135
112331-1	*Spiked blank (BSP)*	BROMOFLUOROBENZENE	106	65-135
112332-1	*Spiked blank duplicate (BSD)*	TRIFLUOROTOLUENE	99.5	65-135
112332-1	*Spiked blank duplicate (BSD)*	BROMOFLUOROBENZENE	106	65-135
112333-1	*Matrix spike (MS)*	TRIFLUOROTOLUENE	91.3	65-135
112333-1	*Matrix spike (MS)*	BROMOFLUOROBENZENE	94.2	65-135
112334-1	*Matrix spike duplicate (MSD)*	TRIFLUOROTOLUENE	99.3	65-135
112334-1	*Matrix spike duplicate (MSD)*	BROMOFLUOROBENZENE	100	65-135

V115
QCSURR1229 KAYVAN 02-Jan-97 13

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

242 / 111406 - 111411

CET Environmental Services, Inc.
5845 Doyle Street, Suite 104
Emeryville, California 94608
(510) 652-7001 FAX (510) 652-7002

SUBM #: 9612245 REP: GC
CLIENT: CET
DUE: 01/02/97
REF #: 31265

31265
02107

COC NO:
DATE 12/11/96 PAGE 1 OF 1

PROJECT NAME DREYERS OAKLAND
ADDRESS OAKLAND
SAMPLER'S SIGNATURE
PRINTED NAME ALEX WONG
CET PROJECT NO. 3534-001
PROJECT MANAGER TERRY CARTON

SAMPLE NO.	DATE	TIME	LOCATION/DESCRIPTION	TPH GASOLINE	TPH DIESEL	BTEX	418.1						RUSH	MATRIX	CONTAINER TYPE	# OF CONTAINERS	REMARKS
MW6	12/11	14:15		✓	✓	✓								H_2O		4	
MW3	12/11	14:05		✓	✓	✓								"		4	10 DAY
MW4	12/11	13:40		✓	✓	✓								"		4	
MW5	12/11	13:05		✓	✓	✓								"		4	TAT
MW2	12/11	12:20		✓	✓	✓								"		4	
MW1	12/11	11:40		✓	✓	✓								"		4	

1 RELINQUISHED BY SIGNATURE PRINTED NAME ALEX WONG COMPANY CET	DATE 12/11/96 TIME 15:00	3 RELINQUISHED BY SIGNATURE PRINTED NAME COMPANY	DATE TIME	5 RELINQUISHED BY SIGNATURE PRINTED NAME COMPANY	DATE TIME	SAMPLE CONDITIONS RECEIVED ON ICE YES/NO CHAIN OF CUSTODY SEAL YES/NO SAMPLES RECEIVED INTACT YES/NO CORRECT CONTAINER TYPE YES/NO	
2 RECEIVED BY SIGNATURE PRINTED NAME COMPANY	DATE TIME	4 RECEIVED BY SIGNATURE PRINTED NAME COMPANY	DATE TIME	6 RECEIVED BY (LAB) SIGNATURE Chris Rowley PRINTED NAME Chris Rowley COMPANY Chromalab	DATE 12/18/96 TIME 1502	Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Samples will be returned to client or disposed of at client expense.	

White - **ORIGINAL** Canary - **FILE** Pink - **CLIENT COPY**

CHROMALAB, INC.
SAMPLE RECEIPT CHECKLIST

Client Name CET

Project DREVERS OAKLAND

Reference/Subm # 31265/9612245

Checklist completed by: C Rowley 12/19/94
Signature / Date

Date/Time Received 12/18/94 1506
Date / Time

Received by C Rowley

Carrier name

Logged in by CR 12/18/94
Initials / Date

Matrix H2O

Shipping container in good condition?			NA___	Yes ✓ No___
Custody seals present on shipping container?	Intact___	Broken___	Yes___	No ✓
Custody seals on sample bottles?	Intact___	Broken___	Yes___	No ✓
Chain of custody present?				Yes ✓ No___
Chain of custody signed when relinquished and received?				Yes ✓ No___
Chain of custody agrees with sample labels?				Yes ✓ No___
Samples in proper container/bottle?				Yes ✓ No___
Samples intact?				Yes ✓ No___
Sufficient sample volume for indicated test?				Yes ✓ No___
VOA vials have zero headspace?			NA___	Yes___ No ✓
Trip Blank received?			NA___	Yes___ No ✓
All samples received within holding time?				Yes ✓ No___

Container temperature? 7.2°C

pH upon receipt 7 pH adjusted <2 Check performed by: CR NA___

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted?_____ Date contacted?_____

Person contacted?_____ Contacted by?_____

Regarding?_____

Comments: pH adjusted for Diesel analysis. pH for volatiles checked by Chemist

Corrective Action:_____

SMPLRECD.CK

CHROMALAB, INC.

