BASELINE ASSESSMENT REPORT
Station Number 03152
8325 Mukilteo Speedway
Mukilteo, Washington

1. Site Features and History

The facility is an operating service station located on the northeast corner of 84th Street and Mukilteo Speedway in Mukilteo, Washington. The service station consists of a station building containing a small convenience store and two automobile service bays, a canopy area with a concrete drive slab, and two pump islands. Six fiberglass USTs are located on the site. Two 10,000-gallon USTs containing regular gasoline and diesel, one 12,000-gallon UST containing regular unleaded gasoline, and one 8,000-gallon UST containing super unleaded gasoline are located in a tank complex west of the station building. A 1,000-gallon waste oil UST is located at the southeast corner of the station building, and a heating oil UST of unknown capacity is located along the north side of the station building (reference b). A site plan (Figure A-1) is included with this report as Attachment A. Site photographs are included as Attachment B. Copies of figures and tabulated data from previous investigations are included as Attachment C. Copies of tabulated data and laboratory reports from EMCON's supplemental site assessment work are included as Attachment D.

BP acquired the service station from Exxon sometime after March 1993 (reference d and e). According to the station manager, the site was last renovated, including removal and/or replacement of some or all of the tanks, during 1973. According to Delta, former USTs at the site included petroleum fuel tanks located in the southeast corner of the site, a waste oil tank located near the southwest corner of the building, and a heating oil tank located north of the station building (reference b). Delta stated that the size and specific contents of the tanks were unknown, as were the locations of former pump islands at the site.

Surrounding properties consist of a market to the north, residences and a restaurant to the south, residences to the east, a restaurant to the west, and a mall, including a 7-Eleven store with a UST complex and pump island, to the southwest

2. Previous Investigations and Remediation Activities

On October 11, 1991, Delta supervised the drilling and sampling of five soil borings (SB-1, SB-2, SB-3, SB-4, and SB-5; reference b; Figure C-1) Borings SB-1 and SB-2 were drilled to a depth of approximately 40 feet bgs, borings SB-3 and SB-4 were drilled to approximately 20 feet bgs, and boring SB-5 was drilled to approximately 1.5 feet bgs. Delta terminated SB-5 at 1.5 feet bgs due to rapid seepage from fill soils immediately below the pavement surface (reference b). Delta drilled three additional soil borings (SB-6, SB-7, and MW-1) to depths of approximately 40 feet bgs in January 1992. Boring MW-1 was completed as a monitoring well.

Soils encountered during drilling of MW-1 consisted of interbedded gravelly silt, sand, and clay to a depth of 22 feet bgs, underlain by silty sand with gravel to a depth of 40 feet bgs. Organic vapor screening during drilling indicated PID readings above background in soil samples collected from several borings Samples from soil borings SB-1, SB-2, SB-6, and SB-7 revealed PID readings up to 490 ppm (reference b).

Soil samples collected from borings SB-1, SB-2, and SB-6 contained TPH-G (up to 1,200 ppm) and BTEX (up to 1.4 ppm benzene and 100 ppm xylenes) (Table C-1; reference b). BTEX also was detected in soil samples collected from boring SB-7 TPH-D (up to 260 ppm) was detected in soil samples collected from borings SB-2 and SB-6. Total lead was detected in soil samples collected from borings SB-2, SB-3, and SB-6

Delta reported water seepage into borings SB-2, SB-5, SB-6, and SB-7, and suggested the seepage may have been the result of water perched within the backfill of the tank basins (reference b). Monitoring well MW-1 was installed approximately 20 feet west of the former tank basin to determine if water was perched within the tank basin. According to Delta's March 1992 report, groundwater was not measured in MW-1 (reference b) at the time of Delta's investigation.

Delta collected groundwater samples from well MW-1 during August 1992, December 1992, April 1993, June 1993, September 1993, and December 1993 (references c through h). Groundwater samples were analyzed in each sampling event for BTEX and TPH-G On one or more occasions, the samples were also analyzed for MTBE, HVOCs, and total lead. BTEX and TPH-G were not detected in groundwater samples collected from MW-1, however, the samples did contain 1,1,1-trichloroethane (TCA, up to 1.7 ppb) during the December 1992, April 1993, and June 1993 monitoring events (Table C-2)

3. Regulatory Status and Other Issues

Ecology lists BP Station 03152 as a LUST site (Incident Number 2790) Based on review of records made available to EMCON on November 10, 1993, the most recent document found in the file was Delta's quarterly status report, dated March 3, 1993. Other documents in the file included Delta's subsurface investigation report, dated March 6, 1992; Delta's third quarter 1992 status report, dated October 2, 1992; a notice of contamination submitted by Exxon to Ecology on October 23, 1991; and a 20-day report dated December 2, 1991, indicating that a gasoline release occurred at the site.

According to the station manger, a release occurred during November 1993, when a super unleaded gasoline line was perforated during Stage II installation activities. Approximately 80 to 90 gallons of gasoline were released at that time. No records of subsequent assessment or cleanup of this release were provided to EMCON.

