PACIFIC
ENVIRONMENTAL
GROUP, INC.

January 20, 1997
Project 304-014.1A

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

Re: Oil/Water Separator
Closure Documentation
Tosco Service Station 11122
3101 98th Avenue
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. PACIFIC's field activities were performed on December 12, 1996 at the request of Gettler-Ryan, Inc., the contractor. The purpose of this work was to investigate the condition of groundwater immediately beneath the base of the oil/water separator located on the service station property.

SUMMARY OF FIELD ACTIVITIES

On December 12, 1996, PACIFIC collected one groundwater sample (OWS-1) from beneath the oil/water separator located in the floor of the vehicle service bay at the west side of the service station building (Figure 1 and Table 1). Groundwater sample OWS-1 was collected from the bottom of the second stage of the separator using a clean disposable bailer. The sample was then transferred from the bailer into containers appropriate to each EPA analytical method being employed. When necessary, preservatives were added to the sample containers. After collection, the sample containers were labeled and stored in an ice chest and transported to a California State-certified laboratory, along with chain-of-custody documentation.

Groundwater sample OWS-1 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 groundwater sample was 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. Sample OWS-1 was also analyzed for TPH calculated as diesel (TPH-d) with silica gel cleanup by the California DHS LUFT Method. Groundwater sampling procedures are presented as Attachment A, and the certified analytical reports and chain-of-custody documentation are presented as Attachment B.

FINDINGS

Oil/Water Separator Closure

Prior to collecting the groundwater sample, the Gettler-Ryan, removed the contents of the oil/water separator and steam cleaned the inside. The steam cleaner rinsate was then purged and 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 an pneumatic hammer. The concrete base of the second stage was observed to be approximately 16 inches thick. Groundwater accumulated in the hole hammered through the second stage, and a sample was collected using a clean disposable bailer.

Groundwater Analytical Results

TRPH was detected in groundwater sample OWS-1 at a concentration of 200 parts per million (ppm) (Table 1). In addition, TPH-g and benzene were detected at concentrations of 45,000 and 460 parts per billion (ppb), respectively. Other BTEX compounds were detected at concentrations up to 6,800 ppb (xylenes). HVOCs and TPH-d were not detected at concentrations above the laboratory method reporting limits (Table 1).

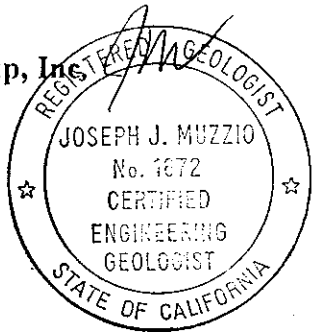
CONCLUSIONS

- Based on the analytical results for water sample OWS-1, petroleum hydrocarbons are present in the groundwater beneath the oil/water separator. Groundwater sample OWS-1 contained TRPH at a concentration of 200 ppm. In addition, TPH-g and benzene were detected at concentrations of 45,000 and 460 ppb, respectively. Other BTEX compounds were also detected at concentrations up to 6,800 ppb (xylenes).

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 - Groundwater 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

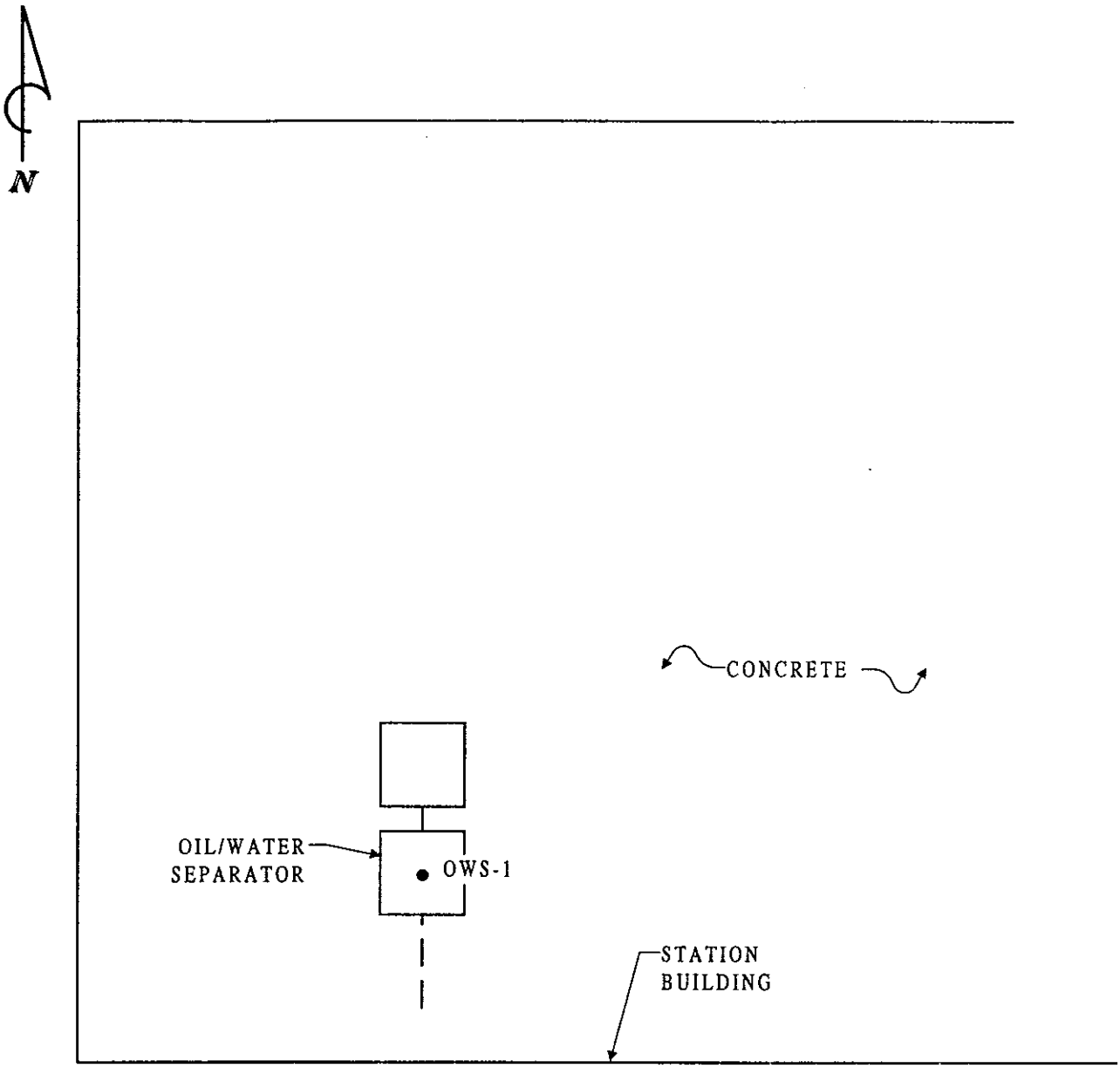
cc: Mr. Scott Hooton, British Petroleum
[redacted], Environmental Health
Mr. Kevin Graves, California Regional Water Quality Control Board, San Francisco Bay Region
Mr. Kent Hein, Tosco Corporation

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

Tosco Service Station 11122
3101 98th Avenue
Oakland, California

Sample ID	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	TPH as Diesel (ppb)	TRPH (ppm)	HVOCs (ppb)
OWS-1	12/12/96	45,000	460	3,100	940	6,800	ND*	200	ND**

ppb = Parts per billion
ppm = Parts per million
ND = Not detected at a concentration above the laboratory method reporting limit (MRL).
* = Quantified as diesel. The sample contained components that eluted prior to and within the diesel range, but the chromatogram did not match a typical diesel fingerprint. The components were quantified at 17,000 ppb using the diesel standard. The sample also contained a heavy oil at 15,000 ppb.
** = The MRL is elevated due to high concentration of non-target analytes requiring sample dilution.



LEGEND

OWS-1 ● SOIL SAMPLE LOCATION AND DESIGNATION

SCALE

0 5 10 FEET

PACIFIC ENVIRONMENTAL GROUP, INC.

TOSCO SERVICE STATION 11122
3101 98th Avenue
Oakland, California

SITE MAP

FIGURE: 1

PROJECT: 304-014.1A

304/014/Sitemap5.vsd

ATTACHMENT A
FIELD AND LABORATORY PROCEDURES

Groundwater Sampling Method

Groundwater sample OWS-1 was collected from the beneath the oil/water separator using a clean disposable bailer. The water sample was transferred from the bailer into glass containers appropriate to each EPA analytical method being employed. When necessary, appropriate preservatives were added to the sample containers. After collection, the sample containers were labeled and stored in an ice chest, and maintained at temperature of less than 4 degrees Centigrade. The sample containers were then transported under chain-of-custody to a California State-certified analytical laboratory.

Laboratory Procedure

Groundwater sample OWS-1 was analyzed for total petroleum hydrocarbons calculated as gasoline (TPH-g) and total recoverable petroleum hydrocarbons (TRPH) by EPA Methods 8015 (modified) and 418.1, respectively. In addition, the sample was analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) by EPA Method 8020, and for total petroleum hydrocarbons calculated as diesel (TPH-d) with silica gel cleanup by the California DHS LUFT Method.

Sample OWS-1 was also analyzed for TPH-d with silica gel cleanup by the California DHS LUFT Method, and for halogenated volatile organic compounds (HVOCs) by EPA Method 8010. 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 inc.

December 27, 1996 Service Request No.: S9602182

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

RE: TOSCO 11122/Oakland/304-014.1A

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,

Cristina V. Naukam for

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	**Service Request:**	L9604975
Project:	TOSCO 11122/Oakland/#304-014.1A	**Date Collected:**	12/12/96
Sample Matrix:	Water	**Date Received:**	12/13/96
		Date Extracted:	12/20/96
		Date Analyzed:	12/20/96

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

Sample Name	Lab Code	MRL	Result
OWS-1	L9604975-001	0.5	200
Method Blank	L961220-MB	0.5	ND

1AMRL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9602182
Project:	TOSCO 11122/Oakland/304-014.1A	**Date Collected:**	12/12/96
Sample Matrix:	Water	**Date Received:**	12/13/96
		Date Extracted:	NA

Halogenated Volatile Organic Compounds
EPA Methods 8010
Units: ug/L (ppb)

		Sample Name:	**OWS-1**	**Method Blank**
		Lab Code:	S9602182-001 X	S961218-WB1
		Date Analyzed:	12/18/96	12/18/96
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	1		<100	ND
Chloromethane	1		<100	ND
Vinyl Chloride	0.5		<50	ND
Bromomethane	0.5		<50	ND
Chloroethane	0.5		<50	ND
Trichlorofluoromethane (CFC 11)	0.5		<50	ND
1,1-Dichloroethene	0.5		<50	ND
Trichlorotrifluoroethane (CFC 113)	0.5		<50	ND
Methylene Chloride	0.5		<50	ND
trans-1,2-Dichloroethene	0.5		<50	ND
cis-1,2-Dichloroethene	0.5		<50	ND
1,1-Dichloroethane	0.5		<50	ND
Chloroform	0.5		<50	ND
1,1,1-Trichloroethane (TCA)	0.5		<50	ND
Carbon Tetrachloride	0.5		<50	ND
1,2-Dichloroethane	0.5		<50	ND
Trichloroethene (TCE)	0.5		<50	ND
1,2-Dichloropropane	0.5		<50	ND
Bromodichloromethane	0.5		<50	ND
2-Chloroethyl Vinyl Ether	5		<500	ND
trans-1,3-Dichloropropene	0.5		<50	ND
cis-1,3-Dichloropropene	0.5		<50	ND
1,1,2-Trichloroethane	0.5		<50	ND
Tetrachloroethene (PCE)	0.5		<50	ND
Dibromochloromethane	0.5		<50	ND
Chlorobenzene	0.5		100	ND
Bromoform	0.5		<50	ND
1,1,2,2-Tetrachloroethane	0.5		<50	ND
1,3-Dichlorobenzene	1		<100	ND
1,4-Dichlorobenzene	1		<100	ND
1,2-Dichlorobenzene	1		430	ND

X The MRL is raised due to high concentration of non-target analytes requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9602182
Project:	TOSCO 11122/Oakland/304-014.1A	**Date Collected:**	12/12/96
Sample Matrix:	Water	**Date Received:**	12/13/96
		Date Extracted:	NA
		Date Analyzed:	12/23-24/96

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

Analyte:	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes, Total
Units:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Method Reporting Limit:	50	0.5	0.5	0.5	0.5
Sample Name **Lab Code**					
OWS-1 S9602182-001	45,000	460	3,100	940	6,800
Method Blank S961223-WB1	ND	ND	ND	ND	ND

5ABTXGAS/061694

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	TOSCO	**Service Request:**	S9602182
Project:	TOSCO 11122/Oakland/304-014.1A	**Date Collected:**	12/12/96
Sample Matrix:	Water	**Date Received:**	12/13/96
		Date Extracted:	12/19/96
		Date Analyzed:	12/20/96

TPH as Diesel
California DHS LUFT Method/Silica Gel Clean-up
Units: ug/L (ppb)
As Received Basis

Sample Name	Lab Code	MRL	Result
OWS-1	S9602182-001	50	ND, A, B
Method Blank	S9601219-WB1	50	ND

A Quantitated as diesel. The sample contained components that eluted prior to and within the diesel range, but the chromatogram did not match a typical diesel fingerprint.
The components were quantitated at 17,000 ppb using a diesel standard.

B The sample also contained a heavy oil at 15,000 ppb.

S9602182

Chain of Custody

PG 1 OF 1

Pacific Environmental Group, Inc.
2025 Gateway Place #440, San Jose CA 95110
Phone 408 441-7500 Fax 408 441-7539

PROJECT No. 304-014.1A

Facility No. TOSCO 11122

Facility Address: 3101 98TH AVE., OAKLAND

Billing Refence Number:

CLIENT engineer: TIM JOHNSON

PACIFIC Point of Contact: JOE MUZZIO

Sampler: MARK KUNKLE

Laboratory Name: CAS

W=water S=soil A=air; G=grab D=disc. C=comp.

Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix	Type	Sampling Date	Sampling Time	TPPH AS GASOLINE 8015M	TEPH AS DIESEL 8015M	TEPH - OIL & GREASE 418.1	CHLORINATED HYDROCARBONS	BTEX 8020						
OWS-1	7	VARIOUS	<4°C	W	G	12/12/96		X	X	X	X	X						
OWS-1, 2'	2	BRASS	<4°C	S	G	12/12/96		X	X	X	X	X	–	ON HOLD – 12/13/96 Per Mark CVK				
								R9	R8	R20	S56							

Comments:

- TEPH-D AND TEPH-O/G METHODS W/SILICA GEL CLEAN UP.
- DIRECT BILL TOSCO
- WATER SAMPLES HAVE VARIOUS PRESERVATIVES SEE CONTAINER LABELS.

Condition of Sample:

Temperature Received: Cool

Relinquished by	Date	Time	Received by	Date	Time
[signature] MARK KUNKLE	12-13-96	16:05	[signature]	12/13/96	16:05
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

Mail original Analytical Report to:
Pacific Environmental Group
- [X] 2025 Gateway Place #440 San Jose, CA 95110
- [ ] 620 Contra Costa Blvd. #209 Pleasant Hill, CA 94523
- [ ] 25725 Jeronimo Rd. #576C Mission Viejo, CA 92622
- [ ] 4020 148th Ave NE #B Redmond, WA 98052

Turnaround Time:
- [ ] Priority Rush (1 day)
- [ ] Rush (2 days)
- [ ] Expedited (5 days)
- [X] Standard (10 days)
- [ ] As Contracted

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: TOSCO
Project: TOSCO 11122/Oakland/304-014.1A
Sample Matrix: Water

Service Request: S9602182
Date Collected: 12/12/96
Date Received: 12/13/96
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
Halogenated Volatile Organic Compounds
EPA Methods 8010

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
OWS-1	S9602182-001	106
Method Blank	S961218-WB1	103

CAS Acceptance Limits: 74-125

SUR1/062994

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	TOSCO	**Service Request:**	S9602182
Project:	TOSCO 11122/Oakland/304-014.1A	**Date Collected:**	12/12/96
Sample Matrix:	Water	**Date Received:**	12/13/96
		Date Extracted:	NA
		Date Analyzed:	NA

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

Sample Name	Lab Code	PID Detector Percent Recovery 4-Bromofluorobenzene	FID Detector Percent Recovery α,α,α–Trifluorotoluene
OWS-1	S9602182-001	104	92
Method Blank	S961223-WB1	103	94
CAS Acceptance Limits:		69-116	69-116

SUR2/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	TOSCO	**Service Request:**	S9602182
Project:	TOSCO 11122/Oakland/304-014.1A	**Date Collected:**	12/12/96
Sample Matrix:	Water	**Date Received:**	12/13/96
		Date Extracted:	NA
		Date Analyzed:	12/20/96

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

Sample Name	Lab Code	Percent Recovery p-Terphenyl
OWS-1	S9602182-001	103
Method Blank	S96012/19-WB1	86

CAS Acceptance Limits: 50-140

SUR1/062994