Environmental Services (SDB)

September 16, 1996 *Submission #:* 9608413

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: OAKLAND DREYERS *Project#:* 3534-001
Received: August 30, 1996

re: 3 samples for TPH - Diesel analysis.
Method: *EPA 3510/8015M*

Matrix: WATER *Extracted:* September 12, 1996
Sampled: August 30, 1996 *Run#:* 3081 *Analyzed:* September 13, 1996

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
98315	MW 5	N.D.	50	N.D.	68.5	1
98316	MW 4	N.D.	50	N.D.	68.5	1

Matrix: WATER *Extracted:* September 12, 1996
Sampled: August 30, 1996 *Run#:* 3081 *Analyzed:* September 16, 1996

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
98314	MW 1	N.D.	50	N.D.	68.5	1

Note: Surrogate was added twice to the sample.

Bruce Havlik
Chemist

Alex Tam
Semivolatiles Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

September 4, 1996 *Submission #:* 9608413

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: OAKLAND DREYERS *Project#:* 3534-001
Received: August 30, 1996

re: 3 samples for Gasoline and BTEX compounds analysis.
Method: *EPA 5030/8015M/8020*

Matrix: WATER
Sampled: August 30, 1996 *Run#:* 2938 *Analyzed:* September 3, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
98314	MW 1	N.D.	N.D.	N.D.	N.D.	N.D.
98315	MW 5	26000	2400	480	2600	6600
98316	MW 4	870	7.3	2.7	5.4	14
Reporting Limits		50	0.50	0.50	0.50	0.50
Blank Result		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)		91.8	95.8	98.7	102	104

June Zhao
Chemist

Marianne Alexander
Gas/BTEX Supervisor

510-243-9501 GC 09/16

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.
SAMPLE RECEIPT CHECKLIST

Client Name CET

Project OAKLAND DRIVERS

Reference/Subm # 29491/9608413

Checklist completed by: Rowley 9/3/96 (Signature / Date)

Date/Time Received 8/30/96 (Date) 1515 (Time)

Received by J Lindberg

Carrier name

Logged in by CR 8/30/96 (Initials / Date)

Matrix H2O

Shipping container in good condition?			NA____	Yes____ No____
Custody seals present on shipping container?	Intact____	Broken____		Yes____ No____
Custody seals on sample bottles?	Intact____	Broken____		Yes____ No____
Chain of custody present?				Yes✓ No____
Chain of custody signed when relinquished and received?				Yes✓ No____
Chain of custody agrees with sample labels?				Yes✓ No____
Samples in proper container/bottle?				Yes✓ No____
Samples intact?				Yes✓ No____
Sufficient sample volume for indicated test?				Yes✓ No____
VOA vials have zero headspace?			NA____	Yes✓ No____
Trip Blank received?			NA____	Yes____ No✓
All samples received within holding time?				Yes✓ No____

Container temperature? 6.0°C

pH upon receipt 14 pH adjusted <2 Check performed by: CR NA____

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted?_____ Date contacted?_____

Person contacted?_____ Contacted by?_____

Regarding?_____

Comments: pH adjusted for Diesel analysis pH for volatiles analysis Checked by Chemist

Corrective Action:_____

SMPLRECD.CK

413/98314-98316

CHROMALAB, INC.

Environmental Services (SDB) (DOHS 1094)

SUBM #: 9608413 REP: GC
CLIENT: CET
DUE: 09/16/96
REF #: 29491

29491

Chain of Custody

DATE 8/30/96 PAGE 1 OF 1

PROJ. MGR TERRY CARTER
COMPANY CET
ADDRESS
SAMPLERS (SIGNATURE) (PHONE NO.) (FAX NO.)

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel, TEPH (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520, B+F, E+F)	PCB (EPA 608, 8080)	PESTICIDES (EPA 608, 8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)		LUFT METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	TOTAL LEAD	EXTRACTION (TCLP, STLC)				NUMBER OF CONTAINERS
MW1	8/30	11:30	H_2O	HCl		✓	✓																	4
MW5	8/30	12:35	"	"		✓	✓																	4
MW4	8/30	13:40	"	"		✓	✓																	4

PROJECT INFORMATION

PROJECT NAME: OAKLAND DRIVERS
PROJECT NUMBER: 3334-001
P.O. #

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

TAT	STANDARD 5-DAY			24	48	72	OTHER

SPECIAL INSTRUCTIONS/COMMENTS:

10 DAY TAT

RELINQUISHED BY 1.
(SIGNATURE) 1515 (TIME)
ALEX WONG 8/30/96
(PRINTED NAME) (DATE)
CET
(COMPANY)

RELINQUISHED BY 2.
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RELINQUISHED BY 3.
(SIGNATURE) 1550 (TIME)
Jeff Lindberg 8/30/96
(PRINTED NAME) (DATE)
Chromalab
(COMPANY)

RECEIVED BY 1.
(SIGNATURE) 1515 (TIME)
Jeff Lindberg 8/30/96
(PRINTED NAME) (DATE)
Chromalab
(COMPANY)

RECEIVED BY 2.
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RECEIVED BY (LABORATORY) 3
(SIGNATURE) 1550 (TIME)
Chris Rowley 8/30/96
(PRINTED NAME) (DATE)
Chromalab
(LAB)

CHROMALAB, INC.

Environmental Services (SDB)

July 16, 1996 *Submission #:* 9607523

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: July 1, 1996

re: 3 samples for TPH - Diesel analysis.
Method: *EPA 3510/8015M*

Matrix: WATER *Extracted:* July 5, 1996
Sampled: June 28, 1996 *Run#:* 2099 *Analyzed:* July 5, 1996

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
90573	MW-2	N.D.	50	N.D.	91.5	1
90574	MW-3	N.D.	50	N.D.	91.5	1

Matrix: WATER *Extracted:* July 5, 1996
Sampled: July 1, 1996 *Run#:* 2099 *Analyzed:* July 5, 1996

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
90572	MW-6	N.D.	50	N.D.	91.5	1

Bruce Havlik
Chemist

Alex Tam
Semivolatiles Supervisor

CHROMALAB, INC.
Environmental Services (SDB)

July 12, 1996

Submission #: 9607523

CET ENVIRONMENTAL SERVICES

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534-001
Received: July 1, 1996

re: 3 samples for Gasoline and BTEX compounds analysis.
Method: *EPA 5030/8015M/8020*

Matrix: WATER
Sampled: June 28, 1996 *Run#:* 2092 *Analyzed:* July 9, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
90573	MW-2	30000	1000	450	2600	4700
90574	MW-3	7100	2600	28	48	55

Matrix: WATER
Sampled: July 1, 1996 *Run#:* 2092 *Analyzed:* July 9, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
90572	MW-6	200	3.2	N.D.	6.5	5.0
Reporting Limits		50	0.50	0.50	0.50	0.50
Blank Result		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)		104	115	109	112	105

June Zhao
Chemist

Marianne Alexander
Gas/BTEX Supervisor

510-243-9501 GC 07/18

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.
SAMPLE RECEIPT CHECKLIST

Client Name CET

Project DREVERS OAKLAND

Reference/Subm # 28589/9607523

Checklist completed by: Signature [signature] Date 7/2/96

Date/Time Received 7/1/96 (Date) 1610 (Time)

Received by B Monroe

Carrier name

Logged in by MP (Initials) 7/1/96 (Date)

Matrix H2O

Shipping container in good condition?			NA____	Yes____ No____
Custody seals present on shipping container?	Intact____	Broken____	Yes____	No____
Custody seals on sample bottles?	Intact____	Broken____	Yes____	No____
Chain of custody present?			Yes✓	No____
Chain of custody signed when relinquished and received?			Yes✓	No____
Chain of custody agrees with sample labels?			Yes✓	No____
Samples in proper container/bottle?			Yes____	No____
Samples intact?			Yes✓	No____
Sufficient sample volume for indicated test?			Yes✓	No____
VOA vials have zero headspace?			NA____ Yes✓	No____
Trip Blank received?			NA____ Yes____	No✓
All samples received within holding time?			Yes✓	No____

Container temperature?____

pH upon receipt 7 pH adjusted <2 Check performed by: CR NA____

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted?____ Date contacted?____

Person contacted?____ Contacted by?____

Regarding?____

Comments: pH adjusted for Diesel analysis
pH for Volatile analysis Checked by Chemist

Corrective Action:____

SMPLRECD.CK

523/90572-90574

CHROMALAB, INC.

Environmental Services (SDB) (DOHS 1094)

SUBM #: 9607523 REP: GC
CLIENT: CET
DUE: 07/16/96
REF #: 28589

28589

Chain of Custody

DATE 7/1/96 PAGE 1 OF 1

PROJ. MGR: TERRY CARTER
COMPANY: CET
ADDRESS:
SAMPLERS (SIGNATURE): (PHONE NO.) (FAX NO.)

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel, TEPH (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520, B+F, E+F)	PCB (EPA 608, 8080)	PESTICIDES (EPA 608, 8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)		LUFT METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	TOTAL LEAD	EXTRACTION (TCLP, STLC)				NUMBER OF CONTAINERS
MW6	7/1	13:35	H_2O	HCl		✓	✓																		4
MW2	6/28	13:55	"	"		✓	✓																		4
MW3	6/28	14:20	"	"		✓	✓																		4

PROJECT INFORMATION

PROJECT NAME: DRYERS OAKLAND
PROJECT NUMBER: 3334-001
P.O. #:

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

TAT	STANDARD 5-DAY			24	48	72	OTHER

SPECIAL INSTRUCTIONS/COMMENTS:

10 DAY TAT

RELINQUISHED BY 1.
(SIGNATURE) (TIME)
ALEX WONG 7/1/96
(PRINTED NAME) (DATE)
CET
(COMPANY)

RELINQUISHED BY 2.
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RELINQUISHED BY 3.
(SIGNATURE) 7-1-96 (TIME)
(PRINTED NAME) (DATE)
Chromalab
(COMPANY)

RECEIVED BY 1.
(SIGNATURE) 1610 (TIME)
(PRINTED NAME) (DATE)
Chromalab
(COMPANY)

RECEIVED BY 2.
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RECEIVED BY (LABORATORY) 3
Mimie Pak 1815
(SIGNATURE) (TIME)
Mimie Pak 7-1-96
(PRINTED NAME) (DATE)
Chromalab
(LAB)

CHROMALAB, INC.

Environmental Services (SDB)

April 5, 1996 *Submission #:* 9603626

CET ENVIRONMENTAL SERVICES,INC

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534
Received: March 22, 1996

re: 3 samples for TPH - Diesel analysis.

Method: EPA 3550/8015M

Matrix: WATER *Extracted:* March 27, 1996
Sampled: March 22, 1996 *Run#:* 889 *Analyzed:* March 28, 1996

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
80903	MW-1	N.D.	50	N.D.	121	1
80904	MW-5	N.D.	50	N.D.	121	1
	Note: Hydrocarbons in the Diesel range do not match our hydrocarbon standard profiles. Quantified using our Diesel standard, amount is 70 ug/L.					
80905	MW-4	N.D.	50	N.D.	121	1

Dennis Mayugba
Chemist

Alex Tam
Semivolatiles Supervisor

510-652-7002 GC

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.
SAMPLE RECEIPT CHECKLIST

Client Name CET

Project DREVERS OAKLAND

Reference/Subm # 27043/9603626

Checklist completed by: CRowley 3/25/96 (Signature / Date)

Date/Time Received 3/22/96 (Date) 1525 (Time)

Received by B Monroe

Carrier name

Logged in by CR 3/22/96 (Initials / Date)

Matrix H2O

Shipping container in good condition?			NA____	Yes____ No____
Custody seals present on shipping container?	Intact____	Broken____	Yes____	No____
Custody seals on sample bottles?	Intact____	Broken____	Yes____	No____
Chain of custody present?			Yes✓	No____
Chain of custody signed when relinquished and received?			Yes✓	No____
Chain of custody agrees with sample labels?			Yes✓	No____
Samples in proper container/bottle?			Yes✓	No____
Samples intact?			Yes✓	No____
Sufficient sample volume for indicated test?			Yes✓	No____
VOA vials have zero headspace?			NA____	Yes✓ No____
Trip Blank received?			NA____	Yes____ No✓
All samples received within holding time?			Yes✓	No____

Container temperature? 11.6 °C

pH upon receipt 6 pH adjusted <2 Check performed by: CR NA____

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted?_____ Date contacted?_____

Person contacted?_____ Contacted by?_____

Regarding?_____

Comments: pH adjusted for Diesel analysis

Corrective Action:_____

SMPLRECD.CK

626/80903-80905

CHROMALAB, INC.

Environmental Services (SDB) (DOHS 1094)

SUBM #: 9603626 REP: GC
CLIENT: CET
DUE: 04/05/96
REF #: 27043

27043

Chain of Custody

DATE 3/22/96 PAGE 1 OF 1

PROJ. MGR. TERRY CARTIN
COMPANY CET
ADDRESS EMERYVILLE

SAMPLERS (SIGNATURE)

(PHONE NO.) 652-7001
(FAX NO.)

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520, B+F, E+F)	PCB (EPA 608, 8080)	PESTICIDES (EPA 608, 8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)		LUFT METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	TOTAL LEAD	EXTRACTION (TCLP, STLC)				NUMBER OF CONTAINERS
MW1	3/22	12:10	H_2O	HCl		✓	✓																		4
MW5	3/22	13:00	"	"		✓	✓																		4
MW4	3/22	14:20	"	"		✓	✓																		4

PROJECT INFORMATION

PROJECT NAME: DREYERS OAKLAND
PROJECT NUMBER: 3534
P.O. #:

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

TAT	STANDARD 5-DAY			24	48	72	OTHER

SPECIAL INSTRUCTIONS/COMMENTS:

10 DAY TAT

RELINQUISHED BY 1.
(SIGNATURE) (TIME)
Alex Work 3/22/96
(PRINTED NAME) (DATE)
CET
(COMPANY)

RELINQUISHED BY 2.
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RELINQUISHED BY 3.
(SIGNATURE) 1715 (TIME)
(PRINTED NAME) 3-22-96 (DATE)
(COMPANY)

RECEIVED BY 1.
(SIGNATURE) 1655 (TIME)
(PRINTED NAME) 3-22-96 (DATE)
(COMPANY)

RECEIVED BY 2.
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RECEIVED BY (LABORATORY) 3
(SIGNATURE) 1715 (TIME)
Chris Rowley 3/22/96
(PRINTED NAME) (DATE)
(LAB)

CHROMALAB, INC.

Environmental Services (SDB)

April 4, 1996 *Submission #:* 9603626

CET ENVIRONMENTAL SERVICES, INC

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534
Received: March 22, 1996

re: 1 sample for Gasoline and BTEX compounds analysis.

Method: EPA 5030/8015M/8020

Matrix: WATER
Sampled: March 22, 1996 *Run#:* 950 *Analyzed:* April 3, 1996

Spl# CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
80905 MW-4	820	3.4	N.D.	3.3	10
Reporting Limits	50	0.50	0.50	0.50	0.50
Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)	99.3	122	113	114	120

Billy Thach
Chemist

Marianne Alexander
Gas/BTEX Supervisor

510-852-7002 GC

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

April 4, 1996

Submission #: 9603626

CET ENVIRONMENTAL SERVICES,INC

Atten: Terry Carter

Project: DREYERS OAKLAND
Project#: 3534
Received: March 22, 1996

re: 1 sample for Gasoline and BTEX compounds analysis.
Method: EPA 5030/8015M/8020

Matrix: WATER
Sampled: March 22, 1996 *Run#:* 952 *Analyzed:* April 3, 1996

Spl# CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
80903 MW-1	N.D.	N.D.	N.D	N.D.	N.D.
Reporting Limits	50	0.50	0.50	0.50	0.50
Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)	98	106	108	111	112

Billy Thach
Chemist

Marianne Alexander
Gas/BTEX Supervisor

510-852-7002

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

April 4, 1996 *Submission #:* 9603626

CET ENVIRONMENTAL SERVICES,INC

Atten: Terry Carter

Project: DREYERS OAKLAND *Project#:* 3534
Received: March 22, 1996

re: 1 sample for Gasoline and BTEX compounds analysis.

Method: EPA 5030/8015M/8020

Matrix: WATER
Sampled: March 22, 1996 *Run#:* 952 *Analyzed:* April 3, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
80904	MW-5	22000	2100	260	2000	3500
Reporting Limits		1200	12	12	12	12
Blank Result		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)		97.7	106	108	111	112

Billy Thach
Chemist

Marianne Alexander
Gas/BTEX Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 9, 1996

Submission #: 9512540

CET ENVIRONMENTAL SERVICES, INC

Atten: Terry Carter

Project: OAKLAND DREYERS
Project#: 3534-001
Received: December 11, 1995

re: 6 samples for TPH - Diesel analysis.
Method: EPA 3550/8015M

Matrix: WATER
Sampled: December 8, 1995
Run#: 390
Extracted: December 14, 1995
Analyzed: December 14, 1995

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
76902	MW1	N.D.	50	N.D.	78	1
76903	MW2	N.D.	50	N.D.	78	1

Matrix: WATER
Sampled: December 8, 1995
Run#: 390
Extracted: December 14, 1995
Analyzed: December 15, 1995

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
76904	MW3	N.D.	50	N.D.	78	1
76905	MW4	N.D.	50	N.D.	78	1
76906	MW5	N.D.	50	N.D.	78	1
76907	MW6	N.D.	50	N.D.	78	1

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

December 21, 1995 *Submission #:* 9512540

CET ENVIRONMENTAL SERVICES,INC

Atten: Terry Carter

Project: OAKLAND DREYERS *Project#:* 3534-001
Received: December 11, 1995

re: 6 samples for Gasoline and BTEX compounds analysis.
Method: EPA 5030/8015M/8020

Matrix: WATER
Sampled: December 8, 1995 *Run#:* 385 *Analyzed:* December 14, 1995

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	DIL'N Factor
76903	MW2	37000	1400	850	2700	9700	~~100~~

Matrix: WATER
Sampled: December 8, 1995 *Run#:* 397 *Analyzed:* December 12, 1995

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	DIL'N FACTOR
76902	MW1	N.D.	N.D.	N.D.	N.D.	N.D.	
76904	MW3	8100	1600	40	70	91	100
76905	MW4	840	N.D.	N.D.	4.2	N.D.	

Note: Estimated concentration for gasoline due to overlapping fuel pattern.

Matrix: WATER
Sampled: December 8, 1995 *Run#:* 397 *Analyzed:* December 13, 1995

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	DIL'N FACTOR
76906	MW5	21000	2700	200	2400	4300	100
76907	MW6	1100	23	N.D.	69	52	

Reporting Limits	50	0.5	0.5	0.5	0.5
Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)	90	104	105	110	112

Marianne Alexander
Gas/BTEX Supervisor

Chip Poalinelli
Operations Manager

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

540/76902-76907

CHROMALAB, INC.

Environmental Services (SDB) (DOHS 1094)

SUBM #: 9512540 REP:
CLIENT: CET
DUE: 12/26/95
REF #:25447

25447

Chain of Custody

DATE 12/8/95 PAGE 1 OF 1

PROJ. MGR TERRY CARTON
COMPANY CET
ADDRESS EMERYVILLE
652-7001
SAMPLERS (SIGNATURE) (PHONE NO.)
(FAX NO.)

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel, TEPH (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520, B+F, E+F)	PCB (EPA 608, 8080)	PESTICIDES (EPA 608, 8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)		LUFT METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	TOTAL LEAD	EXTRACTION (TCLP, STLC)				NUMBER OF CONTAINERS
MW1	12/8	12:30	H_2O	HCl		✓	✓																		4
MW2	12/8	13:50	"	"		✓	✓																		4
MW5	12/8	14:15	"	"		✓	✓																		4
MW4	12/8	15:10	"	"		✓	✓																		4
MW3	12/8	15:50	"	"		✓	✓																		4
MW6	12/8	16:55	"	"		✓	✓																		4

PROJECT INFORMATION

PROJECT NAME: OAKLAND DRY(PB)
PROJECT NUMBER: 3554-001
P.O. #

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	
HEAD SPACE	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

TAT	STANDARD 5-DAY			24	48	72	OTHER

SPECIAL INSTRUCTIONS/COMMENTS:

10 DAY TAT

RELINQUISHED BY 1.
(SIGNATURE) (TIME)
ALEX WORK 12/11/95
(PRINTED NAME) (DATE)
CET FAX
(COMPANY)

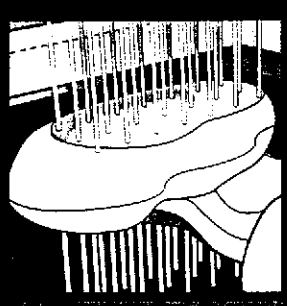
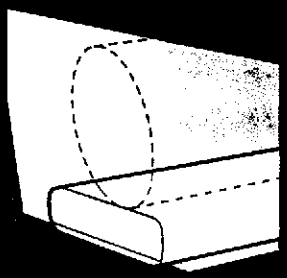
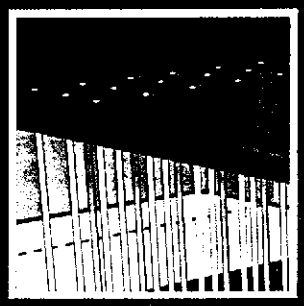
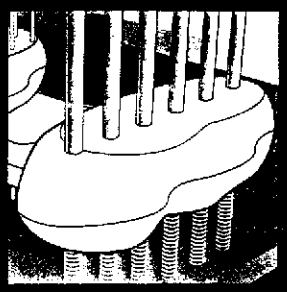
RELINQUISHED BY 2.
(SIGNATURE) 1753 (TIME)
G Morrow 12/11/95
(PRINTED NAME) (DATE)
Chromalab
(COMPANY)

RELINQUISHED BY 3
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RECEIVED BY 1.
(SIGNATURE) 1750 (TIME)
G Morrow
(PRINTED NAME) (DATE)
Chromalab
(COMPANY)

RECEIVED BY 2.
(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)
(COMPANY)

RECEIVED BY (LABORATORY) 3
Mimie Park 1753
(SIGNATURE) (TIME)
Mimie Park 12/11/95
(PRINTED NAME) (DATE)
Chromalab
(LAB)

Oxygen Release Compound, ORC

Faster, Lower Cost Site Closure

ORC

Releases

Oxygen

Slowly to

Enhance

Aerobic

Bioremediation

REGENESIS

COST COMPARISON

ORC applications can be more cost-effective than other alternative technologies and can inexpensively restore contaminated properties to market value. Treatment with ORC is typically:

- 1/4 to 1/2 the cost of air sparging with vapor containment
- equal to or less than the cost of excavation, hauling and disposal of residual hydrocarbons from the floor of the UST excavation
- less than long-term monitoring costs of unassisted natural attenuation sites
- 1/4 the cost of a pump and treat system

For a small incremental expense, excess monitoring wells or bore holes used for sampling can be converted to ORC source points. For example, only $200 turns a 2" x 10' assessment bore hole into an ORC remediation source. Just $375 converts an excess 4" x 10' monitoring well into an on-going ORC remediation source.

Compared with Air Sparging plus Vapor Containment

An ORC application is typically much more cost effective than air sparging with vapor containment. The following includes a summary of costs comparing ORC to air sparging systems on various sites*:

Site	AS/SVE	ORC	Savings	% Savings
Oklahoma	$158,000	$46,000	$112,000	70%
California	180,000	80,000	100,000	55%
Alabama	99,000	26,000	73,000	74%

*All values were derived independently by the sites' consultants. The costs are full systems costs with the objective of site closure.

Compared with Monitoring Only

ORC treatments, if properly applied, can result in site closure in as little as one year. This can also be more cost effective than only monitoring the site and relying on unassisted natural attenuation. Applying ORC can restore property to market value and avoid long term monitoring costs as well as potential future liability*:

Site	Monitor Only	ORC	Savings	% Savings
Oklahoma	$54,000	$46,000	$ 8,000	15%
Alabama	54,000	26,000	28,000	52%

*All values were derived independently by the sites' consultants.

OTHER APPLICATION OPTIONS

ORC is a flexible technology that can be used under a variety of circumstances to meet cleanup objectives. For example, ORC can be used for:

- "Brownfield" remediation where fast and inexpensive land use restoration is needed
- oxygenation of biopiles
- remote sites with limited access, such as pipelines or railroads
- treatment of sediments with minimal disturbance
- residential cleanups, such as home heating oil tank leaks
- odor control by preventing the formation of hydrogen sulfide
- manufactured gas plant clean up

REGENESIS

THE COMPANY

REGENESIS was formed to continue the development and marketing of Oxygen Release Compound (ORC®). ORC was first sold commercially in 1995 after three years of development. The inventors originally began working on a similar product used to facilitate the growth of plants in oxygen-poor soils. Formulations of ORC more appropriate to bioremediation applications were successfully tested in the laboratory and followed by several field demonstrations.

REGENESIS strives to provide quality products augmented with extensive technical support and customer service. The ORC technology is a unique and innovative breakthrough in the preservation of one of our most important resources—groundwater.

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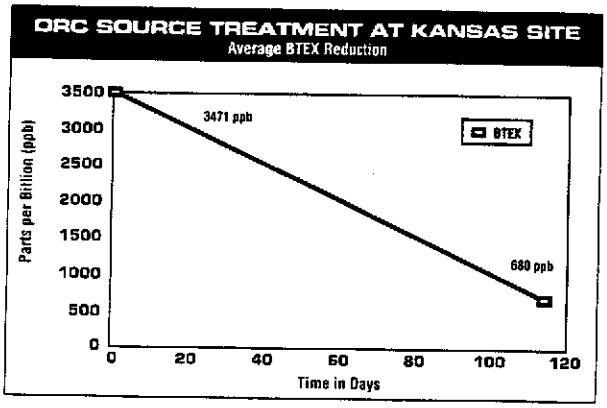
ORC has been used on hundreds of sites across the United States and Canada for groundwater and soil remediation. The field results continuously indicate rapid and substantial contaminant degradation after ORC installation.

1 Saturated Zone Source Treatment

The ORC Saturated Zone Source Treatment application is a cost effective method of attacking the contaminants at the source. This will in turn cause the plume to collapse:

Figure: 1



At a site in Great Bend, Kansas, 2325 pounds of ORC were installed in 118 bore holes across a large site consisting of two corner gas stations. BTEX, MTBE, and naphthalene concentrations were reduced in correlation with an increase in dissolved oxygen. BTEX reductions are depicted in Figure 1. The cost of ORC on this site was $20,900. Other recent ORC source treatment results include:

- At a site in New Jersey, 180 pounds of ORC were installed in 44 Geoprobe® points on 10 foot centers in the core of a typical dissolved phase hydrocarbon plume; the application reduced BTEX 81% and benzene 82% after 121 days
- In Washington state, 900 pounds of ORC were installed in 15 four-inch diameter augered holes; after three months there was significant contaminant degradation at the sentinel monitoring wells (95% BTEX reduction) indicating a shrinkage of the plume
- At a site in Michigan, BTEX was reduced 39% and benzene was reduced 65% after 315 days which correlated with a rise in the microbial degrader populations; this site is slated for risk-based closure

Lower flap for applications graphic

REGENESIS

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APPLICATIONS

ORC can be used to meet a variety of remediation objectives. It may be applied to achieve MCLs, or ORC can be part of a risk reduction protocol—attenuating a dissolved phase hydrocarbon mass to acceptable levels at downgradient monitoring points.

1 Saturated Zone Source Treatment

- Create a highly oxygenated zone in the "heart of the plume" quickly, easily and at a low cost
- Collapse the plume by remediating the source

The ORC Saturated Zone Source Treatment targets dissolved phase contamination plus sorbed material within the saturated zone and capillary fringe. In this low-cost application, ORC powder is mixed with water to create a smooth slurry that is pumped or poured into narrow, inexpensive direct-push or augered bore holes that have been placed in an array in and around the contaminant source area.

A concentrated ORC slurry can be used to backfill the bore holes, similar to a grout or cement. Dilute solutions of the ORC slurry can be pumped under pressure to force the mixture into the aquifer and increase the radius of influence.

2 Excavated Tank Treatment

- Eliminate over-excavation
- Protect against recontamination from rising water table; prevent smear zone formation

The ORC Excavated Tank Treatment offers a unique, one-time opportunity to provide a large treatment area across the floor of a tank excavation. This eliminates over-excavation in pursuit of residual contaminants. Applying a long-lasting oxygen source into the system creates a zone of remedial activity which degrades tank area contaminants, eliminating the source of future groundwater contamination.

After tank removal and remedial excavation, pure ORC powder is physically mixed with low level contaminated soil. Typically, 0.1% to 1% of ORC is used in the soil on a w/w basis. As seasonal fluctuations occur in the water table, contact with the ORC treated area promotes biodegradation. This protects clean groundwater from residual sorbed material and protects clean fill from contaminated groundwater.

3 Localized Remediation in or Near Existing Wells/Monitoring Well Conversion

- Surround existing wells with ORC slurry in direct push holes or place ORC Filter Socks in wells
- Cost-effectively treat residual, low level contamination
- Eliminate monitoring wells that may need ongoing attention by converting them to remediation wells

Cost effective site closure can be difficult using active, engineered cleanup systems and natural attenuation is a very slow process. ORC provides the option of a low cost, passive system to significantly enhance natural attenuation leading to faster more cost effective site closure.

When utilizing existing wells, ORC is mixed with a carrier matrix and contained in inert filter socks. A string of ORC filter socks is lowered into the well through the length of the contaminated saturated zone where contact with groundwater releases the oxygen. When exhausted the socks can be removed and, if necessary, replaced with new socks.

In addition, a slurry of pure ORC and water can be used to backfill bore holes which were originally drilled during the assessment phase. Thus, bore holes used for sampling become remediation points at a small incremental expense.

4 ORC Oxygen Barrier for Plume Control

- Control leading edge of plume moving toward receptors
- Avoid property line liability

ORC can be configured to form an "oxygen barrier" across a contaminated plume. A properly placed row of wells or bore holes containing ORC can cut off the plume in the oxygenated zone. This application may be particularly appropriate on sites where property line liability issues are of concern.

OXYGEN RELEASE COMPOUND, ORC®

Bioremediation

Bioremediation is a process that harnesses microbial metabolism to degrade hazardous substances. Microbes break down a wide variety of organic compounds to obtain energy and materials for growth. Petroleum hydrocarbons are among the organic compounds that microbes metabolize transforming the compounds into harmless by-products–carbon dioxide and water. All microbes need minerals and water to survive; most microbes are aerobic and require oxygen.

Oxygen is the Limiting Factor

Oxygen is often the limiting factor for the aerobic microbes that perform bioremediation. Minerals and water are generally present in sufficient quantities, however, oxygen is not. Without adequate oxygen, contaminant degradation will either cease or may proceed by much slower anaerobic (oxygen-free) processes. Generally, aerobic degradation occurs 10 to 100 times faster than anaerobic processes.

ORC —The Technology

Oxygen Release Compound (ORC®) is a patented formulation of magnesium peroxide that slowly releases molecular oxygen when hydrated, as shown by the following equation:

$$MgO_2 + H_2O \longrightarrow {}^1/_2O_2 \uparrow + Mg(OH)_2$$

ORC's unique time release technology delivers oxygen over an extended period of time, lasting about six months, and does not require continuous mechanical operation or maintenance.

Oxygen introduced by ORC promotes microbial growth and maximizes the ability of aerobic microbes to degrade contaminants. When strategically applied, ORC treatments can remediate sites faster and lead to more rapid site closure, at substantially lower costs than alternative systems. For example, an ORC treatment is typically two-thirds to one-half the cost of conventional alternatives, and can close the site in as little as one year.

Features

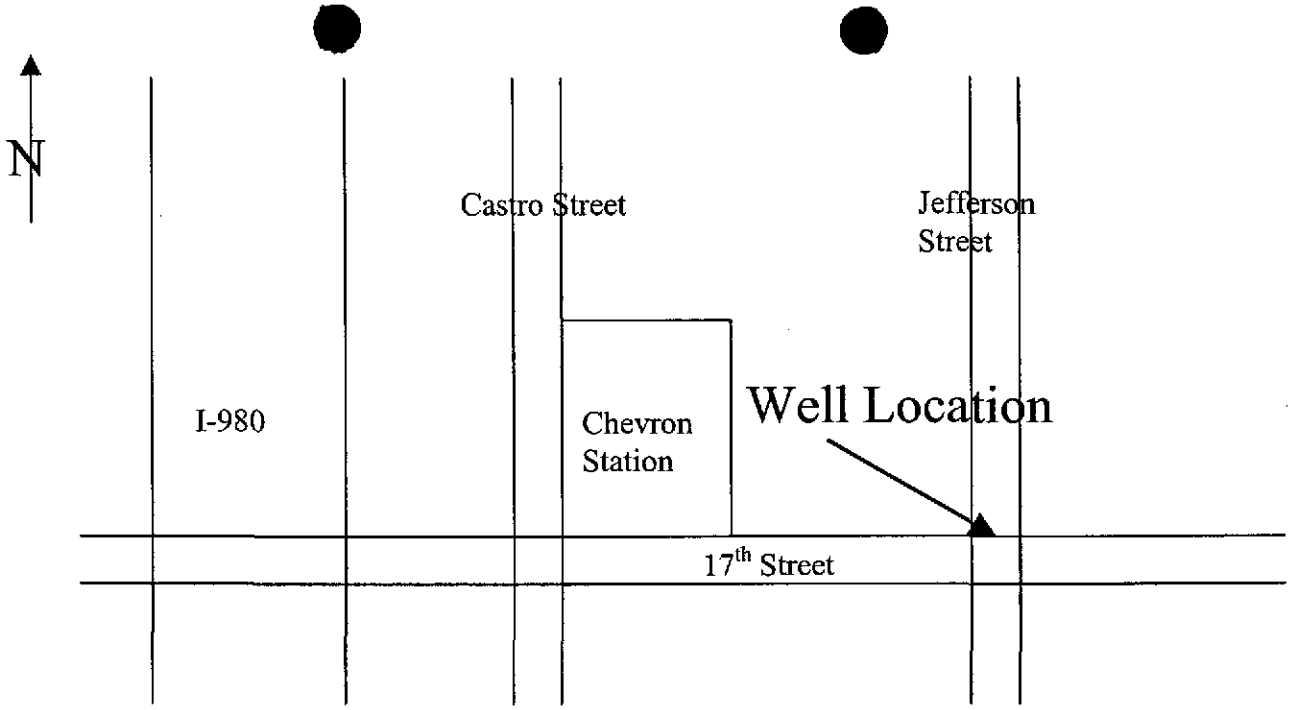
- ORC is activated by moisture
- Patented technology controls and prolongs the release of oxygen without external coating
- Generates higher dissolved oxygen levels than possible with air
- Moderate pH levels are maintained
- Long, stable shelf life

Benefits

- Provides a passive, cost effective, long-term oxygen source
- Converts to an insoluble, harmless substance—magnesium hydroxide
- Ideal for in-situ remediation where other methods are impractical
- Will not disturb the dimensions of the contaminant plume or volatilize pollutants

Target Contaminants for ORC

ORC can be used to enhance the bioremediation of any aerobically degradable compounds. These include BTEX, gasoline and diesel range organics, PAHs, vinyl chloride, PCP, and MTBE.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Well Location
17th Street