A sensitive receptor survey was completed by Delta for Exxon in September 1991 (reference a). Utility vaults and a storm sewer were identified on the site. Residences with basements were identified within 1,000 to 2,000 feet of the site. No municipal water wells, private water wells, or surface water bodies were identified within 1,000 feet of the site (reference a). Delta assigned the aquifer beneath the site a Class I designation (Special Groundwaters/Irreplaceable Drinking Water Source/Ecologically Vital). Delta reported that the depth to the aquifer was greater than 40 feet bgs.

4. Supplemental Site Assessment Work

On January 31, 1994, EMCON visited the site to inspect the soil beneath the dispensers for evidence of petroleum hydrocarbon contamination. The material beneath all dispensers was pea gravel A hydrocarbon vapor concentration of 33 ppm was measured with a PID in the pea gravel beneath the west diesel dispenser. Pea gravel beneath the other dispensers did not contain detectable hydrocarbon vapors. One sample (BP-106-Diesel-W), collected beneath the west diesel dispenser (Figure A-1) was analyzed for TPH-D, which was detected at a concentration of 7,700 ppm (Table D-1).

On February 2, 1994, EMCON completed two exploratory hand auger borings (HA-106-1 and HA-106-2) HA-106-1 was discontinued at 1 foot bgs because water was accumulating in the open hole Boring HA-106-2 was completed to 3 feet bgs, at which depth the soil became very dense and could not be penetrated. Organic vapor concentration readings (using a PID) ranged from 50 to 160 ppm. Soil samples collected from boring HA-106-2 at 2 5 and 3.0 feet bgs were analyzed for TPH-G, TPH-D, and BTEX, which were detected in both soil samples at concentrations of up to 10 ppm, 33 ppm, and 0.12 ppm (xylenes), respectively (Table D-1).

5. Baseline Summary

Based on our review of the most recent relevant data available in existing files, observations made during site inspections, and data collected during the environmental investigations performed in accordance with the BP/Tosco purchase agreement, hazardous substance contamination is present in soil and groundwater at this site Our review has also determined evidence of contamination and sources of contamination which could result in the presence of hazardous substance contamination which has not yet been detected.

Although the complete extent of contamination is not known at this time, there is sufficient evidence to demonstrate that the site was contaminated before the time of Tosco's purchase. Areas at the site for which evidence of contamination exists include: the former UST complex location, the current UST complex, the product lines, and the pump islands.

Soil samples collected from borings SB-1, SB-2, SB-6, SB-7, MW-1, hand auger boring HA-106-2, and from beneath the west diesel dispenser (sample BP-106-Diesel-W) contained one or more of the following constituents at concentrations above method detection limits: TPH-G, TPH-D, and BTEX. Total lead was detected at concentrations above the method detection limit in soil samples collected from borings SB-2, SB-3, and SB-6.

Groundwater samples collected from monitoring well MW-1, the only monitoring well installed at the site, contained TCA at concentrations above the method detection limit.

The extent of evidence of actual contamination levels present and of sources of contamination includes the following:

- Soil and groundwater data as summarized earlier in this report and detailed in existing files
- Inclusion of the site in the Ecology LUST list
- Documentation of a gasoline release during 1991
- A report of a gasoline release during Stage II activities in November 1993
- Hydrocarbon vapors detected in soil collected from hand auger borings, soil borings, and under the dispenser islands

- Former gasoline, waste oil, and fuel oil USTs for which documentation of removal activities was not found

In conclusion, existing and developed evidence establishes a contamination baseline consisting of the measured presence of hazardous substance contamination in soil and groundwater and evidence of historic sources and releases of hazardous substances. This report establishes a contamination baseline consisting of:

1. Known areas of contamination from measured or observed direct evidence, and

2. On-site or off-site areas of contamination which have not yet been detected but which are associated with or are consistent with evidence of existing areas of contamination and historic releases of hazardous substances.

References Cited in Report

a Delta September 29, 1991 *Exxon Proprietary Scope of Work Sensitive Receptor Survey Exxon Location Number #7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington*

b Delta. March 6, 1992. *Subsurface Investigation. Exxon Company, U S.A. Retail Store No. 7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington. Delta Project No. 43-91-801.*

c Delta. October 2, 1992. *Quarterly Status Report. Exxon R/S No. 7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington. Delta No. 43-91-801.*

d Delta March 3, 1993. *Quarterly Status Report. Exxon R/S No. 7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington. Delta No 43-91-801.*

e Delta June 14, 1993. *Quarterly Status Report. Exxon R/S No. 7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington. Delta No. 43-91-801.*

