



PACIFIC  
ENVIRONMENTAL  
GROUP INC.

ENVIRONMENTAL  
PROTECTION

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January 20, 1997  
Project 304-013.1A

Mr. Timothy D. Johnson  
Tosco Northwest Company  
601 Union Street, Suite 2500  
Seattle, Washington 98101

Re: Oil/Water Separator  
Closure Documentation  
Tosco Service Station 11127  
5425 Martin Luther King Way  
Oakland, California

Dear Mr. Johnson:

Pacific Environmental Group, Inc. (PACIFIC) has prepared this letter for the Tosco Northwest Company (Tosco) to document the results of the oil/water separator closure activities at the site referenced above (Figure 1). The work described in this letter was performed by PACIFIC at the request of Tosco. The field activities were completed on December 12, 1996, at the request of Gettler-Ryan, Inc., the contractor. The purpose of this work was to investigate the condition of soil beneath the base of the oil/water separator located on the service station property.

#### SUMMARY OF FIELD ACTIVITIES

On December 12, 1996, PACIFIC collected two soil samples (OWS-1, 0.5' and OWS-1, 2') from beneath the oil/water separator located in the floor of the vehicle service bay at the south side of the service station building (Figure 1 and Table 1). Soil samples OWS-1, 0.5' and OWS-1, 2' were collected immediately below the second stage of the separator and at depths of approximately 0.5 foot and 2 feet, respectively.

The samples were collected using hand auger equipment, and were retained in brass liners, sealed with Teflon® tape and plastic end caps, and stored on ice. The samples were later transported under chain-of-custody to a California State-certified laboratory. Each soil sample was analyzed for total recoverable petroleum hydrocarbons (TRPH) and halogenated volatile organic compounds (HVOCs) by EPA Methods 418.1 and 8010, respectively. In addition, the soil samples were analyzed for total petroleum

hydrocarbons calculated as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) by EPA Methods 8015 (modified) and 8020. Samples OWS-1, 0.5' and OWS-1, 2' were also analyzed for TPH calculated as diesel (TPH-d) with silica gel cleanup by the California DHS LUFT Method. Field and laboratory procedures are presented as Attachment A. Certified analytical reports and chain-of-custody documentation are presented as Attachment B.

## **FINDINGS**

### **Oil/Water Separator Closure**

Prior to collecting the soil samples, Gettler-Ryan removed the contents of the oil/water separator and steam cleaned the inside. Each stage of the separator was inspected and appeared to be in good and undamaged condition. The bottom of the separator was then broken out using a pneumatic hammer. The concrete at the base of the second stage was observed to be approximately 6 inches thick. Soil samples were then collected from below the second stage using hand auger equipment. Field evidence of hydrocarbon-impacted soil was not observed.

### **Soil Analytical Results**

TRPH was detected in soil sample OWS-1, 2' at a concentration of 64 parts per million (ppm) (Table 1). TPH-g and BTEX compounds were not detected in the samples at concentrations above the laboratory method reporting limits (MRLs). In addition, TPH-d and HVOCs were not detected at concentrations above the MRLs. Soil analytical data are presented in Table 1.

## **CONCLUSIONS**

Based on the analytical results for the two soil samples collected from hand auger Boring OWS-1, minor concentrations of petroleum hydrocarbons are present in the soil below the oil/water separator. The soil sample collected at a depth of 2 feet below the separator contained TRPH at a concentration of 64 ppm. TPH-g, BTEX compounds, TPH-d, and HVOCs were not detected in soil samples at concentrations above the laboratory MRLs.

Should you have any questions regarding the contents of this letter, please call.

Sincerely,

Pacific Environmental Group, Inc.



Joseph Muzzio  
Project Geologist  
CEG 1672



- Attachments: Table 1 - Soil Analytical Data - Oil/Water Separator  
Total Petroleum Hydrocarbons  
(TPH as Gasoline, BTEX Compounds, TPH as Diesel,  
TRPH, and HVOCs)  
Figure 1 - Site Map  
Attachment A - Field and Laboratory Procedures  
Attachment B - Certified Analytical Reports and Chain-of-Custody  
Documentation

