



Industrial Compliance

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3-1-95

**THIRD QUARTER 1994
GROUND WATER MONITORING REPORT**

**Southern Pacific Transportation Company
1399 Wood Street
Oakland, California**

IC Project No. 05100535

Prepared For:

**Southern Pacific Transportation Company
One Market Plaza
San Francisco, CA 94105**

March 1, 1995

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IC Project No: 05100585
ENVIRONMENTAL SERVICES
NORTH COUNTY

Ms. Jennifer Eberle
Alameda County Health Care Services Agency
Department of Environmental Health
Division of Hazardous Materials
1131 Harbor Bay Parkway
Alameda, California 94501

VIA OVERNIGHT MAIL

**Re: Third Quarter 1994 Ground Water Monitoring Report
Southern Pacific Transportation Company
1399 Wood Street - Oakland, California**

Dear Ms. Eberle:

Industrial Compliance (IC), on behalf of Southern Pacific Transportation Company (SPTCo), has prepared the attached Third Quarter 1994 Ground Water Monitoring Report for the SPTCo site located at 1399 Wood Street, Oakland, California.

If you should have any questions regarding this report, please contact either of the undersigned at (510) 238-9540 or (916) 369-8971.

Sincerely,

INDUSTRIAL COMPLIANCE

James B. Ackerman
Project Geologist

Richard L. Bateman, R.G.
Principal Hydrogeologist

JBA/RLB/dao

Attachment

- cc: Mr. John Moe, Southern Pacific Transportation Company (with attachment)
- Mr. Darrell J. Maxey, Oakland Program Office, Southern Pacific Transportation Company (with attachment)
- Ms. Gina Kathuria, California Regional Water Quality Control Board, San Francisco Region (with attachment)

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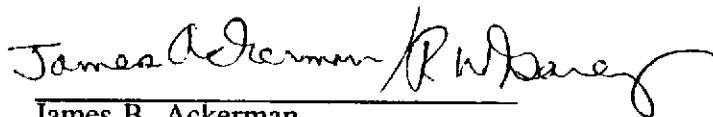


ENVIRONMENTAL PROTECTION
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**THIRD QUARTER 1994
GROUND WATER MONITORING REPORT**

**Southern Pacific Transportation Company
1399 Wood Street
Oakland, California**

Prepared By:



James B. Ackerman
Project Geologist

Reviewed By:



Richard L. Bateman, R.G.
Principal Hydrogeologist



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1.0 INTRODUCTION

Industrial Compliance (IC), on behalf of Southern Pacific Transportation Company (SPTCo), is conducting quarterly ground water monitoring at the SPTCo property located at 1399 Wood Street, Oakland, California (Figure 1). The site was formerly the location of three underground storage tanks (USTs), along with a fuel dispensing island (Figure 2). Third quarter, 1994 ground water monitoring and sampling activities were performed on September 30, 1994. This report presents the results of that monitoring event.



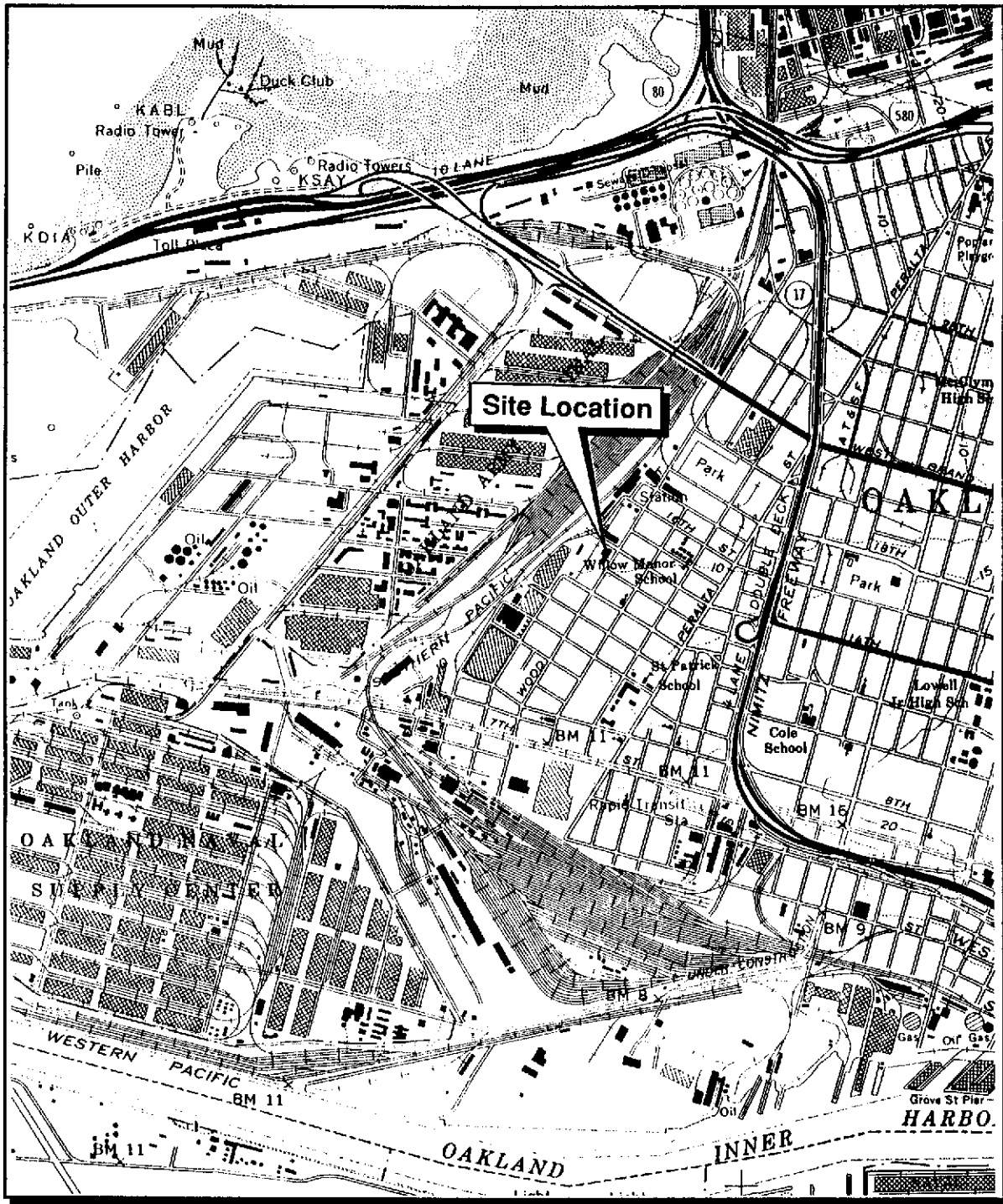


Figure 1
Site Location Map
Southern Pacific Transportation Company
1399 Wood Street
Oakland, California