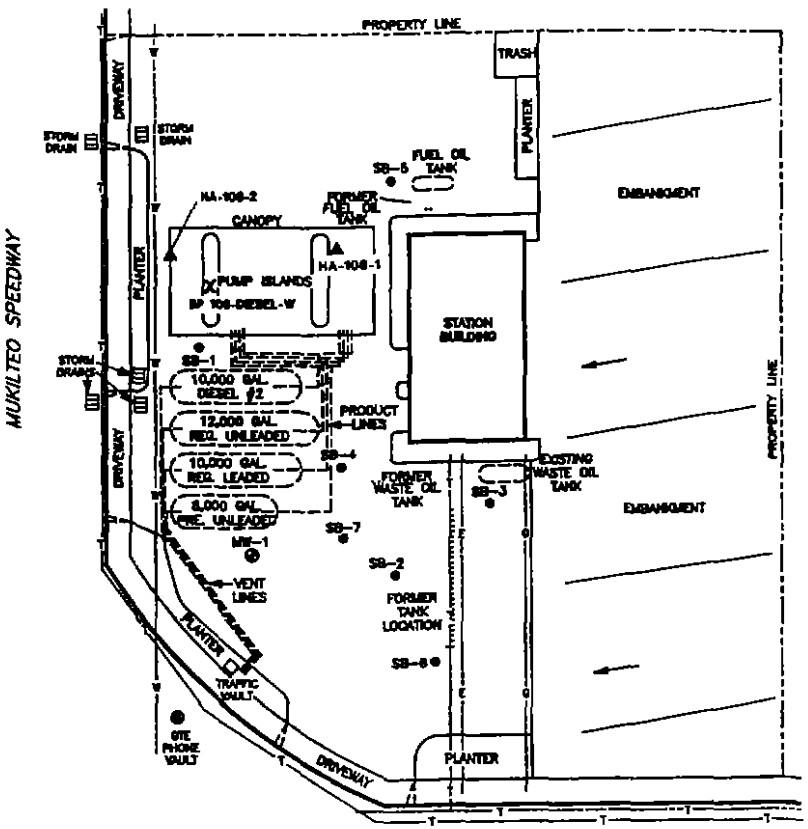
f Delta. October 6, 1993. *Status Report - Second Quarter 1993 Exxon R/S No. 7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington. Delta No. 43-91-801.*

g Delta. October 22, 1993. *Status Report - Third Quarter 1993. Exxon R/S No. 7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington. Delta No 43-91-801*

h Delta. January 28, 1994. *Status Report - Fourth Quarter 1993 Exxon R/S No. 7-6375, 8325 Mukilteo Speedway, Mukilteo, Washington. Delta No. 43-91-801*

ATTACHMENT A

SITE PLAN



LEGEND

SB 1	●	SOIL BORING LOCATION
MW 1	⊕	MONITORING WELL LOCATION
HA 108-2	▲	TOSCO HAND AUGER BORING
BP-108-DIESEL-W	X	TOSCO SOIL SAMPLE LOCATION

NOTE: LOCATIONS OF TANKS VENT LINES AND PRODUCT DISTRIBUTION LINES ARE APPROXIMATE.

UTILITIES

- —T— TELEPHONE LINE (OVERHEAD)
- —T— TELEPHONE LINE (BURIED)
- —E— ELECTRICAL LINE (BURIED)
- —G— GAS LINE (BURIED)
- —W— WATER LINE (BURIED)

-N-

0 30 60

SCALE (ft)

SOURCE: DELTA ENVIRONMENTAL CONSULTANTS, INC

EMCON Northwest Inc

DATE	3-94
DWN	MLP
APPR	
REVIS	
PROJECT NO	0328-106.03

Figure A 1
TOSCO #03152
8325 MUKILTEO SPEEDWAY
MUKILTEO WASHINGTON
SITE PLAN

ATTACHMENT B

SITE PHOTOGRAPHS

150989

PUMP ISLANDS AND STATION BUILDING

PUMP ISLANDS
TANK COMPLEX IN FOREGROUND

EMCON Northwest, Inc

DATE 5-94
DWN MLP
APPR
REVIS
PROJECT NO
0328-106 03

Figure B 1
TOSCO #03152
8325 MUKILTEO SPEEDWAY
MUKILTEO, WASHINGTON
SITE PHOTOGRAPHS

ATTACHMENT C

SUMMARY TABLES AND FIGURES FROM PREVIOUS INVESTIGATIONS

TABLE 1

Analytical Results of Soil Samples Collected
Concentrations in Parts per million (ppm)

