



# Industrial Compliance

9719 Lincoln Village Drive, Suite 310 Sacramento, CA 95827 916/369-8971 FAX 916/369-8370

December 8, 1992

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
Department of Environmental Health  
Hazardous Materials Division  
80 Swan Way, Room 200  
Oakland, California 94621

**Subject: Fourth Quarter 1992 Groundwater Monitoring Report  
Southern Pacific Transportation Company  
5th and Kirkham Streets Site  
Oakland, California  
IC Project No. 05032**

Dear Ms. Eberle:

Industrial Compliance (IC), on behalf of Southern Pacific Transportation Company (SPTCo), is submitting the ~~\_\_\_\_\_~~ for the SPTCo property located at 5<sup>th</sup> and Kirkham Streets in Oakland, California (see Figure 1). Work was performed in accordance with the guidelines presented in the Alameda County Health Care Services Agency (the County) letter dated June 21, 1991, which required groundwater monitoring at this site. Quarterly groundwater sampling of these wells began in the third quarter of 1991.

### Groundwater Sampling

There are currently four wells onsite (MW-1, MW-3, MW-4 and MW-6). Well locations are shown on Figure 2. Wells MW-1, MW-3 and MW-4 were installed adjacent to former underground storage tank (UST) locations. The monitoring well MW-6 was not associated with the UST's, and was therefore not included in the quarterly sampling. At the time of sampling, the traffic box housing the well MW-1 had been damaged, apparently during resurfacing activities at the site. It appeared as though approximately 6 inches of debris had entered the well casing. ~~For this reason, the well was not sampled. The traffic box was repaired on November 5, 1992.~~

Groundwater samples were collected on November 3, 1992. Prior to sampling, groundwater elevations were measured with an electronic water level probe to calculate saturated well volumes and to generate a site groundwater gradient map. This data is included in the purge characterization and sample logs presented as Attachment A. Approximately 3 well volumes were purged from each well using a submersible pump. Prior to initial use and between each well, sampling and purging equipment was decontaminated by scrubbing with a water and trisodium phosphate (TSP) solution, and rinsing with potable water. During purging, the groundwater pH, temperature, and electrical conductivity were measured after purging each well volume and recorded on a purge characterization and sample log form. Data from the purge characterization and sample logs is presented on Table 1; original forms are presented as Attachment A.

05032-7.LTR/D:KEYDATA/LTR-MEM

*Dedicated to solving your environmental problems.*

A Subsidiary of SP Environmental Systems, Inc.



December 8, 1992  
Alameda County Health Care Services Agency (05032)  
Ms. Jennifer Eberle  
Page 2

Samples were collected with disposable polyethylene bailers and transferred into laboratory supplied containers. Samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) using Method P/T-BX-Tri-regional, and total petroleum hydrocarbons as diesel (TPH-diesel) using Method TPH-D-Tri-regional.

**Analytical Results**

The results of analyses have been summarized in Table 2. The analytical laboratory reports are included as Attachment B.

Unidentified hydrocarbons in the diesel range (C11-C30) were detected in MW-3 at a concentration of 930 µg/L and in MW-4 at a concentration of 120 µg/L. Benzene was detected in the sample from MW-3 at a concentration 2.3 µg/L. BTEX was not detected in the sample from MW-4.

**Groundwater Gradient**

On November 3, 1992, depth to water measurements were collected from the 4 wells at the site for the purpose of measuring the hydraulic gradient. The data collected is presented in Table 3. The hydraulic gradient direction is calculated to be in a northerly direction (see Figure 3) with a slope of 0.0035 (18.4 feet/mile).

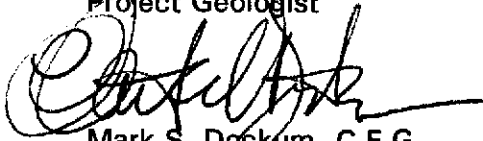
If you have any questions concerning this report, please contact Mr. Walter Floyd at (916) 369-8971.

Sincerely,



Walter D. Floyd  
Project Geologist

*Seal?  
exp date?*



Mark S. Dockum, C.E.G.  
Project Manager

Attachments

cc: Mr. Lester Feldman

**Table 1**  
**Purge Characterization Data**  
**Southern Pacific Transportation Company**  
**5th & Kirkham Streets Property**  
**Oakland, California**  
**Samples Collected November 1992**  
**IC Project No. 05032**

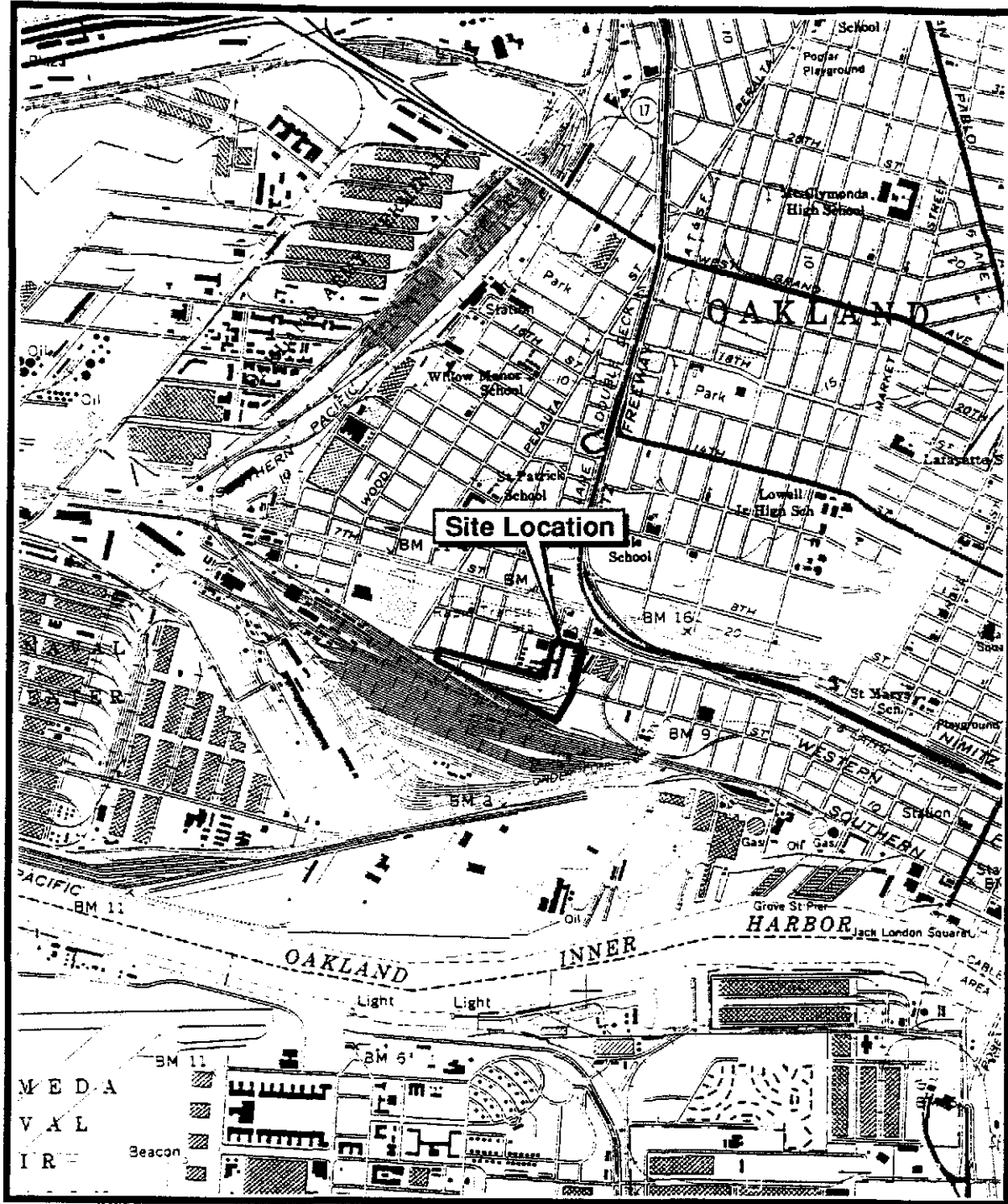
| Well <sup>a</sup> | Purged Volume (Gallons) | pH   | Electrical Conductivity (µmhos) | Temperature (°F) |
|-------------------|-------------------------|------|---------------------------------|------------------|
| MW-3              | 11                      | 8.6  | 9200                            | 68.2             |
|                   | 22                      | 6.8  | 1438                            | 68.3             |
|                   | 33                      | 6.7  | off-scale                       | 67               |
| MW-4              | 10                      | 6.91 | 3620                            | 68.4             |
|                   | 20                      | 6.82 | 4930                            | 67.7             |
|                   | 30                      | 6.94 | 8070                            | 69.2             |

<sup>a</sup> See Figure 2 for approximate well locations.

**Table 3**  
**Depth to Groundwater Measurements**  
**Southern Pacific Transportation Company**  
**5th & Kirkham Streets Property**  
**Oakland, California**  
**Measurements Taken on November 3, 1992**  
**IC Project No. 05032**


| Well <sup>a</sup> | Depth to Water (feet) | PVC Casing Elevation <sup>b</sup> | Groundwater Elevation <sup>c</sup> |
|-------------------|-----------------------|-----------------------------------|------------------------------------|
| MW-1              | 3.44                  | 6.22                              | 2.78                               |
| MW-3              | 4.00                  | 6.53                              | 2.53                               |
| MW-4              | 5.76                  | 7.50                              | 1.74                               |
| MW-6              | 3.40                  | 5.78                              | 2.38                               |

- a See Figure 2 for approximate monitoring well locations.
- b Elevations were measured by a licensed surveyor. Units are in feet above mean sea level.
- c Measured in feet above mean sea level.



Approximate Scale in Feet  
 0 2000'




Reference:  
 USGS 7.5 Minute Series (Topographic)  
 Oakland West Quadrangle  
 California

|   |                |
|---|----------------|
|  <b>Industrial Compliance</b><br>A Subsidiary of SP Environmental Systems, Inc. |                |
| PROJECT NO: 05032   | DATE: 05/26/92 |
| DRAWN BY: PD  | CHECKED BY: WF |

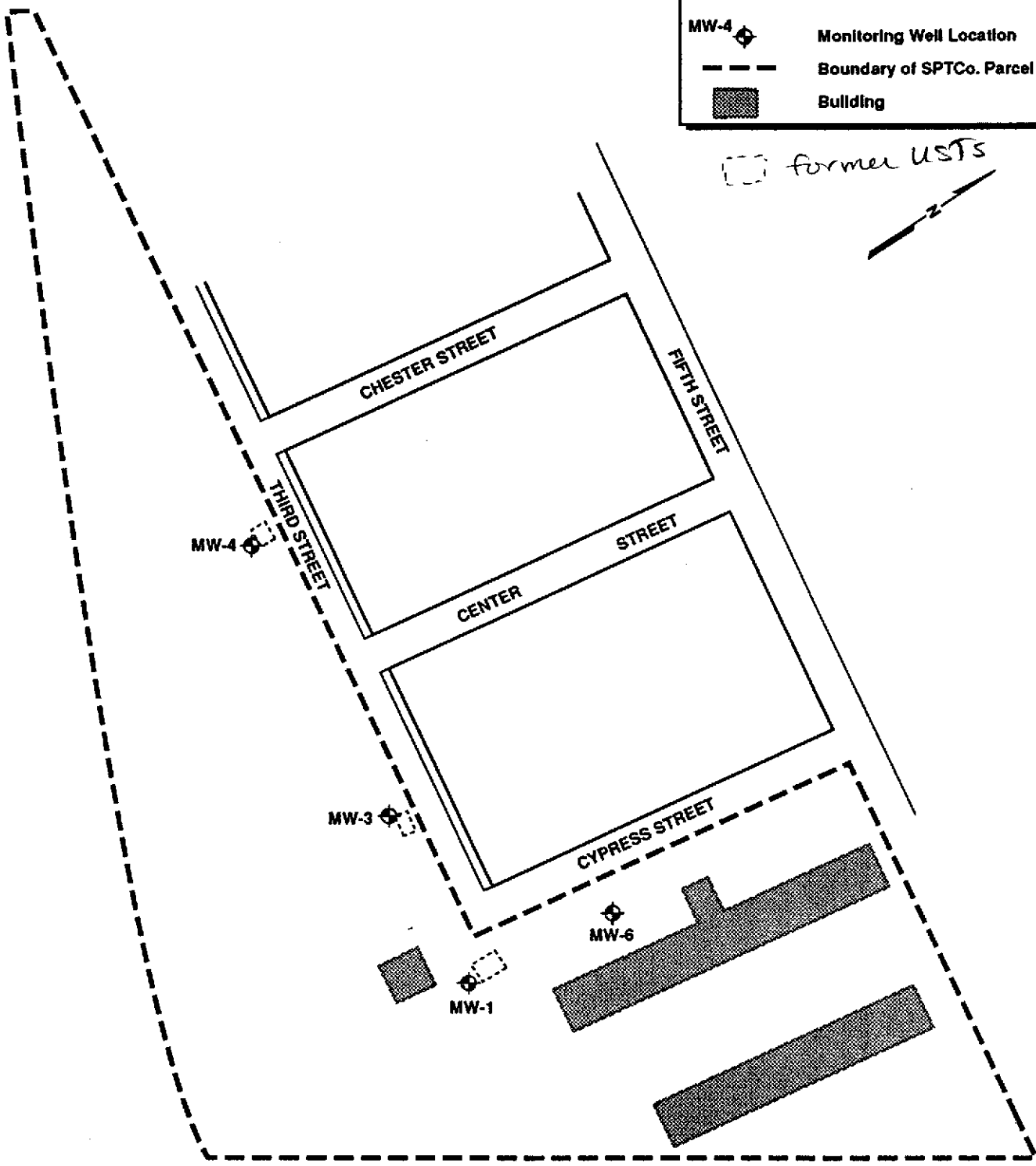
**SITE LOCATION MAP**  
**SOUTHERN PACIFIC TRANSPORTATION CO.**  
**5TH & KIRKHAM STREETS PROPERTY**  
**OAKLAND, CALIFORNIA**


|                    |
|--------------------|
| FIGURE:<br>1       |
| SCALE:<br>as shown |

**LEGEND**

- MW-4  Monitoring Well Location
-  Boundary of SPTCo. Parcel
-  Building

*former USTs*



Approx. Scale in Feet  
 0  180'



**Industrial Compliance**  
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**SITE MAP**  
**SOUTHERN PACIFIC TRANSPORTATION CO.**  
**5TH & KIRKHAM PROPERTY**  
**OAKLAND, CALIFORNIA**

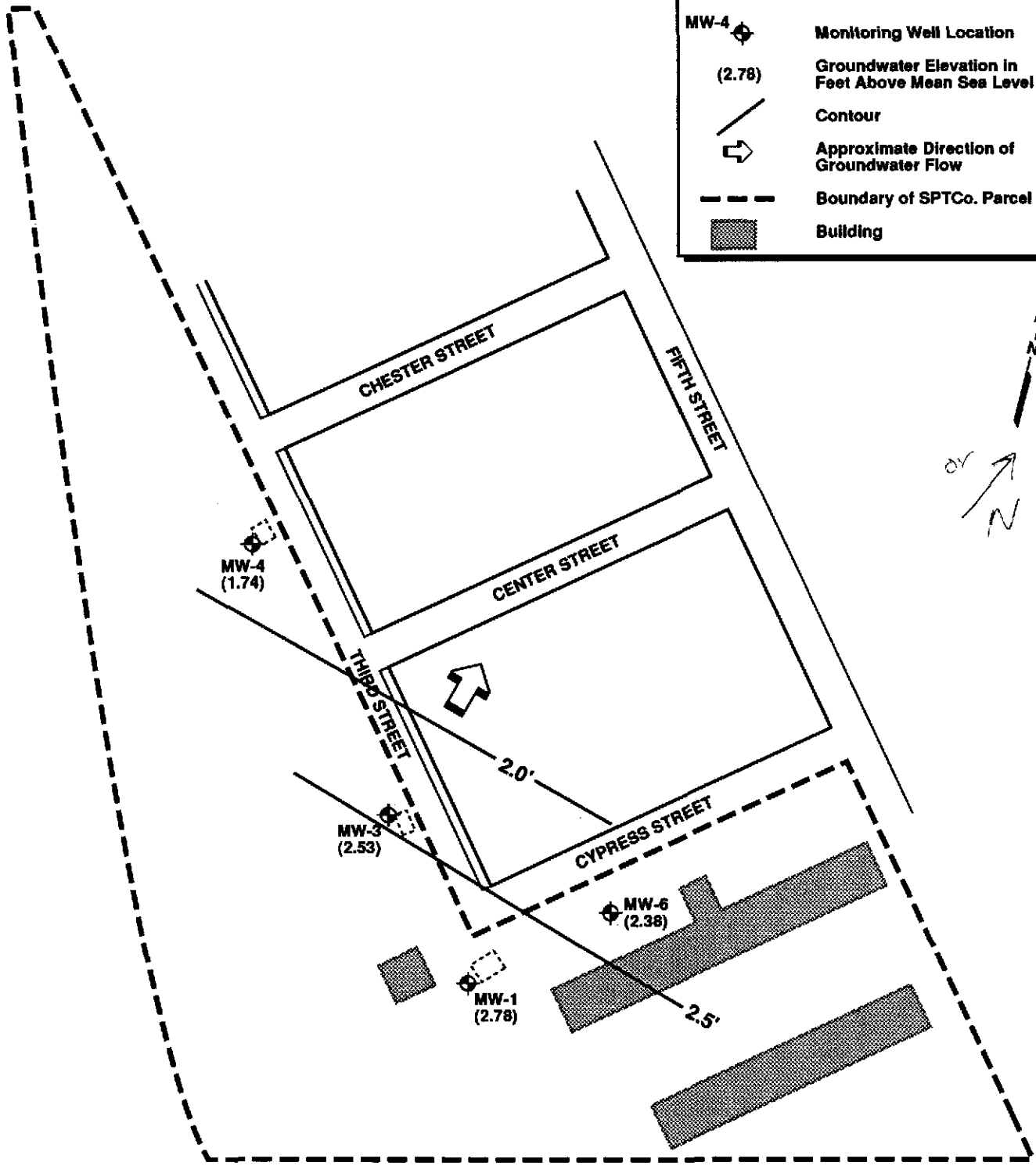
**FIGURE:**  
 2

**SCALE:**  
 as shown

|                   |                |
|-------------------|----------------|
| PROJECT NO: 05032 | DATE: 08/31/92 |
| DRAWN BY: PD      | CHECKED BY: WF |

**LEGEND**

- MW-4  Monitoring Well Location
- (2.78) Groundwater Elevation in Feet Above Mean Sea Level
-  Contour
-  Approximate Direction of Groundwater Flow
-  Boundary of SPTCo. Parcel
-  Building



Approx. Scale In Feet  
0 180'

**Industrial Compliance**  
A Subsidiary of SP Environmental Systems, Inc.

PROJECT NO: 05032    DATE: 12/07/92  
DRAWN BY: PD    CHECKED BY: WF

**GROUNDWATER GRADIENT MAP  
SOUTHERN PACIFIC TRANSPORTATION CO.  
5TH & KIRKHAM PROPERTY  
OAKLAND, CALIFORNIA**

FIGURE:  
**3**  
SCALE:  
as shown

**ATTACHMENT A**  
**PURGE CHARACTERIZATION AND SAMPLE LOGS**





Industrial Compliance  
A Subsidiary of SP  
Environmental Systems, Inc.



PURGE CHARACTERIZATION AND SAMPLE LOG

Project Number: 05032 Project Name: BOBO'S Date: 11/3/92  
 Well Number: MEB Sampler: MEA - ~~IB~~ Weather: 20°  
sample

|                    |      |      |            |      |
|--------------------|------|------|------------|------|
| Military Time      | 1020 | 1025 | 1030       | 1040 |
| Gallons Purged     | 10   | 20   | 33         |      |
| Purge Rate         |      |      |            |      |
| pH                 | 8.6  | 6.8  | 6.7        |      |
| Conductivity       | 9200 | 1438 | 0.155 mg/l |      |
| Temperature (C)    | 68.2 | 68.3 | 67.0       |      |
| Salinity (0/00)    |      |      |            |      |
| Turbidity          |      |      |            |      |
| Color              |      |      |            |      |
| Water Level Casing | 4.00 |      |            |      |
| Calibration        | pH:  |      |            |      |

|   |      |
|---|------|
| Depth to bottom (DB):                     | 21.5 |
| Depth to water:                           | 4.00 |
| Height of water column (H) = DB - BW:     | 17.5 |
| One casing volume (CV) = H x multiplier:  | 11.4 |
| Three casing volumes (3CV):               | 34.2 |
| Multipliers = 2" well = 0.16 gallons/foot |      |
| 4" well = 0.65 gallons/foot               |      |
| 6" well = 1.47 gallons/foot               |      |
| 8" well = 2.61 gallons/foot               |      |
| S.C.:                                     |      |

| Sample #  | Quantity | Volume | Type | Preserv. | Analysis | Tub | Sample Equip. | Purge Equip. | Field Comments |
|-----------|----------|--------|------|----------|----------|-----|---------------|--------------|----------------|
| SA        | -        | 1040   |      |          | gpc      |     |               |              |                |
| SB        | -        | 1160   |      |          |          |     |               |              |                |
| Cleaning: |          |        |      |          |          |     |               |              |                |
| Comments: |          |        |      |          |          |     |               |              |                |

Sampler's Signature: \_\_\_\_\_



Industrial Compliance  
A Subsidiary of SP  
Environmental Systems, Inc.

PURGE CHARACTERIZATION AND SAMPLE LOG

Project Number: 05032 Project Name: BOBOS Date: 11/13/92  
 Well Number: MW-4 Sampler: BML - MEA Weather: 70° Sunny/Clear

|                    |      |      |      |  |      |  |  |  |  |
|--------------------|------|------|------|--|------|--|--|--|--|
| Military Time      | 0920 | 0925 | 0930 |  | 9:40 |  |  |  |  |
| Gallons Purged     | 10   | 20   | 30   |  | S    |  |  |  |  |
| Purge Rate         |      |      |      |  | A    |  |  |  |  |
| pH                 | 6.91 | 6.82 | 6.94 |  | M    |  |  |  |  |
| Conductivity       | 3620 | 4930 | 8070 |  | P    |  |  |  |  |
| Temperature (C)    | 68.4 | 67.7 | 69.2 |  | L    |  |  |  |  |
| Salinity (0/00)    |      |      |      |  | E    |  |  |  |  |
| Turbidity          |      |      |      |  |      |  |  |  |  |
| Color              |      |      |      |  |      |  |  |  |  |
| Water Level Casing |      |      |      |  |      |  |  |  |  |
| Cellbration        |      |      |      |  |      |  |  |  |  |

Depth to bottom (DB): 21.5'  
 Depth to water: 5.76  
 Height of water column (H) = DB - BW: 15.74  
 One casing volume (CV) = H x multiplier: 10.23  
 Three casing volumes (3CV): 30.7 gal  
 Multipliers = 2" well = 0.16 gallons/foot  
 4" well = 0.65 gallons/foot  
 6" well = 1.47 gallons/foot  
 8" well = 2.61 gallons/foot  
 S.C.:

| Sample #  | Quantity | Volume          | Type  | Preserv.                       | Analysis | Lab | Sample Equip.   | Purge Equip. | Field Comments |
|-----------|----------|-----------------|-------|--------------------------------|----------|-----|-----------------|--------------|----------------|
| PW 4      | 3        | 40ml            | VOA   | HCL                            | 8015 D   | Evo | 9:40            |              |                |
| MW 4      | 1        | <del>40ml</del> | Amber | H <sub>2</sub> SO <sub>4</sub> | 8015 D   | Evo |                 |              |                |
| MW 4A     | 3        | 40ml            | VOA   |                                | 8015     |     | TIME            |              |                |
|           | 1        | <del>40ml</del> | Amber |                                | 8020     |     | <del>9:40</del> |              |                |
|           |          |                 |       |                                |          |     | 10:00           |              |                |
| Cleaning: |          |                 |       |                                |          |     |                 |              |                |
| Comments: |          |                 |       |                                |          |     |                 |              |                |

8020 - BTEX

Sampler's Signature: \_\_\_\_\_



FIELD OBSERVATION DATA SHEET

Babas

PROJECT NO. \_\_\_\_\_ EMPLOYEE(S) NO. \_\_\_\_\_

| Location No. | Date |    |    | Military Time |      | Code Number | Measurement | All Msmt (product) | Comments |
|--------------|------|----|----|---------------|------|-------------|-------------|--------------------|----------|
|              | M    | D  | Y  | Hr.           | Min. |             |             |                    |          |
| 1 MW6        | 11   | 13 | 92 | 14            | 00   | 0           | 3.40        |                    | TD       |
| 2 MW1        | 11   | 13 | 92 | 7             | 50   | 0           | 3.44        |                    | 19. -    |
| 3 MW3        | 11   | 13 | 92 | 8             | 00   | 0           | 4.00        |                    | 21.56    |
| 4 MW4        | 11   | 13 | 92 | 8             | 10   | 0           | 5.76        |                    | 21.51    |
| 5            |      |    |    |               |      |             |             |                    |          |
| 6            |      |    |    |               |      |             |             |                    |          |
| 7            |      |    |    |               |      |             |             |                    |          |
| 8            |      |    |    |               |      |             |             |                    |          |
| 9            |      |    |    |               |      |             |             |                    |          |
| 10           |      |    |    |               |      |             |             |                    |          |
| 11           |      |    |    |               |      |             |             |                    |          |
| 12           |      |    |    |               |      |             |             |                    |          |
| 13           |      |    |    |               |      |             |             |                    |          |
| 14           |      |    |    |               |      |             |             |                    |          |
| 15           |      |    |    |               |      |             |             |                    |          |
| 16           |      |    |    |               |      |             |             |                    |          |
| 17           |      |    |    |               |      |             |             |                    |          |
| 18           |      |    |    |               |      |             |             |                    |          |
| 19           |      |    |    |               |      |             |             |                    |          |
| 20           |      |    |    |               |      |             |             |                    |          |
| 21           |      |    |    |               |      |             |             |                    |          |
| 22           |      |    |    |               |      |             |             |                    |          |
| 23           |      |    |    |               |      |             |             |                    |          |
| 24           |      |    |    |               |      |             |             |                    |          |
| 25           |      |    |    |               |      |             |             |                    |          |

Code

- 0 Depth Water, Feet (TOC)
- 1 Water Level Elevation, Feet (MSL)
- 2 Depth Water, Feet (Cristy Box)
- 3 Depth Water/Product, Feet (TOC)
- 4 Water/Product Elevation, Feet (MSL)
- 5 Depth Water/Product, Feet (Cristy)
- 6 Oil Flow Rate, GPM
- 7 Cumulative Oil, Gallons
- 20 Pumping Depth, Feet
- 21 Pumping Rate, GPM
- 22 Pressure, PSI
- 23 Flow Rate, GPM
- 24 Stream Flow, CFS
- 25 Volume, mi
- 27 pH, Water Sample
- 28 pH, Probe (Lowered into Well)
- 29 Air Temperature (°C)
- 30 Water Temperature (°C)
- 31 Residual Chlorine
- 32 Dissolved Oxygen, mg/l
- 33 Specific Conductance, µmhos/cm
- 34 Nitrogen as Ammonia, mg/l
- 35 Nitrate Nitrogen, mg/l
- 36 Precipitation, Inches/ Day
- 39 Cumulative Gallons
- 40 Cumulative Acre-Feet

**ATTACHMENT B**  
**ANALYTICAL LABORATORY REPORTS**



November 16, 1992  
ENSECO CAL LAB PROJECT NUMBER: 066702  
PO/CONTRACT: 05032

Walter Floyd  
Industrial Compliance  
9719 Lincoln Village Dr.  
Suite 310  
Sacramento, CA 95827

Dear Mr. Floyd:

This report contains the analytical results for the four aqueous samples which were received under chain of custody by Enseco Cal Lab on 05 November 1992. These samples are associated with your BoBo's Project #05032.

The case narrative is an integral part of this report.

If you have any questions, please call me at (916) 374-4300.

Sincerely,



Bonnie McNeill  
Project Manager

lye

---

**TABLE OF CONTENTS**

**ENSECO CAL LAB PROJECT NUMBER 066702**

Case Narrative

Enseco Cal Lab's Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

Benzene, Toluene, Ethyl Benzene and Xylenes - Method 602

**Includes Samples: 1 through 4**

Sample Data Sheets

Method Blank Report

Laboratory Control Sample Report (DCS, SCS)

Total Petroleum Hydrocarbons by GC/FID (Triregional)

Method TPH-D-TRIREGIONAL

**Includes Samples: 1 through 4**

Sample Data Sheets

Method Blank Report

Laboratory Control Sample Report (DCS)

**CASE NARRATIVE**

**ENSECO CAL LAB PROJECT NUMBER 066702**

There were no anomalies associated with this report.

## ENSECO CAL LAB'S QUALITY ASSURANCE PROGRAM

Enseco Cal Lab has implemented an extensive Quality Assurance (QA) program to ensure the production of scientifically sound, legally defensible data of known documental quality. A key element of this program is Enseco's Laboratory Control Sample (LCS) system. Controlling lab operations with LCS (as opposed to matrix spike/matrix spike duplicate samples), allows the lab to differentiate between bias as a result of procedural errors versus bias due to matrix effects. The analyst can then identify and implement the appropriate corrective actions at the bench level, without waiting for extensive senior level review or costly and time-consuming sample re-analyses. The LCS program also provides our client with information to assess batch, and overall laboratory performance.

### Laboratory Control Samples - (LCS)

Laboratory Control Samples (LCS) are well-characterized, laboratory generated samples used to monitor the laboratory's day-to-day performance of routine analytical methods. The results of the LCS are compared to well-defined laboratory acceptance criteria to determine whether the laboratory system is "in control". Three types of LCS are routinely analyzed: Duplicate Control Samples (DCS), Single Control Samples (SCS), and method blanks. Each of these LCS are described below.

**Duplicate Control Samples.** A DCS is a well-characterized matrix (blank water, sand, sodium sulfate or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits.

**Single Control Samples.** An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS.

**Method Blank Results.** A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.



SAMPLE DESCRIPTION INFORMATION  
for  
Industrial Compliance

| Lab ID         | Client ID | Matrix  | Sampled   |       | Received  |
|----------------|-----------|---------|-----------|-------|-----------|
|                |           |         | Date      | Time  | Date      |
| 066702-0001-SA | MW-4      | AQUEOUS | 03 NOV 92 | 09:40 | 05 NOV 92 |
| 066702-0002-SA | MW-4A     | AQUEOUS | 03 NOV 92 | 10:00 | 05 NOV 92 |
| 066702-0003-SA | MW-3      | AQUEOUS | 03 NOV 92 | 11:00 | 05 NOV 92 |
| 066702-0004-SA | MW-3A     | AQUEOUS | 03 NOV 92 | 10:40 | 05 NOV 92 |



SP - EVS

CHAIN-OF-CUSTODY RECORD

No. 12383

SP - Environmental Systems, Inc. • 9719 Lincoln Village Drive, Ste. 310 • Sacramento, CA 95827 • Phone 916-369-8971 • FAX 916-369-8370

| PROJECT NAME |                 | PROJECT LOCATION      |  | ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) |      | NUMBER OF CONTAINERS | REMARKS |
|--------------|-----------------|-----------------------|--|---|------|----------------------|---------|
| PROJ. NO.    | PROJECT CONTACT | PROJECT TELEPHONE NO. | SAMPLE LOCATION (INCLUDE MATRIX AND POINT OF SAMPLE) | DATE  | TIME |                      |         |
| 15032        | B. M. Levens    | 369 8971              | WATER  | 11/3  | 9:10 | 4                    |         |
| 2            | MW 4A           |                       |  |   | 1100 |                      |         |
| 3            | MW-3            |                       |  |   | 1100 |                      |         |
| 4            | MW 3A           |                       |  |   | 1040 |                      |         |
| 5            |                 |                       |  |   |      |                      |         |
| 6            |                 |                       |  |   |      |                      |         |
| 7            |                 |                       |  |   |      |                      |         |
| 8            |                 |                       |  |   |      |                      |         |
| 9            |                 |                       |  |   |      |                      |         |
| 10           |                 |                       |  |   |      |                      |         |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE    | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|---------|------|---------|
| 1               | 4           | <i>[Signature]</i>        | <i>[Signature]</i>    | 11/3/00 | 1100 |         |
| 2               |             |                           |                       | 11/5    | 0755 |         |
| 3               |             |                           |                       |         |      |         |
| 4               |             |                           |                       |         |      |         |

SAMPLER'S NAME: *[Signature]*  
SAMPLER'S SIGNATURE: *[Signature]*

LAB COPY

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 602

Client Name: Industrial Compliance

Client ID: MW-4

Lab ID: 066702-0001-SA

Matrix: AQUEOUS

Authorized: 05 NOV 92

Sampled: 03 NOV 92

Prepared: NA

Received: 05 NOV 92

Analyzed: 10 NOV 92

| Parameter              | Result   | Units | Reporting Limit |
|------------------------|----------|-------|-----------------|
| Benzene                | ND       | ug/L  | 0.50            |
| Toluene                | ND       | ug/L  | 0.50            |
| Ethylbenzene           | ND       | ug/L  | 0.50            |
| Xylenes (total)        | ND       | ug/L  | 1.0             |
| Surrogate              | Recovery |       |                 |
| a,a,a-Trifluorotoluene | 96       | %     |                 |

ND = Not detected  
 NA = Not applicable

Reported By: Allison L. Kempt

Approved By: Ann Marie Carroll

The cover letter is an integral part of this report.

Rev 230787

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 602

Client Name: Industrial Compliance

Client ID: MW-4A

Lab ID: 066702-0002-SA

Matrix: AQUEOUS

Authorized: 05 NOV 92

Sampled: 03 NOV 92

Prepared: NA

Received: 05 NOV 92

Analyzed: 10 NOV 92

| Parameter              | Result   | Units | Reporting Limit |
|------------------------|----------|-------|-----------------|
| Benzene                | ND       | ug/L  | 0.50            |
| Toluene                | ND       | ug/L  | 0.50            |
| Ethylbenzene           | ND       | ug/L  | 0.50            |
| Xylenes (total)        | ND       | ug/L  | 1.0             |
| Surrogate              | Recovery |       |                 |
| a,a,a-Trifluorotoluene | 104      | %     |                 |

ND = Not detected  
 NA = Not applicable

Reported By: Allison L. Kempt

Approved By: Ann Marie Carroll

The cover letter is an integral part of this report.

Rev 230787

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)



Method 602

Client Name: Industrial Compliance

Client ID: MW-3

Lab ID: 066702-0003-SA

Matrix: AQUEOUS

Authorized: 05 NOV 92

Sampled: 03 NOV 92

Prepared: NA

Received: 05 NOV 92

Analyzed: 10 NOV 92

| Parameter              | Result   | Units | Reporting Limit |
|------------------------|----------|-------|-----------------|
| Benzene                | 2.2      | ug/L  | 0.50            |
| Toluene                | ND       | ug/L  | 0.50            |
| Ethylbenzene           | ND       | ug/L  | 0.50            |
| Xylenes (total)        | ND       | ug/L  | 1.0             |
| Surrogate              | Recovery |       |                 |
| a,a,a-Trifluorotoluene | 78       | %     |                 |

ND = Not detected

NA = Not applicable

Reported By: Allison L. Kempt

Approved By: Ann Marie Carroll

The cover letter is an integral part of this report.

Rev 230787

## Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

## Method 602

Client Name: Industrial Compliance

Client ID: MW-3A

Lab ID: 066702-0004-SA

Matrix: AQUEOUS

Authorized: 05 NOV 92

Sampled: 03 NOV 92

Prepared: NA

Received: 05 NOV 92

Analyzed: 10 NOV 92

| Parameter              | Result   | Units | Reporting Limit |
|------------------------|----------|-------|-----------------|
| Benzene                | 2.3      | ug/L  | 0.50            |
| Toluene                | ND       | ug/L  | 0.50            |
| Ethylbenzene           | ND       | ug/L  | 0.50            |
| Xylenes (total)        | ND       | ug/L  | 1.0             |
| Surrogate              | Recovery |       |                 |
| a,a,a-Trifluorotoluene | 80       | %     |                 |

 ND = Not detected  
 NA = Not applicable

Reported By: Allison L. Kempt

Approved By: Ann Marie Carroll

The cover letter is an integral part of this report.

Rev 230787

QC LOT ASSIGNMENT REPORT  
Volatile Organics by GC

| Laboratory<br>Sample Number | QC Matrix | QC Category | QC Lot Number<br>(DCS) | QC Run Number<br>(SCS/BLANK) |
|-----------------------------|-----------|-------------|------------------------|------------------------------|
| 066702-0001-SA              | AQUEOUS   | 602-A       | 10 NOV 92-11A          | 10 NOV 92-11A                |
| 066702-0002-SA              | AQUEOUS   | 602-A       | 10 NOV 92-11A          | 10 NOV 92-11A                |
| 066702-0003-SA              | AQUEOUS   | 602-A       | 10 NOV 92-11A          | 10 NOV 92-11A                |
| 066702-0004-SA              | AQUEOUS   | 602-A       | 10 NOV 92-11A          | 10 NOV 92-11A                |

METHOD BLANK REPORT  
Volatile Organics by GC

| Analyte                                     | Result | Units | Reporting Limit |
|---|--------|-------|-----------------|
| Test: 602-BTX-A                             |        |       |                 |
| Matrix: AQUEOUS                             |        |       |                 |
| QC Lot: 10 NOV 92-11A QC Run: 10 NOV 92-11A |        |       |                 |
| Benzene                                     | ND     | ug/L  | 0.50            |
| Toluene                                     | ND     | ug/L  | 0.50            |
| Ethylbenzene                                | ND     | ug/L  | 0.50            |
| Xylenes (total)                             | ND     | ug/L  | 1.0             |



DUPLICATE CONTROL SAMPLE REPORT  
 Volatile Organics by GC

| Analyte                   | Concentration Spiked | Concentration Measured |      | AVG  | Accuracy Average (%) |        | Precision (RPD) |       |  |
|---------------------------|----------------------|------------------------|------|------|----------------------|--------|-----------------|-------|--|
|                           |                      | DCS1                   | DCS2 |      | DCS                  | Limits | DCS             | Limit |  |
| Category: 602-A           |                      |                        |      |      |                      |        |                 |       |  |
| Matrix: AQUEOUS           |                      |                        |      |      |                      |        |                 |       |  |
| QC Lot: 10 NOV 92-11A     |                      |                        |      |      |                      |        |                 |       |  |
| Concentration Units: ug/L |                      |                        |      |      |                      |        |                 |       |  |
| Benzene                   | 5.00                 | 5.44                   | 5.53 | 5.48 | 110                  | 75-122 | 1.6             | 12    |  |
| Toluene                   | 5.00                 | 5.42                   | 5.48 | 5.45 | 109                  | 76-117 | 1.1             | 18    |  |
| Ethylbenzene              | 5.00                 | 5.46                   | 5.56 | 5.51 | 110                  | 77-120 | 1.8             | 18    |  |
| Xylenes (total)           | 15.0                 | 16.3                   | 16.4 | 16.4 | 109                  | 72-128 | 0.6             | 14    |  |
| 1,3-Dichlorobenzene       | 5.00                 | 4.50                   | 5.38 | 4.94 | 99                   | 74-123 | 18              | 19    |  |

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT  
Volatile Organics by GC

| Analyte                                     | Concentration |          | Accuracy(%) |        |
|---|---------------|----------|-------------|--------|
|   | Spiked        | Measured | SCS         | Limits |
| Category: 602-A                             |               |          |             |        |
| Matrix: AQUEOUS                             |               |          |             |        |
| QC Lot: 10 NOV 92-11A QC Run: 10 NOV 92-11A |               |          |             |        |
| Concentration Units: ug/L                   |               |          |             |        |
| a,a,a-Trifluorotoluene                      | 4.00          | 4.15     | 104         | 78-126 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

Total Petroleum Hydrocarbons by GC/FID (Triregional)



Method TPH-D-TRIREGIONAL

Client Name: Industrial Compliance

Client ID: MW-4

Lab ID: 066702-0001-SA

Matrix: AQUEOUS

Authorized: 05 NOV 92

Sampled: 03 NOV 92

Prepared: 10 NOV 92

Received: 05 NOV 92

Analyzed: 12 NOV 92

| Parameter           | Result | Units | Reporting Limit |   |
|---------------------|--------|-------|-----------------|---|
| Diesel Fuel         | ND     | ug/L  | 50              |   |
| Unknown hydrocarbon | 78     | ug/L  | 50              | 1 |

Note 1 : The hydrocarbon pattern present in this sample represents an unknown mixture in the range of about C12 to C28. Quantitation was based upon a diesel reference in the range between C10 to C24.

ND = Not detected  
NA = Not applicable

Reported By: Don Absher

Approved By: Sharon Campbell

The cover letter is an integral part of this report.

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Total Petroleum Hydrocarbons by GC/FID (Triregional)



Method TPH-D-TRIREGIONAL

Client Name: Industrial Compliance

Client ID: MW-4A

Lab ID: 066702-0002-SA

Matrix: AQUEOUS

Authorized: 05 NOV 92

Sampled: 03 NOV 92

Prepared: 10 NOV 92

Received: 05 NOV 92

Analyzed: 12 NOV 92

| Parameter           | Result | Units | Reporting Limit |   |
|---------------------|--------|-------|-----------------|---|
| Diesel Fuel         | ND     | ug/L  | 50              |   |
| Unknown hydrocarbon | 120    | ug/L  | 50              | 1 |

Note 1 : The peaks present in this sample represent unknown components in the range of about C8 to C21. 85% of the total area used for quantitation is contributed by a large, single, off scale peak that elutes between C16 and C17. These peaks are atypical of common petroleum hydrocarbon products. Quantitation was based upon a diesel reference in the range between C10 to C24.

ND = Not detected  
NA = Not applicable

Reported By: Don Absher

Approved By: Sharon Campbell

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Total Petroleum Hydrocarbons by GC/FID (Triregional)



Method TPH-D-TRIREGIONAL

Client Name: Industrial Compliance  
 Client ID: MW-3  
 Lab ID: 066702-0003-SA  
 Matrix: AQUEOUS  
 Authorized: 05 NOV 92

Sampled: 03 NOV 92  
 Prepared: 10 NOV 92

Received: 05 NOV 92  
 Analyzed: 12 NOV 92

| Parameter           | Result | Units | Reporting Limit |   |
|---------------------|--------|-------|-----------------|---|
| Diesel Fuel         | ND     | ug/L  | 50              |   |
| Unknown hydrocarbon | 860    | ug/L  | 50              | 1 |

Note 1 : The hydrocarbon pattern present in this sample represents an unknown mixture in the range of about C8 to C28. The pattern bears similarities to diesel fuel standards and is probably a weathered diesel fuel. Quantitation was based upon a diesel reference in the range between C10 to C24.

ND = Not detected  
 NA = Not applicable

Reported By: Don Absher

Approved By: Sharon Campbell

The cover letter is an integral part of this report.

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Total Petroleum Hydrocarbons by GC/FID (Triregional)



Method TPH-D-TRIREGIONAL

Client Name: Industrial Compliance

Client ID: MW-3A

Lab ID: 066702-0004-SA

Matrix: AQUEOUS

Authorized: 05 NOV 92

Sampled: 03 NOV 92

Prepared: 10 NOV 92

Received: 05 NOV 92

Analyzed: 12 NOV 92

| Parameter           | Result | Units | Reporting Limit |   |
|---------------------|--------|-------|-----------------|---|
| Diesel Fuel         | ND     | ug/L  | 50              |   |
| Unknown hydrocarbon | 930    | ug/L  | 50              | 1 |

Note 1 : The hydrocarbon pattern present in this sample represents an unknown mixture in the range of about C8 to C28. The pattern bears similarities to diesel fuel standards and is probably a weathered diesel fuel. Quantitation was based upon a diesel reference in the range between C10 to C-24.

ND = Not detected  
 NA = Not applicable

Reported By: Don Absher

Approved By: Sharon Campbell

The cover letter is an integral part of this report.

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QC LOT ASSIGNMENT REPORT  
Hydrocarbon Work Cell

| Laboratory<br>Sample Number | QC Matrix | QC Category | QC Lot Number<br>(DCS) | QC Run Number<br>(SCS/BLANK) |
|-----------------------------|-----------|-------------|------------------------|------------------------------|
| 066702-0001-SA              | AQUEOUS   | TPH-D-TR-A  | 10 NOV 92-16A          | 10 NOV 92-16A                |
| 066702-0002-SA              | AQUEOUS   | TPH-D-TR-A  | 10 NOV 92-16A          | 10 NOV 92-16A                |
| 066702-0003-SA              | AQUEOUS   | TPH-D-TR-A  | 10 NOV 92-16A          | 10 NOV 92-16A                |
| 066702-0004-SA              | AQUEOUS   | TPH-D-TR-A  | 10 NOV 92-16A          | 10 NOV 92-16A                |

METHOD BLANK REPORT  
Hydrocarbon Work Cell

| Analyte                                     | Result | Units | Reporting Limit |
|---|--------|-------|-----------------|
| Test: TPH-D-TR-A                            |        |       |                 |
| Matrix: AQUEOUS                             |        |       |                 |
| QC Lot: 10 NOV 92-16A QC Run: 10 NOV 92-16A |        |       |                 |
| Diesel Fuel                                 | ND     | ug/L  | 50              |
| Unknown hydrocarbon                         | ND     | ug/L  | 50              |



DUPLICATE CONTROL SAMPLE REPORT  
 Hydrocarbon Work Cell

| Analyte   | Concentration |      |                  | AVG | Accuracy          |        | Precision    |       |
|---|---------------|------|------------------|-----|-------------------|--------|--------------|-------|
|   | Spiked        | DCS1 | Measured<br>DCS2 |     | Average(%)<br>DCS | Limits | (RPD)<br>DCS | Limit |
| Category: TPH-D-TR-A<br>Matrix: AQUEOUS<br>QC Lot: 10 NOV 92-16A<br>Concentration Units: ug/L |               |      |                  |     |                   |        |              |       |
| Diesel Fuel   | 300           | 305  | 298              | 302 | 101               | 56-122 | 2.3          | 26    |

Calculations are performed before rounding to avoid round-off errors in calculated results.