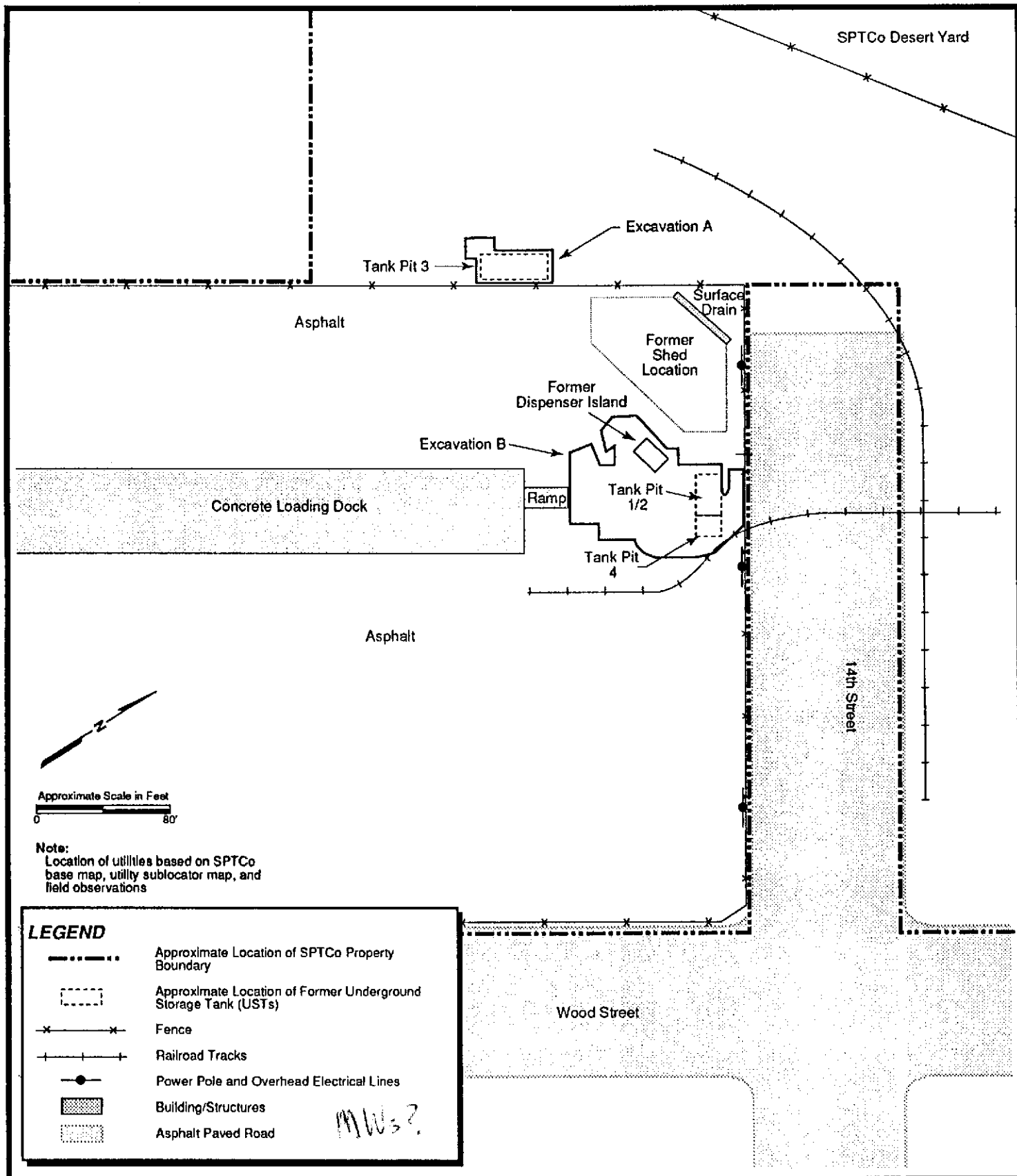
Reference:
 USGS 7.5 Minute Topographic Map
 Oakland West Quadrangle
 California



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Drawn By: Patti Decker	Checked By: James Ackerman

**SITE LAYOUT MAP
SOUTHERN PACIFIC TRANSPORTATION COMPANY
1399 WOOD STREET
OAKLAND, CALIFORNIA**

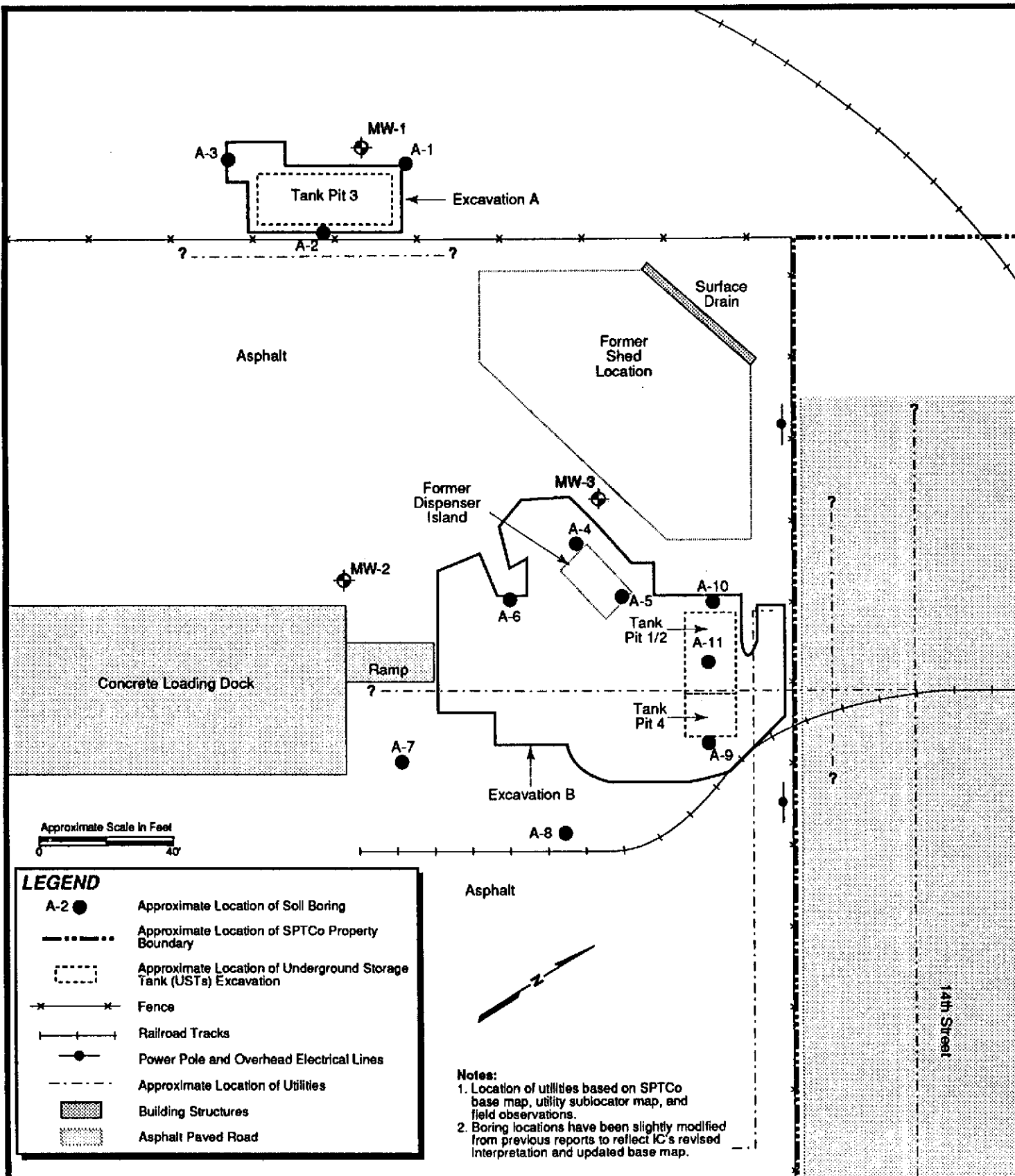
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2.0 BACKGROUND

In July, 1988, Canonie Environmental Services Corporation (Canonie) removed a fuel dispensing island with associated piping and three USTs (identified in Canonie's report as Tank 1/2, Tank 3, and Tank 4) from the site: a 12,000-gallon split-compartment diesel-gasoline tank (Tank 1/2), a 7,300 gallon diesel tank (Tank 3), and a 550 gallon waste oil tank (Tank 4) (Figure 2). The procedures and results of this work were presented in a Canonie report dated December 18, 1989 (report entitled: *Final Site Report, Underground Storage Tank Removal, Southern Pacific Transportation Company, Oakland, California*).

The Alameda County Health Care Services Agency - Department of Environmental Health, Division of Hazardous Materials (Alameda County) required SPTCo to conduct a further investigation of the site. In October of 1992, IC performed a preliminary soil investigation in which 11 borings (A1 through A11) were drilled (Figure 3). As a result of this investigation, total petroleum hydrocarbons as gasoline (TPH-G) were identified in three borings near the former location of Tanks 1/2 and 4 and the former location of the fuel dispensing island. Total hydrocarbons as diesel (TPH-D) were identified in four borings; two near the former location of Tanks 1/2 and 4 and two near the former location of Tank 3. The procedures and results of this work were presented in IC's report dated January 17, 1994 (report entitled: *Preliminary Soil Investigation Report, Southern Pacific Transportation Company, 1399 Wood Street, Oakland, California*).

In June of 1994, IC conducted a soil remediation and ground water investigation. As a result of the soil remediation activities, a total of 1,100 cubic yards (cy) of petroleum hydrocarbon-impacted soil were removed from the site. Excavation A included the area immediately around the former location of Tank 3 (60 cy), and the area of excavation B included the former locations of Tank 1/2, Tank 4, and the fuel dispensing island. After conclusion of the soil remediation activities, a ground water investigation was initiated. As part of this



LEGEND

- A-2 ● Approximate Location of Soil Boring
- Approximate Location of SPTCo Property Boundary
- - - - - Approximate Location of Underground Storage Tank (USTs) Excavation
- × × × × Fence
- +—+—+ Railroad Tracks
- Power Pole and Overhead Electrical Lines
- Approximate Location of Utilities
- [Hatched Box] Building Structures
- [Dotted Box] Asphalt Paved Road

Notes:

1. Location of utilities based on SPTCo base map, utility sublocator map, and field observations.
2. Boring locations have been slightly modified from previous reports to reflect IC's revised interpretation and updated base map.

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	Project No.: 05100535	Date: 01/18/95
Drawn By: Patil Decker	Checked By: James Ackerman	

**LOCATION OF SOIL BORINGS
 AND MONITORING WELLS
 INSTALLED DURING PREVIOUS INVESTIGATION
 SOUTHERN PACIFIC TRANSPORTATION COMPANY
 1399 WOOD STREET
 OAKLAND, CALIFORNIA**

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investigation, four soil borings were drilled, three of which were converted to monitoring wells, and subsequently developed (MW-1, MW-2 and MW-3). Ground water sampling commenced on June 29, 1994. Locations of excavations, soil borings and monitoring wells are shown on Figure 3. The procedures and results of this work were presented in IC's report dated August 29, 1994 (report entitled: *Soil Remediation and Ground Water Investigation Report, Southern Pacific Transportation Company, 1399 Wood Street, Oakland, California*).

In September of 1994, IC initiated quarterly ground water monitoring and sampling activities utilizing the monitoring wells installed during the June, 1994 field activities. The results of that third quarter, 1994 sampling event are presented in this report.



3.0 FIELD INVESTIGATION

This section discusses the procedures and protocol used for the collection of monitoring well water level data and ground water samples for laboratory analyses.

3.1 Monitoring Well Water Level Data

On September 30, 1994, prior to conducting any ground water sampling, the depth to ground water was measured in all three monitoring wells on site. All readings were measured relative to the surveyed reference point of known elevation at the top of each well casing, using a water level probe with an accuracy of 0.01 feet. Ground water elevations for the third quarter of 1994 ranged from 2.80 to 3.15 feet above mean sea level (MSL).

Monitoring well ground water elevation data for this quarter are summarized in Table 1. Figure 4 is a ground water elevation contour map which depicts the approximate direction and gradient of ground water flow for this quarter. The direction of ground water flow is to the northeast. The local hydraulic gradient calculated from the September 30, 1994 water level data is approximately 0.003 feet per foot.

3.2 Monitoring Well Purging

After measurement of the ground water level in each well, the saturated well volume was calculated by subtracting the depth to ground water from the total depth of the well and multiplying the resultant length by the number of gallons per foot of casing. Prior to sample collection, three saturated well volumes were purged from each of the wells by hand-bailing. During purging, ground water characterization data, consisting of temperature, electrical conductivity and pH, were measured from the initial water removed from the well, and at least three times during purging. The ground water in each well was assumed to be representative of the formation when three well volumes were removed and consecutive



TABLE 1
MONITORING WELL GROUND WATER ELEVATION DATA
SEPTEMBER, 1994

Monitoring Well ^a	Date Measured	Time Measured	Reference Elevation ^b (feet MSL)	Depth to Ground Water ^c (feet TOC)	Ground Water Elevation ^d (feet MSL)
MW-1	09/30/94	1000	7.71	4.56	3.15
MW-2	09/30/94	1015	7.00	4.04	2.96
MW-3	09/30/94	1030	7.32	4.52	2.80

a See Figure 3 for approximate location of monitoring wells.

b Reference casing elevation is a point marked on the top of the well casing, which has been measured by a licensed surveyor.

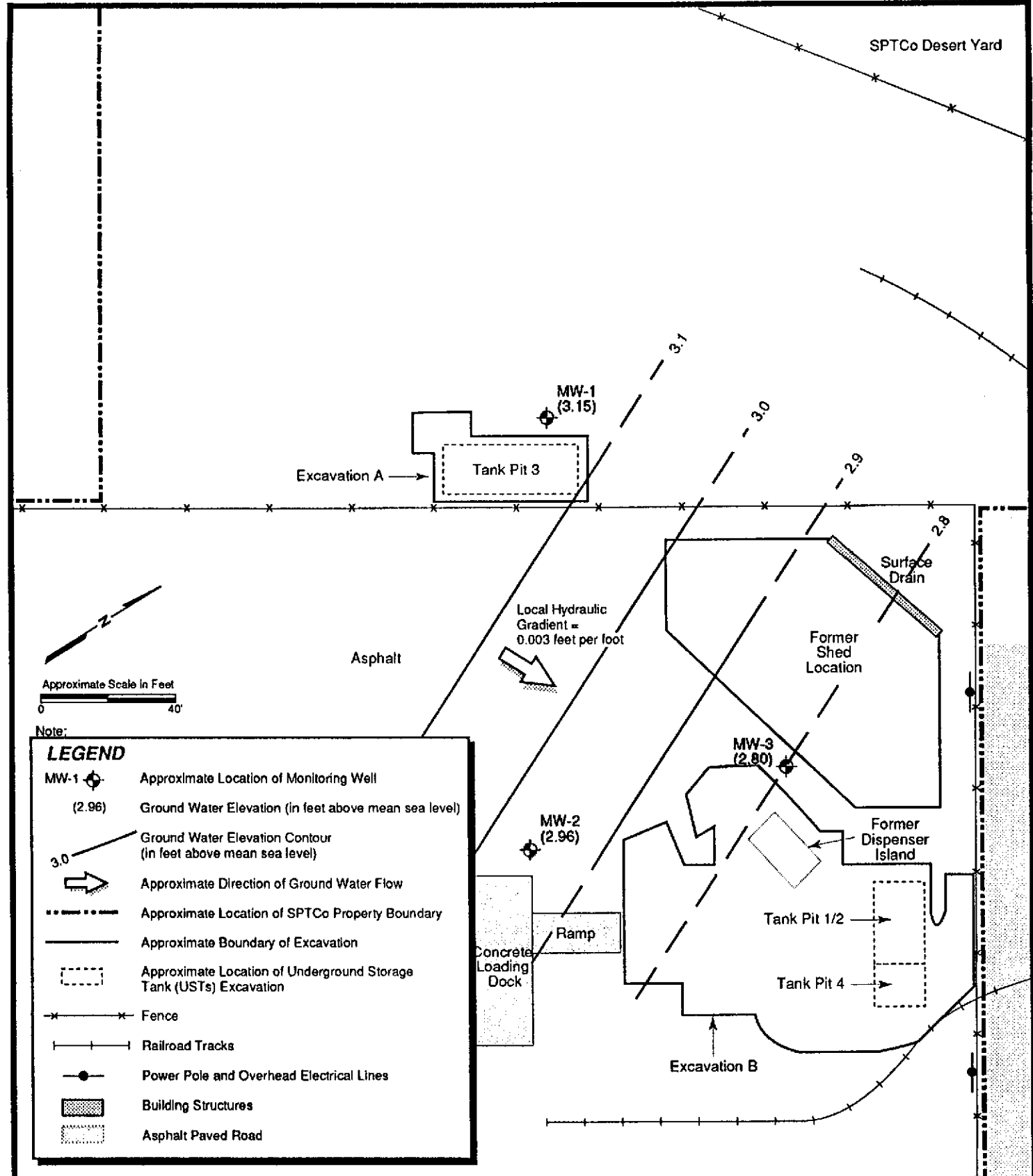
c Depth to ground water measured from top of casing (TOC).

d Ground water elevation calculated by subtracting the depth to ground water from the reference casing elevation.

MSL Mean sea level

TOC Top of casing





Note:

LEGEND

- MW-1 Approximate Location of Monitoring Well
- (2.96) Ground Water Elevation (in feet above mean sea level)
- 3.0 Ground Water Elevation Contour (in feet above mean sea level)
- Approximate Direction of Ground Water Flow
- Approximate Location of SPTCo Property Boundary
- Approximate Boundary of Excavation
- Approximate Location of Underground Storage Tank (USTs) Excavation
- Fence
- Railroad Tracks
- Power Pole and Overhead Electrical Lines
- Building Structures
- Asphalt Paved Road

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Project No.: 05100535 Date: 01/18/95

Drawn By: Patil Decker Checked By: James Ackerman

**CONTOUR MAP OF GROUND WATER ELEVATIONS
 SEPTEMBER, 1994
 SOUTHERN PACIFIC TRANSPORTATION COMPANY
 1399 WOOD STREET
 OAKLAND, CALIFORNIA**

Figure:	4
Page:	9
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parameter readings were within 10 percent. After purging was completed, each well was allowed to recover to at least 90 percent of the pre-purge water level prior to sampling. Purge water was collected in 55-gallon Department of Transportation (DOT) approved drums. Purge water was subsequently disposed of at the SPTCo water treatment plant located in the West Oakland Yard. Ground water purge characterization data are summarized in Table 2. Purge characterization and sample log field data sheets are included in Appendix A.

3.3 Monitoring Well Sampling

After the wells were purged, ground water samples were collected using new, disposable polyethylene bailers. Ground water samples were collected in laboratory-supplied bottles of appropriate volumes and with required preservatives for the intended analyses. Volatile organic analysis (VOA) sample bottles were filled to capacity, sealed with Teflon-lined lids, and checked for air bubbles. If air bubbles were detected, the vial was reopened, additional sample water added, and the vial resealed.

After sample collection was completed, each sample was labeled with a unique sample number, the site name, date of collection, time of collection, initials of collector, and any other pertinent information. The samples were then placed in a chilled ice chest for transport to Chromalab, Inc. Environmental Services (Chromalab) for analysis. A chain-of-custody form was completed concurrent with sample collection and accompanied the samples upon transport to the laboratory. The chain-of-custody document is included as Appendix B.



TABLE 2
GROUND WATER PURGE CHARACTERIZATION DATA
SEPTEMBER, 1994

Monitoring Well ^a	Date Measured	Purge Volume (gallons)	Electrical Conductivity (μ mhos/cm)	Temperature ($^{\circ}$ F)	Field pH (units)
MW-1	09/30/94	1	1,030	67.6	7.02
		5	900	66.5	7.11
		10	850	67.3	7.20
		15	850	66.1	7.15
		20	830	66.1	7.10
MW-2	09/30/94	1	970	74.0	7.34
		5	920	74.6	7.35
		10	940	76.0	7.34
		15	910	75.8	7.35
		20	900	75.8	7.38
MW-3	09/30/94	1	1190	78.5	7.20
		5	940	87.7	7.22
		10	1140	78.5	7.20
		15	1150	80.5	7.25
		20	1130	79.2	7.15

^a See Figure 3 for approximate location of monitoring wells.

μ mhos/cm Micromhos per centimeter

$^{\circ}$ F Degrees Fahrenheit

Note: Purge characterization data sheets included in Appendix A.



All ground water samples were analyzed for the following constituents:

<u>Constituents</u>	<u>Analytical</u>
Total petroleum hydrocarbons as gasoline (TPH-G)	EPA Method 8015 Modified
TPH as diesel (TPH-D)	EPA Method 8015 Modified
Benzene, Ethylbenzene, Toluene, and Total Xylenes (BTEX)	EPA Method 8020
Polychlorinated Biphenyls (PCBs)	EPA Method 608 Modified
Total Dissolved Solids (TDS)	EPA Method 160.1

3.4 Quality Assurance/Quality Control

To evaluate the integrity of the ground water sample/analysis process, a duplicate ground water sample was collected from MW-3 using the procedures previously described in Section 3.3. This duplicate was analyzed for the same constituents as the original ground water sample.

To assess the potential for cross-contamination of the ground water samples during transport to the laboratory, one trip blank was prepared by Chromalab prior to sampling and accompanied the ground water samples during shipment to the laboratory. The trip blank was submitted to the laboratory to be analyzed for TPH-G and BTEX compounds only.

In addition, one equipment blank was prepared by pouring deionized (DI) water through the sampling equipment into the sample bottles. The equipment blank was submitted to the laboratory for the suite of analyses listed in Section 3.3, with the exception of TDS.



4.0 ANALYTICAL RESULTS

Third quarter 1994 ground water samples were analyzed by Chromalab for the suite of constituents listed in Section 3.3. Analytical results are summarized in Table 3. Figure 5 is a chemical distribution map. Analytical laboratory reports are included as Appendix C. A summary of the third quarter 1994 analytical results includes the following:

- * Ground water samples collected from MW-1 and MW-2 did not contain TPH-G, BTEX, or PCBs at or above the respective reporting limits.
- * TPH-D was not detected in any of the wells sampled at concentrations at or above the reporting limit.
- * TPH-G was detected in MW-3 at a concentration of 160 micrograms per liter ($\mu\text{g/L}$).
- * Benzene, toluene, and xylenes were detected in MW-3 at concentrations of 0.8 $\mu\text{g/L}$, 1.6 $\mu\text{g/L}$ and 2.3 $\mu\text{g/L}$, respectively, while ethylbenzene was not detected at or above the reporting limit.
- * TDS ranged from 630 milligrams per liter (mg/L) in MW-1 to 880 mg/L in MW-3 (average concentration for all three wells = 727 mg/L).

The analytical results for the duplicate ground water sample collected from MW-3 were consistent with the analytical results for the original sample.

TABLE 3
GROUND WATER MONITORING WELL ANALYTICAL RESULTS
SEPTEMBER 1994

Well Location	Date Sampled	Total Petroleum Hydrocarbons ^a ($\mu\text{g/L}$)		Volatile Organic Compounds ^b ($\mu\text{g/L}$)				PCBs ^c ($\mu\text{g/L}$)	Total Dissolved Solids ^d (mg/L)
		Gasoline	Diesel	Benzene	Toluene	Ethylbenzene	Xylenes		
MW-1	09/30/94	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	630
MW-2	09/30/94	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	670
MW-3	09/30/94	160	<50	0.8	1.6	<0.5	2.3	<0.5	880
Duplicate (MW-3D)	09/30/94	160	<50	0.7	1.4	<0.5	2.0	<0.5	870
Equipment Blank (MW-3E)	09/30/94	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NA
Trip Blank	09/30/94	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA
Cal DHS MCLs ^e		NE	NE	1	100 ^f	680	1,750	0.5 ^g	500

a Analyzed by EPA Method 8015 Modified.

b Analyzed by EPA Method 8020.

c Analyzed by EPA Method 608 Modified.

d Analyzed by EPA Method 160.1

e California Department of Health Services (DHS) Maximum Contaminant Levels (MCLs) for drinking water (California RWQCB, May, 1993, Compilation of Water Quality Goals).

f California DHS action level for drinking water (California RWQCB, May, 1993, Compilation of Water Quality Goals)

g U.S. Environmental Protection Agency (USEPA) MCLs for drinking water (California RWQCB, May, 1993, Compilation of Water Quality Goals).

PCBs Polychlorinated biphenyls

$\mu\text{g/l}$ Micrograms per liter

mg/L Milligrams per liter

< Symbol indicates constituents not detected above reporting limits.

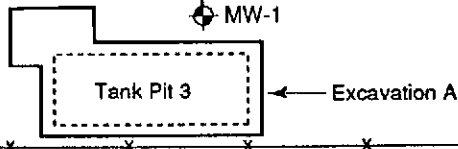
ND Not detected above the reporting limit.

NA Not Analyzed

NE Not Established

Date Sampled	TPH (µg/L)		Volatile Organic Compounds (µg/L)			PCBs (µg/L)	Total Dissolved Solids (mg/L)
	Gasoline	Diesel	Benzene	Toluene	Ethyl-benzene		
9/30/94	<50	<50	<0.5	<0.5	<0.5	<0.5	630

MW-1

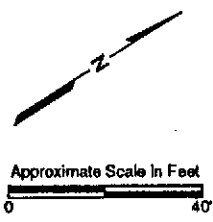


Date Sampled	TPH (µg/L)		Volatile Organic Compounds (µg/L)			PCBs (µg/L)	Total Dissolved Solids (mg/L)
	Gasoline	Diesel	Benzene	Toluene	Ethyl-benzene		
9/30/94	<50	<50	<0.5	<0.5	<0.5	<0.5	670

MW-2

Date Sampled	TPH (µg/L)		Volatile Organic Compounds (µg/L)			PCBs (µg/L)	Total Dissolved Solids (mg/L)	
	Gasoline	Diesel	Benzene	Toluene	Ethyl-benzene			Xylenes
9/30/94	160	<50	0.8	1.8	<0.5	2.3	<0.5	880

MW-3



LEGEND

- MW-1 Approximate Location of Monitoring Well
- Approximate Location of SPTCo Property Boundary
- Approximate Boundary of Excavation
- Approximate Location of Underground Storage Tank (USTs) Excavation
- Fence
- Railroad Tracks
- Power Pole and Overhead Electrical Lines
- Building Structures
- Asphalt Paved Road

- NOTES:**
- Total petroleum hydrocarbons (TPH) analyzed by EPA Method 8015 Modified and volatile organic compounds analyzed by EPA Method 8020 Modified
 - Polychlorinated biphenyls (PCBs) analyzed by EPA Method 608.
 - Sodium chloride concentrations determined by calculation.
 - Total dissolved solids analyzed by EPA Method 160.1.
 - Sample results reported in micrograms per liter (µg/L), or milligrams per liter (mg/L).
 - < = Indicates the constituent not detected at a concentration at or above the method practical quantitation limit as noted.

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Project No.: 05100535 Date: 01/18/95

Drawn By: Patil Decker Checked By: James Ackerman

**CHEMICAL DISTRIBUTION MAP FOR
CONSTITUENTS IN GROUND WATER SAMPLES
SEPTEMBER 1994
SOUTHERN PACIFIC TRANSPORTATION COMPANY
1399 WOOD STREET
OAKLAND, CALIFORNIA**

Figure:	5
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None of the analyzed constituents were detected at or above their respective reporting limits in either the trip blank or the equipment blank.

All laboratory procedures (holding times, methods used, method blanks, documentation, etc.) and subsequent results were monitored throughout the analytical process, according to standard quality assurance/quality control (QA/QC) procedures. In addition, all laboratory reports were evaluated as part of QA/QC procedures for ground water monitoring. The analytical data included in this third quarter, 1994 report are considered quantitatively valid.



5.0 DISCUSSION

Based on data collected during the third quarter, 1994 ground water monitoring event at the 1399 Wood Street site, the chemical compounds present in the ground water consist of petroleum hydrocarbons in the gasoline range and benzene, toluene and xylenes. Gasoline-impacted ground water appears to be limited to the area around the former location of the fuel dispensing island, as indicated by the detection of gasoline hydrocarbons and BTEX compounds in monitoring well MW-3 only. None of the compounds analyzed this quarter were detected at concentrations exceeding the California Department of Health Services (DHS) Maximum Contaminant Levels (MCLs) for drinking water.

Table 4 summarizes ground water analytical data collected during this and the previous sampling event. A review of these analytical data demonstrates that concentrations of TPH-G and BTEX compounds have been detected only in MW-3 and have been absent in the remaining two wells (MW-1 and MW-2). TPH-G has been detected in MW-3 during both sampling events at similar concentrations (110 $\mu\text{g/L}$ in June, 1994 and 160 $\mu\text{g/L}$ this quarter). The concentration of toluene in MW-3 this quarter (1.6 $\mu\text{g/L}$) is about the same as during the first sampling event in June, 1994 (0.9 $\mu\text{g/L}$). In MW-3, benzene was detected this quarter at a concentration of 0.8 $\mu\text{g/L}$, and was not detected in the first sampling event. Also in MW-3, xylenes were detected at a concentration of 2.3 $\mu\text{g/L}$, which is comparable to the June 1994 sampling event which indicated a concentration of 0.8 $\mu\text{g/L}$ for xylenes. Ethylbenzene has not been detected in MW-3 during either sampling event.

1,2-dichloroethane (1,2-DCA) and ethylene dibromide were analyzed during the first sampling event as part of a unique fuel fingerprint analysis using EPA Method 8260 which was offered by Coast-to-Coast Analytical Services, Inc. These two compounds were not analyzed for this quarter since they were not detected last quarter. Sodium chloride was also not analyzed for this quarter.



TABLE 4
GROUND WATER MONITORING WELL ANALYTICAL RESULTS
HISTORIC SUMMARY

Well Location	Date Sampled	Total Petroleum Hydrocarbons ^a (µg/L)		Volatile Organic Compounds ^b (µg/L)						PCBs ^c (µg/L)	Sodium Chloride ^d (mg/L)	Total Dissolved Solids ^e (mg/L)
		Gasoline	Diesel	Benzene	Toluene	Ethylbenzene	Xylenes	1,2-DCA	Ethylene Dibromide			
MW-1	06/29/94	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	40	410
	09/30/94	< 50 ✓	< 50 ✓	< 0.5 ✓	< 0.5	< 0.5	< 0.5	NA	NA	< 0.5 ✓	NA	630
MW-2	06/29/94	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	48	680
	09/30/94	< 50 ✓	< 50 ✓	< 0.5 ✓	< 0.5	< 0.5	< 0.5	NA	NA	< 0.5 ✓	NA	670
MW-3	06/29/94	110	< 50	< 0.5	0.9	< 0.5	0.8	< 0.5	< 0.5	< 1	60	850
	09/30/94	160 ✓	< 50 ✓	0.8 ✓	1.6	< 0.5	2.3	NA	NA	< 0.5 ✓	NA	880
Cal DHS MCLs ^f		NE	NE	1	100 ^g	680	1,750	0.5	1,750	0.5 ^h	NE	500

- a** Analyzed by EPA Method 8015 Modified (06/29/94 samples analyzed by EPA Method 8260 Modified).
- b** Analyzed by EPA Method 8020 (06/29/94 samples analyzed by EPA Method 8260 Modified).
- c** Analyzed by EPA Method 608 Modified.
- d** Sodium chloride concentrations determined by calculation after analyzing for sodium and chloride separately.
- e** Analyzed by EPA Method 160.1
- f** California Department of Health Services (DHS) Maximum Contaminant Levels (MCLs) for drinking water (California RWQCB, May, 1993, Compilation of Water Quality Goals).

- g** California DHS action level for drinking water (California RWQCB, May, 1993, Compilation of Water Quality Goals).
- h** U.S. Environmental Protection Agency (USEPA) MCLs for drinking water (California RWQCB, May, 1993, Compilation of Water Quality Goals).
- PCBs** Polychlorinated biphenyls
- µg/l** Micrograms per liter
- mg/L** Milligrams per liter
- <** Symbol indicates constituents not detected above method detection or reporting limits as noted.
- NA** Not Analyzed
- NE** No MCL established



Table 5 lists all ground water elevation data collected to date. A comparison of ground water elevation data collected during the third quarter, 1994 sampling event with ground water elevations measured during the previous sampling event (June 29, 1994), indicates an average decrease of 0.79 feet in ground water elevations. The local hydraulic gradient for the third quarter, 1994 was calculated to be 0.003 feet per foot which has decreased relative to the gradient for the second quarter, 1994 gradient of 0.014 feet per foot. The ground water flow has changed from a southerly direction in June, 1994, to an northeasterly direction in September, 1994. The observed decrease in ground water elevations and the change in apparent flow direction is most likely due to seasonal variation. Figure 6 shows hydrographs of ground water elevations for all monitoring wells.

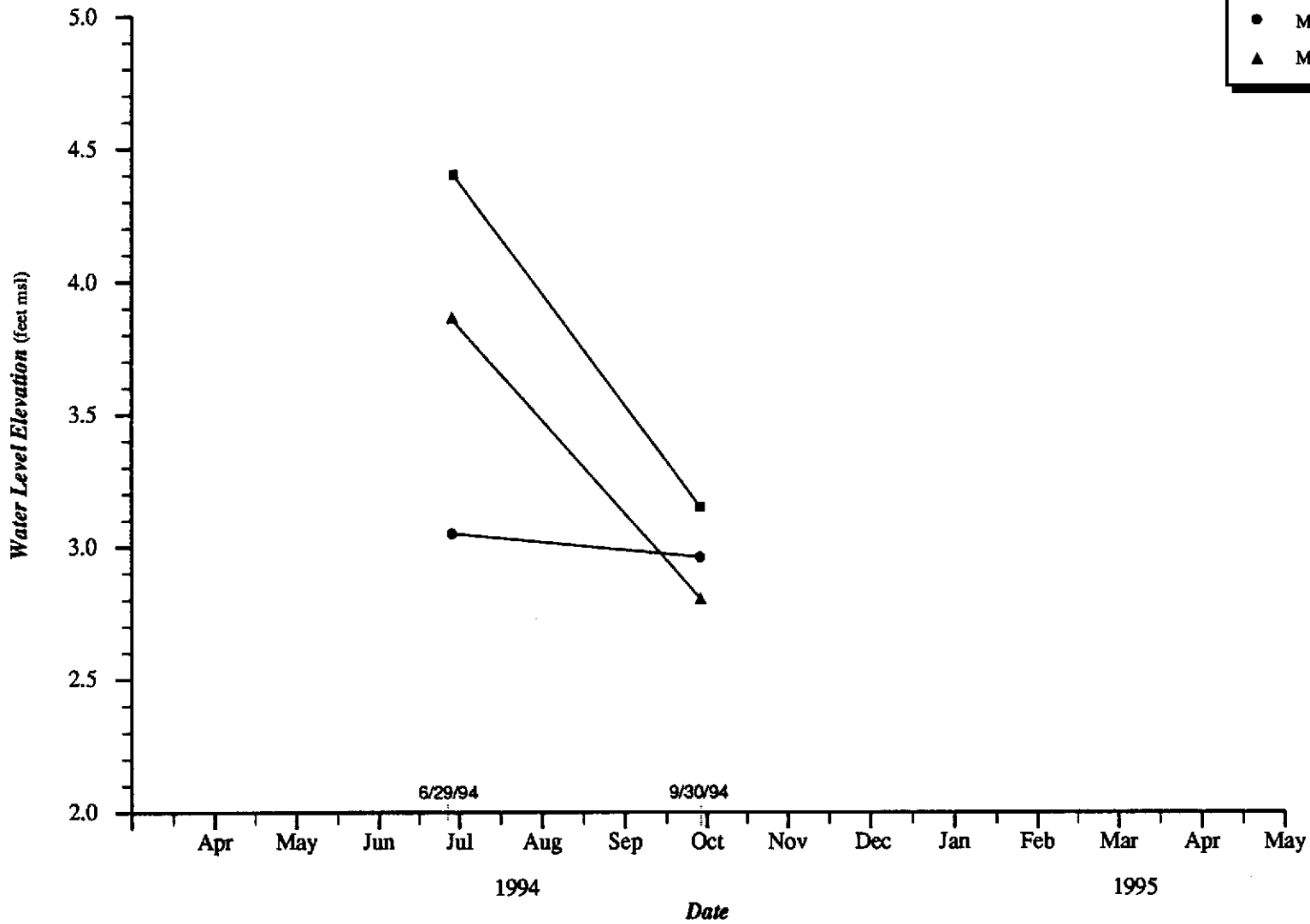


**TABLE 5
MONITORING WELL GROUND WATER ELEVATION DATA
HISTORIC SUMMARY**

Monitoring Well ^a	Date Measured	Time Measured	Reference Elevation ^b (feet MSL)	Depth to Ground Water ^c (feet TOC)	Ground Water Elevation ^d (feet MSL)
MW-1	06/29/94	0900	7.74	3.36	4.38
	09/30/94	1000	7.71*	4.56	3.15
MW-2	06/29/94	0900	7.00	3.94	3.06
	09/30/94	1015		4.04	2.96
MW-3	06/29/94	0900	7.43	3.50	3.84
	09/30/94	1030	7.32*	4.52	2.80

- a See Figure 3 for approximate location of monitoring wells.
- b Reference casing elevation is a point marked on the top of the well casing, which has been measured by a licensed surveyor.
- c Depth to ground water measured from top of casing (TOC).
- d Ground water elevation calculated by subtracting the depth to ground water from the reference casing elevation.
- MSL Mean sea level
- TOC Top of casing
- * Well resurveyed in September of 1994.





LEGEND

- Monitoring Well MW-1
- Monitoring Well MW-2
- ▲ Monitoring Well MW-3

	Project No.: 05100535	Date: 01/18/95
	Drawn By: Patti Decker	Checked By: James Ackerman

**HYDROGRAPHS OF GROUND WATER ELEVATIONS
SOUTHERN PACIFIC TRANSPORTATION COMPANY
1399 WOOD STREET
OAKLAND, CALIFORNIA**

Figure:	6
Page No.:	21
Scale:	as shown

6.0 GLOSSARY OF ACRONYMS

1,2-DCA	1,2-Dichloroethane
BTEX	Benzene, toluene, ethylbenzene and xylenes
cy	Cubic yards
DHS	Department of Health Services
DI	Deionized
DOT	Department of Transportation
IC	Industrial Compliance
MCLs	Maximum Contaminant Levels
mg/L	Milligrams per liter
MSL	Mean sea level
PCBs	Polychlorinated biphenyls
QA/QC	Quality assurance/quality control
SPTCo	Southern Pacific Transportation Company
TDS	Total dissolved solids
TPH-D	Total petroleum hydrocarbons as diesel
TPH-G	Total petroleum hydrocarbons as diesel
USTs	Underground storage tanks
VOA	Volatile organic analysis
µg/L	Micrograms per liter



APPENDIX A
PURGE CHARACTERIZATION
AND SAMPLE LOG FIELD DATA SHEETS





Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.



PURGE CHARACTERIZATION AND SAMPLE LOG

Project Number: 05100535 Project Name: WOOD STREET Date: 9-30-94
 Well Number: MW-1 Sampler: MIKE ENDICOTT Weather: SUNNY

Military Time	905	910	915	920	930	1000	
Gallons Purged	1 GAL	5 GAL	10 GAL	15 GAL	20 GAL		Depth to bottom (DB): <u>14.70</u>
Purge Rate	—	—	—	—	—	S	Depth to water (DW): <u>4.56</u>
pH	7.02	7.11	7.20	7.15	7.10	A	Height of water column (H) = DB - DW: <u>10.14</u>
Conductivity	$\times 1000$ 1.03	$\times 1000$.90	$\times 1000$.85	$\times 1000$.85	$\times 1000$.83	M	One casing volume (CV) = H x multiplier: <u>6.59</u>
Temperature (°F)	67.6	66.5	67.3	66.1	66.1	L	Three casing volumes (3CV): <u>19.77</u>
Salinity (0/00)	—	—	—	—	—	E	Multipliers = 2" well = 0.16 gallons/foot
Turbidity	CLOUDY	CLOUDY	CLOUDY	CLOUDY	CLOUDY		4" well = 0.65 gallons/foot
Color	LT GRAY	LT GRAY	LT GRAY	LT GRAY	LT GRAY		6" well = 1.47 gallons/foot
Water Level Casing	—	—	—	—	—		8" well = 2.61 gallons/foot
Calibration	pH:						S.C.:

Sample #	Quantity	Volume	Type	Preserv.	Analysis	Lab	Sample Equip.	Purge Equip.	Field Comments
MW-1	2	40 ML	VOAS	HCL	TPH-GAS	CHROM	BAILER (DUP)	TEFLON BAILER	
MW-2	2	1 LT	AMBER	HCL	TPH-DIESEL	CHROM	DSP. BAILER	TEFLON BAILER	
↓	1	1 LT	AMBER	HCL	P.B.S	CHROM	↓	↓	
	1	5 QT	POLY	NONE HCL	TDS	CHROM	↓	↓	
Cleaning:									
Comments:									

Sampler's Signature: Mike Endicott



Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.



PURGE CHARACTERIZATION AND SAMPLE LOG

Project Number: 05100535 Project Name: WOOD STREET Date: 9-30-94

Well Number: MW-2 Sampler: MIKE ENDICOTT Weather: SENNES

Military Time	1015	1025	1030	1045	1100	1125	
Gallons Purged	10GAL	5GAL	10GAL	15GAL	20GAL		Depth to bottom (DB): <u>14.14</u>
Purge Rate	—	—	—	—	—	S	Depth to water (DW): <u>4.04</u>
pH	7.34	7.35	7.34	7.35	7.38	A	Height of water column (H) = DB - DW: <u>10.1</u>
Conductivity	$\times 1000$ 97	$\times 1000$ 92	$\times 1000$ 94	$\times 1000$ 91	$\times 1000$ 98	D	One casing volume (CV) = H x multiplier: <u>6.56</u>
Temperature (°F)	74.0	74.6	76.0	75.8	75.8	L	Three casing volumes (3CV): <u>19.69</u>
Salinity (0/00)	—	—	—	—	—	E	Multipliers = 2" well = 0.16 gallons/foot
Turbidity	MOD	MOD	MOD	MOD	MOD		4" well = 0.65 gallons/foot
Color	CLEAR	LT GRAY	LT GRAY	LT GRAY	LT GRAY		6" well = 1.47 gallons/foot
Water Level Casing							8" well = 2.61 gallons/foot
Calibration	pH:						S.C.:

Sample #	Quantity	Volume	Type	Preserv.	Analysis	Lab	Sample Equip.	Purge Equip.	Field Comments
MW-2	2	40ML	COAS	HCL	BTEX TPH-CAS	CHROM	DISP. BAILER	TEFLON BAILER	
↓	1	1 LT	AMBER	HCL	TPH DIESEL	↓	↓	↓	
↓	1	1 LT	AMBER	HCL	PSBS	↓	↓	↓	
↓	1	500E	POLY	HCL	TDS	↓	↓	↓	
Cleaning:									
Comments:									

Sampler's Signature: Mike Endicott



Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.



PURGE CHARACTERIZATION AND SAMPLE LOG

Project Number: 05100535 Project Name: WOOD STREET Date: 9-30-94
 Well Number: MW-3 Sampler: MIKE ENDICOTT Weather: SCANNY

Military Time	1215	1220	1230	1240	1251	1330	
Gallons Purged	1 GAL	5 GAL	10 GAL	15 GAL	20 GAL	5	Depth to bottom (DB): <u>14.12</u>
Purge Rate	—	—	—	—	—	A	Depth to water (DW): <u>4.52</u>
pH	7.20	7.22	7.20	7.25	7.15	M	Height of water column (H) = DB - DW: <u>9.6</u>
Conductivity	$\times 1000$ 1.19	$\times 1000$ 1.24	$\times 1000$ 1.14	$\times 1000$ 1.15	$\times 1000$ 1.13	D	One casing volume (CV) = H x multiplier: <u>6.24</u>
Temperature (°F)	78.5	87.7	78.5	80.6	79.2	L	Three casing volumes (3CV): <u>18.72</u>
Salinity (0/00)	—	—	—	—	—	E	Multipliers = 2" well = 0.16 gallons/foot
Turbidity	MOD	MOD	MOD	MOD	MOD		4" well = 0.65 gallons/foot
Color	LT GRAY	LT GRAY	LT GRAY	LT GRAY	LT GRAY		6" well = 1.47 gallons/foot
Water Level Casing							8" well = 2.61 gallons/foot
Calibration	pH:						S.C.:

Sample #	Quantity	Volume	Type	Preserv.	Analysis	Lab	Sample Equip.	Purge Equip.	Field Comments
MW 3	2	40ML	VOAS	HCL	^{15TEX} TPH-GAS	CHROM	DISD. BAILER	TEFLON BAILER	OILY SMELL
↓	1	1LT	AMBER	HCL	TPH DIESEL	↓	↓	↓	
↓	1	1LT	AMBER	HCL	PCBS	↓	↓	↓	
↓	1	1/2QT	POLY	NONE	TDS	↓	↓	↓	
Cleaning:									
Comments:									

Sampler's Signature: Mike Endicott

GROUND WATER ELEVATION MEASUREMENT LOG

Project Name: WOOD STREET Project No.: 05100535 Task/Phase: 01
 Date: 9-30-94 Start/Finish: 1000 - 1030 Weather: SONNY

Well Number	Reference Elevation (feet msl)	DTW (feet)	PT (feet)	PT x 0.8 (feet)	Adjusted DTW (DTW - (PT x 0.8))	Ground Water Elevation (feet msl)	Comments
MW-1	7.71	4.56				3.15	
MW-2	7.00	4.04				2.96	
MW-3	7.32	4.52				2.80	

DTW = Depth to Water (to 0.01 feet)

DTP = Depth to Product (to 0.01 feet)

PT = Product Thickness (to 0.01 feet)

Signature: Mike Endicott

APPENDIX B
CHAIN-OF-CUSTODY DOCUMENTS





Industrial Compliance

A Subsidiary of SP Environmental Systems, Inc.



CHAIN-OF-CUSTODY RECORD

471164615-015

18670

No. 14248

Industrial Compliance • 9719 Lincoln Village Drive, Ste. 310 • Sacramento, CA 95827 • Phone 916-369-8971 • FAX 916-369-8370

CHROMALAB

PROJECT NAME Wood St.		PROJECT LOCATION CACLAND	
PROJ. NO. 05100	PROJECT CONTACT CARL TAYLOR	PROJECT TELEPHONE NO. (510) 238-9540	
CLIENT'S REPRESENTATIVE		PROJECT MANAGER/SUPERVISOR CARL TAYLOR	

NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)	SUBM #: 9409434 CLIENT: INDCOMP DUE: 10/07/94 REF #: 18670
	<i>TPH - BTEX 8015</i>	
	<i>TPH - DIESEL 8015</i>	
	<i>PCB's 8080</i>	

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE LOCATION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED	REMARKS
1	MW-1	9-30	1000			GROUNDWATER FROM MW-1	5	X X X X	
2	MW-2	9-30	1125			GROUNDWATER FROM MW-2	5	X X X X	
3	MW-3	9-30	1330			GROUNDWATER FROM MW-3	5	X X X X	
4	MW-3D	9-30	1335			GROUNDWATER FROM MW-3 DUPLICATE	5	X X X X	
5	MW-3E	9-30	1345			FIELD EQUIPT. BLANK (BATTERY)	4	X X X	
6	TRIP	9-30	930			TRIP BLANK PREPARED BY LAB	2	X	
7									
8									
9									
10									

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	6	Mike Endicott	<i>[Signature]</i>	9-30-94	15:00	5 DAY TURNAROUND
2						
3						
4						

SAMPLER'S NAME: *Mike Endicott* SAMPLER'S SIGNATURE: *MIKE ENDICOTT*

APPENDIX C
ANALYTICAL LABORATORY REPORTS,
GROUND WATER SAMPLES



CHROMALAB, INC.

Environmental Services (SDB)

October 5, 1994

Submission #: 9409434

INDUSTRIAL COMPLIANCE

Attention: Carl Taylor

Project: WOOD ST

Project#: 05100

Received: September 30, 1994

Reference: 6 samples for Gasoline and BTEX analysis.

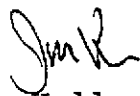
Sampled: September 30, 1994 ✓ Matrix: WATER


Run#: 4090

Analyzed: October 4, 1994

Method: EPA 5030/8015M/602/8020

Well #	CLIENT SMPL ID	Gasoline (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
64645	MW-1	N.D. ✓	N.D. ✓	N.D.	N.D.	N.D.
64646	MW-2	N.D. ✓	N.D. ✓	N.D.	N.D.	N.D.
64647	MW-3	0.16 ✓	0.80 ✓	1.6	N.D.	2.3
64648	MW-3D	0.16	0.70	1.4	N.D.	2.0
64649	MW-3E	N.D.	N.D.	N.D.	N.D.	N.D.
64650	TRIP	N.D.	N.D.	N.D.	N.D.	N.D.
Reporting Limits		0.05	0.5	0.5	0.5	0.5
Blank Result		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)		88	98	111	108	115


Jack Kelly
Chemist


Ali Kharrazi
Organic Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 7, 1994

Submission #: 9409434

INDUSTRIAL COMPLIANCE

Atten: Carl Taylor

Project: WOOD ST

Project #: 05100

Received: September 30, 1994

re: Five samples for Diesel analysis

Matrix: WATER

Extracted: October 3, 1994

Sampled: September 30, 1994

Analyzed: October 6, 1994

Method: EPA 3510/8015

<u>Sample #</u>	<u>Client Sample ID</u>	<u>Diesel ($\mu\text{g/L}$)</u>
64645	MW-1	N.D. ✓
64646	MW-2	N.D. ✓
64647	MW-3	N.D. ✓
64648	MW-3D	N.D. ✓
64649	MW-3E	N.D.
Blank		N.D.
Spike Recovery		83%
Dup Spike Recovery		81%
Reporting Limit		50

ChromaLab, Inc.



Alex Tam
Analytical Chemist



Ali Kharrazi
Organic Manager

cc

CHROMALAB, INC.

Environmental Services (SDB)

October 6, 1994

Submission #: 9409434

INDUSTRIAL COMPLIANCE

Attn: Carl Taylor

Project: WOOD ST

Project#: 05100

Received: September 30, 1994

re: One sample for Polychlorinated Biphenyls (PCBs) analysis.

Sample ID: MW-1

Spl#: 64645

Matrix: WATER

Extracted: October 4, 1994


Sampled: September 30, 1994

Run#: 4123

Analyzed: October 5, 1994

Method: MOD. EPA 608

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
AROCLOR 1016	N.D.	0.5	N.D.	--
AROCLOR 1221	N.D.	0.5	N.D.	--
AROCLOR 1232	N.D.	0.5	N.D.	--
AROCLOR 1242	N.D.	0.5	N.D.	--
AROCLOR 1248	N.D.	0.5	N.D.	--
AROCLOR 1254	N.D.	0.5	N.D.	--
AROCLOR 1260	N.D.	0.5	N.D.	85


Alex Tam
Chemist


Ali Kharrazi
Organic Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 6, 1994

Submission #: 9409434

INDUSTRIAL COMPLIANCE

Client: Carl Taylor

Project: WOOD ST

Project#: 05100

Received: September 30, 1994

Reference: One sample for Polychlorinated Biphenyls (PCBs) analysis.

Sample ID: MW-2

Spl#: 64646

Matrix: WATER

Extracted: October 4, 1994


Sampled: September 30, 1994

Run#: 4123

Analyzed: October 5, 1994

Method: MOD. EPA 608

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
AROCLOR 1016	N.D.	0.5	N.D.	--
AROCLOR 1221	N.D.	0.5	N.D.	--
AROCLOR 1232	N.D.	0.5	N.D.	--
AROCLOR 1242	N.D.	0.5	N.D.	--
AROCLOR 1248	N.D.	0.5	N.D.	--
AROCLOR 1254	N.D.	0.5	N.D.	--
AROCLOR 1260	N.D.	0.5	N.D.	85


Alex Tam
Chemist


Ali Kharrazi
Organic Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 6, 1994

Submission #: 9409434

INDUSTRIAL COMPLIANCE

Atten: Carl Taylor

Project: WOOD ST

Project#: 05100

Received: September 30, 1994

re: One sample for Polychlorinated Biphenyls (PCBs) analysis.

Sample ID: MW-3

Spl#: 64647

Matrix: WATER

Extracted: October 4, 1994

Sampled: September 30, 1994

Run#: 4123

Analyzed: October 5, 1994

Method: MOD. EPA 608

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
AROCLOR 1016	N.D.	0.5	N.D.	--
AROCLOR 1221	N.D.	0.5	N.D.	--
AROCLOR 1232	N.D.	0.5	N.D.	--
AROCLOR 1242	N.D.	0.5	N.D.	--
AROCLOR 1248	N.D.	0.5	N.D.	--
AROCLOR 1254	N.D.	0.5	N.D.	--
AROCLOR 1260	N.D.	0.5	N.D.	85


Alex Tam
Chemist


Ali Kharrazi
Organic Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 6, 1994

Submission #: 9409434

INDUSTRIAL COMPLIANCE

Atten: Carl Taylor

Project: WOOD ST

Project#: 05100

Received: September 30, 1994

re: One sample for Polychlorinated Biphenyls (PCBs) analysis.

Sample ID: MW-3D

Spl#: 64648

Matrix: WATER

Extracted: October 4, 1994

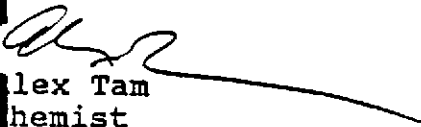
Sampled: September 30, 1994


Run#: 4123

Analyzed: October 5, 1994

Method: MOD. EPA 608

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
AROCLOR 1016	N.D.	0.5	N.D.	--
AROCLOR 1221	N.D.	0.5	N.D.	--
AROCLOR 1232	N.D.	0.5	N.D.	--
AROCLOR 1242	N.D.	0.5	N.D.	--
AROCLOR 1248	N.D.	0.5	N.D.	--
AROCLOR 1254	N.D.	0.5	N.D.	--
AROCLOR 1260	N.D.	0.5	N.D.	85


Alex Tam
Chemist


Ali Kharrazi
Organic Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 6, 1994

Submission #: 9409434

INDUSTRIAL COMPLIANCE

Attn: Carl Taylor

Project: WOOD ST

Project#: 05100

Received: September 30, 1994

re: One sample for Polychlorinated Biphenyls (PCBs) analysis.

Sample ID: MW-3E

Spl#: 64649

Matrix: WATER

Extracted: October 4, 1994

Sampled: September 30, 1994

Run#: 4123

Analyzed: October 5, 1994

Method: MOD. EPA 608

ANALYTE	RESULT	REPORTING	BLANK	BLANK SPIKE
	(ug/L)	LIMIT	RESULT	RESULT
		(ug/L)	(ug/L)	(%)
ROCLOR 1016	N.D.	0.5	N.D.	--
AROCLOR 1221	N.D.	0.5	N.D.	--
AROCLOR 1232	N.D.	0.5	N.D.	--
ROCLOR 1242	N.D.	0.5	N.D.	--
ROCLOR 1248	N.D.	0.5	N.D.	--
AROCLOR 1254	N.D.	0.5	N.D.	--
AROCLOR 1260	N.D.	0.5	N.D.	85

Alex Tam
Chemist

Ali Kharrazi
Organic Manager



GeoAnalytical Laboratories, Inc.

1031 Kansas Avenue
Modesto, CA 95351

Phone (209) 572-0900
FAX (209) 572-0916

CERTIFICATE OF ANALYSIS

Report # F277-05

ChromaLab

2239 Omega Rd Ste 1
San Ramon CA 94583

Date: 10/15/94

Date Received: 10/14/94


Date Started: 10/14/94

Date Completed: 10/15/94

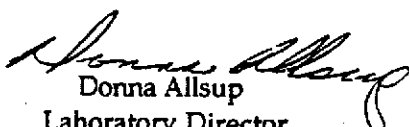
Project Name: IND COMP

Project # 9409434

Sample ID	Lab ID	Detection Limit	Method	Analyte	Results	Units mg/L
MW-1	F35005	10	160.1	Total Dissolved Solids	630	
MW-2	F35006	10	160.1	Total Dissolved Solids	670	
MW-3	F35007	10	160.1	Total Dissolved Solids	880	
MW-3D	F35008	10	160.1	Total Dissolved Solids	870	


Ramiro Salgado
Chemist

Certification # E757


Donna Allsup
Laboratory Director