Sample Location	Date Sampled	Date Analyzed	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH-G[a]	TPH-D[b]	TRPH[c]	Total Lead
SB-1	10/11/91	10/20/91	21.0	0.27	0.25	0.029	0.21	0.759	1.5	<5.0	—[e]	<1
SB-1	10/11/91	10/20/91	41.0	0.0056	0.0091	0.0011	0.0068	0.0226	0.2	<5.0	—	<1
SB-2	10/11/91	10/20/91	5.5	[redacted]	20	14	[redacted]	135.4	[redacted]	170[d]	—	10
SB-2	10/11/91	10/20/91	25.5	0.0012	<0.001	0.0021	0.0093	0.0136	<0.2	<5.0	—	3
SB-3	10/11/91	10/20/91	20.5	<0.001	<0.001	<0.001	<0.001	<0.004	<0.2	<5.0	<50.0	1
SB-4	10/11/91	10/20/91	11.0	<0.001	<0.001	<0.001	<0.001	<0.004	<0.2	<5.0	<50.0	<1
SB-5	NS[f]											
SB-6	01/29/92	02/10/92	10.0	0.11	0.19	0.30	1.1	1.7	9.5	[redacted]	—	13
SB-6	01/29/92	02/10/92	35.0	<0.005	0.087	<0.005	<0.005	<0.102	<1.0	<5.0	—	<10
SB-7	01/29/92	02/10/92	20.0	0.021	0.014	0.0067	0.040	0.0817	<1.0	<5.0	—	<10
SB-7	01/29/92	02/10/92	35.0	<0.005	0.120	<0.005	<0.005	<0.135	<1.0	<5.0	—	<10
MW-1	01/30/92	02/10/92	40.0	<0.005	<0.005	<0.005	<0.005	<0.020	<1.0	<5.0	—	<10
		Laboratory Methods		8020	8020	8020	8020		5030/8015 Modified	3550/8015 Modified	418.1	7421/6010
	Washington State Action Levels:			**0.5**	**40.0**	**20.0**	**20.0**		**100.0**	**200.0**	**200.0**	**250.0**
	MTCA Method A Clean-up Levels:			**0.5**	**40.0**	**20.0**	**20.0**		**100.0**	**200.0**	**200.0**	**250.0**

[a] Total petroleum hydrocarbons as gasoline.
[b] Total petroleum hydrocarbons as diesel.
[c] Total recoverable petroleum hydrocarbons.
[d] Hydrocarbons greater than C_{22} were detected.
[e] Chemical analysis was not performed for this constituent.
[f] Not sampled due to shallow seepage encountered at 1.5 feet below grade.
[redacted] = Concentrations at or above Washington State Action Levels and MTCA Clean-up Levels.

Resource: Delta, March 6, 1992.

TABLE C-1

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYSES
FORMER EXXON R/S NO. 7-6375
8325 Mukilteo Speedway
Mukilteo, Washington
DELTA PROJECT NO. 43-91-801

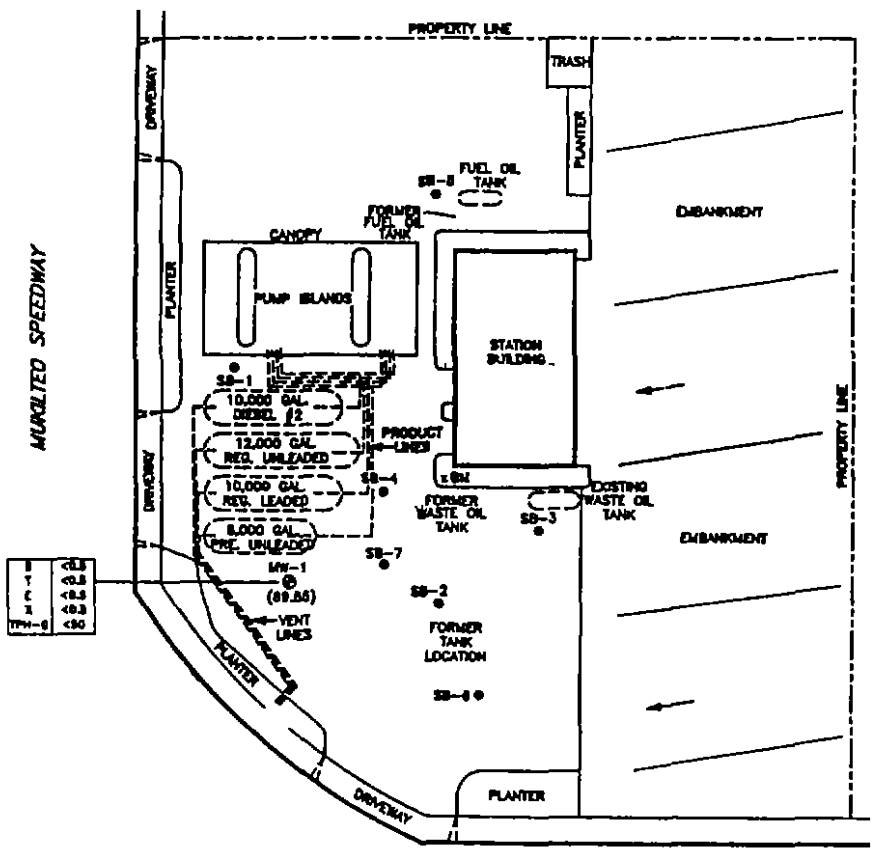
MONITORING WELL	DATE SAMPLED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TPH-G	TPH-D	TRPH	MTBE	PNAs	PURGEABLE HALOCARBONS	TOTAL LEAD
MW-1	08/14/92	<0 5	<0 5	<0 5	<0 5	<50	NA	NA	<5 0	NA	ND	NA
	12/08/92	<0 5	<0 5	<0 5	<0 5	<50	NA	NA	<5 0	NA	1 3a	NA
	04/22/93	<0 5	<0 5	<0.5	<0 5	<50	<50	NA	<5 0	NA	1 7a	NA
	06/01/93	<0.5	<0 5	<0 5	<0 5	<50	NA	NA	NA	NA	1 5a	NA
	09/07/93	<0 5	<0 5	<0 5	<0 5	<50	NA	NA	<5 0	NA	ND	<3 0
	12/01/93	<0.5	<0 5	<0 5	<0 5	<50	NA	NA	<5 0	NA	NA	<3 0
EPA Laboratory Method		8020	8020	8020	8020	8020/8015	3510/8015	418.1	602	8270	601	7421
MTCA Cleanup Levels		5 0	40 0	30 0	20 0	1000	1000	1000	NE	NE	5 0	5 0