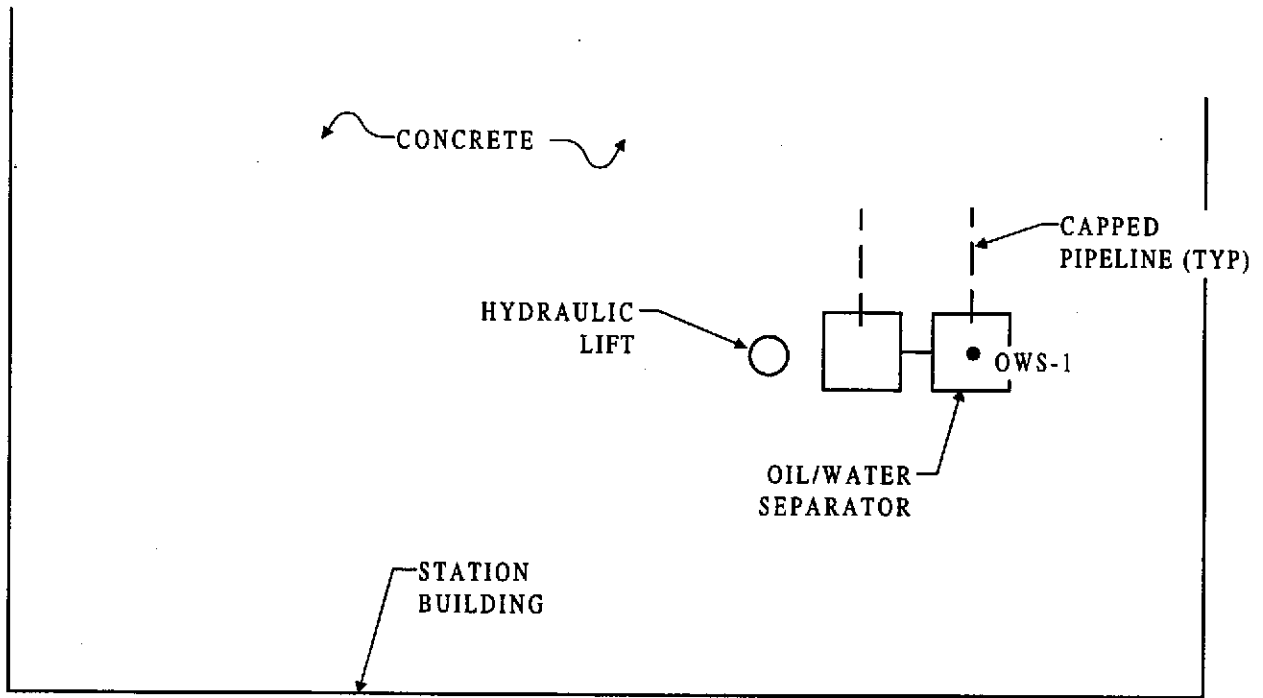
cc: Mr. Scott Hooton, British Petroleum Oil Company  
Mr. [REDACTED] Health  
Mr. Kevin Graves, California Regional Water Quality Control Board,  
San Francisco Bay Region  
MR. Kent Hein, Tosco Corporation

**Table 1**  
**Soil Analytical Data**  
**Oil/Water Separator**  
**Total Petroleum Hydrocarbons**  
 (TPH as Gasoline, BTEX Compounds, TPH as Diesel, TRPH, and HVOCs)

Tosco Service Station 11127  
 5425 Martin Luther King Way  
 Oakland, California

Sample ID	Sample Depth (feet)	Date Sampled	TPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	TPH as Diesel (ppm)	TRPH (ppm)	HVOCs (ppm)
OWS-1, 0.5'	0.5	12/12/96	ND	ND	ND	ND	ND	ND	ND	ND
OWS-1, 2'	2	12/12/96	ND	ND	ND	ND	ND	ND	64	ND

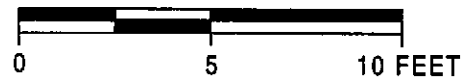
TRPH = Total recoverable petroleum hydrocarbons  
 HVOCs = Halogenated volatile organic compounds  
 ppm = Parts per million  
 ND = Not detected



**LEGEND**

- OWS-1 ● SOIL SAMPLE LOCATION AND DESIGNATION

**SCALE**



304/013/Sitemap5.vsd



PACIFIC  
ENVIRONMENTAL  
GROUP, INC.

TOSCO SERVICE STATION 11127  
5425 Martin Luther King Way  
Oakland, California

SITE MAP

FIGURE:  
**1**  
PROJECT:  
304-013.1A

**ATTACHMENT A**  
**FIELD AND LABORATORY PROCEDURES**

## ATTACHMENT A

### FIELD AND LABORATORY PROCEDURES

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#### **Hand-Auger Drilling Method**

Soil Boring OWS-1 was completed using the hand-auger drilling method. This method utilizes a 3-inch diameter earth auger attached to a 4-foot long T-bar that is turned by hand. As the depth of the boring was increased, additional extension rods were attached. For the collection of soil samples, the auger was removed and replaced with a sampling devise, consisting of a steel penetration shoe attached to a extension rod and sliding hammer. The shoe was equipped with a brass sample retention liner, approximately 6 inches long and 2 inches in diameter. To collect soil samples, the shoe and liner were driven with the slide hammer into the undisturbed soil at the bottom of the borehole. After the sampler was driven into the soil, the shoe was removed from the boring and the sample liner was removed from the shoe and sealed on both ends with Teflon® tape and plastic end caps. The hand auger and sampling equipment were washed in a nonphosphatic cleaning solution and rinsed with deionized water prior to collecting each sample. Upon completion of the sampling, the boring was backfilled with soil cuttings.

The soil samples were stored at a temperature of less than 4 degrees Centigrade in an insulated container. The samples were later transported under chain-of-custody to a California State-certified laboratory.

#### **Laboratory Procedure**

Soil samples OWS-1, 0.5' and OWS-1, 2' were analyzed for total recoverable petroleum hydrocarbons (TRPH) and halogenated volatile organic compounds (HVOCs) by EPA Methods 418.1 and 8010, respectively. In addition, the soil samples were analyzed for total petroleum hydrocarbons calculated as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) by EPA Methods 8015 (modified) and 8020, respectively. The samples were also analyzed for TPH calculated as diesel (TPH-d) with silica gel cleanup by the California DHS LUFT Method. Certified analytical reports and chain-of-custody documentation are presented as Attachment B.

**ATTACHMENT B**

**CERTIFIED ANALYTICAL REPORTS AND  
CHAIN-OF-CUSTODY DOCUMENTATION**





**Columbia  
Analytical  
Services<sup>INC.</sup>**

December 27, 1996

Service Request No.: S9602181

Mr. Joe Muzzio  
PACIFIC ENVIRONMENTAL GROUP  
2025 Gateway Place, Suite 440  
San Jose, CA 95110

RE: TOSCO 11127/Oakland/304-013.1A

Dear Mr. Muzzio:

The following pages contain analytical results for sample(s) received by the laboratory on December 13, 1996. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 10, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,



Steven L. Green  
Project Chemist

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** TOSCO  
**Project:** TOSCO 11127/Oakland/#304-013.1A  
**Sample Matrix:** Soil

**Service Request:** L9604973  
**Date Collected:** 12/12/96  
**Date Received:** 12/13/96  
**Date Extracted:** 12/19/96  
**Date Analyzed:** 12/19/96

Total Recoverable Petroleum Hydrocarbons (TRPH)  
EPA Method 418.1  
Units: mg/Kg (ppm)

Sample Name	Lab Code	MRL	Result
OWS-1, 0.5'	L9604973-001	10	ND
OWS-1, 2'	L9604973-002	10	64
Method Blank	L961219-MB	10	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: TOSCO  
 Project: TOSCO 11127/Oakland/304-013.1A  
 Sample Matrix: Soil

Service Request: S9602181  
 Date Collected: 12/12/96  
 Date Received: 12/12/96  
 Date Extracted: 12/18/96

Halogenated Volatile Organic Compounds  
 EPA Methods 5030/8010  
 Units: mg/Kg (ppm)  
 As Received Basis

Sample Name:	OWS-1, 0.5'	OWS-1, 2'	Method Blank
Lab Code:	S9602181-001	S9602181-002	S961218-SB1
Date Analyzed:	12/18/96	12/18/96	12/18/96

Analyte	MRL			
Dichlorodifluoromethane (CFC 12)	0.1	ND	ND	ND
Chloromethane	0.1	ND	ND	ND
Vinyl Chloride	0.05	ND	ND	ND
Bromomethane	0.05	ND	ND	ND
Chloroethane	0.05	ND	ND	ND
Trichlorofluoromethane (CFC 11)	0.05	ND	ND	ND
1,1-Dichloroethene	0.05	ND	ND	ND
Trichlorotrifluoroethane (CFC 113)	0.05	ND	ND	ND
Methylene Chloride	0.05	ND	ND	ND
trans-1,2-Dichloroethene	0.05	ND	ND	ND
cis-1,2-Dichloroethene	0.05	ND	ND	ND
1,1-Dichloroethane	0.05	ND	ND	ND
Chloroform	0.05	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.05	ND	ND	ND
Carbon Tetrachloride	0.05	ND	ND	ND
1,2-Dichloroethane	0.05	ND	ND	ND
Trichloroethene (TCE)	0.05	ND	ND	ND
1,2-Dichloropropane	0.05	ND	ND	ND
Bromodichloromethane	0.05	ND	ND	ND
2-Chloroethyl Vinyl Ether	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.05	ND	ND	ND
cis-1,3-Dichloropropene	0.05	ND	ND	ND
1,1,2-Trichloroethane	0.05	ND	ND	ND
Tetrachloroethene (PCE)	0.05	ND	ND	ND
Dibromochloromethane	0.05	ND	ND	ND
Chlorobenzene	0.05	ND	ND	ND
Bromoform	0.05	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.05	ND	ND	ND
1,3-Dichlorobenzene	0.1	ND	ND	ND
1,4-Dichlorobenzene	0.1	ND	ND	ND
1,2-Dichlorobenzene	0.1	ND	ND	ND

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

Client: TOSCO  
 Project: TOSCO 11127/Oakland/304-013.1A  
 Sample Matrix: Soil

Service Request: S9602181  
 Date Collected: 12/12/96  
 Date Received: 12/12/96  
 Date Extracted: 12/23/96  
 Date Analyzed: 12/23-24/96

BTEX and TPH as Gasoline  
 EPA Methods 5030/8020/California DHS LUFT Method  
 As Received Basis

	<b>TPH as</b>			<b>Ethyl-</b>	<b>Xylenes,</b>
Analyte:	<b>Gasoline</b>	<b>Benzene</b>	<b>Toluene</b>	<b>benzene</b>	<b>Total</b>
Units:	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)
Method Reporting Limit:	1	0.005	0.005	0.005	0.005

Sample Name	Lab Code					
OWS-1, 0.5'	S9602181-001	ND	ND	ND	ND	ND
OWS-1, 2'	S9602181-002	ND	ND	ND	ND	ND
Method Blank	S9961223-SB1	ND	ND	ND	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: TOSCO  
Project: TOSCO 11127/Oakland/304-013.1A  
Sample Matrix: Soil

Service Request: S9602181  
Date Collected: 12/12/96  
Date Received: 12/13/96  
Date Extracted: 12/18/96  
Date Analyzed: 12/18/96

TPH as Diesel  
California DHS LUFT Method/Silica Gel Clean-Up  
Units: mg/Kg (ppm)  
As Received Basis

Sample Name	Lab Code	MRL	Result
OWS-1, 0.5'	S9602181-001	1	ND
OWS-1,2'	S9602181-002	1	ND
Method Blank	9601218-SB1	1	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: TOSCO  
Project: TOSCO 11127/Oakland/304-013.1A  
Sample Matrix: Soil

Service Request: S9602181  
Date Collected: 12/12/96  
Date Received: 12/12/96  
Date Extracted: 12/18/96  
Date Analyzed: NA

Surrogate Recovery Summary  
Halogenated Volatile Organic Compounds  
EPA Methods 5030/8010

Sample Name	Lab Code	Percent Recovery
		4-Bromofluorobenzene
OWS-1, 0.5'	S9602181-001	110
OWS-1, 2'	S9602181-002	119
Method Blank	S961218-SB1	92

CAS Acceptance Limits: 74-125

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: TOSCO  
Project: TOSCO 11127/Oakland/304-013.1A  
Sample Matrix: Soil

Service Request: S9602181  
Date Collected: 12/12/96  
Date Received: 12/12/96  
Date Extracted: NA  
Date Analyzed: NA

Surrogate Recovery Summary  
TPH as Gasoline/BTEX  
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	PID Detector	FID Detector
		Percent Recovery 4-Bromofluorobenzene	Percent Recovery $\alpha,\alpha,\alpha$ -Trifluorotoluene
OWS-1, 0.5'	S9602181-001	103	97
OWS-1, 2'	S9602181-002	104	100
Method Blank	S9961223-SB1	100	91

CAS Acceptance Limits: 51-137 51-137



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: TOSCO  
Project: TOSCO 11127/Oakland/304-013.1A  
Sample Matrix: Soil

Service Request: S9602181  
Date Collected: 12/12/96  
Date Received: 12/12/96  
Date Extracted: NA  
Date Analyzed: 12/18/96

Surrogate Recovery Summary  
TPH as Diesel  
California DHS LUFT Method/Silica Gel Clean-Up

Sample Name	Lab Code	Percent Recovery p-Terphenyl
OWS-1, 0.5'	S9602181-001	87
OWS-1, 2'	S9602181-002	91
Method Blank	9601218-SB1	80

CAS Acceptance Limits: 41-140