All concentrations reported in ?g/L (ppb)
TPH-G = Total petroleum hydrocarbons as gasoline.
TPH-D = Total petroleum hydrocarbons as diesel.
TRPH = Total recoverable petroleum hydrocarbons by IR.
Purgeable Halocarbons = Analysis for 30 individual halogenated volatile organic compounds
PNAs = Polynuclear aromatic hydrocarbons as naphthalene.
a = 1,1,1 Trichloroethane

NA = Not analyzed
ND = None detected.
NE = Not established. Action levels have only been established for BTEX, TPH-G, TPH D, TRPH and lead for petroleum releases from UST sites Compounds not listed on Method A clean-up tables may require Method B calculation to determine clean-up levels.

Resource: Delta, January 28, 1994.

TABLE C-2



North

LEGEND:

x BM	GEO BENCH MARK
● SB-1	SOIL BORING LOCATION
⊕ MW-1	MONITORING WELL LOCATION
(89.55)	GROUND WATER ELEVATION IN FEET RELATIVE TO TEMPORARY BENCH MARK

GROUND WATER DATA

B	<0.5
T	<0.5
E	<0.5
X	<0.5
TPH-G	<50

BENZENE IN PARTS PER BILLION
TOLUENE IN PARTS PER BILLION
ETHYLBENZENE IN PARTS PER BILLION
XYLENES IN PARTS PER BILLION
TPH-G IN PARTS PER BILLION

NOTE LOCATIONS OF TANKS, VENT LINES, AND PRODUCT DISTRIBUTION LINES ARE APPROXIMATE

0 30 FT
SCALE

FIGURE 2
SITE DATA MAP - 8/13-14/92
EXXON STATION NO 7-6375
8325 MUKILTEO SPEEDWAY
MUKILTEO, WA.

PROJECT NO. 43-01-001	DRAWN BY LH 10/1/92
FILE NO. 4301001	PREPARED BY PAK
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

Resource: Delta, March 6, 1992.

FIGURE C-1

ATTACHMENT D

EMCON SUPPLEMENTAL FIELD INFORMATION

Table D-1

Tosco Station #03152
8325 Mukilteo Speedway, Mukilteo, Washington

Soil Sample Results of Analyses (ppm)

Sample Number	Depth (feet)	Date Collected	Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethylbenzene	Total Xylenes
HA-106-2-2 5	2 5	02/02/94	7 3	33	—	*nd*	*nd*	*nd*	0 12
HA-106-2-3	3	02/02/94	10	10	—	*nd*	*nd*	*nd*	0 1
BP-106-Diesel-W	—	01/31/94	—	7,700	—	—	—	—	—

NOTE
TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
TPH-O = Total petroleum hydrocarbons as oil
nd = Not detected at or above method reporting limit
— = Not analyzed

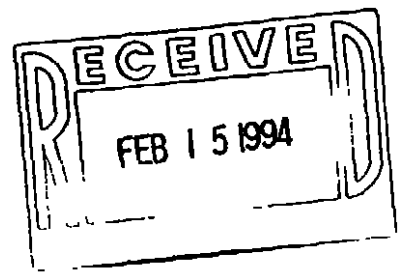
NORTH CREEK ANALYTICAL

18939 120th Avenue N E , Suite 101 • Bothell WA 98011 9508 (206) 481-9200 • FAX 485 2992
East 11115 Montgomery Suite B • Spokane, WA 99206-4779 (509) 924-9200 • FAX 924-9290
15055 S W Sequoia Parkway Suite 110 • Portland OR 97224 7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID:	TOSCO #03152, #0328-106.02 (02)		
18912 N Creek Parkway, #100	Sample Matrix	Soil		
Bothell, WA 98011			Received:	Feb 3, 1994
Attention Mike Noll	First Sample #:	402-0139	Reported:	Feb 9, 1994

TOTAL SOLIDS & MOISTURE CONTENT REPORT

Sample Number	Sample Description	Total Solids %	Moisture Content %
402-0139	HA-106-2-2 5 (HA-106-2)	87	13
402-0140	HA-106-2-3 (HA-106-2-4)	92	8 0



The enclosed analytical results for soils, sediments and sludges have been converted to a DRY WEIGHT reporting basis
To attain the wet weight "as received" equivalent, multiply the dry weight result by the decimal fraction of percent Total Solids
The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

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18939 120th Avenue N E Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485 2992
East 11115 Montgomery, Suite B • Spokane WA 99206 4779 (509) 924 9200 • FAX 924-9290
15055 S W Sequoia Parkway Suite 110 • Portland OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID.	TOSCO #03152, #0328-106.02 (02)	Sampled:	Feb 2, 1994
18912 N Creek Parkway, #100	Sample Matrix	Soil	Received:	Feb 3, 1994
Bothell, WA 98011	Analysis Method	WTPH-G	Analyzed:	Feb 4, 1994
Attention: Russell Thompson	First Sample #:	402-0139	Reported:	Feb 9, 1994

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result mg/kg (ppm)	Surrogate Recovery %
402-0139	HA-106-2-2.5 (HA-106-2)	7.3	88
402-0140	HA-106-2-3 (HA-106-2-4)	10	93
BLK020494	Method Blank	N.D.	97

Reporting Limits	1.0

4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.
Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane)
Analytes reported as N D were not detected above the stated Reporting Limit. The results reported above are on a dry weight basis

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N E Suite 101 • Bothell WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206 4779 (509) 924-9200 • FAX 924-9290
15055 S W Sequoia Parkway Suite 110 • Portland OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID TOSCO #03152, #0328-106 02 (02)	Analyst	R Lister
18912 N Creek Parkway, #100	Sample Matrix Soil		K Wilke
Bothell, WA 98011	Analysis Method. WTPH-G		
Attention Russell Thompson	Units mg/kg (ppm)	Analyzed:	Feb 4, 1994
		Reported	Feb 9, 1994

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

Gasoline

Spike Conc. Added:	5.0
Spike Result:	4.4
% Recovery:	88
Upper Control Limit %:	111
Lower Control Limit %:	73

PRECISION ASSESSMENT
Sample Duplicate

Gasoline Range Hydrocarbons

Sample Number:	402-0137
Original Result:	N.D.
Duplicate Result:	N.D.
Relative % Difference	Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Detection Limit.
Maximum RPD:	66

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Matthew T. Essig
Project Manager

$$\% \text{ Recovery} = \frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$$

$$\text{Relative \% Difference} = \frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$$

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18939 120th Avenue N E Suite 101 • Bothell WA 98011-9508 (206) 481-9200 • FAX 485 2992
East 11115 Montgomery Suite B • Spokane WA 99206 4779 (509) 924-9200 • FAX 924-9290
15055 S W Sequoia Parkway Suite 110 • Portland, OR 97224 7155 (503) 624-9800 • FAX 684 3782

EMCON Northwest	Client Project ID	TOSCO #03152, #0328-106.02 (02)	Sampled:	Feb 2, 1994
18912 N Creek Parkway, #100	Sample Matrix:	Soil	Received:	Feb 3, 1994
Bothell, WA 98011	Analysis Method	EPA 8020	Analyzed:	Feb 4, 1994
Attention. Russell Thompson	First Sample #	402-0139	Reported:	Feb 9, 1994

BTEX DISTINCTION

Sample Number	Sample Description	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)	Surrogate Recovery %
402-0139	HA-106-2-2.5 (HA-106-2)	N.D.	N D.	N D.	0.12	101
402-0140	HA-106-2-3 (HA-106-2-4)	N D	N.D.	N D.	0.10	104
BLK020494	Method Blank	N D.	N D.	N D.	N D	106

Reporting Limits:	0.050	0.050	0.050	0.10	

4-Bromofluorobenzene surrogate recovery control limits are 59 - 124 %
Analytes reported as N D were not detected above the stated Reporting Limit.
The results reported above are on a dry weight basis.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N E Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485 2992
East 11115 Montgomery Suite B • Spokane WA 99206 4779 (509) 924-9200 • FAX 924-9290
15055 S W Sequoia Parkway Suite 110 • Portland OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID. TOSCO #03152, #0328-106 02 (02)	Analyst.	R. Lister
18912 N Creek Parkway, #100	Sample Matrix: Soil		K Wilke
Bothell, WA 98011	Analysis Method: EPA 8020		
Attention Russell Thompson	Units: mg/kg (ppm)	Analyzed:	Feb 4, 1994
	QC Sample #: 402-0137	Reported	Feb 9, 1994

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Sample Result:	N D.	N D.	N.D.	N.D.
Spike Conc. Added:	0 53	0 53	0 53	1.6
Spike Result:	0.52	0 50	0.51	1.6
Spike % Recovery:	98%	94%	96%	100%
Spike Dup. Result:	0 52	0.49	0.51	1.5
Spike Duplicate % Recovery:	98%	92%	96%	94%
Upper Control Limit %:	107	104	113	113
Lower Control Limit %:	71	74	73	72
Relative % Difference:	0 0%	2.0%	0 0%	6.5%
Maximum RPD:	13	13	13	16

ORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

$$\text{\% Recovery} = \frac{\text{Spike Result - Sample Result}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference} = \frac{\text{Spike Result - Spike Dup. Result}}{(\text{Spike Result + Spike Dup. Result}) / 2} \times 100$$

NORTH CREEK ANALYTICAL

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15055 S W Sequoia Parkway Suite 110 • Portland, OR 97224-7155 (503) 624-9800 • FAX 684 378

EMCON Northwest	Client Project ID:	TOSCO #03152, #0328-106 02 (02)	Sampled	Feb 2, 1994
18912 N Creek Parkway, #100	Sample Matrix:	Soil	Received	Feb 3, 1994
Bothell, WA 98011	Analysis Method:	WTPH-D	Extracted	Feb 7, 1994
Attention: Russell Thompson	First Sample #	402-0139	Analyzed	Feb 8, 1994
			Reported	Feb 9, 1994

TOTAL PETROLEUM HYDROCARBONS-DIESEL RANGE

Sample Number	Sample Description	Sample Result mg/kg (ppm)	Surrogate Recovery %
402-0139	HA-106-2-2.5 (HA-106-2)	33	88
402-0140	HA-106-2-3 (HA-106-2-4)	10	95
BLK020794	Method Blank	N D.	92

Reporting Limit:	10

2-Fluorobiphenyl surrogate recovery control limits are 50 - 150 %.
Extractable Total Petroleum Hydrocarbons are quantitated as Diesel Range Organics (C12 - C24)
Analytes reported as N D were not detected above the stated Reporting Limit The results reported above are on a dry weight basis

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

NORTH CREEK ANALYTICAL

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EMCON Northwest	Client Project ID	TOSCO #03152, #0328-106 02 (02)	Analyst D Anderson
18912 N. Creek Parkway, #100	Sample Matrix	Soil	
Bothell, WA 98011	Analysis Method	WTPH-D	Extracted: Feb 7, 1994
Attention Russell Thompson	Units	mg/kg (ppm)	Analyzed. Feb 8, 1994
			Reported. Feb 9, 1994

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

Diesel	
Spike Conc. Added:	67
Spike Result:	67
% Recovery:	100
Upper Control Limit %:	122
Lower Control Limit %:	84

PRECISION ASSESSMENT
Sample Duplicate

Diesel Range Hydrocarbons	
Sample Number:	402-0139
Original Result:	33
Duplicate Result:	19
Relative % Difference	54, Q-6
Maximum RPD:	46

Q-6 = The RPD value for this QC sample is outside of the NCA established control limits.

NORTH CREEK ANALYTICAL Inc

Matthew T. Essig
Project Manager

$$\%\ \text{Recovery} = \frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$$

$$\text{Relative \% Difference} = \frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$$

EMCON Northwest, Inc.

Tosco #0315L

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 2-2-94 PAGE 1 OF 1

PROJECT NAME BP Mukilteo 0328-106.02 (02)

PROJECT Tosco C3152

COMPANY/ADDRESS Emcon NW (Bothell)

PHONE 206-485-5000

SAMPLERS SIGNATURE [signature]

ANALYSIS REQUEST: PETROLEUM HCS / ORGANIC / ORGANIC METALS/INORGANICS

SAMPLE ID	DATE	TIME	LAB ID	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH-HCID State:	TPH-G State: WA X BTEX X	TPH-D State: WA OIL	TPH-418.1 State:	TPH-Other	Halogenated or Aromatic Volatiles 601/8010 602/8020	Volatile Organics GC/MS 624/8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBs 8080 PCB ONLY	PAH 8100 GC 8310 HPCL	TCLP Metals Semi VOA VOA Pest/Herb	Metals Total List Below DISS	Cyanide	pH, Cond, Cl, SO_4, PO_4, F, Br, NO_2, NO_3 (Circle)	NH_3-N, COD, Total-P, TKN, TOC, TOX (Circle)			REMARKS	
HA-106-2-3.5	2-2-94	1610	4020139	Soil			X	X															72	160
HA-106-2-3		1620	4020140				X	X															50	140
labels indicate HA-106-2																								
HA-106-2-4																								
per DH 2/3/94																								

RED

RELINQUISHED BY	RECEIVED BY
Signature	Signature [signature]
Printed Name	Printed Name DANA HEIM
Firm	Firm NCA
Date/Time	Date/Time 2/3/94 1130

TURNAROUND REQUIREMENTS
- ___ 24 hr ___ 48 hr X 5 day
- (Standard) (10-15 working days)
- ___ Provide Verbal Preliminary Results
- ___ Provide FAX preliminary Results
- Requested Report Date ______

REPORT REQUIREMENTS
- ___ I. Routine Report
- ___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
- ___ III. Data Validation Report (includes All Raw Data)
- ___ IV. CLP Deliverable Report

INVOICE INFORMATION:
- P.O.# ______
- Bill To ______

SAMPLE RECEIPT
- Shipping VIA ______
- Shipping # ______
- Condition ______
- Lab No. ______

[illegible] Reaching

After 5-10 min in warm car

RELINQUISHED BY	RECEIVED BY:
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

SPECIAL INSTRUCTIONS/COMMENTS

Hold for further instruction

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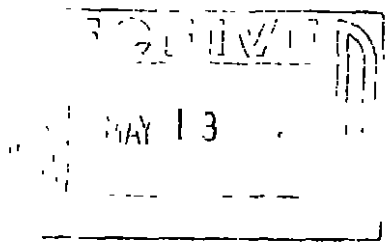
EMCON Northwest	Client Project ID.	Mukilteo BP, #0328-106 02	
18912 N Creek Parkway, #100	Sample Matrix	Soil	
Bothell, WA 98011			Received: Jan 31, 1994
Attention: Mike Noll	First Sample #:	401-1772	Reported: Feb 4, 1994

TOTAL SOLIDS & MOISTURE CONTENT REPORT

Sample Number	Sample Description	Total Solids %	Moisture Content %
401-1772	BP-106-DIESEL-W	98	2.0



The enclosed analytical results for soils, sediments and sludges have been converted to a DRY WEIGHT reporting basis
To attain the wet weight "as received" equivalent, multiply the dry weight result by the decimal fraction of percent Total Solids
The results in this report apply to the samples analyzed in accordance with the chain of custody document
This analytical report must be reproduced in its entirety

NORTH CREEK ANALYTICAL Inc.

Matthew T Essig
Project Manager

NORTH CREEK ANALYTICAL

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EMCON Northwest	Client Project ID	Mukilteo BP, #0328-106 02	Sampled:	Jan 31, 1994
18912 N Creek Parkway, #100	Sample Matrix:	Soil	Received:	Jan 31, 1994
Bothell, WA 98011	Analysis Method	WTPH-D	Extracted.	Feb 1, 1994
Attention Mike Noll	First Sample #:	401-1772	Analyzed:	Feb 1-2, 1994
			Reported.	Feb 4, 1994

TOTAL PETROLEUM HYDROCARBONS-DIESEL RANGE

Sample Number	Sample Description	Sample Result mg/kg (ppm)	Surrogate Recovery %
401-1772	BP-106-DIESEL-W	7,700	95
BLK020194	Method Blank	N.D.	92

Reporting Limit:	10

2-Fluorobiphenyl surrogate recovery control limits are 50 - 150 %
Extractable Total Petroleum Hydrocarbons are quantitated as Diesel Range Organics (C12 - C24)
Analytes reported as N D were not detected above the stated Reporting Limit The results reported above are on a dry weight basis

NORTH CREEK ANALYTICAL Inc.

Matthew T Essig
Project Manager

NORTH CREEK ANALYTICAL

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15055 S W Sequoia Parkway, Suite 110 • Portland, OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID: Mukilteo BP, #0328-106 02	Analyst:	D Anderson
18912 N. Creek Parkway, #100	Sample Matrix: Soil		
Bothell, WA 98011	Analysis Method: WTPH-D	Extracted:	Feb 1, 1994
Attention: Mike Noll	Units: mg/kg (ppm)	Analyzed:	Feb 3-4, 1994
-		Reported:	Feb 4, 1994

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

	Diesel
Spike Conc. Added:	67
Spike Result:	74
% Recovery:	111
Upper Control Limit %:	122
Lower Control Limit %:	84

PRECISION ASSESSMENT
Sample Duplicate

	Diesel Range Hydrocarbons
Sample Number:	401-1775
Original Result:	N D.
Duplicate Result:	N D
Relative % Difference	Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Detection Limit
Maximum RPD:	49

NORTH CREEK ANALYTICAL Inc

Matthew T Essig
Project Manager

% Recovery	$\frac{\text{Spike Result}}{\text{Spike Concentration Added}}$	x 100
Relative % Difference	$\frac{\text{Original Result - Duplicate Result}}{(\text{Original Result + Duplicate Result}) / 2}$	x 100

EMCON Northwest, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 1-31-94 PAGE 1 OF 1

PROJECT NAME Mult. Well BP #0328-106.02

PROJECT Exxon #3152 Task 02

COMPANY/ADDRESS Emcon (Bothell)

PHONE 206-485-5000

SAMPLERS SIGNATURE

SAMPLE ID	DATE	TIME	LAB ID	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS: TPH - HCID State	TPH - G State	BTEX	TPH - D State	OIL	TPH - 418.1 State	TPH - Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC HPCL	TCLP Metals Semi VOA VOA	Metals Total List Below Pest/Herb DISS	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD Total-P TKN, TOC TOX (Circle)	REMARKS
BR106-Diesel-W	1-31-94	1540		Soil					X														

RELINQUISHED BY:
Signature
Printed Name: Russell Thompson
Firm: EMCON NW
Date/Time: 1-31-94 1700

RECEIVED BY:
Signature
Printed Name: Tim Collic
Firm: UPS
Date/Time: 1/3 1/94 1700

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. X 5 day
(Standard) (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I Routine Report
___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)
___ III Data Validation Report (includes All Raw Data)
___ IV CLP Deliverable Report

INVOICE INFORMATION.
P.O.# ___
Bill To ___

SAMPLE RECEIPT
Shipping VIA ___
Shipping to ___
Condition ___
Lab No ___

RELINQUISHED BY
Signature
Printed Name
Firm
Date/Time

RECEIVED BY
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS