BASELINE ASSESSMENT REPORT
Station Number 11073
5405 Pacific Highway East
Fife, Washington

1. Site Features and History

The facility is an operating service station located on the northeast corner of the intersection of 54th Avenue East and Pacific Highway South in Fife, Washington. The service station facility consists of a canopy area with a concrete drive slab, three pump islands, and a station building. According to the station manager, existing USTs at the station include one 12,000-gallon, two 8,000-gallon, and two 6,000-gallon fiberglass USTs. The USTs store unleaded, super unleaded, and regular leaded gasoline. A small (1 to 3 cubic yards) soil stockpile and several labeled and sealed 55-gallon drums were observed in the northeast corner of the site during EMCON's November 1991 site visit. Additional soil stockpiles, currently incorporated into the landscaping, are located along the north and east sides of the site, and at the south and southwest property edges. 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 tables from previous site investigations are included as Attachment C. Copies of figures, tabulated data, and laboratory reports from EMCON's supplemental site assessment work are included in Attachment D.

BP purchased the service station from Mobil in 1991 or 1992 (reference f). The facility was reconstructed in 1984 (reference c), and USTs were removed, but the number, sizes, and contents of the former tanks are unknown. A 500-gallon UST was removed from the site in 1990 (references a and g). Surrounding properties consist of various commercial businesses.

2. Previous Investigations and Remediation Activities

In July 1984, Hart-Crowser excavated three test pits (TP-1, TP-2, and TP-3) in the northeast portion of the site to evaluate the source and extent of free-floating product previously found in the UST complex excavation during reconstruction of the service station facility (Figure C-1, references c, d, and e). Benzene (up to 3 ppm), toluene, and xylenes (up to 30 ppm), were detected in three composite soil samples collected from the test pits (Table C-1). Free-floating product and groundwater were pumped from test pits

TP-1 and TP-2 by a vacuum truck and transported off site for recycling (reference c). A site plan prepared by Hart-Crowser shows that three soil borings (B-1, B-2, and B-3) were drilled and backfilled in 1983 (Figure C-1). EMCON did not receive information regarding the purpose of or findings from the completion of these borings. Additionally, an abandoned 85-foot-deep water well, located west of the station building, is shown on Hart-Crowser's site plan. The condition of this well was not discussed in subsequent site reports reviewed by EMCON. Hart-Crowser also showed the locations of six additional proposed test pits and three proposed monitoring wells (Figure C-1). No information regarding this additional assessment work was supplied to EMCON.

Target conducted a soil gas survey for Mobil in December 1990 (reference n). Target reported that the survey results indicated the presence of total volatiles, identified as gasoline, in the subsurface at the former UST complex area, the former pump island areas (up to 237,900 µg/l), and the eastern portion of the site (up to 45,220 µg/l; Figure C-2). According to Target, the gasoline apparently entered the subsurface near the former pump islands (reference n).

An undocumented 500-gallon steel UST was discovered on the western property boundary during work along on the 54th Avenue right-of-way in November 1990 (references a and g). RZA reported that approximately 12 inches of a possible gasoline and water mixture was found in the UST, and four small holes were observed in the tank at the time of removal (reference g). RZA reported stained soil and petroleum-like odors along the north sidewall of the tank excavation. Groundwater accumulated in the excavation to within approximately 4 5 feet of the ground surface. RZA reported observing free-floating product on the groundwater surface (reference g). Soil samples collected from each of the four excavation sidewalls immediately above the water table were analyzed for TPH by EPA Method 8015 (Figure C-3). The sample from the north sidewall was also analyzed for BTEX. TPH-G and BTEX (30 ppm xylenes) were detected in the soil sample collected from the north sidewall (Table C-2) The excavation was subsequently backfilled and the surface was repaved. No information regarding the source or nature of the backfill material was available to EMCON. According to BP, soil containing total xylenes and TPH was left in place along the north wall of the UST complex (reference a).

In February and March 1991, RZA drilled five soil borings to depths of 13.5 to 20 feet and converted the borings to groundwater monitoring wells MW-1 through MW-5 (Figure A-1; reference h). Soil types encountered during drilling consisted of sand with gravel to 5 to 7 feet bgs, underlain by silt to the maximum depth explored. Groundwater was encountered at depths of approximately 4 to 5 feet bgs. Soil samples collected from borings MW-1, MW-2, MW-4, and MW-5 contained TPH-G (up to 1,300 ppm) and BTEX (up to 220 ppm xylenes; Table C-3). Soil samples were not analyzed for total lead.

Groundwater samples collected from wells MW-2 through MW-5 in March 1991 contained TPH-G (up to 100,000 ppb; Table C-4). BTEX (up to 16,000 ppb benzene) was detected in groundwater samples collected from wells MW-2, MW-4, and MW-5. Benzene and/or xylenes were also detected in groundwater samples collected from wells MW-1 and MW-3 (Table C-4). The groundwater samples were not analyzed for total or dissolved lead. RZA reported that the groundwater flow direction was toward the north in March 1991 (reference h), but a groundwater elevation contour map was not provided to EMCON.

RZA conducted additional subsurface investigation work in September 1991 (reference i). Three borings were drilled to depths of approximately 14 feet bgs on the adjacent property north of the site and were completed as groundwater monitoring wells (MW-6, MW-7, and MW-8; Figure A-1). Groundwater was encountered in each of the three additional borings. Soil samples were collected from borings MW-6 and MW-7; due to poor sample recovery, however, a soil sample was collected from the drill cuttings for boring MW-8 (reference i). A soil sample collected from boring MW-6 contained TPH-D (Table C-3). Groundwater samples collected from the three new wells did not contain TPH-D, TPH-G, or BTEX above the method detection limits (Table C-4).

RZA sampled groundwater from the five on-site monitoring wells (MW-1 through MW-5) and conducted a vapor extraction test in the northwestern portion of the site in March 1992 (references f and j). TPH-D (up to 40,000 ppb), TPH-G (up to 270,000 ppb), and BTEX (up to 12,000 ppb benzene) were detected in groundwater samples collected from wells MW-2, MW-3, MW-4, and MW-5 (Table C-4).

RZA collected groundwater samples from monitoring wells MW-1 through MW-8 in April 1993 (reference l) and February 1994 (reference m). The most recent groundwater monitoring report EMCON reviewed was dated April 20, 1994, and documented results of the February 16, 1994, groundwater sampling round (reference m). TPH-G was detected during one or more sampling rounds in groundwater samples collected from monitoring wells MW-2, MW-3, MW-4, MW-5, and MW-8 (Table C-4). BTEX constituents were detected during one or more sampling rounds in groundwater samples collected from wells MW-1 through MW-5. Total lead was detected in groundwater samples collected from wells MW-2 and MW-4. Dissolved lead was detected in groundwater samples collected from wells MW-1 and MW-4. The highest TPH-G and BTEX concentrations consistently were detected in monitoring wells MW-2, MW-4, and MW-5. According to RZA, the groundwater flow beneath the site was toward the north and northeast in April 1993 (Figure C-4) and to the north in February 1994 (Figure C-5).

3. Regulatory Status and Other Issues

Ecology lists BP Station 11073 as a LUST site (Incident Number 1390). Based on EMCON's review of available records on November 10, 1993, the most recent document in the Ecology file was a letter from Ecology to BP dated July 13, 1993, acknowledging receipt of RZA's groundwater sampling results report, dated May 10, 1993. Other documentation in Ecology's file included Target's soil gas survey report, dated December 1990, RZA's subsurface environmental report, dated April 1991, and RZA's UST removal report, dated November 28, 1990. Ecology's files documented the presence of free-floating product on the groundwater surface in a test pit excavated by Hart-Crowser in July 1984. Also found in Ecology's file were records indicating past releases of unspecified amounts of BTEX, TPH, or both into the soil and groundwater at the site in February 1991, March 1991, and April 1993, and a release of approximately 50 to 100 gallons of gasoline in December 1989.

A July 19, 1992, letter in Ecology's file, sent from RZA to Mobil, recommended that a VES be installed at the site (reference k). A March 19, 1993, letter from BP to RZA authorized a remediation system design (reference b).

The Ecology file contained a December 6, 1993, permit from PSAPCA to install a VES; however, EMCON did not locate reports regarding remediation system design, installation, or operation in Ecology's files. Additionally, EMCON did not observe an operating remediation system at the site during the November 1993 site visit.

4. Supplemental Site Assessment Work

On March 9, 1994, EMCON collected soil samples in conjunction with Stage II vapor recovery system upgrade activities in progress at the site. The soil overlying the active fuel USTs and product pipelines was uncovered during system upgrade activities (Figure D-1). EMCON collected ten soil samples from the floor of the product line trenches and beneath product dispensers. Additionally, eight soil samples were collected from the soil stockpiles generated during Stage II activities. Five of the product line/dispenser samples and five of the soil stockpile samples were selected for analysis.

Laboratory results indicated the presence of TPH-G (up to 20,000 ppm), TPH-D (up to 3,990 ppm), and TPH-O (up to 1,170 ppm) in each of the five soil samples collected from the product line trenches and dispenser islands (Table D-1). BTEX (up to 210 ppm benzene, 530 ppm toluene, 220 ppm ethylbenzene, and 1,800 ppm xylenes) was detected in the five soil samples collected from the trenches and dispensers. The soil stockpile samples contained TPH-G (up to 200 ppm), TPH-D (up to 410 ppm), and/or TPH-O (up

to 280 ppm). Three of the soil stockpile samples contained BTEX (up to 0 03 ppm benzene, 0.13 ppm toluene, 0.72 ppm ethylbenzene, and 3 7 ppm xylenes)

On May 11, 1994, EMCON visited the site to sample soils in the landscaped areas on the site. Eight hand auger borings were advanced to a maximum depth of 2.5 bgs in the site planters and a grassy knoll east of the pump islands (Figure A-1). Hand borings HB-1, HB-2, and HB-8 were terminated at depths of 2 feet bgs due to large cobbles obstructing the hand auger. Borings HB-3, HB-5, and HB-6 were terminated when asphalt or concrete was reached. Boring HB-4 was terminated at a depth of 2 feet due to pea gravel collapsing the sides of the boring. Soil encountered in all borings except HB-4 consisted of brown gravelly silty sand with cobbles Boring HB-4 contained fine sand (fill) to a depth of 1 feet bgs, and then pea gravel to a depth of 2 feet bgs.

Seven soil samples were collected from the two borings in the grassy knoll area, and one from each of the four planters. Samples collected from 2 feet bgs in borings HB-1 and HB-2 were analyzed for TPH-G, TPH-D, TPH-O, and BTEX. Samples collected from borings HB-5, HB-6, and HB-8 were analyzed for TPH-D and TPH-O. Samples collected from all borings contained TPH-D (up to 50 ppm), and TPH-O (up to 190 ppm) with the sample containing the highest TPH concentrations collected from soil boring HB-8 in the northern planter.

5. Baseline Summary

Based on our review of the most recent relevant data available in existing files, observations made during site visits, and data collected during the environmental investigations performed in accordance with the BP/Tosco purchase agreement, hazardous substance contamination is present in the 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 and existing gasoline UST complex, the former and existing pump island and product line areas, along the western property line where a steel tank was removed, and beneath the central and northern parts of the site.

Soil samples collected from borings MW-1, MW-2, MW-4, MW-5, and MW-6, from the sidewall of the former 500-gallon UST excavation, from beneath product dispensers, along the floor of the product line trenches (Stage II soil samples), and from hand augered borings in the landscaped areas on the north, east, and south sides of the site

contained one or more of the following constituents at concentrations above the method detection limits: BTEX, TPH-G, TPH-D, and TPH-O

Groundwater samples collected from monitoring wells MW-1 through MW-6 and MW-8 contained one or more of the following constituents at concentrations above the method detection limits: BTEX, TPH-G, and TPH-D. In addition, groundwater collected from monitoring wells MW-6 through MW-8 contained elevated concentrations of total lead.

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
- Observation of free-floating product on groundwater during excavation activities associated with the former USTs in July 1984 and the UST located along the west property line in November 1990
- Inclusion of the site in the Ecology LUST site list
- A discovered 500-gallon steel UST with holes in it and containing a gasoline/water mixture
- Results from a soil gas survey conducted in December 1990, documenting the presence of volatile hydrocarbons in the subsurface beneath the site
- Release of 50 to 100 gallons of gasoline in December 1989
- BP's authorization to RZA to proceed with the design of remediation systems
- Contaminated soil used as landscaping material at the site

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 BP. April 17, 1991. *BP Facility #11073, 5403 (sic) Pacific Highway East, Fife, Washington* (letter to Washington Department of Ecology)

b BP. March 29, 1993. *Remediation System Design, BP Site #11073*

c Hart-Crowser & Associates, Inc. July 19, 1984. *Report on Site Visit and Proposed Program to Evaluate the Degree of Excavated Soil Contamination and Possible Extent of Free Product Migration at the Mobil Station, 5405 Pacific Highway South, Fife, Washington.*

d Hart-Crowser & Associates, Inc. December 4, 1984. *Monitoring Well Data, Mobil Service Station, Fife, Washington*

e Mobil. September 6, 1984. *Correspondence from Mobil to Ecology.*

f Mobil. August 17, 1992. *BP/Mobil Project Transfer.*

g RZA. November 28, 1990. *Underground Storage Tank Removal, BP Service Station No. 11073, 5403 (sic) Pacific Highway East, Fife, Washington.*

h RZA. April 11, 1991. *Executive Summary, Subsurface Environmental Assessment, Former Mobil Service Station No 10-315, 5405 Pacific Highway South, Fife, Washington.*

i RZA. November 1991. *Additional Subsurface Environmental Investigation, Former Mobil Service Station No 10-315, 5405 Pacific Highway South, Fife, Washington.*

j RZA July 1992. *Petroleum Hydrocarbon Remediation Study, Former Mobil Service Station No. 10-315, 5403 (sic) Pacific Highway South, Fife, Washington.*

k RZA. July 28, 1992. *Executive Summary and Recommended Remedial Actions, Petroleum Hydrocarbon Remediation Study. Former Mobil Service Station No 10-315, 5403 (sic) Pacific Highway South, Fife, Washington.*

l RZA. May 10, 1993. *Groundwater Sampling Results, BP Station No. 11073, 5403 (sic) Pacific Highway South, Fife, Washington*

m RZA. April 20, 1994. *Groundwater Monitoring Report, February 1994 Sampling Event, BP Service Station No. 11073, 5403 Pacific Highway South, Fife, Washington.*

n Target. December 1990. *Soil Gas Survey, BP Service Station, Former Mobil Service Station #10-315, 5405 Pacific Highway South, Fife, Washington.*

Other Documents Reviewed

BP. October 22, 1990. Correspondence from BP to Mobil.

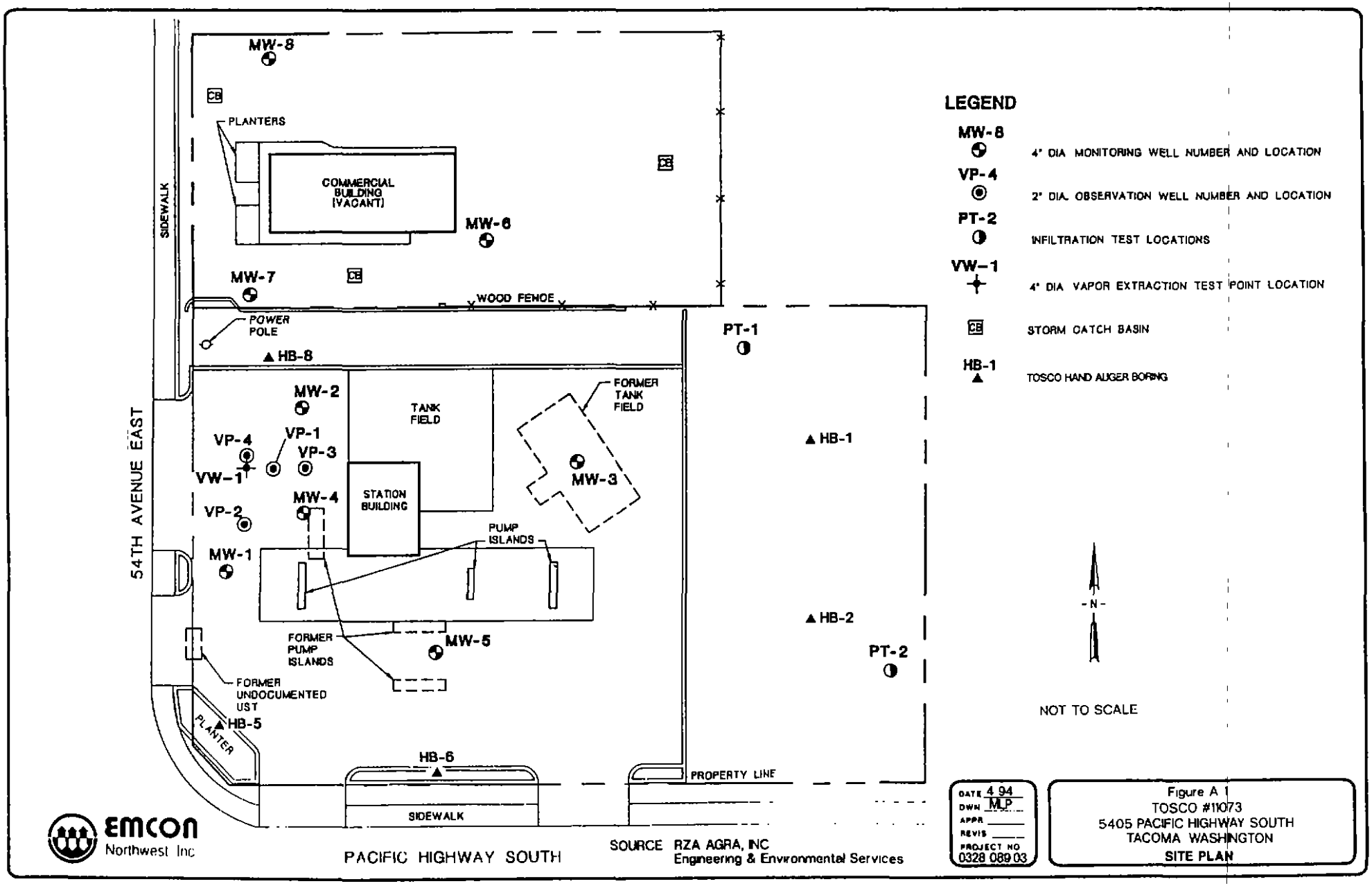
BP. February 8, 1992. *Tier Two Emergency and Hazardous Chemical Inventory.*

Seattle-King County Department of Public Health. October 22, 1991. *Waste Material Cleared for Disposal at Coal Creek Landfill.*

SME Corporation. January 27, 1989. *Data Chart for Tank System Tightness Test.*

ATTACHMENT A

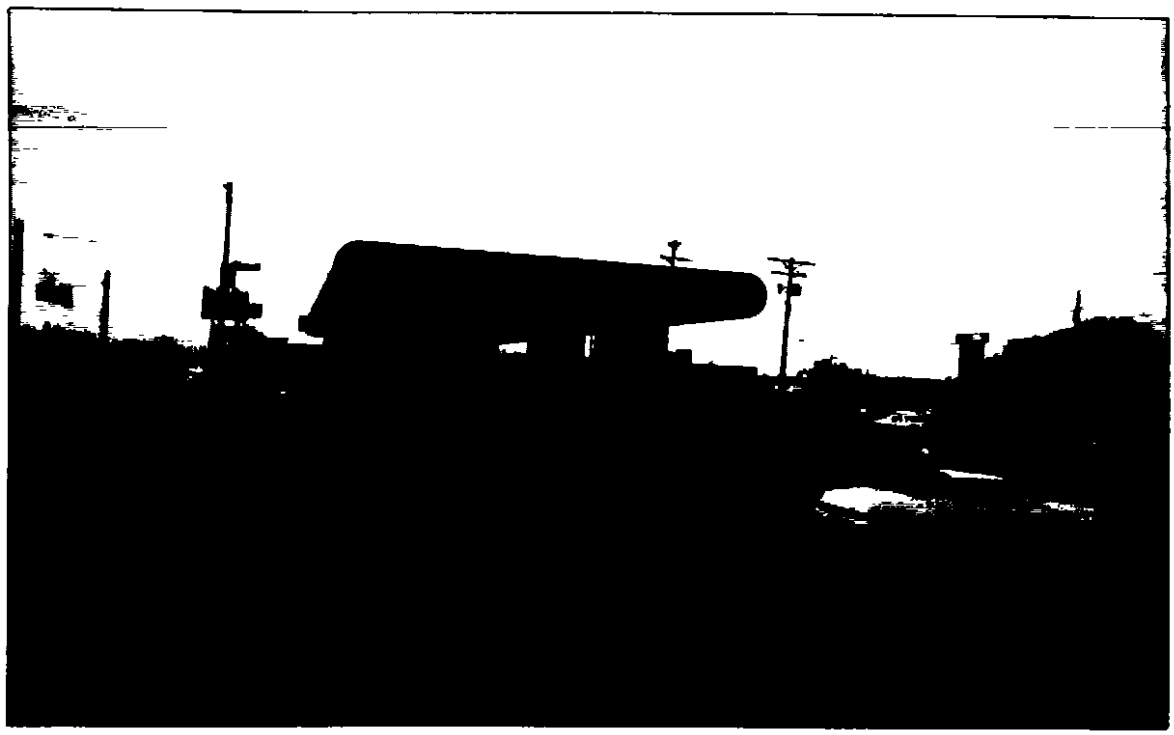
SITE PLAN


MW-8
CB
PLANTERS
COMMERCIAL BUILDING (VACANT)
MW-6
MW-7
WOOD FENCE
POWER POLE
HB-8
SIDEWALK
54TH AVENUE EAST
MW-2
TANK FIELD
FORMER TANK FIELD
VP-4
VP-1
VP-3
VW-1
MW-4
STATION BUILDING
MW-3
VP-2
PUMP ISLANDS
MW-1
FORMER PUMP ISLANDS
MW-5
FORMER UNDOCUMENTED UST
HB-5
PLANTER
HB-6
SIDEWALK
PROPERTY LINE
PT-1
HB-1
HB-2
PT-2
PACIFIC HIGHWAY SOUTH
LEGEND
MW-8
4" DIA MONITORING WELL NUMBER AND LOCATION
VP-4
2" DIA. OBSERVATION WELL NUMBER AND LOCATION
PT-2
INFILTRATION TEST LOCATIONS
VW-1
4" DIA VAPOR EXTRACTION TEST POINT LOCATION
CB
STORM CATCH BASIN
HB-1
TOSCO HAND AUGER BORING
- N -
NOT TO SCALE
DATE 4 94
DWN MLP
APPR
REVIS
PROJECT NO 0328 089 03
Figure A 1
TOSCO #11073
5405 PACIFIC HIGHWAY SOUTH
TACOMA WASHINGTON
SITE PLAN
EMCON Northwest Inc
SOURCE RZA AGRA, INC
Engineering & Environmental Services

ATTACHMENT B

SITE PHOTOGRAPHS

142322



PUMP ISLANDS AND STATION BUILDING

PUMP ISLANDS AND STATION BUILDING

EMCON Northwest, Inc

DATE 4-94
DWN MLP
APPR
REVIS
PROJECT NO
0328-089 03

Figure B-1
TOSCO #11073
5405 PACIFIC HIGHWAY SOUTH
TACOMA, WASHINGTON
SITE PHOTOGRAPHS

142322

STAGE II EXCAVATION
EAST DISPENSER, FACING SOUTH

STAGE II EXCAVATION
CENTRAL TRENCH, FACING SOUTH

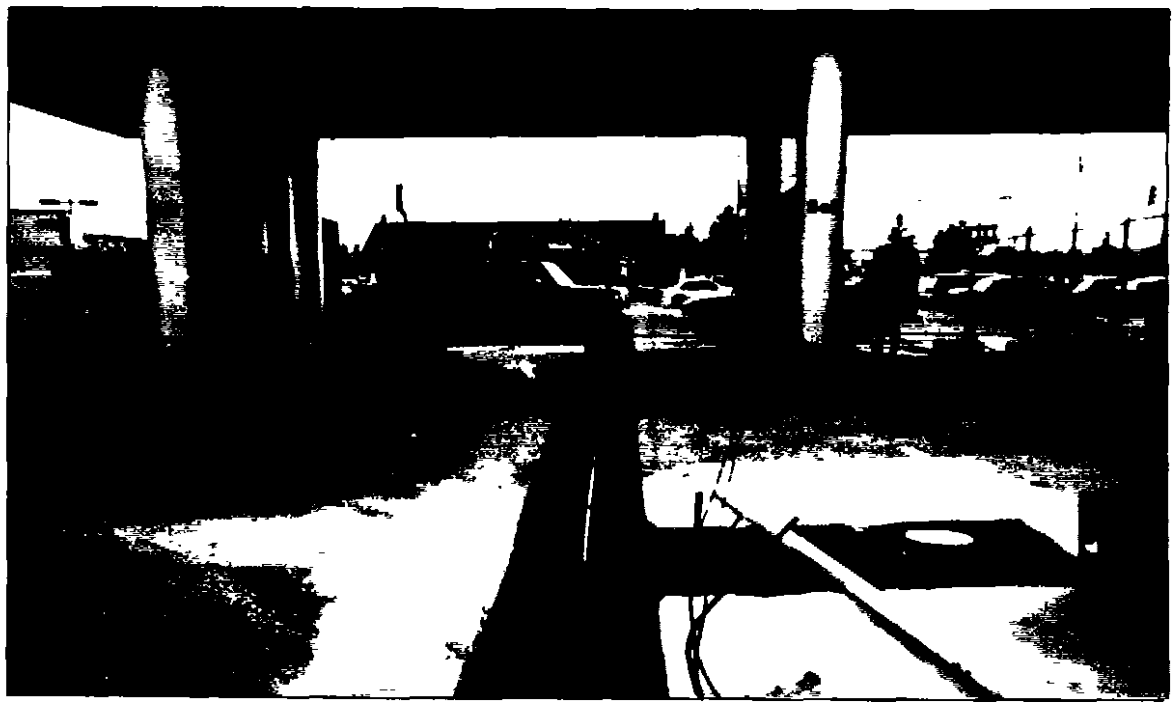
EMCON Northwest, Inc

DATE 4-94
DWN MLP
APPR
REVIS
PROJECT NO
0328-089 03

Figure B-2
TOSCO #11073
5405 PACIFIC HIGHWAY SOUTH
TACOMA, WASHINGTON
SITE PHOTOGRAPHS

142322

STAGE II EXCAVATION
TANK COMPLEX



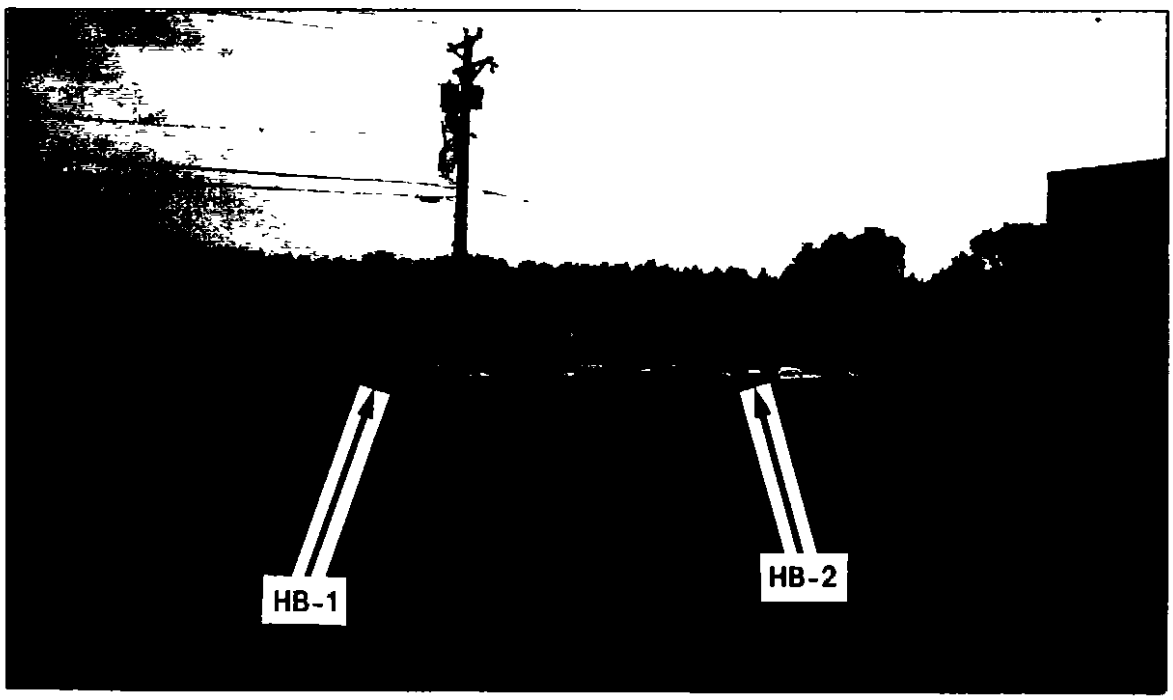
STAGE II EXCAVATION
EAST TRENCH TO TANK COMPLEX LOOKING SOUTH

EMCON
Northwest, Inc

DATE 4-94
DWN MLP
APPR
REVIS
PROJECT NO
0328-089 03

Figure B-3
TOSCO #11073
5405 PACIFIC HIGHWAY SOUTH
TACOMA, WASHINGTON
SITE PHOTOGRAPHS

HAND AUGER BORING HB-8
NORTH PLANTER FACING NORTH



HAND AUGER BORINGS HB-1 AND HB-2
EAST LANDSCAPED AREA

EMCON Northwest Inc

DATE 5 94
DWN MLP
APPR
REVIS
PROJECT NO
0328 089 03

Figure B 4
TOSCO #11073
5405 PACIFIC HIGHWAY SOUTH
TACOMA, WASHINGTON
SITE PHOTOGRAPHS

ATTACHMENT C

SUMMARY TABLES AND FIGURES FROM PREVIOUS INVESTIGATIONS

Laucks
Testing Laboratories, Inc.
940 South Harney Street Seattle Washington 98108 (206)767 5060

Certificate

Chemistry Microbiology and Technical Services

CLIENT Hart Crowser and Associates
1910 Fairview Avenue East
Seattle, WA 98102
ATTN: Laurie Herman

LABORATORY NO 85522

DATE August 6, 1984

REPORT ON SOIL

SAMPLE IDENTIFICATION Submitted 7/24/84 and identified as shown below:

TESTS PERFORMED AND RESULTS	1) Upper - SD/	7/14/84
	2) Above Water Surface	7/24/84
	3) Tank Backfill	7/24/84

Samples were analyzed using gas chromatography, with results as shown below:

parts per million (mg/kg), as received basis

	1	2	3
Benzene	0.13	18.	3.0
Toluene	0.054	100.	14.0
Xylene	0.088	240.	30.0

Samples were further analyzed for Gravimetric Polycyclic Aromatic Hydrocarbons in accordance with Washington State Department of Ecology WAC 173-303. The method requires analysis of the samples through successive stages until the result obtained is less than 1% by weight (as received basis) or until the fourth stage has been completed. Results are as shown below:

% by weight, as received basis

	1	2	3
Stage 1: Soxhlet Extraction	0.021	0.099	0.069

Respectfully submitted,

Laucks Testing Laboratories, Inc.

J. M. Owens

JMO:bg

Source: Hart-Crowser Associates, Inc.
July 19, 1984

Table C-1

TABLE 1
Summary of Analytical Laboratory Testing Results

Sample	Location	Headspace	TPH (ppm)	B (ppm)	T (ppm)	E (ppm)	X (ppm)
S-1/N	North Sidewall	309	557 as aged gas	<0 05	7.57	13.4	30.2
S-2/S	South Sidewall	5	<10	NT	NT	NT	NT
S-3/E	East Sidewall	19	<10	NT	NT	NT	NT
S-4/W	West Sidewall	2	<10	NT	NT	NT	NT

B = Benzene, T = Toluene; E = Ethylbenzene: X = Total Xylenes
Sample headspace measured with OVM photolonization detector
TPA = Total Petroleum Hydrocarbons by EPA 8015 Modified
PPM = Parts per million
NT = Not tested
Values proceeded by "<" represent measured concentrations below the method detection limit indicated.

FORMER MOBIL STATION NO. 10-315
FIFE, WASHINGTON

Job No. W-7436
Date: 11-Sep-91

TABLE 2: SUMMARY OF SOIL ANALYTICAL DATA

Location	Sample	Depth (ft)	Headspace	Total Lead	WTPH-D	WTPH-G	Benzene	Toluene	Ethyl Benzene	Xylenes
MW-1	S-8	4.0	1			1.9	0 07	0 12	ND	0 15
MW-1	S-9	6.5	4			4.1	ND	ND	ND	0.23
MW-2	S-9	6.5	>2000			1300	8.3	8 5	41	220
MW-2	S-7	11.5	788			500	ND	3.2	9 2	48
MW-3	S-1	4.0	2			ND	ND	ND	ND	ND
MW-3	S-3	14.0	9			ND	ND	ND	ND	ND
MW-4	S-12	9.0	165			540	0.4	8 8	14	73
MW-5	S-13	4.0	61			1.7	ND	ND	ND	ND
MW-5	S-14	8.0	>2000			170	ND	ND	3.4	22
MW-6	S-19	4.0	2	11	53	ND	ND	ND	ND	ND
MW-6	S-21	9.0	0	9.5	ND	ND	ND	ND	ND	ND
MW-7	S-16	4.0		14	ND	ND	ND	ND	ND	ND
MW-7	S-17	6 5	0	11	ND	ND	ND	ND	ND	ND
MW-8	S-22	4.0	7	41	ND	ND	ND	ND	ND	ND
MW-8	S-24	9 0	0	10	ND	ND	ND	ND	ND	ND
MTCA	Method A			250	200	100	0.5	40	20	20
Detection Limits			1	7.5	10	1.0	0.05	0.1	0 1	0 1

NOTES: Headspace values were obtained utilizing a Thermal Environmental Instruments, Inc. Model 580 Organic Vapor Meter.
All values presented in parts per million (ppm).
ND= Non-detectable
MTCA= Washington Department of Ecology Model Toxics Control Act Method A compliance cleanup level.
Shaded data represents concentrations in excess Method A cleanup levels.

Source: RZA, November 1991.

Table 2: Summary of Analytical Results: Groundwater
BP Service Station No. 11073
5403 Pacific Highway South
Fife, Washington
RZA AGRA, Inc. Project No. 11-09410-14

Well Number	Date Collected	WTPH-D (ppb)	WTPH-G (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-Benzene (ppb)	Total Xylenes (ppb)	Total Lead (ppb)	Dissolved Lead (ppb)	Turbidity (NTU)
MW-1	08-Mar-91	NT	<50	2.9	<0.5	<0 5	3.5	NT	NT	NT
	20-Mar-92	<500	<50	<0.5	<0.5	<0 5	<0 5	20	1.8	200
	06-Apr-93	NT	<50	<0.5	<0.5	<0.5	<0.5	<3	<3	240
	16-Feb-94	NT	<100	<0.5	0.7	<0.5	0.6	NT	6 1	160
MW-2	08-Mar-91	NT	70,000	16,000	6,800	3,600	14,000	NT	NT	NT
	20-Mar-92	32,000	170,000	12,000	8,700	3,900	13,000	140	8 5	1,200
	06-Apr-93	NT	62,000	15,000	2,400	3,800	7,500	5	<3	400
	16-Feb-94	NT	35,000	12,000	3,600	2,300	5,500	NT	<3	330
MW-3	08-Mar-91	NT	150	6 5	<0.5	<0.5	<0.5	NT	NT	NT
	08-Mar-91	NT	180	7 3	<0 5	<0.5	<0.5	NT	NT	NT
	20-Mar-92	640	370	16	<0.5	3.5	2.1	19	2 1	400
	06-Apr-93	NT	460	14	1.3	1.8	4.1	<3	<3	390
	16-Feb-94	NT	760	11	1 3	1.8	6.3	NT	<3	580
MW-4	08-Mar-91	NT	100,000	10,000	33,000	2,800	21,000	NT	NT	NT
	20-Mar-92	40,000	270,000	8,700	29,000	4,500	23,000	77	29	320
	06-Apr-93	NT	120,000	5,000	22,000	5,000	25,000	13	6	280
	16-Feb-94	NT	110,000	5,000	19,000	3,400	17,000	NT	8	150
MW-5	08-Mar-91	NT	9,800	2,000	2,900	270	1,700	NT	NT	NT
	20-Mar-92	5,900	120,000	8,700	7,100	2,000	9,400	110	2	2,600
	06-Apr-93	NT	24,000	4,500	1,200	1,100	3,900	<3	<3	1,800
	16-Feb-94	NT	6,600	1,500	640	320	810	NT	<3	960

Source: RZA, April 20, 1994

Table 2: Summary of Analytical Results: Groundwater
BP Service Station No. 11073
5403 Pacific Highway South
Fife, Washington
RZA AGRA, Inc. Project No. 11-09410-14

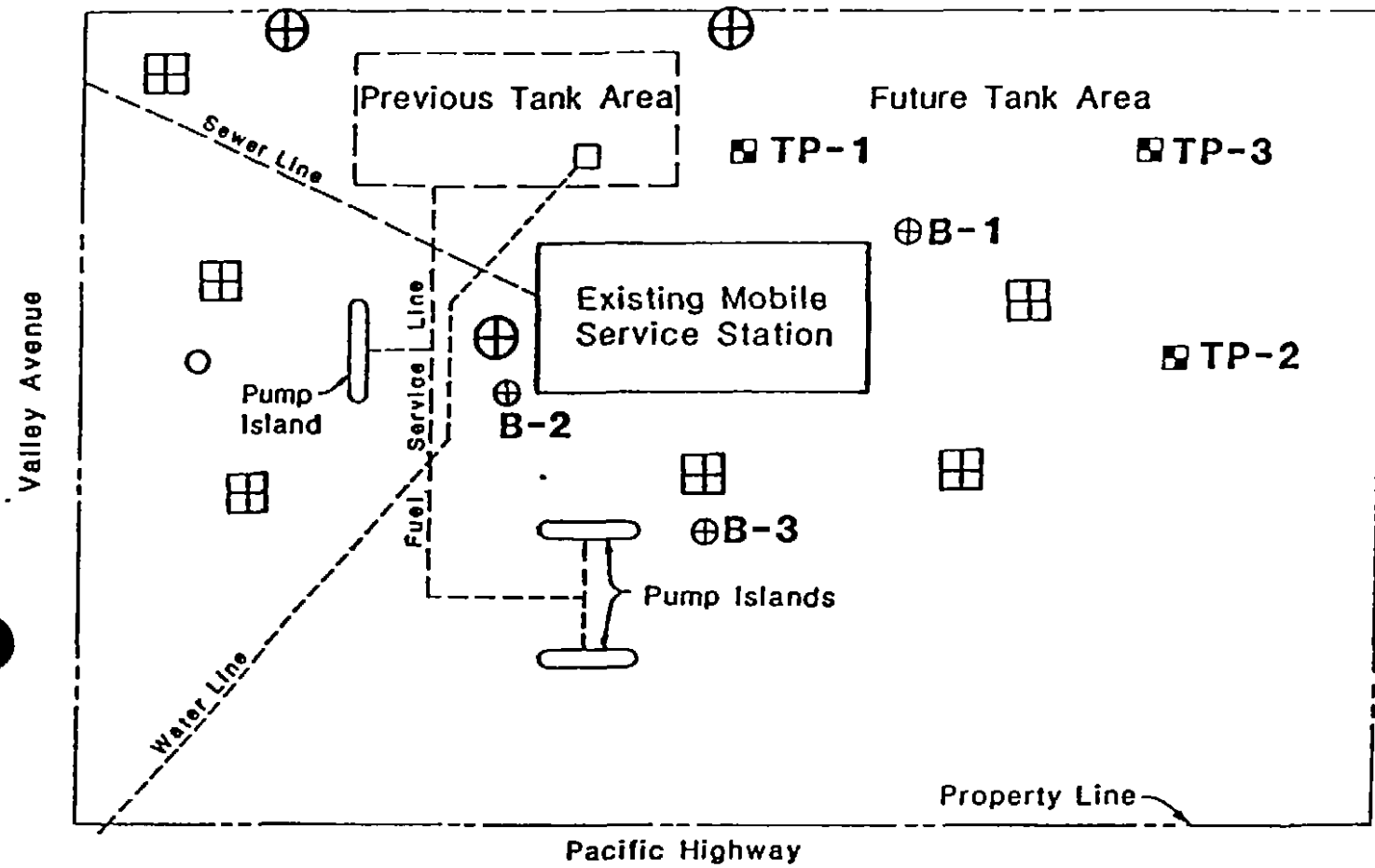
Well Number	Date Collected	WTPH-D (ppb)	WTPH-G (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-Benzene (ppb)	Total Xylenes (ppb)	Total Lead (ppb)	Dissolved Lead (ppb)	Turbidity (NTU)
MW-6	19-Sep-91	<500	<50	<0.5	<0.5	<0 5	<0 5	3,800	3 5	270
	06-Apr-93	NT	<50	<0 5	<0 5	<0 5	<0 5	<3	<3	330
	16-Feb-94	NT	<100	<0 5	<0 5	<0 5	<0 5	NT	<3	270
MW-7	19-Sep-91	<500	<50	<0 5	<0.5	<0 5	<0 5	41,000	41	Infinite
	30-Oct-91	NT	NT	NT	NT	NT	NT	<1	<1	180
	06-Apr-93	NT	<50	<0.5	<0 5	<0 5	<0.5	<3	<3	300
	16-Feb-94	NT	<100	<0 5	<0 5	<0 5	<0 5	NT	<3	280
MW-8	19-Sep-91	<500	<50	<0 5	<0.5	<0 5	<0 5	4,800	4 8	89
	06-Apr-93	NT	3	<0 5	<0.5	<0 5	<0 5	<3	<3	410
	16-Feb-94	NT	<100	<0 5	<0 5	<0 5	<0 5	NT	<3	230

Notes

WTPH D = Total Petroleum Hydrocarbons, diesel range, by Ecology Method WTPH D
WTPH G = Total Petroleum Hydrocarbons, gasoline range, by Ecology Method WTPH-G
Benzene Toluene, Ethylbenzene, and Total Xylenes (BTEX), by EPA Method 8020
Total and dissolved lead by EPA Method 7421
NT = Not tested
All concentration are expressed in parts per billion (ppb)
Concentrations preceded by a '< are laboratory method detection limits The method detection limit may vary depending on the laboratory used and sample characteristics

Source: RZA, April 20, 1994

Proposed Exploration Plan



⊕B-1 Previous Boring Location and Number by Others, 1983 Boring has been backfilled

O Abandoned Water Well Location Well is 85 feet deep and flowing

TP-1 Test Pit Location and Number Hart-Crowser, July 12, 1983

⊕ Proposed Monitoring Well Location

⊞ Proposed Test Pit Location

N

0 20 60

Approximate Scale in Feet

Note: All utilities are approximately located only.

J-1415 July 1984

HART-CROWSER & associates inc.

Figure 1

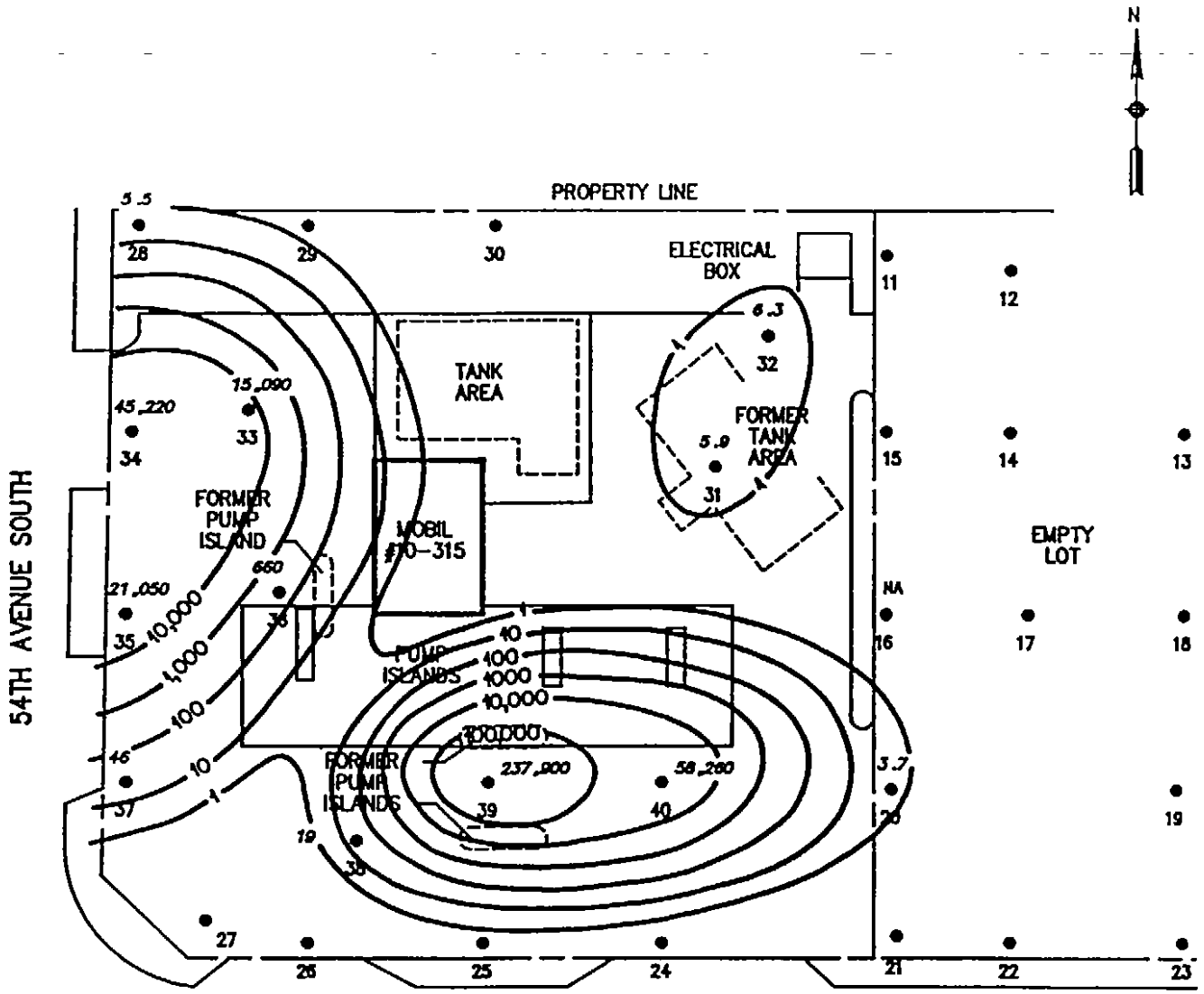


FIGURE 2. FID Total Volatiles
(calc'd µg/l)

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

BP SERVICE STATION
FORMER MOBIL SERVICE STATION #10-315
FIFE, WASHINGTON

Source: Target Environmental Services, Inc., December 1990.

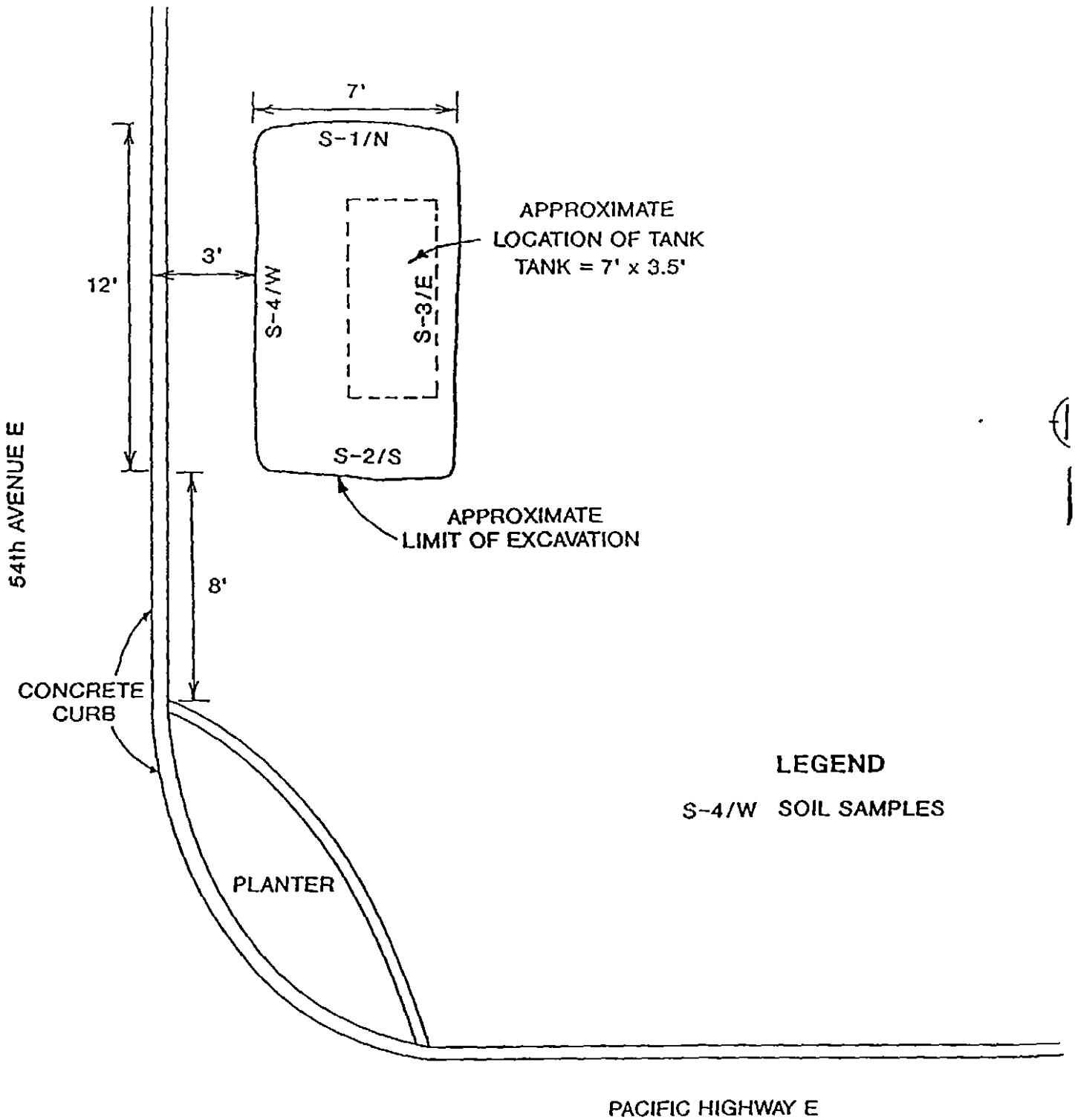
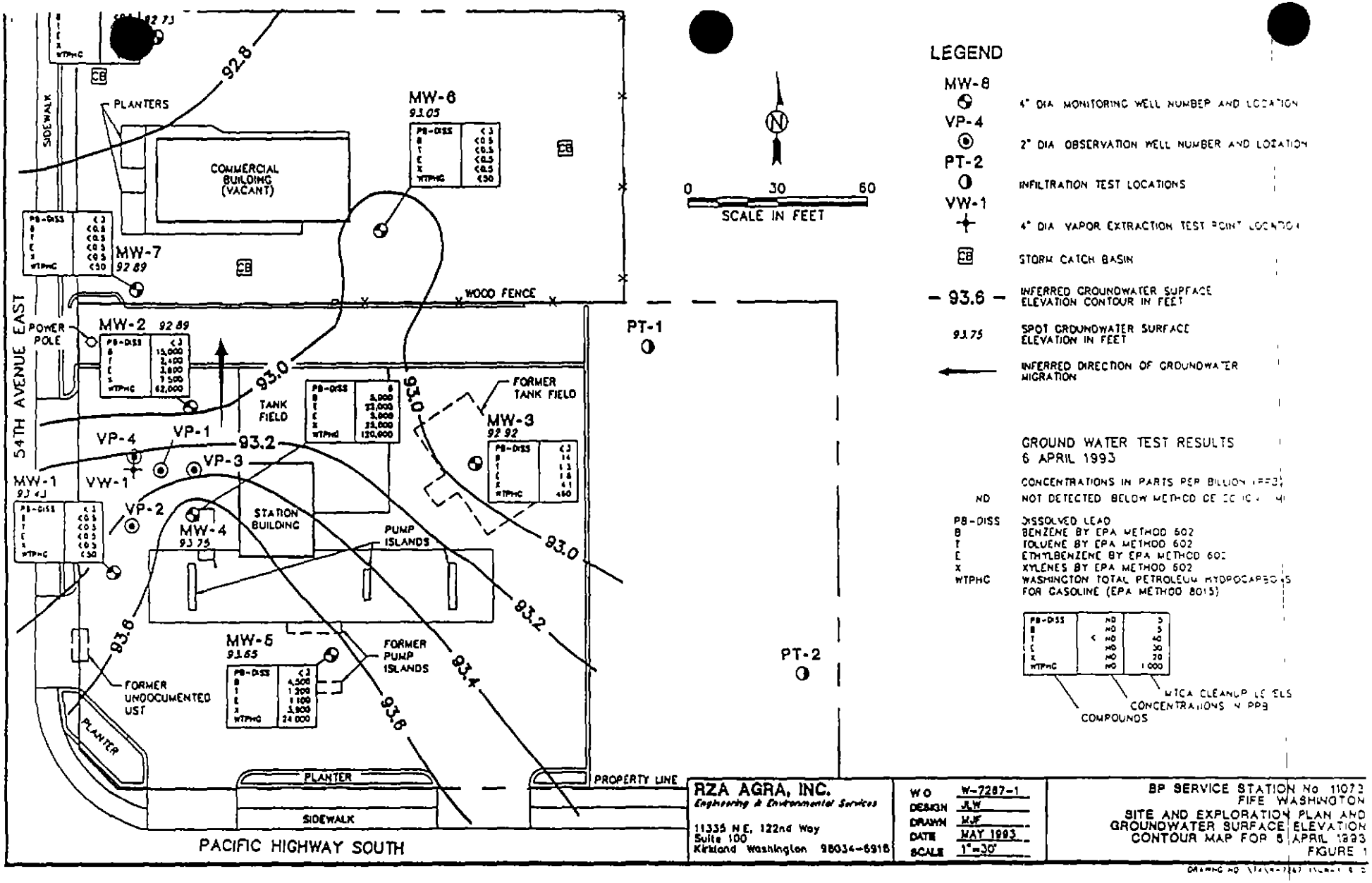
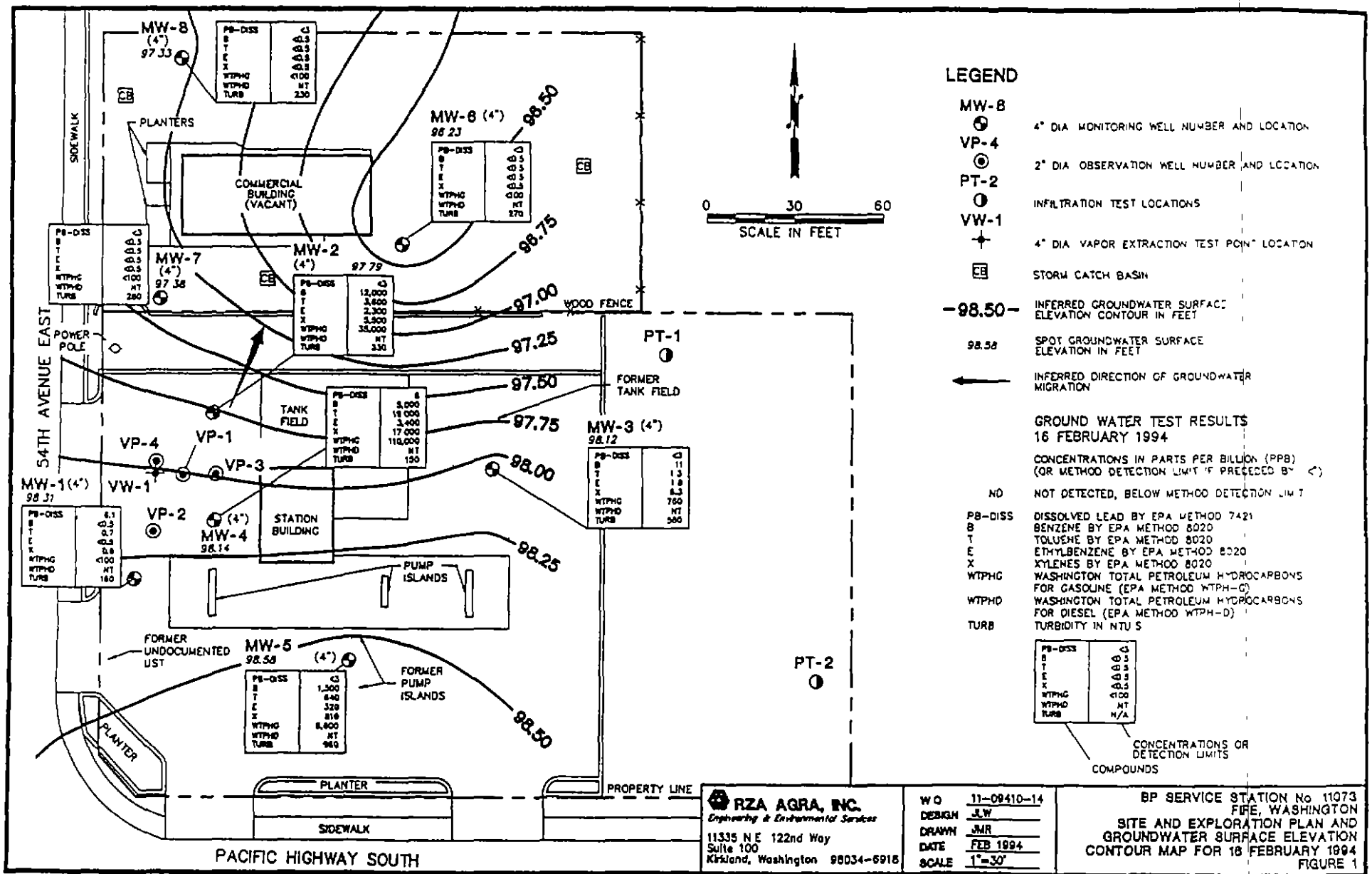

7'
S-1/N
APPROXIMATE
LOCATION OF TANK
TANK = 7' x 3.5'
3'
12'
S-4/W
S-3/E
S-2/S
APPROXIMATE
LIMIT OF EXCAVATION
54th AVENUE E
8'
CONCRETE
CURB
PLANTER
LEGEND
S-4/W SOIL SAMPLES
PACIFIC HIGHWAY E

FIGURE C-3



Source: RZA, May 1993

FIGURE C-4



Source: RZA, April 20, 1994

FIGURE C-5

ATTACHMENT D

EMCON SUPPLEMENTAL FIELD INFORMATION

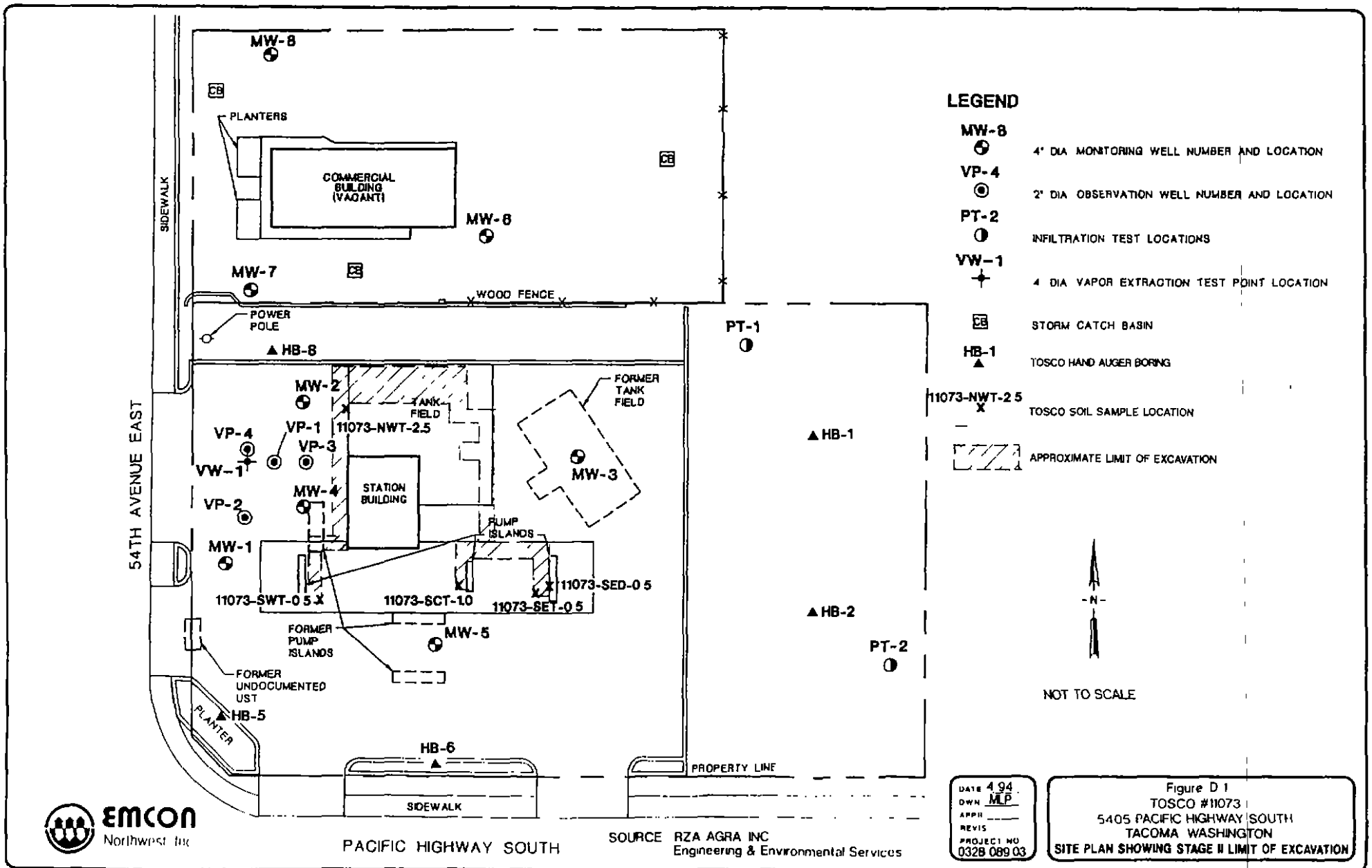
Table D-1

Tosco Station #11073
5405 Pacific Highway South, Tacoma, 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
11073-SED-0 5	0.5	03/09/94	15	28	62	*nd*	*nd*	*nd*	*nd*
11073-SET-0 5	0.5	03/09/94	20,000	3,990	980	210	530	220	1,800
11073-SCT-1.0	1 0	03/09/94	707	1,270	490	0 09	8 9	6 6	137
11073-NWT-2 5	2 5	03/09/94	44	33	90	*nd*	*nd*	0 3	1 7
11073-SWT-0 5	0.5	03/09/94	5,300	1,300	1,170	16	220	36	560
11073-SSA1	—	03/09/94	86	32	86	*nd*	0 13	0 72	3 7
11073-SSA2	—	03/09/94	47	110	280	0 030	0 075	0 35	1 4
11073-SSB	—	03/09/94	200	410	180	*nd*	0 092	0 077	2 5
11073-SSD	—	03/09/94	*nd*	14	53	*nd*	*nd*	*nd*	*nd*
11073-SSE	—	03/09/94	*nd*	9	57	*nd*	*nd*	*nd*	*nd*
11073-HB-1-2	2.0	05/11/94	*nd*	31	170	*nd*	*nd*	*nd*	*nd*
11073-HB-2-2	2.0	05/11/94	*nd*	28	96	*nd*	*nd*	*nd*	*nd*
11073-HB-5-1 5	1.5	05/11/94	—	32	160	—	—	—	—
11073-HB-6-2	2 0	05/11/94	—	11	46	—	—	—	—
11073-HB-8-2	2.0	05/11/94	—	50	190	—	—	—	—

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
TW = Tosco well
TB = Tosco boring
DI = Dispenser island soil
HB = Pump island hand boring


MW-8
CB
PLANTERS
COMMERCIAL BUILDING (VACANT)
MW-6
MW-7
WOOD FENCE
POWER POLE
HB-8
SIDEWALK
54TH AVENUE EAST
MW-2
TANK FIELD
VP-4
VP-1
11073-NWT-2.5
VP-3
VW-1
VP-2
MW-4
STATION BUILDING
MW-1
FORMER TANK FIELD
MW-3
PUMP ISLANDS
11073-SWT-0.5
11073-SCT-1.0
11073-SET-0.5
11073-SED-0.5
FORMER PUMP ISLANDS
MW-5
FORMER UNDOCUMENTED UST
HB-5
PLANTER
HB-6
SIDEWALK
PROPERTY LINE
PT-1
HB-1
HB-2
PT-2
LEGEND
MW-8 4" DIA MONITORING WELL NUMBER AND LOCATION
VP-4 2" DIA OBSERVATION WELL NUMBER AND LOCATION
PT-2 INFILTRATION TEST LOCATIONS
VW-1 4 DIA VAPOR EXTRACTION TEST POINT LOCATION
CB STORM CATCH BASIN
HB-1 TOSCO HAND AUGER BORING
11073-NWT-2.5 TOSCO SOIL SAMPLE LOCATION
APPROXIMATE LIMIT OF EXCAVATION
-N-
NOT TO SCALE
PACIFIC HIGHWAY SOUTH
SOURCE RZA AGRA INC
Engineering & Environmental Services
DATE 4.94
DWN MLP
APPR
REVIS
PROJECT NO 0328 089 03
Figure D 1
TOSCO #11073
5405 PACIFIC HIGHWAY SOUTH
TACOMA WASHINGTON
SITE PLAN SHOWING STAGE II LIMIT OF EXCAVATION
EMCON
Northwest Inc

Columbia Analytical Services, Inc.

March 23, 1994 Service Request No.: B940149

Mike Noll
EMCON Northwest
18912 N Creek Parkway
Suite 210
Bothell, WA 98011

Re: **TOSCO #11073/Project #0328-089.02**

Dear Mike

Attached are the results of the sample(s) submitted to our laboratory on March 10, 1994. Preliminary results were given on March 17, 1994. For your reference, these analyses have been assigned our service request number B940149.

All analyses were performed consistent with our laboratory's quality assurance program All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results only apply to samples analyzed.

Please call if you have any questions

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B Elliott
Laboratory Manager

CBE/bdr

COLUMBIA ANALYTICAL SERVICES INC

Analytical Report

Client·	EMCON Northwest	Date Collected	03/09/94
Project	TOSCO #11073	Date Received	03/10/94
Sample Matrix	Soil	Date Extracted	03/11/94
		Work Order No .	B940149

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G Modified
mg/Kg (ppm)
Dry Weight Basis

Sample Name		11073-SED-0 5	11073-SET-0 5	11073-SCT-1 0
Lab Code		B0149-2	B0149-7	B0149-8
Date Analyzed		03/12/94	03/12/94	03/12/94
Analyte	**MRL**			
Benzene	0 05	ND	*210	0 09
Toluene	0 1	ND	*530	8 9
Ethylbenzene	0 1	ND	*220	6 6
Total Xylenes	0 1	ND	*1,800	137
TPH as Gasoline	1	15	*20,000	707

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Result is from the analysis of a diluted sample, performed on March 16, 1994

Approved by John Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC

Analytical Report

Client	EMCON Northwest	**Date Collected**	03/09/94
Project	TOSCO #11073	**Date Received**	03/10/94
Sample Matrix	Soil	**Date Extracted**	03/11/94
		Work Order No	B940149

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G Modified
mg/Kg (ppm)
Dry Weight Basis

Sample Name		11073-NWT-2 5	11073-SWT-0 5	11073-SSD
Lab Code		B0149-9	B0149-10	B0149-12
Date Analyzed		03/12/94	03/12/94	03/12/94
Analyte	**MRL**			
Benzene	0 05	ND	*16	ND
Toluene	0 1	ND	*220	ND
Ethylbenzene	0 1	0 3	*36	ND
Total Xylenes	0 1	1 7	*560	ND
TPH as Gasoline	1	44	*5,300	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Result is from the analysis of a diluted sample, performed on March 15, 1994

Approved by Chris Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC

Analytical Report

Client	EMCON Northwest	Date Collected	03/09/94
Project.	TOSCO #11073	Date Received	03/10/94
Sample Matrix.	Soil	Date Extracted	03/11/94
		Work Order No	B940149

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G Modified
mg/Kg (ppm)
Dry Weight Basis

Sample Name		11073-SSE	Method Blank
Lab Code		B0149-13	B0149-MB
Date Analyzed		03/12/94	03/12/94
Analyte	**MRL**		
Benzene	0 05	ND	ND
Toluene	0 1	ND	ND
Ethylbenzene	0 1	ND	ND
Total Xylenes	0 1	ND	ND
TPH as Gasoline	1	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Glen Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client	EMCON Northwest	Date Collected	03/09/94
Project	TOSCO #11073	Date Received	03/10/94
Sample Matrix.	Soil	Date Extracted	03/11/94
		Date Analyzed	03/16,17/94
		Work Order No.	B940149

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil*	
Sample Name	Lab Code	MRL	Result	MRL	Result
11073-SED-0 5	B0149-2	25	28	100	[a]62
11073-SET-0 5	B0149-7	25	[b]3,990	100	980
11073-SCT-1 0	B0149-8	25	[b]1,270	100	490
11073-NWT-2.5	B0149-9	25	[c]33	100	[a]90
11073-SWT-0.5	B0149-10	25	[b]1,300	100	1,170
11073-SSD	B0149-11	25	14	100	[a]53
11073-SSE	B0149-12	25	9	100	[a]57
Method Blank	B0149-MB	25	ND	100	ND

* Quantified using 30-weight motor oil as a standard
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
[a] Estimated concentration The value is less than the method reporting limit, but greater than the method detection limit
[b] Quantified as diesel The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint
[c] Result is due to the beginning of oil, which elutes in the diesel region

Approved by Colin Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC

QA/QC Report

Client	EMCON Northwest	Date Collected	03/09/94
Project	TOSCO #11073	Date Received:	03/10/94
Sample Matrix	Soil	Date Extracted.	03/11/94
		Date Analyzed:	03/12/94
		Work Order No :	B940149

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
11073-SED-0 5	B0149-2	8 8	86
11073-SET-0 5	B0149-7	8 8	NA
11073-SCT-1.0	B0149-8	8 8	*148
11073-NWT-2 5	B0149-9	8 8	80
11073-NWT-2 5	B0149-9MS	8 8	87
11073-SWT-0 5	B0149-10	8 8	NA
11073-SSD	B0149-12	8 8	90
11073-SSE	B0149-13	8 8	92
Method Blank	B0149-MB	8 8	83
Laboratory Control Sample	B0149-LCS	8 8	102
Laboratory Control Sample	B0149-GLCS	8 8	105
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

* Outside of acceptance limits because of matrix interferences The chromatogram showed target components that interfered with the analysis

NA Not Applicable because of the sample matrix Analysis of this sample required a dilution such that the surrogate concentration was diluted below the method reporting limit.

Approved by Chr. Elliot Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client	EMCON Northwest	Date Collected	----/----/----
Project	TOSCO #11073	Date Received	----/----/----
Sample Matrix.	Soil	Date Extracted	03/11/94
		Date Analyzed	03/12/94
		Work Order No	B940149

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name Batch QC
Lab Code B0154-2

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0 05	ND	ND	--	--
Toluene	0.1	ND	ND	--	--
Ethylbenzene	0 1	ND	ND	--	--
Total Xylenes	0 1	ND	ND	--	--
TPH as Gasoline	1	ND	ND	--	--

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Ellison Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC

QA/QC Report

Client.	EMCON Northwest	Date Collected	03/09/94
Project	TOSCO #11073	Date Received	03/10/94
Sample Matrix	Soil	Date Extracted	03/11/94
		Date Analyzed	03/13/94
		Work Order No	B940149

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name 11073-NWT-2 5
Lab Code B0149-9

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	0 59	ND	0 51	86	23-170
Toluene	0 59	ND	0 75	127	31-166
Ethylbenzene	0 59	0 3	0 91	103	30-164

ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client	EMCON Northwest	Date Extracted	03/11/94
Project	TOSCO #11073	Date Analyzed	03/12/94
LCS Matrix	Soil	Work Order No.	B940149

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1 00	0 94	94	23-170
Toluene	1 00	0 98	98	31-166
Ethylbenzene	1 00	0 97	97	30-164
TPH as Gasoline	50	49	98	70-140

TPH Total Petroleum Hydrocarbons

Approved by Cor. Elliot Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC

QA/QC Report

Client	EMCON Northwest	Date Collected	03/09/94
Project	TOSCO #11073	Date Received	03/10/94
Sample Matrix	Soil	Date Extracted	03/11/94
		Date Analyzed	03/16,17/94
		Work Order No :	B940149

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
11073-SED-0 5	B0149-2	107
11073-SET-0 5	B0149-7	*118
11073-SET-0 5	B0149-7Dup	*115
11073-SCT-1 0	B0149-8	*116
11073-NWT-2 5	B0149-9	107
11073-NWT-2 5	B0149-9Dup	90
11073-SWT-0 5	B0149-10	99
11073-SSD	B0149-12	105
11073-SSE	B0149-13	100
Method Blank	B0149-MB	102
Laboratory Control Sample	B0149-LCS	*118
	CAS Acceptance Criteria	50-114

* Outside of acceptance limits Since all associated QC is acceptable, it is the opinion of CAS that the quality of the sample data has not been significantly affected by this slightly elevated percent recovery

Approved by Chris Ellett Date 3/23/94

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services, Inc.
18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486-6983 • FAX (206) 486-7695

DATE 3/9/94 PAGE 2 OF 2

PROJECT NAME TOSCO 11073 #0328 089.02
PROJECT MILE NOLL
COMPANY/ADDRESS
PHONE 485-5000
SAMPLERS SIGNATURE

SAMPLE ID	DATE	TIME	LAB ID	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH - HCID State	TPH - G State	TPH - D State	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	Metals Total / DISS List Below / Pest/Herb	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)	HOLD	REMARKS
11073-SS C	3/9/94	1525	B94-149-11	SOIL	1																	
11073-SS D		1530	-12				X	X														
11073-SS E		1535	-13				X	X														
11073-SS F		1540	-14																			
11073-SS G		1545	-15																			

ANALYSIS REQUEST — PETROLEUM HCS | ORGANIC | ORGANIC METALS/INORGANICS

RELINQUISHED BY:
Signature
Printed Name TANYA P. TREAT
Firm EMCON NW
Date/Time 3/10/94 0845

RECEIVED BY.
Signature
Printed Name
Firm
Date/Time 3-10-94 8:46

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr ___ 5 day
X Standard (10 15 working days)
___ Provide Verbal Preliminary Results
X 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
PO#
Bill To

SAMPLE RECEIPT
Shipping via
Shipping Id
Condition
Lab No B94-149

RELINQUISHED BY
Signature
Printed Name
Firm
Date/Time

RECEIVED BY
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS

Columbia Analytical Services, inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486 6983 • FAX (206) 486 7695

DATE 3/9/94 PAGE 1 OF 2

PROJECT NAME TOSCO 11073 # 0328.089.02

PROJECT MIKE NOLL

COMPANY/ADDRESS

PHONE 485-5000

SAMPLERS SIGNATURE

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	LAB ID	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH - HCID Slate	TPH - G & BTEX Slate	TPH - D Slate	TPH - 418.1 Slate	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 8310 HPCL	TCLP Metals Semi VOA VOA	Metals List Below Total DISS	Cyanide	pH, Cond Cl SO_4 PO_4 F Br NO_2 NO_3 (Circle)	NH_3 - N COD Total P TKN TOC (Circle)	HOLD	REMARKS
11073-NED-0.5	3/9/94	1708	149-1	Soil	1																X	
11073-SED-0.5		1704	-2				X	X														
11073-NCD-0.5		1716	-3																		X	
11073-SCD-0.5		1700	-4																		X	
11073-NWD-0.5		1650	-5																		X	
11073-SWD-0.5		1643	-6																		X	
11073-SET-0.5		1715	-7				X	X														
11073-SCT-1.0		1710	-8				X	X														
11073 NWT-2.5		1653	-9				X	X														
11073-SWT-0.5		1646	-10				X	X														

RELINQUISHED BY

Signature

TANYA P. TREAT

Printed Name

EMCON NW

Firm

3/10/94 0846

Date/Time

RECEIVED BY

Signature

Printed Name

Firm

3-10-94 8:46

Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day

X Standard (10-15 working days)

___ Provide Verbal Preliminary Results

X 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

PO #

Bill To

SAMPLE RECEIPT

Shipping VIA

Shipping to

Condition

Lab No B94-149

RELINQUISHED BY

Signature

Printed Name

Firm

Date/Time

RECEIVED BY

Signature

Printed Name

Firm

Date/Time

SPECIAL INSTRUCTIONS/COMMENTS

AnalyticalTechnologies,Inc 560 Naches Avenue SW Suite 101 Renton WA 98055 (206) 228-8335
Karen L. Mixon, Laboratory Manager

ATI I.D. # 9403-103

March 22, 1994

EMCON Northwest, Inc.
18912 North Creek Parkway
Suite 100
Bothell WA 98011

Attention : Mike Noll

Project Number : BP # 11073/EMCON NW, Bothell

Project Name : BP # 11073/54th & Pacific Hwy.

Dear Mr. Noll:

On March 10, 1994, Analytical Technologies, Inc. (ATI), received three samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Sincerely,

Diana Spence

Diana Spence
Project Manager

DS/hal/sb

Enclosure

Analytical Technologies, Inc

ATI I.D. # 9403-103

SAMPLE CROSS REFERENCE SHEET

CLIENT : EMCON NORTHWEST, INC.
PROJECT # : BP # 11073/EMCON NW, BOTHELL
PROJECT NAME : BP # 11073/54TH & PACIFIC HWY.

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9403-103-1	11073-SSB	03/09/94	SOIL
9403-103-2	11073-SSA1	03/09/94	SOIL
9403-103-3	11073-SSA2	03/09/94	SOIL

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	3

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc

ATI I.D. # 9403-103

ANALYTICAL SCHEDULE

CLIENT : EMCON NORTHWEST, INC.
PROJECT # : BP # 11073/EMCON NW, BOTHELL
PROJECT NAME : BP # 11073/54TH & PACIFIC HWY.

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
TOTAL PETROLEUM HYDROCARBONS	GC/FID	WA DOE WTPH-G	R
TOTAL PETROLEUM HYDROCARBONS	GC/FID	WA DOE WTPH-D	R
MOISTURE	GRAVIMETRIC	CLP SOW ILM01.0	R

R = ATI - Renton
SD = ATI - San Diego
PHX = ATI - Phoenix
PNR = ATI - Pensacola
FC = ATI - Fort Collins
B = Subcontract

Analytical Technologies, Inc

ATI I.D. # 9403-103

BETX - GASOLINE
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: N/A
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: N/A
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/10/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/10/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-G/8020(BETX)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	TOLUENE TO DODECANE
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	104	52 - 116
TRIFLUOROTOLUENE	98	50 - 150

AnalyticalTechnologies,Inc

ATI I.D. # 9403-103-1

BETX - GASOLINE
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: 03/09/94
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/10/94
CLIENT I.D.	: 11073-SSB	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-G/8020(BETX)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.026
ETHYLBENZENE	0.077
TOLUENE	0.092
TOTAL XYLENES	2.5
FUEL HYDROCARBONS	200
HYDROCARBON RANGE	TOLUENE TO DODECANE
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	129 F	52 - 116
TRIFLUOROTOLUENE	98	50 - 150

F = Out of limits due to matrix interference.

Analytical Technologies, Inc

ATI I.D. # 9403-103-2

BETX - GASOLINE
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: 03/09/94
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/10/94
CLIENT I.D.	: 11073-SSA1	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-G/8020(BETX)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.027
ETHYLBENZENE	0.72
TOLUENE	0.13
TOTAL XYLENES	3.7
FUEL HYDROCARBONS	86
HYDROCARBON RANGE	TOLUENE TO DODECANE
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	130 F	52 - 116
TRIFLUOROTOLUENE	93	50 - 150

F = Out of limits due to matrix interference.

AnalyticalTechnologies,Inc

ATI I.D. # 9403-103-3

BETX - GASOLINE
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: 03/09/94
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/10/94
CLIENT I.D.	: 11073-SSA2	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-G/8020(BETX)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	0.030
ETHYLBENZENE	0.35
TOLUENE	0.075
TOTAL XYLENES	1.4
FUEL HYDROCARBONS	47
HYDROCARBON RANGE	TOLUENE TO DODECANE
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	123 F	52 - 116
TRIFLUOROTOLUENE	86	50 - 150

F = Out of limits due to matrix interference.

Analytical Technologies, Inc

ATI I.D. # 9403-103

BETX - GASOLINE
QUALITY CONTROL DATA

CLIENT	: EMCON NORTHWEST, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE EXTRACTED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE ANALYZED	: 03/10/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-G/8020(BETX)		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.0250	1.00	1.02	102	N/A	N/A	N/A
TOLUENE	<0.0250	1.00	1.05	105	N/A	N/A	N/A
TOTAL XYLENES	<0.0250	2.00	2.05	102	N/A	N/A	N/A
GASOLINE	<5.00	50.0	41.9	84	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
BENZENE	82 - 109	20
TOLUENE	86 - 116	20
TOTAL XYLENES	83 - 119	20
GASOLINE	78 - 115	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	111	N/A	52 - 116
TRIFLUOROTOLUENE	96	N/A	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103

BETX - GASOLINE
QUALITY CONTROL DATA

CLIENT	: EMCON NORTHWEST, INC.	SAMPLE I.D. #	: 9403-100-1
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE EXTRACTED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE ANALYZED	: 03/10/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-G/8020(BETX)		

COMPOUNDS	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
BENZENE	<0.0250	N/A	N/A	1.00	0.995	100	0.875	88	13
TOLUENE	<0.0250	N/A	N/A	1.00	1.06	106	0.945	95	11
TOTAL XYLENES	0.0415	N/A	N/A	2.00	2.19	107	2.00	98	9
GASOLINE	12.8	2	13.1	50.0	49.3	73	49.6	74	1

CONTROL LIMITS	% REC.	RPD
BENZENE	62 - 104	20
TOLUENE	63 - 115	20
TOTAL XYLENES	64 - 117	20
GASOLINE	59 - 111	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	116	104	52 - 116
TRIFLUOROTOLUENE	54	50	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103

TOTAL PETROLEUM HYDROCARBONS
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: N/A
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: N/A
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/11/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<10
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL
FUEL HYDROCARBONS	<40
HYDROCARBON RANGE	C24 - C34
HYDROCARBON QUANTITATION USING	MOTOR OIL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	99	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103

TOTAL PETROLEUM HYDROCARBONS
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: N/A
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: N/A
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/11/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<10
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL
FUEL HYDROCARBONS	<40
HYDROCARBON RANGE	C24 - C34
HYDROCARBON QUANTITATION USING	MOTOR OIL

SURROGATE PERCENT RECOVERY		LIMITS
TERPHENYL	95	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103-1

TOTAL PETROLEUM HYDROCARBONS
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: 03/09/94
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/11/94
CLIENT I.D.	: 11073-SSB	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	410
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL
FUEL HYDROCARBONS	180
HYDROCARBON RANGE	C24 - C34
HYDROCARBON QUANTITATION USING	MOTOR OIL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	100	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103-2

TOTAL PETROLEUM HYDROCARBONS
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: 03/09/94
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/11/94
CLIENT I.D.	: 11073-SSA1	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	32
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL
FUEL HYDROCARBONS	86
HYDROCARBON RANGE	C24 - C34
HYDROCARBON QUANTITATION USING	MOTOR OIL

SURROGATE PERCENT RECOVERY		LIMITS
TERPHENYL	96	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103-3

TOTAL PETROLEUM HYDROCARBONS
DATA SUMMARY

CLIENT	: EMCON NORTHWEST, INC.	DATE SAMPLED	: 03/09/94
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE RECEIVED	: 03/10/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE EXTRACTED	: 03/11/94
CLIENT I.D.	: 11073-SSA2	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	110
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL
FUEL HYDROCARBONS	280
HYDROCARBON RANGE	C24 - C34
HYDROCARBON QUANTITATION USING	MOTOR OIL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	99	50 - 150

Analytical Technologies, Inc

ATI I.D # 9403-103

TOTAL PETROLEUM HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: EMCON NORTHWEST, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE EXTRACTED	: 03/11/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<10.0	200	209	105	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
DIESEL	69 - 115	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
O-TERPHENYL	98	N/A	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103

TOTAL PETROLEUM HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: EMCON NORTHWEST, INC.	SAMPLE I.D. #	: 9403-099-20
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE EXTRACTED	: 03/11/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D		

COMPOUNDS	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
DIESEL	147	137	7	N/A	N/A	N/A	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
DIESEL	N/A	20

SURROGATE RECOVERIES	SAMPLE	SAMPLE DUP.	LIMITS
O-TERPHENYL	99	97	50 - 150

Analytical Technologies, Inc

ATI I.D # 9403-103

TOTAL PETROLEUM HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: EMCON NORTHWEST, INC.	SAMPLE I.D. #	: 9403-099-12
PROJECT #	: BP # 11073/EMCON NW, BOTHELL	DATE EXTRACTED	: 03/11/94
PROJECT NAME	: BP # 11073/54TH & PACIFIC HWY.	DATE ANALYZED	: 03/11/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: WA DOE WTPH-D		

COMPOUNDS	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
DIESEL	14.8	13.9	6	200	220	103	218	102	1

CONTROL LIMITS	% REC.	RPD
DIESEL	61 - 120	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
O-TERPHENYL	99	95	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9403-103

GENERAL CHEMISTRY ANALYSIS

CLIENT : EMCON NORTHWEST, INC. MATRIX : SOIL
PROJECT # : BP # 11073/EMCON NW, BOTHELL
PROJECT NAME : BP # 11073/54TH & PACIFIC HWY.

PARAMETER	DATE ANALYZED
MOISTURE	03/11/94

Analytical Technologies, Inc

ATI I.D. # 9403-103

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : EMCON NORTHWEST, INC. MATRIX : SOIL
PROJECT # : BP # 11073/EMCON NW, BOTHELL
PROJECT NAME : BP # 11073/54TH & PACIFIC HWY. UNITS : %

ATI I.D. #	CLIENT I.D.	MOISTURE
9403-103-1	11073-SSB	3.2
9403-103-2	11073-SSA1	9.0
9403-103-3	11073-SSA2	9.8

AnalyticalTechnologies,Inc

ATI I.D. # 9403-103

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : EMCON NORTHWEST, INC. MATRIX : SOIL
PROJECT # : BP # 11073/EMCON NW, BOTHELL
PROJECT NAME : BP # 11073/54TH & PACIFIC HWY. UNITS : %

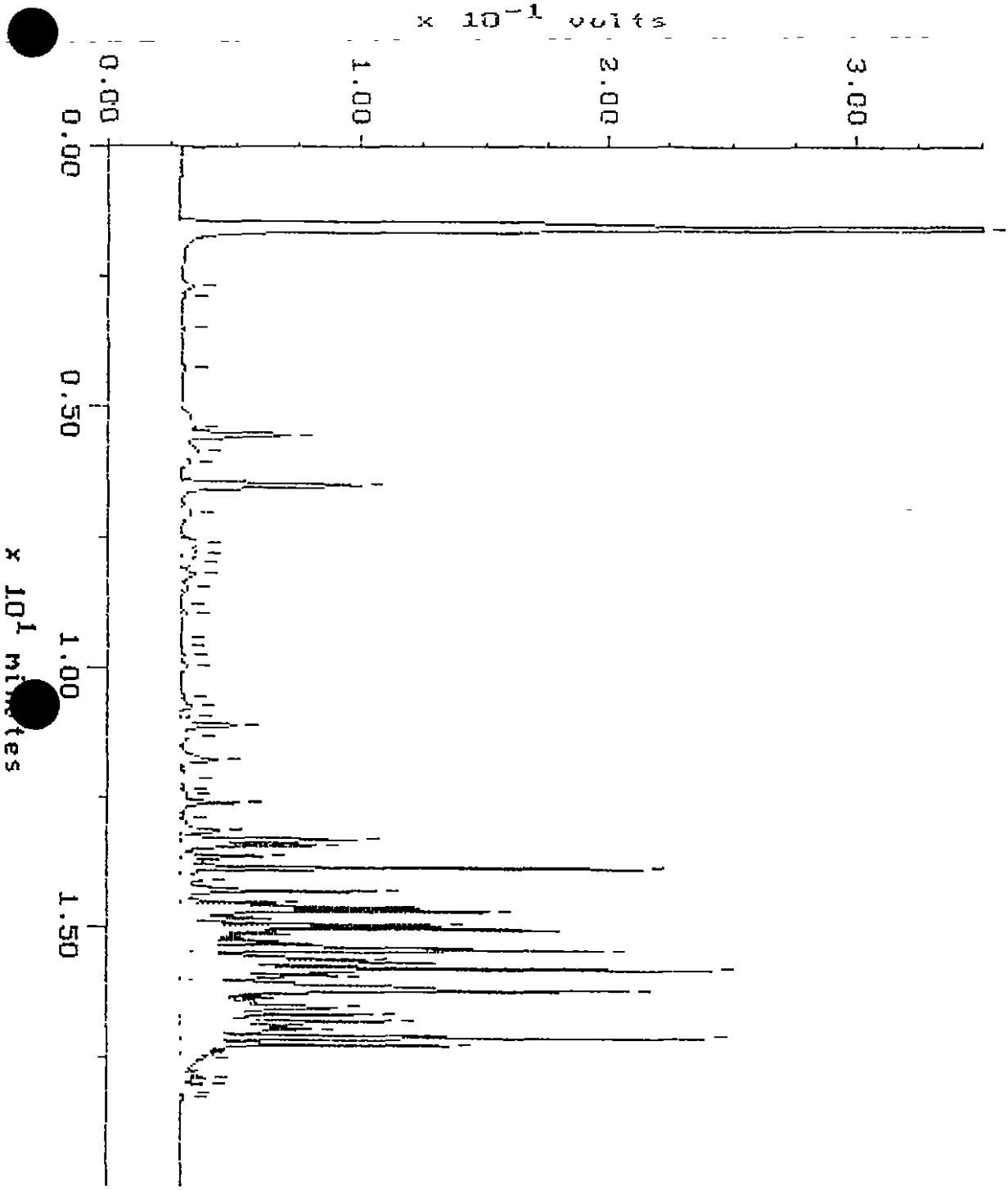
PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9403-103-2	9.0	7.4	20	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Sample Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

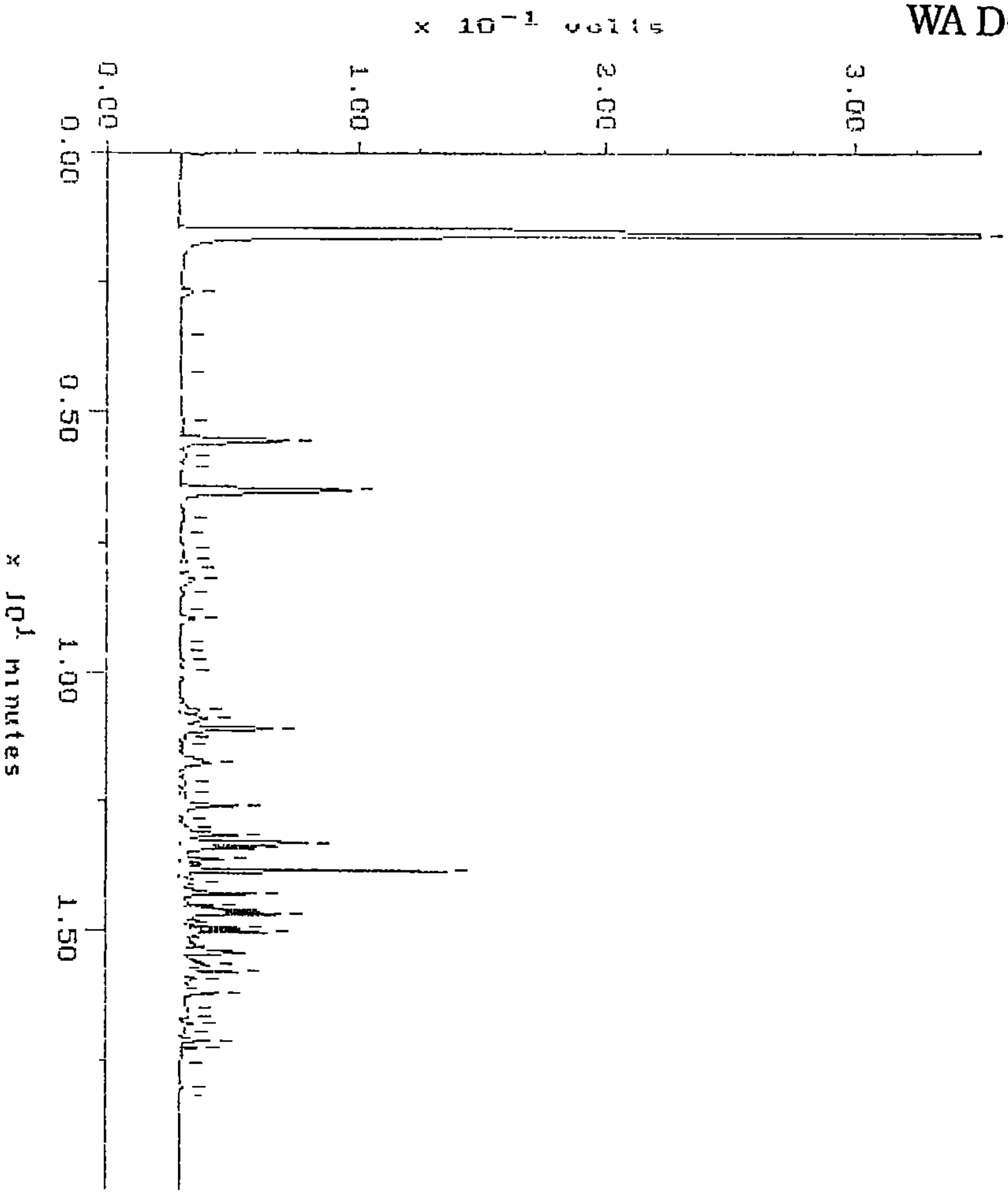
WA DOE WTPH-G

Sample: 9403-103-1 Channel: FID Filename: R3109G34
Acquired: 11-MAR-94 3:03 Method: F:\BRD2\MAXDATA\GLAD\031094GS Operator: ATI
Comments: ATI : A COMMITMENT TO QUALITY



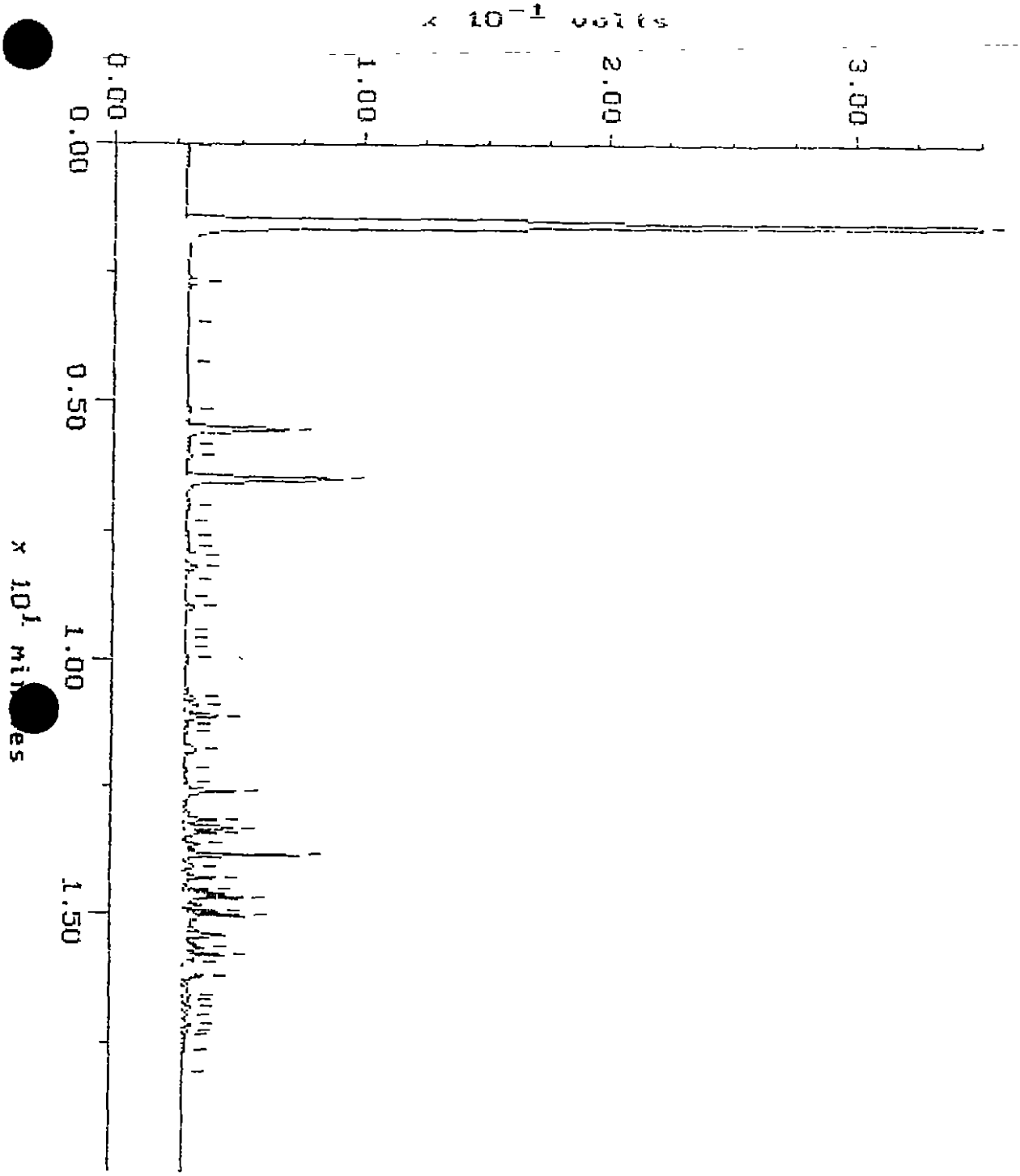
Acquired: 11-APR-94 3:31 Method: [illegible] Operator: ATI
Comments: ATI : A COMMITMENT TO QUALITY

WA DOE WTPH-G



WA DOE WTPH-G

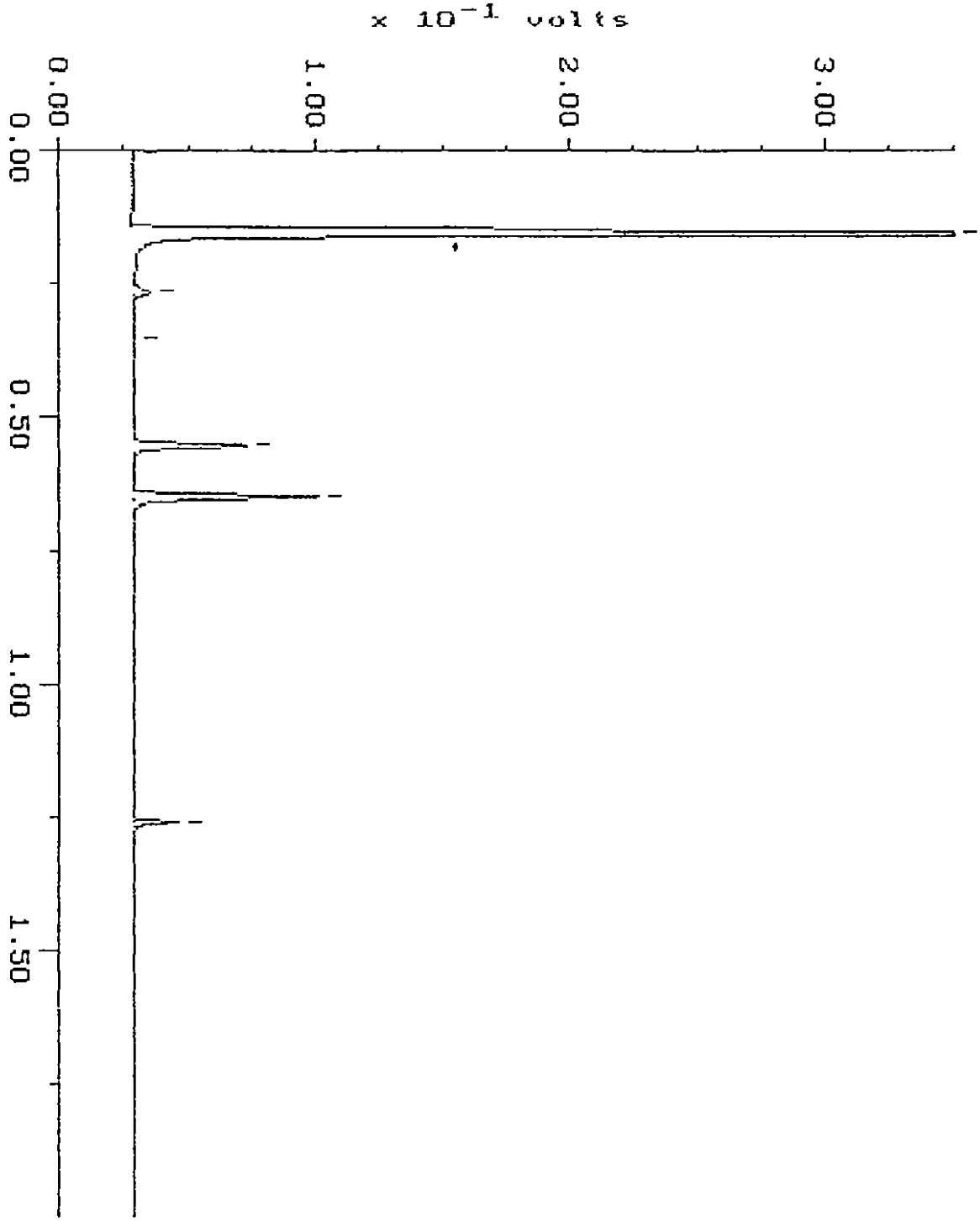
Sample: 9403-103-3 Channel: FID Filename: R3109G36
Acquired: 11-MAR-94 4:00 Method: F:\BROZ\MAXDATA\GLAD\031094GS Operator: ATI
Comments: ATI : A COMMITMENT TO QUALITY



Blank

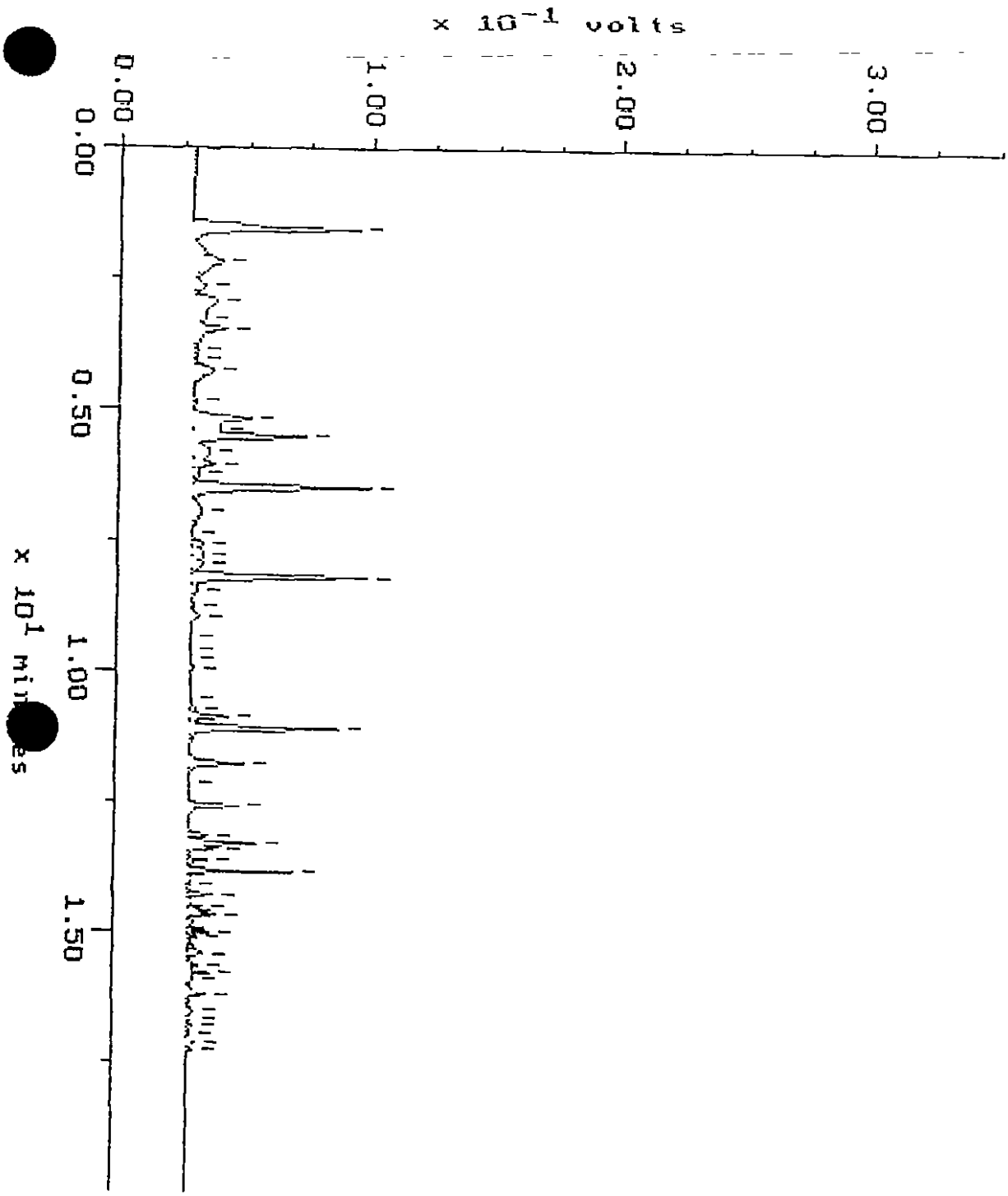
WA DOE WTPH-G

Sample: SRB 3-10 Channel: FID Filename: R3109G12
Acquired: 10-MAR-94 16:32 Method: F:\BRO2\MAXDATA\GLAD\031094GS Operator: ATI
Comments: ATI : A COMMITMENT TO QUALITY

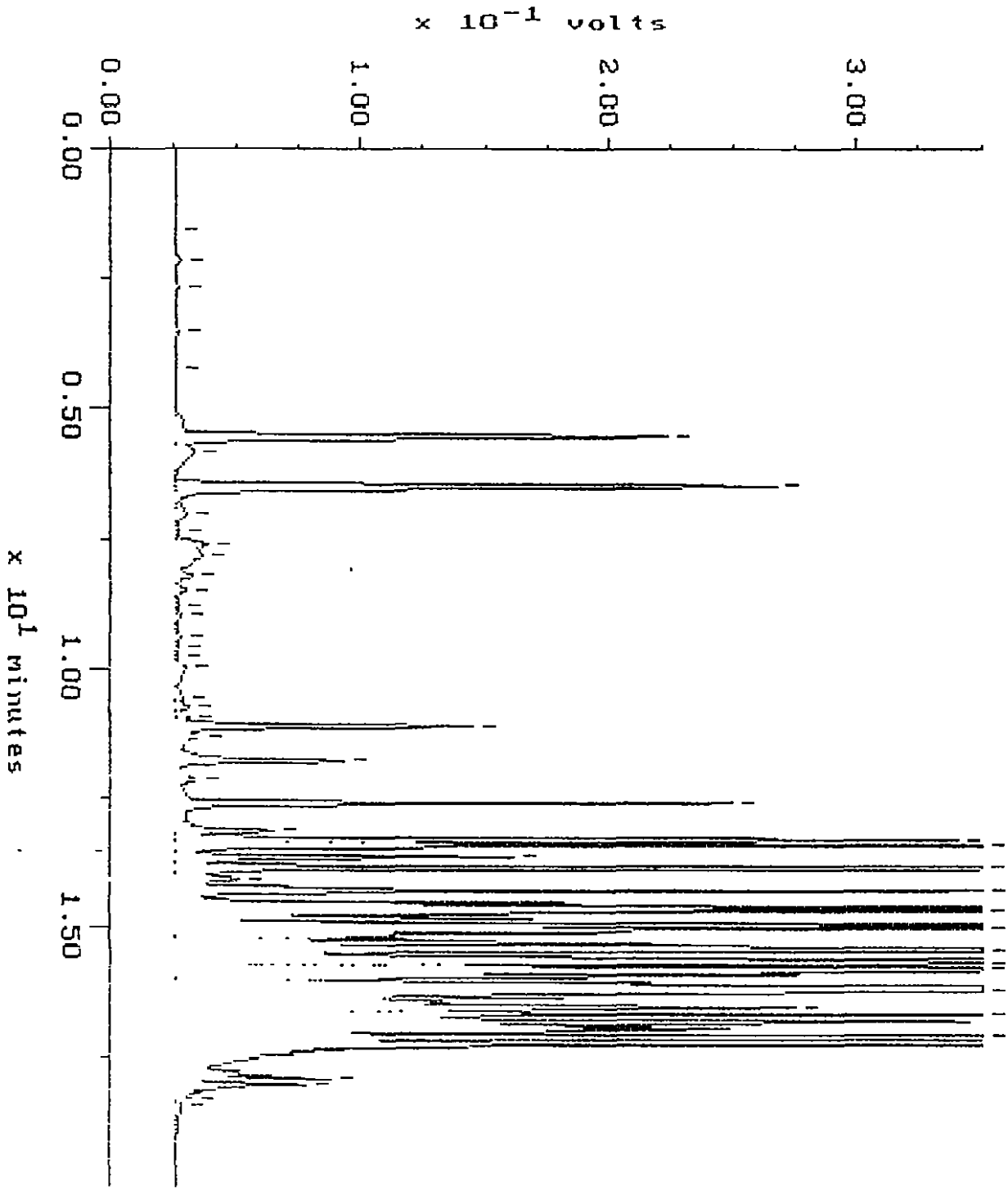


Continuing Calibration

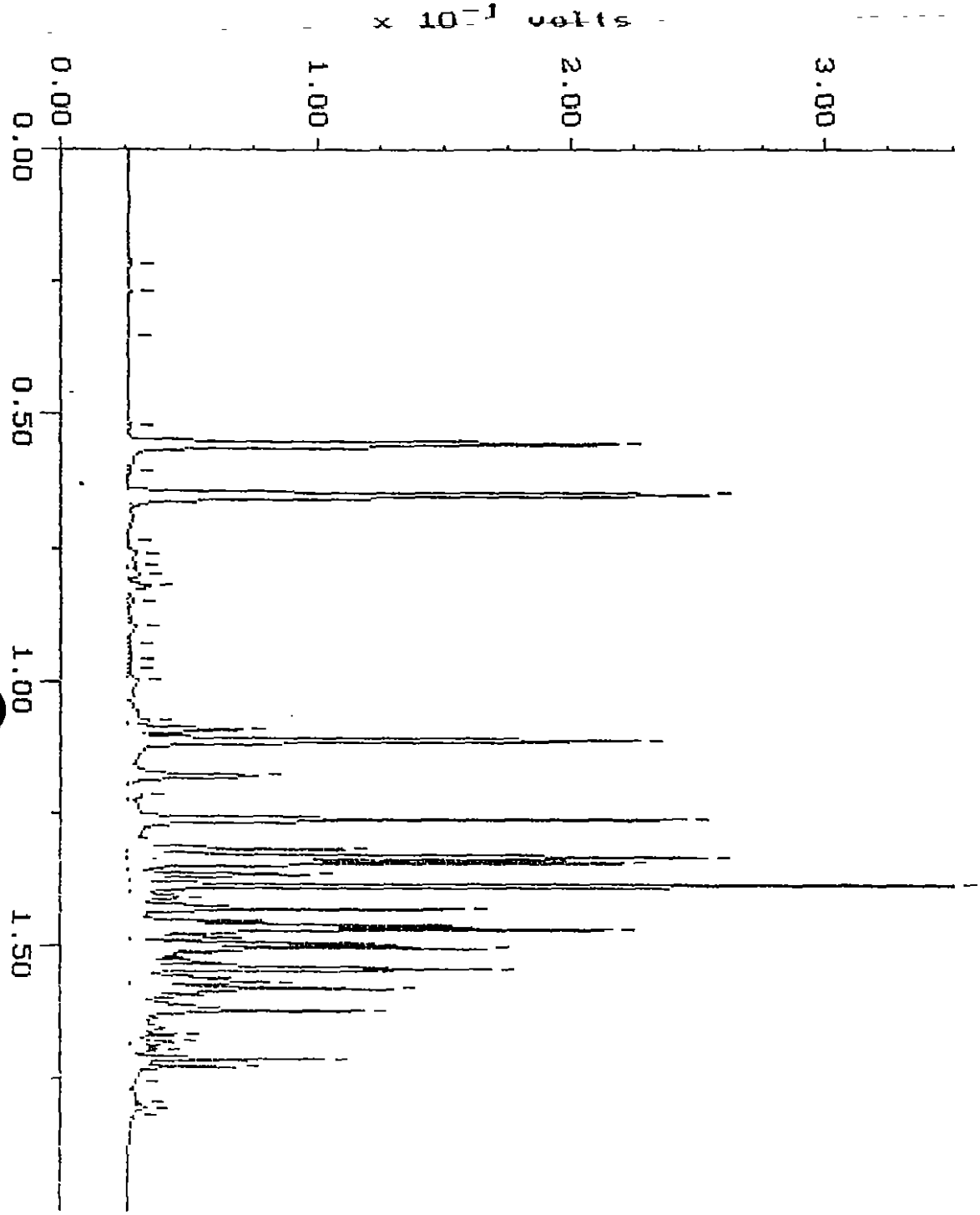
Sample: STD-C G Channel: FID Filename: R3109G10
Acquired: 10-MAR-94 15:35 Method: F:\BRD2\MAXDATA\GLAD\031094GS Operator: ATI
Comments: ATI . A COMMITMENT TO QUALITY



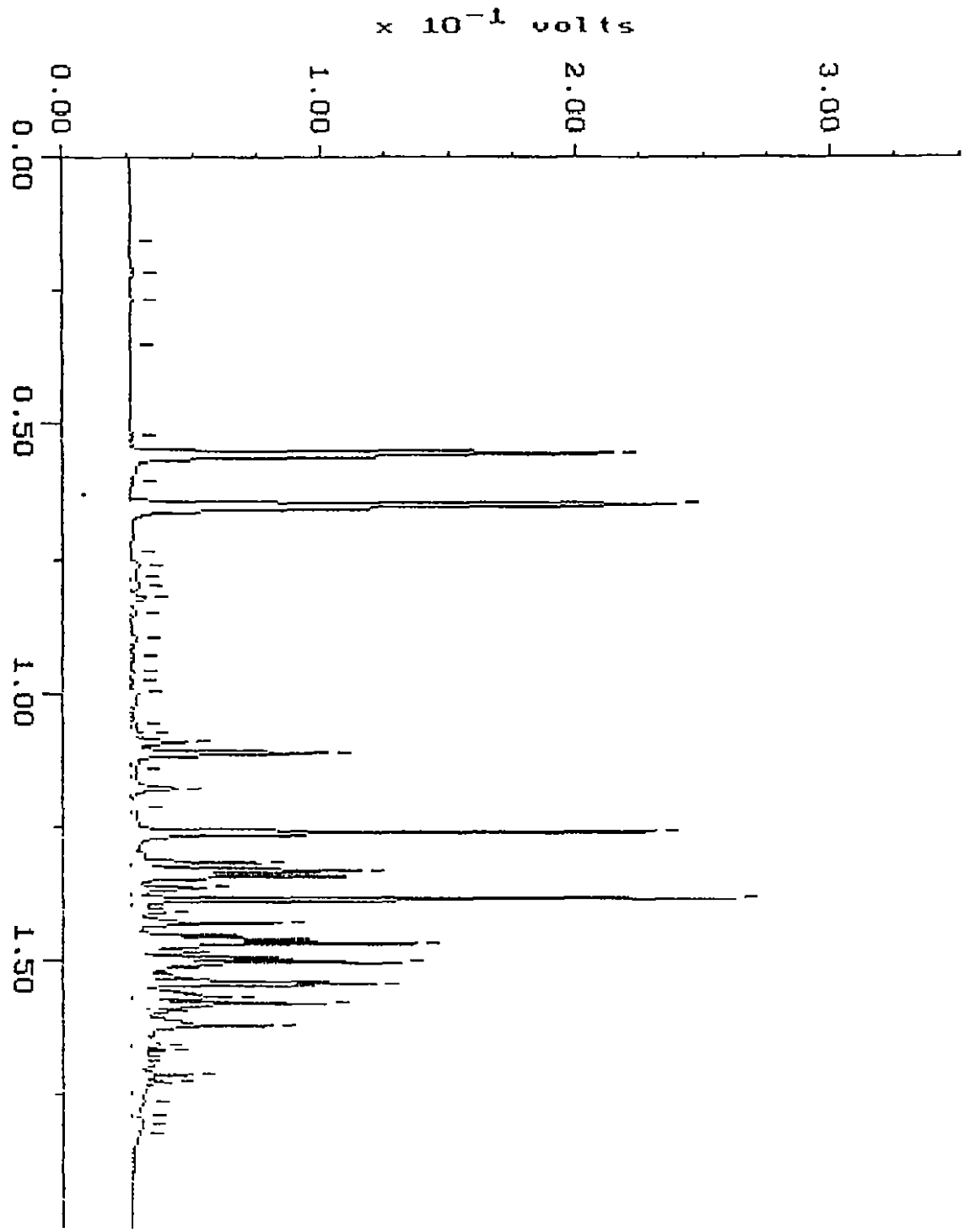
Sample: 9403-103-1 Channel: PID Filename: R3109G34
Acquired: 11-MAR-94 3:03 Method: F:\BRO2\MAXDATA\GLAD\0310946S Operator: ATI
Comments: ATI . A COMMITMENT TO QUALITY



Sample: 9403-103-2 Channel: PID Filename: R3109G35
Acquired: 11-MAR-94 3:31 Method: F:\BRO2\MAXDATA\GLAD\031094GS Operator: ATI
Comments: ATI : A COMMITMENT TO QUALITY

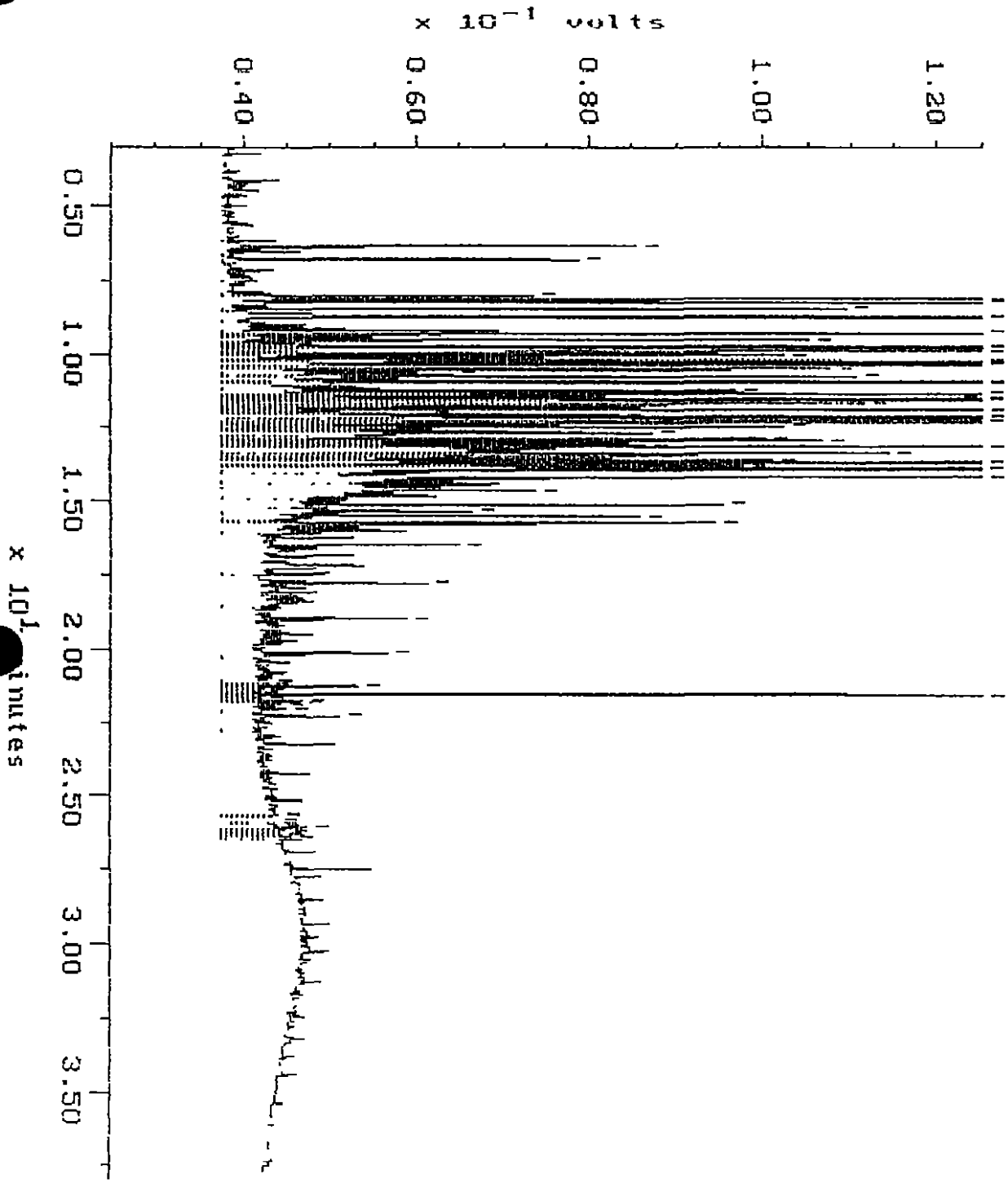


Sample: 9403-103-3 Channel: PID Filename: R3109G36
Acquired: 11-MAR-94 4:00 Method: F:\BRO2\MAXDATA\GLAD\031094GS Operator: ATI
Comments: ATI . A COMMITMENT TO QUALITY



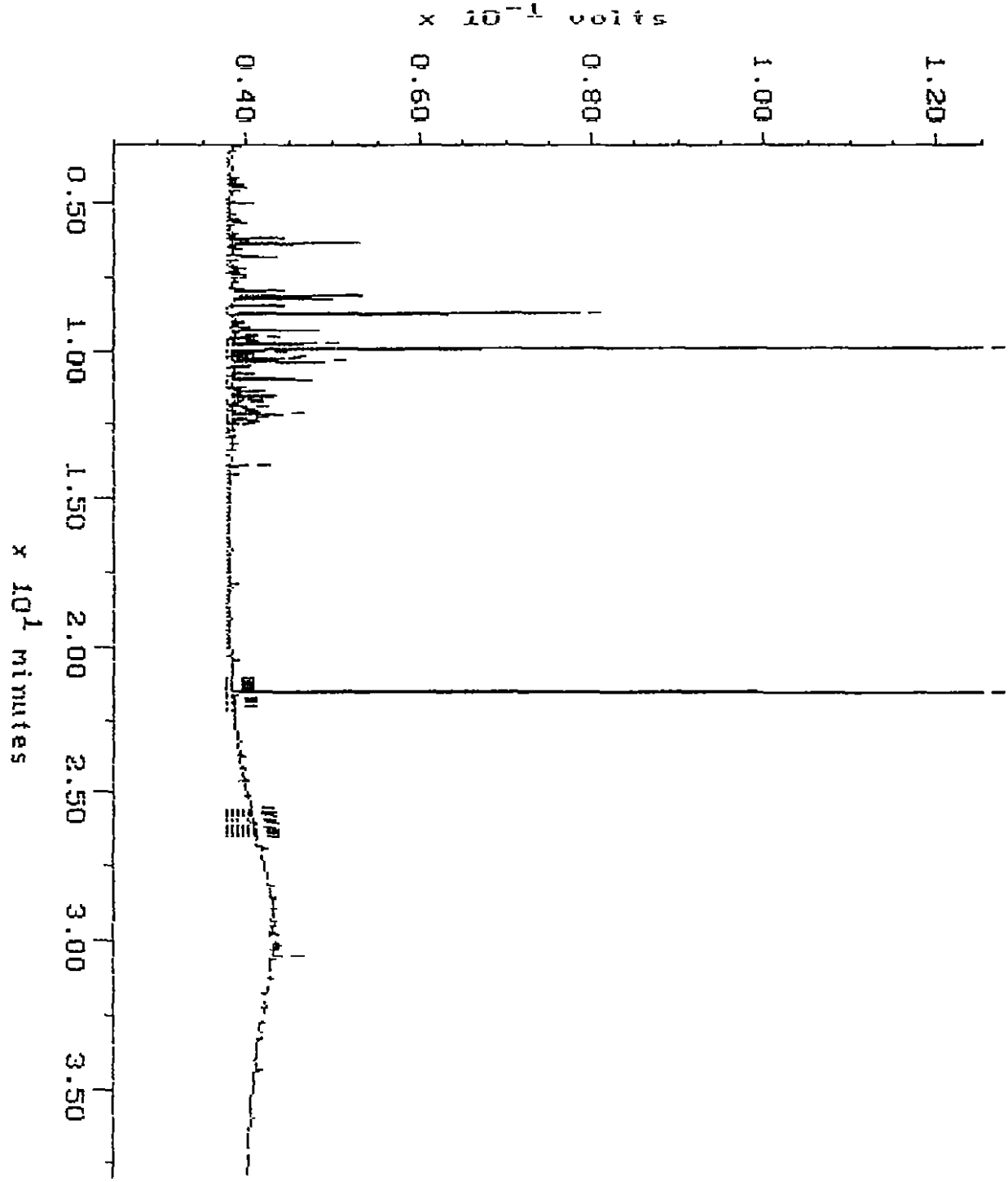
WA DOE WTPH-D

Sample: 9403-103-1 Channel: CLARENCE Filename: R3118C09
Acquired: 11-MAR-94 19:07 Method: F:\BR02\MAXDATA\SERGE-C\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: DEDICATED TO QUALITY CLIENT SEPVICE



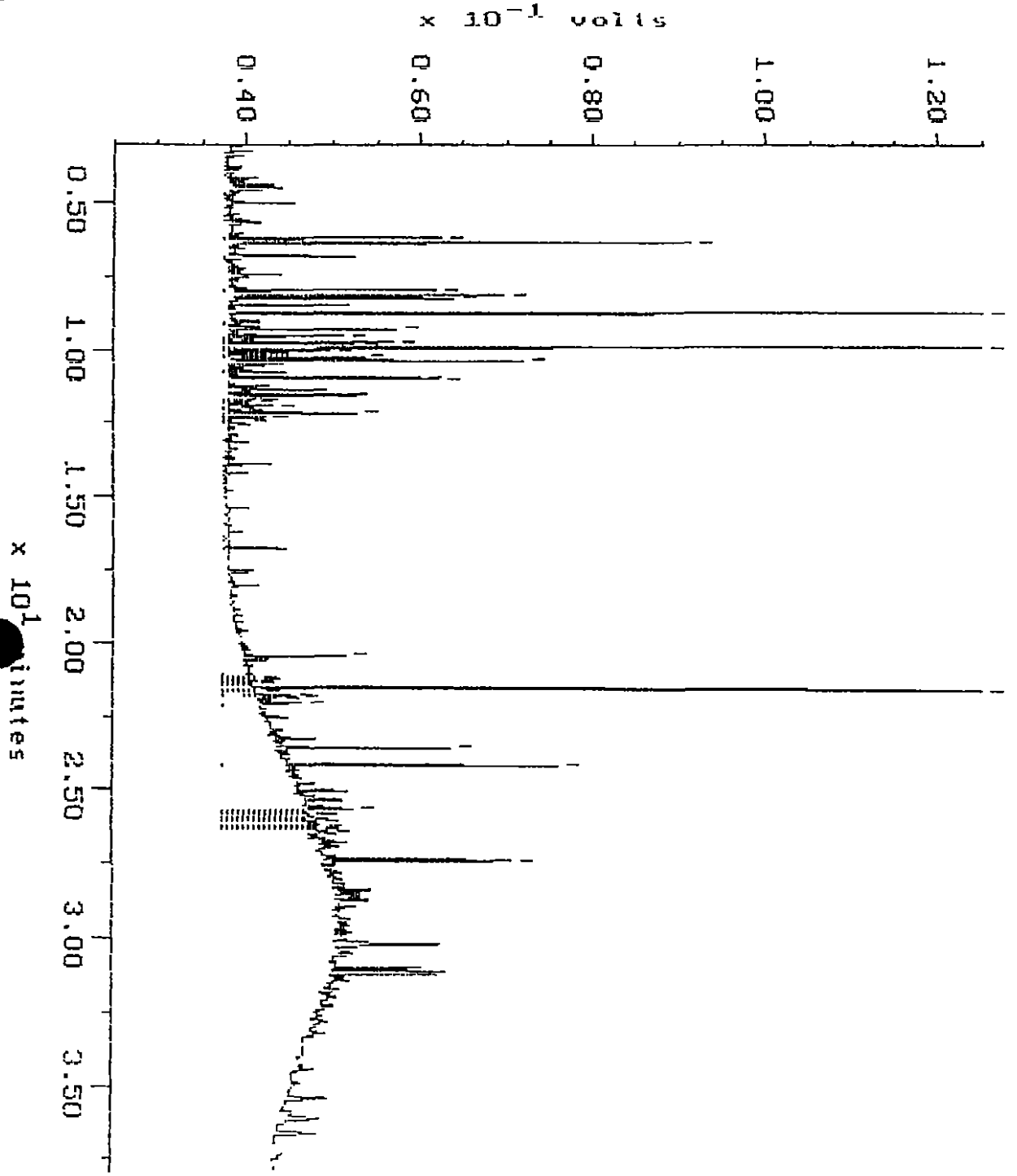
WA DOE WTPH-D

Sample: 9403-103-2 Channel: CLAPENCE Filename: R3118C12
Acquired: 11-MAR-94 21:27 Method: F:\BRO2\MAXDATA\SERGE-C\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: DEDICATED TO QUALITY CLIENT SERVICE



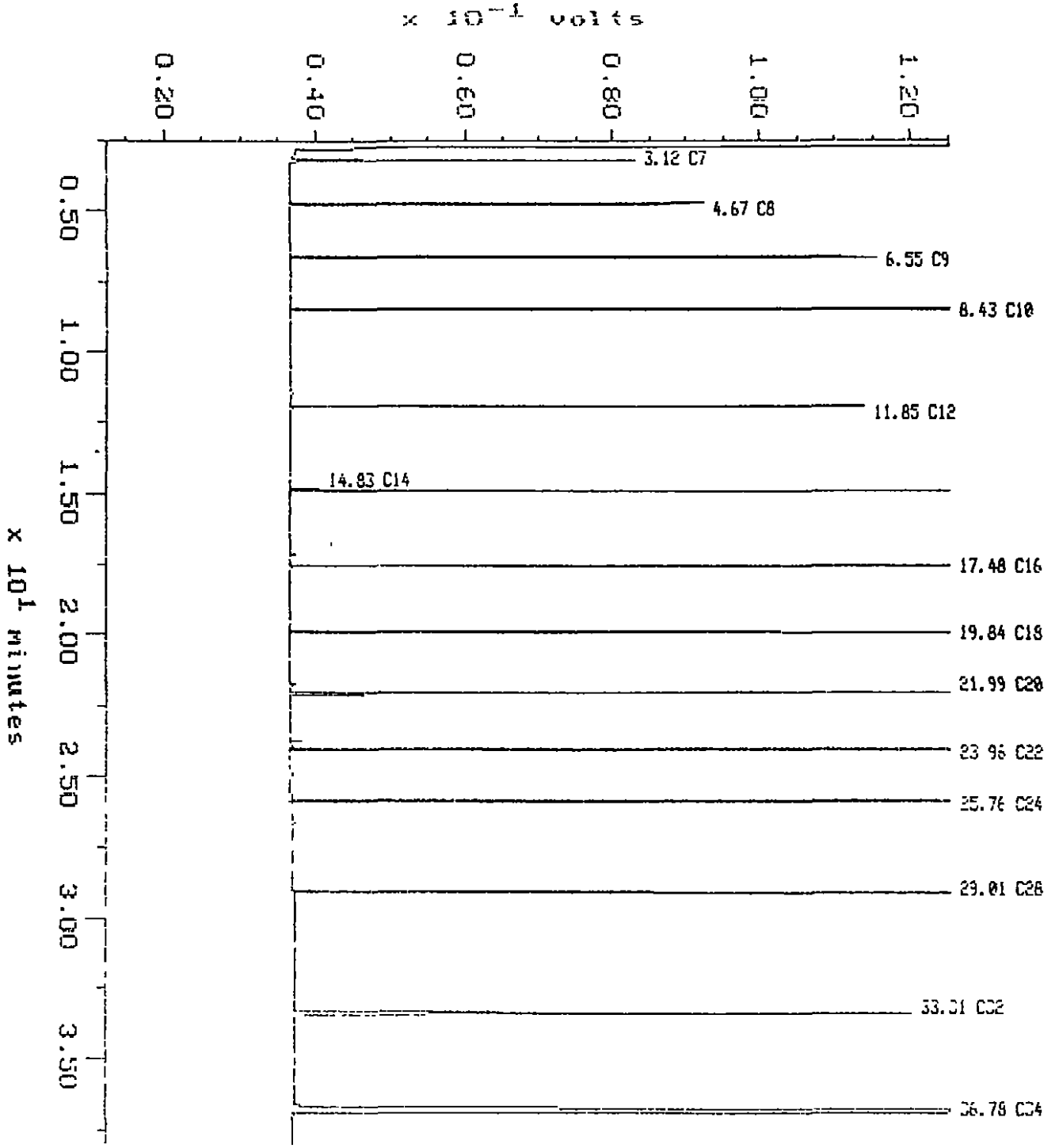
WA DOE WTPH-D

Sample: 9403-103-3 Channel: CLARENCE Filename: R3118C07
Acquired: 11-MAR-94 17:34 Method: F:\BRO2\MAXDATA\SEPGE-C\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: DEDICATED TO QUALITY CLIENT SEPVICE

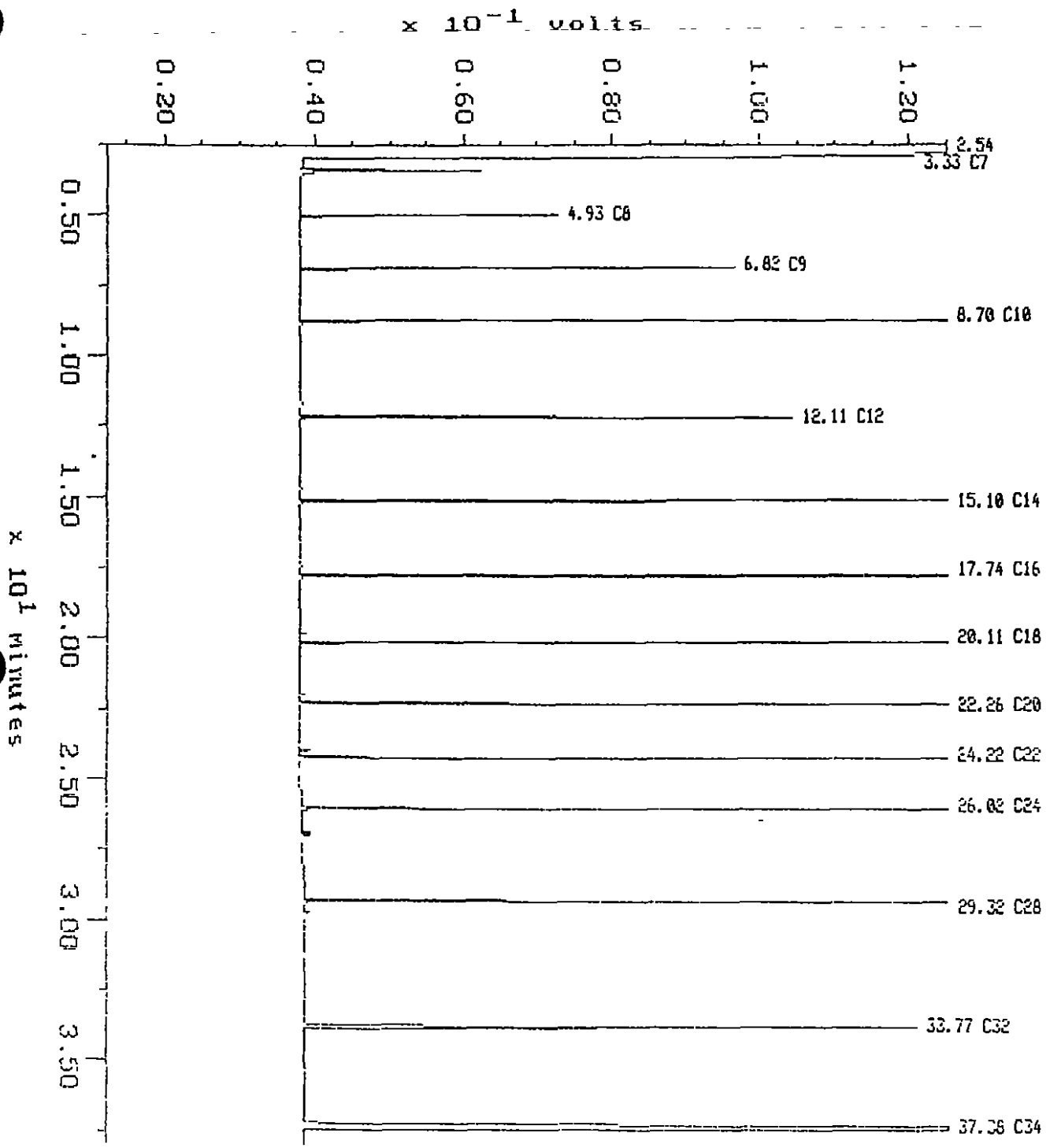


Alkane

Sample: ALKANE S-D
Acquired: 07-MAR-94 12:35
Inj Vol: 1.00
Channel: DEMITRI
Method: F:\6RO2\MAXDATA\SERGE-D\FUEL0307
Filename: R3078002
Operator: ATI

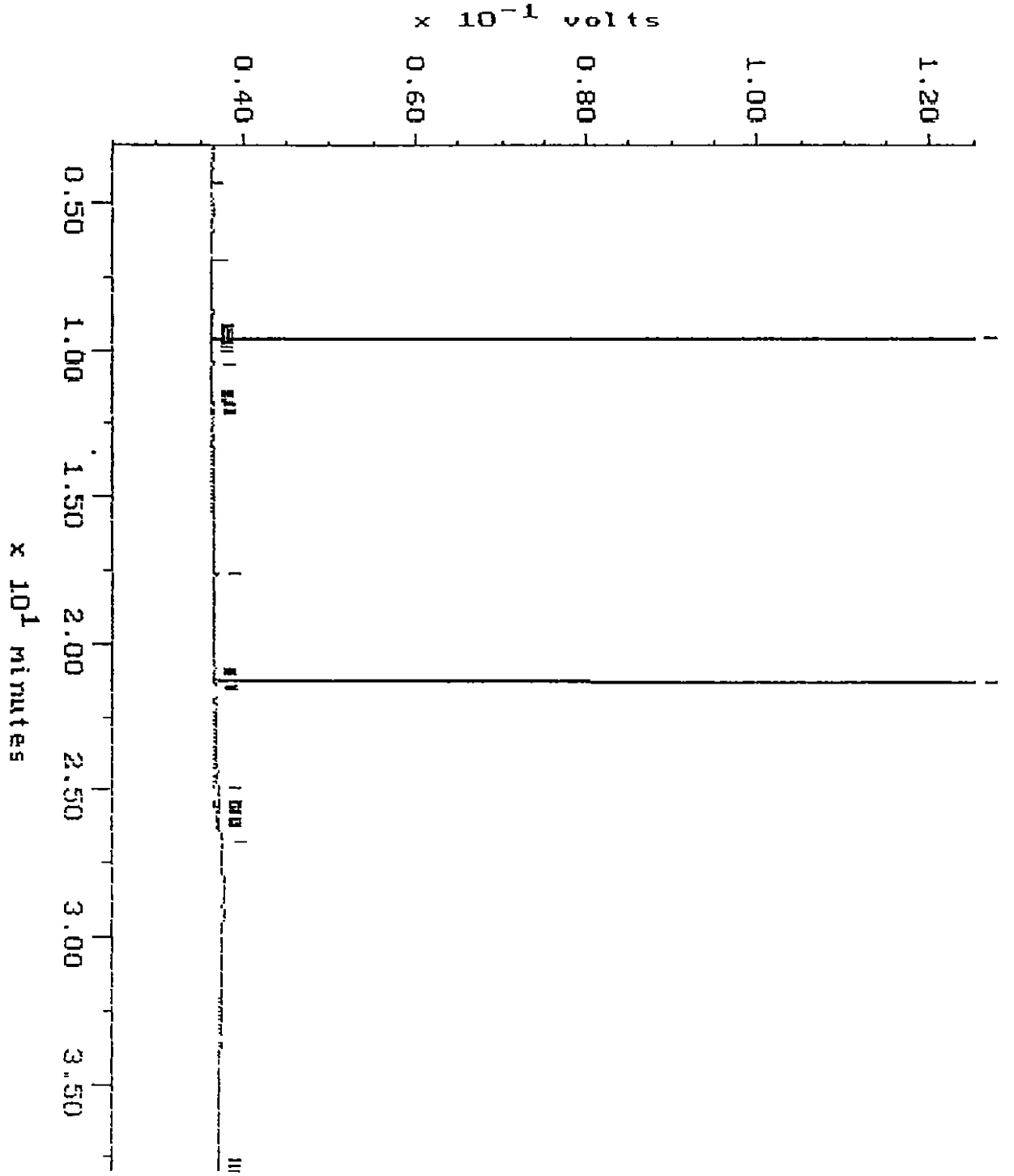


Sample: ALKANE S-C
Acquired: 07-MAR-94 12:35
Inj Vol: 1.00
Channel: CLARENCE
Method: F:\BRUE\MAXDATA\SERGE-C\FUEL0307
Filename: R2078C03
Operator: ATI



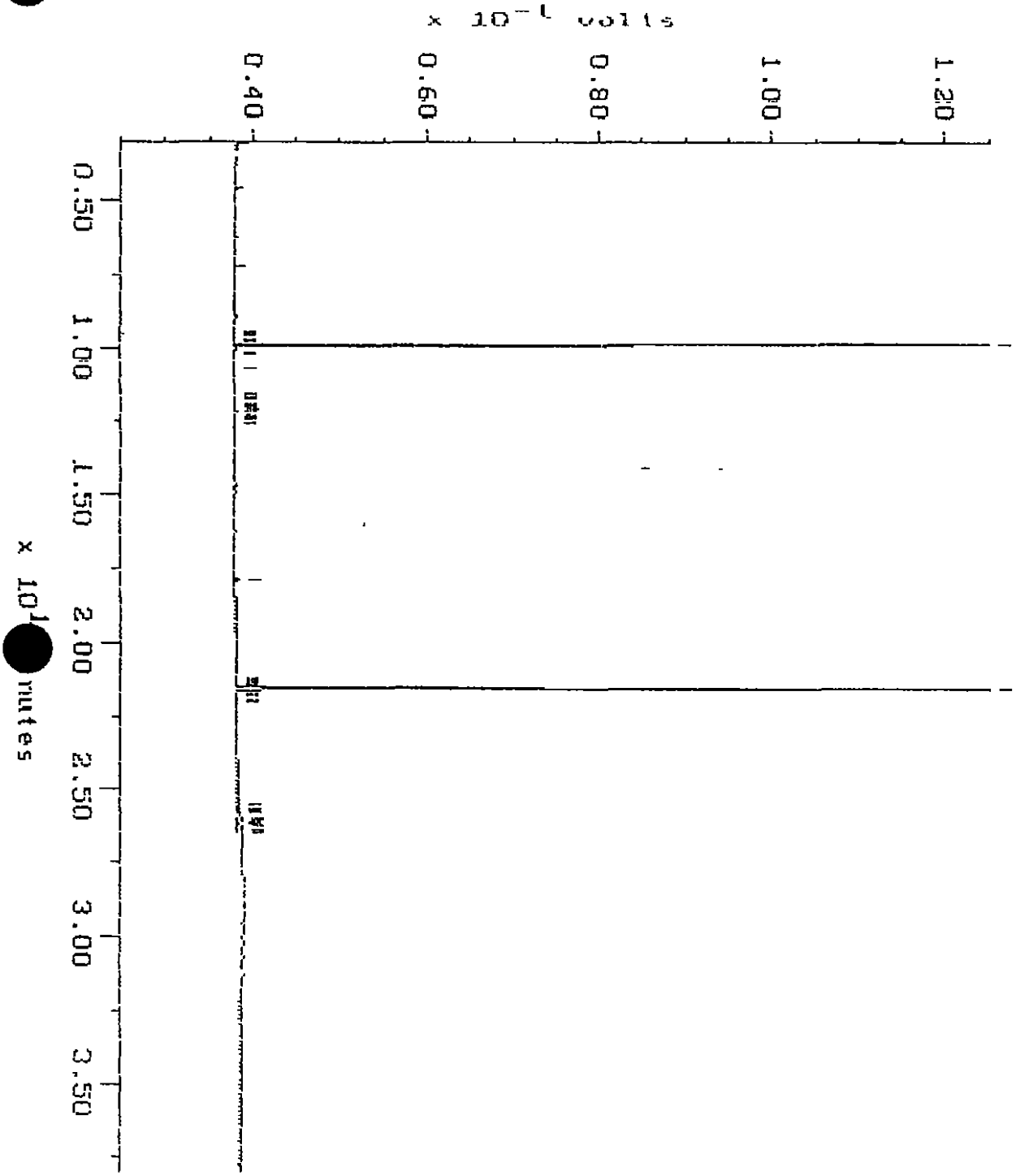
Blank

Sample: SRB 03-11 Channel: DEMITRI Filename: R3118D04
Acquired: 11-MAR-94 15:15 Method: F:\BRO2\MAXDATA\SERGE-D\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: A MISSION OF EXCELLENCE IN ANALYTICAL CHROMATOGRAPHY



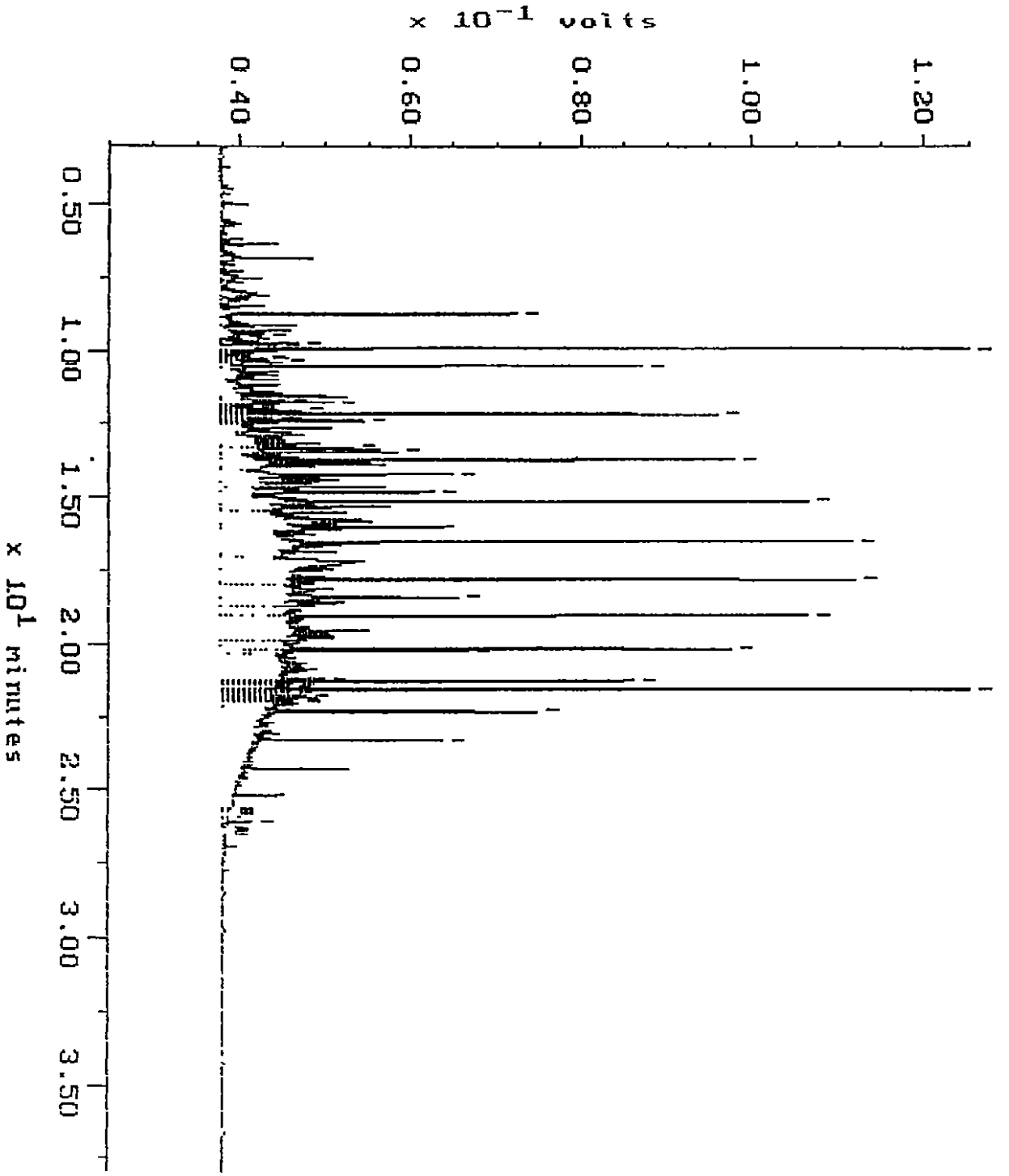
Blank WA DOE WTPH-D

Sample: SRB 03-11 Channel: CLARENCE Filename: AC118C04
Acquired: 11-MAR-94 15:15 Method: F:\BRUC\MAXDATA\SEPGE-C\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: DEDICATED TO QUALITY CLIENT SERVICE



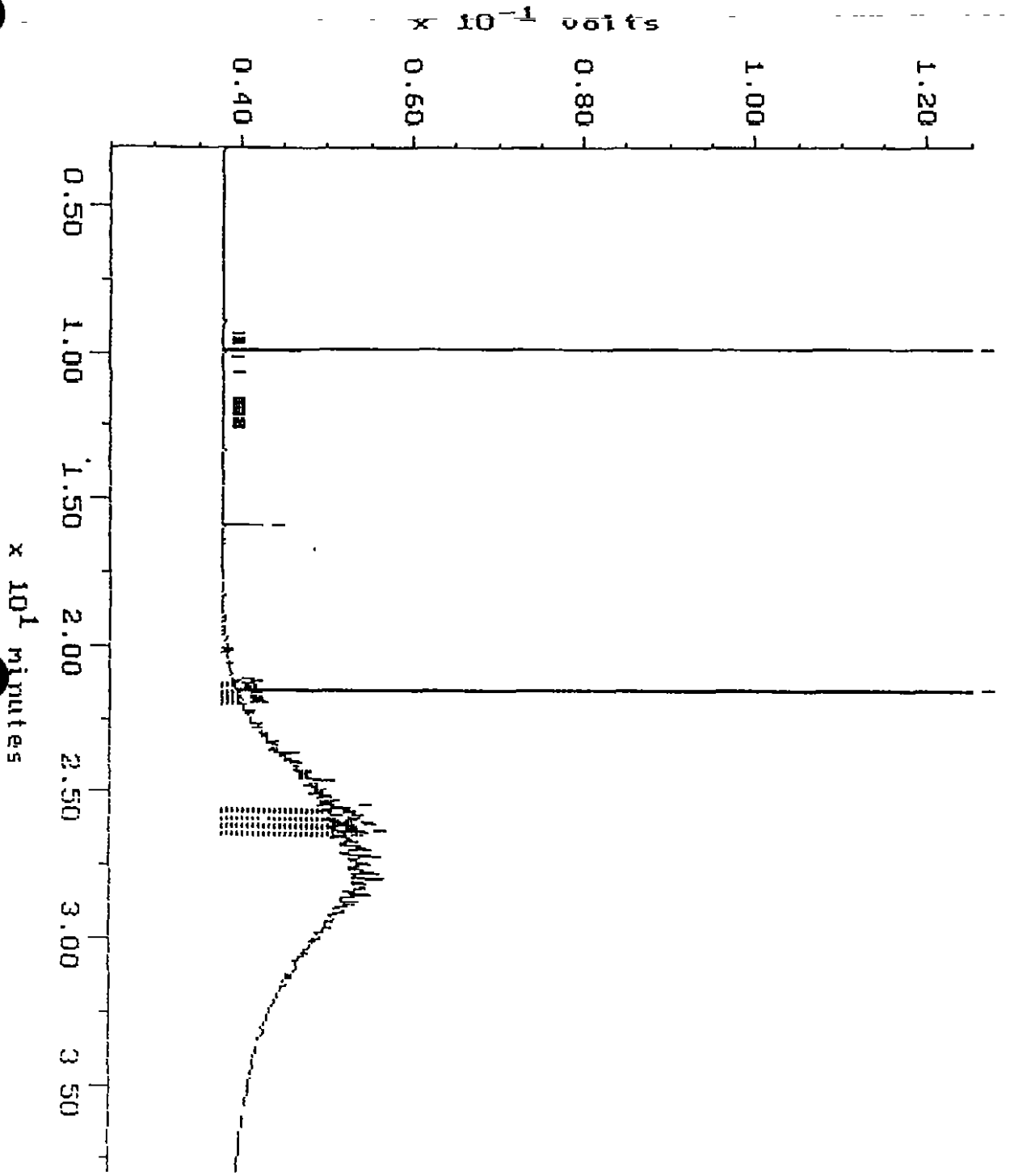
Continuing Calibration

Sample: D 500 Channel: CLARENCE Filename: R3118C02
Acquired: 11-MAR-94 12:15 Method: F:\BR02\MAXDATA\SERGE-C\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: DEDICATED TO QUALITY CLIENT SERVICE



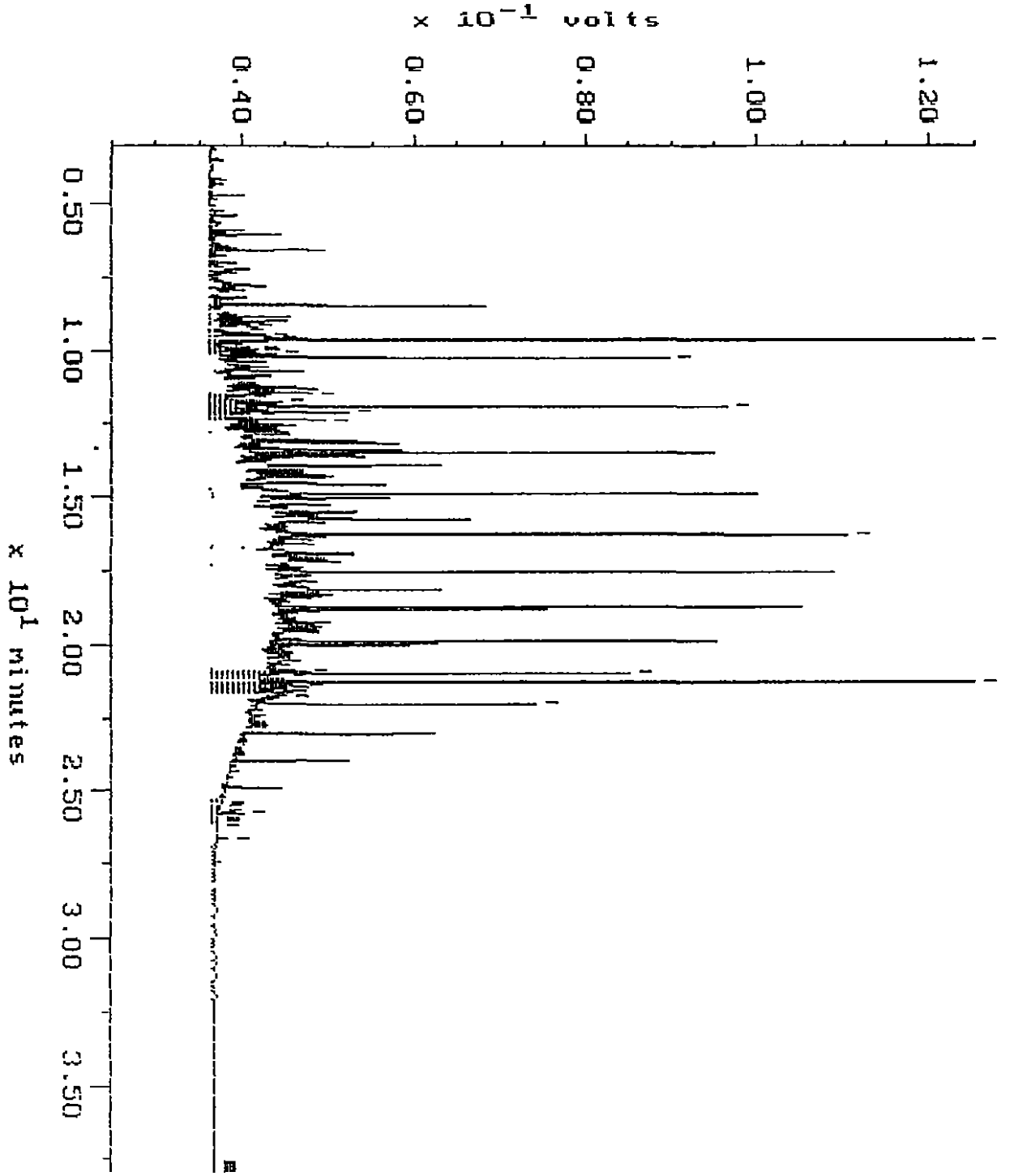
Continuing Calibration

Sample: MO 500 Channel: CLARENCE Filename: R3118C03
Acquired: 11-MAR-94 13:01 Method: F:\BRO2\MAXDATA\SERGE-C\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: DEDICATED TO QUALITY CLIENT SERVICE



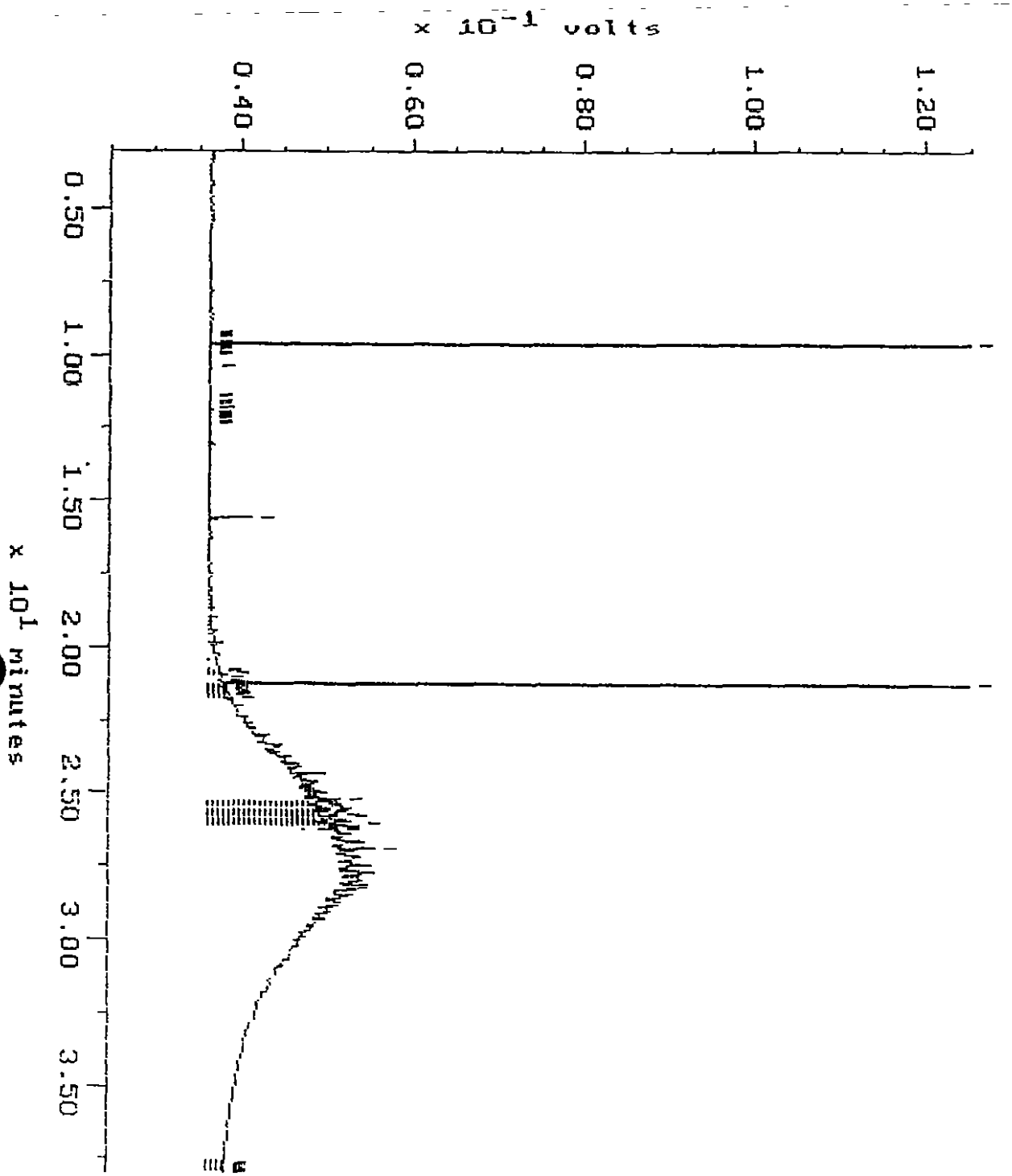
Continuing Calibration

Sample: D 500 Channel: DEMITRI Filename: R3118D02
Acquired: 11-MAR-94 12:15 Method: F:\BRO2\MAXDATA\SERGE-D\FUEL0311 Operator: ATI
Comments: ATI RUSH FUELS: A MISSION OF EXCELLENCE IN ANALYTICAL CHROMATOGRAPHY



Continuing Calibration

Sample: MO 500 Channel: DEMITRI Filename: A3118D03
Acquired: 11-MAR-94 13:01 Method: F:\BRO2\MAXDATA\SERGE-D\FUEL0311 Operator: ATI
Comment: ATI RUSH FUELS: A MISSION OF EXCELLENCE IN ANALYTICAL CHROMATOGRAPHY



9403-103

CHAIN OF CUSTODY

No. 052651 Page 1 of 1

CONSULTANT'S NAME	ADDRESS	CITY	STATE	ZIP CODE
EMCON	18912 N Creek Pkwy	Bothell	Wa	98011

BP SITE NUMBER	BP CORNER ADDRESS/CITY	CONSULTANT PROJECT NUMBER
11073	54th Pacific Hwy	

CONSULTANT PROJECT MANAGER	PHONE NUMBER	FAX NUMBER	CONSULTANT CONTRACT NUMBER
Mike Neill			

BP CONTACT	BP ADDRESS	PHONE NUMBER	FAX NO

LAB CONTACT	LABORATORY ADDRESS	PHONE NUMBER	FAX NO

SAMPLED BY (Please Print Name)	SAMPLED BY (Signature)	SHIPMENT DATE	SHIPMENT METHOD
TANYA TRIAT			

TAT ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☑ Standard 2 Weeks

ANALYSIS REQUIRED

AIRBILL NUMBER

SAMPLE DESCRIPTION	COLLECTION DATE / COLLECTION TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH-G BTEX	TPHD extended	COMMENTS
11073-SSC	3/4/94 1621	Soil	2	4oz	1	X	X	
11073-SSA1	3/4/94 1624	1	1	1	2	X	X	
11073-SSA2	3/4/94 1630	1	1	1	3	X	X	

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
EMCon	3/10/94	1340	Diana Spence	3/10/94	

ADDITIONAL COMMENTS

CLV 16722

Distribution White - Original (with Data)
Yellow BP
Pink - Lab
Blue - Consultant Field Staff

NORTH CREEK ANALYTICAL

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

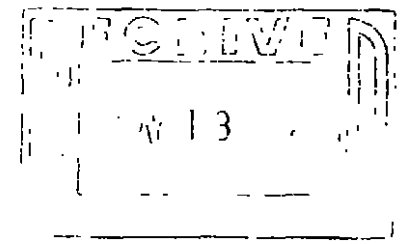
EMCON Northwest
18912 N Creek Parkway, #100
Bothell, WA 98011
Attention Mike Noll

Client Project ID: TOSCO #11073, #0328-089 02
Sample Matrix: Soil
First Sample #: 405-0534

Received May 11, 1994
Reported: May 13, 1994

TOTAL SOLIDS & MOISTURE CONTENT REPORT

Sample Number	Sample Description	Total Solids %	Moisture Content %
405-0534	#11073-HB-1-2	92	8 0
405-0536	#11073-HB-2-2	95	5 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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EMCON Northwest	Client Project ID.	TOSCO #11073, #0328-089 02	Sampled.	May 11, 1994
18912 N Creek Parkway, #100	Sample Matrix	Soil	Received	May 11, 1994
Bothell, WA 98011	Analysis Method:	WTPH-G	Analyzed	May 12, 1994
Attention. Mike Noll	First Sample #:	405-0534	Reported.	May 13, 1994

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result mg/kg (ppm)	Surrogate Recovery %
405-0534	#11073-HB-1-2	N D	114
405-0536	#11073-HB-2-2	N.D	99
BLK051294	Method Blank	N D	126

Reporting Limits	0.50

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

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EMCON Northwest	Client Project ID	TOSCO #11073, #0328-089 02	Analyst R Lister
18912 N Creek Parkway, #100	Sample Matrix	Soil	F Shino
Bothell, WA 98011	Analysis Method	WTPH-G	
Attention Mike Noll	Units	mg/kg (ppm)	Analyzed: May 12, 1994
			Reported: May 13, 1994

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

Gasoline

Spike Conc. Added:	5.0
Spike Result:	4 5
% Recovery:	90
Upper Control Limit %:	113
Lower Control Limit %:	65

PRECISION ASSESSMENT
Sample Duplicate

Gasoline Range Hydrocarbons

Sample Number:	405-0518
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:	65

NORTH CREEK ANALYTICAL Inc.

Matthew T Essig
Project Manager

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

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

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EMCON Northwest	Client Project ID	TOSCO #11073, #0328-089 02	Sampled	May 11, 1994
18912 N Creek Parkway, #100	Sample Matrix	Soil	Received.	May 11, 1994
Bothell, WA 98011	Analysis Method	EPA 8020	Analyzed:	May 12, 1994
Attention Mike Noll	First Sample #.	405-0534	Reported.	May 13, 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 %
405-0534	#11073-HB-1-2	N.D	N D.	N D	N D.	76
405-0536	#11073-HB-2-2	N D.	N D.	N D	N D.	76
BLK051294	Method Blank	N D.	N D	N D	N D	82
Reporting Limits:		0.015	0.015	0.015	0.030	

4-Bromofluorobenzene surrogate recovery control limits are 59 - 144 %
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 #11073, #0328-089 02	Analyst:	R. Lister
18912 N Creek Parkway, #100	Sample Matrix	Soil		F. Shino
Bothell, WA 98011	Analysis Method	EPA 8020		
Attention Mike Noll	Units:	mg/kg (ppm)	Analyzed:	May 12, 1994
	QC Sample #.	405-0467	Reported.	May 13, 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 55	0 55	0.55	1.64
Spike Result:	0 44	0 50	0 50	1 56
Spike % Recovery:	80%	91%	91%	95%
Spike Dup. Result.	0 48	0 51	0 55	1.70
Spike Duplicate % Recovery:	87%	93%	100%	104%
Upper Control Limit %:	112	104	109	111
Lower Control Limit %:	69	68	69	66
Relative % Difference:	8 7%	2 0%	9 1%	9 0%
Maximum RPD:	20	15	19	15

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

% Recovery	$\frac{\text{Spike Result - Sample Result}}{\text{Spike Conc Added}}$	x 100
Relative % Difference	$\frac{\text{Spike Result - Spike Dup Result}}{\text{(Spike Result + Spike Dup Result) / 2}}$	x 100

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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	TOSCO #11073, #0328-089 02	Sampled	May 11, 1994
18912 N Creek Parkway, #100	Sample Matrix.	Soil	Received:	May 11, 1994
Bothell, WA 98011	Analysis Method·	WTPH-D Extended	Extracted.	May 12, 1994
Attention Mike Noll	First Sample #.	405-0534	Analyzed	May 12, 1994
			Reported.	May 13, 1994

TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE EXTENDED

Sample Number	Sample Description	Diesel Result mg/kg (ppm)	Heavy Oil Result mg/kg (ppm)	Surrogate Recovery %
405-0534	#11073-HB-1-2	31	170	80
405-0536	#11073-HB-2-2	28	96	75
BLK051294	Method Blank	N.D	N D.	70
Reporting Limit:		4.0	15	

2-Fluorobiphenyl Surrogate Recovery Control Limits are 50 - 150%
Extractable Hydrocarbons are quantitated as Diesel Range Organics (C12 - C24) and Heavy Oil Range Organics (>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

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EMCON Northwest	Client Project ID	TOSCO #11073, #0328-089 02	Analyst. D. Anderson
18912 N Creek Parkway, #100	Sample Matrix	Soil	
Bothell, WA 98011	Analysis Method.	WTPH-D	Extracted: May 12, 1994
Attention Mike Noll	Units	mg/kg (ppm)	Analyzed: May 12, 1994
			Reported. May 13, 1994

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

Diesel

Spike Conc. Added:	70
Spike Result:	59
% Recovery:	84
Upper Control Limit %:	122
Lower Control Limit %.	84

PRECISION ASSESSMENT
Sample Duplicate

Diesel Range Hydrocarbons

Sample Number:	405-0534
Original Result:	31
Duplicate Result:	29
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

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

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

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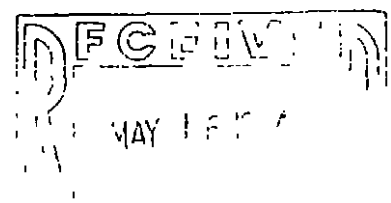
15055 S W Sequoia Parkway, Suite 110 • Portland OR 97224 7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID	TOSCO #11073, #0328-089.02		
18912 N. Creek Parkway, #100	Sample Matrix	Soil		
Bothell, WA 98011			Relogged:	May 13, 1994
Attention. Mike Noll	First Sample #:	405-0537	Reported:	May 16, 1994

TOTAL SOLIDS & MOISTURE CONTENT REPORT

Sample Number	Sample Description	Total Solids %	Moisture Content %
405-0537	#11073-HB-5-1 5	73	27
405-0538	#11073-HB-6-2	94	6.0
405-0540	#11073-HB-8-2	95	5 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

RTH CREEK ANALYTICAL Inc.

Matthew T Essig
Project Manager

NORTH CREEK ANALYTICAL

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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 #11073, #0328-089 02	Sampled:	May 11, 1994
18912 N Creek Parkway, #100	Sample Matrix	Soil	Relogged:	May 13, 1994
Bothell, WA 98011	Analysis Method	WTPH-D Extended	Extracted:	May 13, 1994
Attention Mike Noll	First Sample #.	405-0537	Analyzed:	May 14, 1994
			Reported:	May 16, 1994

TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE EXTENDED

Sample Number	Sample Description	Diesel Result mg/kg (ppm)	Heavy Oil Result mg/kg (ppm)	Surrogate Recovery %
405-0537	#11073-HB-5-1 5	32	160	96
405-0538	#11073-HB-6-2	11	46	85
405-0540	#11073-HB-8-2	50	190	91
BLK051394	Method Blank	N D.	N.D.	87
Reporting Limit:		**4.0**	**15**	

2-Fluorobiphenyl Surrogate Recovery Control Limits are 50 - 150%
Extractable Hydrocarbons are quantitated as Diesel Range Organics (C12 - C24) and Heavy Oil Range Organics (>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

EMCON Northwest, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 5/11/94 PAGE 1 OF 1

PROJECT NAME TOSCO 11073 . 0322-029.02

PROJECT Attn Mike Noll

COMPANY ADDRESS 18912 N Creek Pkwy

PHONE 485-5000

SAMPLERS SIGNATURE [signature]

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

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH HCID State	TPH G & BTEX State	TPH-D extended State	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 8310 HPLC 8100 GC	TCLP Metals Semi VOA VOA Pesticides Herb	Metals Total Diss.	List Below	Cyanide	pH Cond Cl SO4 PO4 F Br	NO2 NO3 (Circle)	NH3 N COD TOC Total P TKN TOX (C only)	HOLD		REMARKS
11073-HB1-1	5/11/94	0950	4050533	Soil	2																		+		
11073-HB1-2		1020	4050534				x	+																	24 hr TAT
11073-HB2-1		1040	4050535																				+		
11073-HB2-2		1110	4050536				x	+																	24 hr TAT
11073-HB5-1.5		1220	4050537					⊗															+		
11073-HB6-2		1237	4050538					⊗															+		
11073-HB7-1		1250	4050539																				+		
11073-HB8-2		1300	4050540					⊗															+		

RELINQUISHED BY: [signature] Signature; FRANK A. DITACO Printed Name; EMCON NW Firm; 5/11/94 1830 Date/Time

RECEIVED BY: Russell Lister Signature; RUSSELL LISTER Printed Name; NCA Firm; 5-11-94 18:30 Date/Time

RELINQUISHED BY:

RECEIVED BY:

TURNAROUND REQUIREMENTS: X 24 h ___ 48 h ___ 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); ___ V. CLP Deliverable Report

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

SAMPLE RECEIPT: Shipping VIA ___ Shipping # ___ Condition ___ Lab No. ___

SPECIAL INSTRUCTIONS/COMMENTS:

24 hr RUSH

⊗ Run samples for WTPH-D extended 24-hr Rush, Results Monday (5/16/94) by 2pm.

Post-it™ Fax Note 7671		Date 5/13/94	# of pages ▶ 1
To	Matt Essig	From	Mike Noll
Co./Dept.	North Creek	Co.	Emcon Northwest
Phone #	481-9200	Phone #	485-5000
Fax #	485-2992	Fax #	486-9766

Tom Collins NCA 5/13/94 1500.

(2)

EMCON Northwest, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 5/11/94 PAGE 1 OF 1

PROJECT NAME TOSCO 11073 # 0328.089.02

PROJECT Attn Mike Hall

COMPANY/ADDRESS 1849 N Creek Pkwy

PHONE 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	TPH - D State	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	Pest/Herb	Metals Total	List Below	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 (Circle)	HOLD	REMARKS
11073-HB1-1	5/4/94	0950	4050533	Soil	2																							
11073-HB1-2		1020	4050534				X	X																				24 hr TAT
11073-HB2-1		1040	4050535																								X	
11073-HB2-2		1110	4050536				X	X																				24 hr TAT
11073-HB5-1.5		1220	4050537																								X	
11073-HB6-2		1237	4050538																								X	
11073-HB7-1		1250	4050539																								X	
11073-HB8-2 (STAT)		1300	4050540																								X	

RELINQUISHED BY
Signature
Printed Name: TANYA D. TRACY
Firm: EMCON NW
Date/Time: 5/11/94 1830

RECEIVED BY
Signature
Printed Name: Russell LISTER
Firm: NCA
Date/Time: 5-11-94 18:30

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
X 24 hr ___ 48 hr ___ 5 day
X 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 ___

SPECIAL INSTRUCTIONS/COMMENTS

24 hr RUSH

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 #11073, #0328-089.02	
18912 N Creek Parkway, #100	Sample Matrix	Soil	
Bothell, WA 98011			Relogged: May 13, 1994
Attention Mike Noll	First Sample #:	405-0537	Reported: May 16, 1994

TOTAL SOLIDS & MOISTURE CONTENT REPORT

Sample Number	Sample Description	Total Solids %	Moisture Content %
405-0537	#11073-HB-5-1 5	73	27
405-0538	#11073-HB-6-2	94	6.0
405-0540	#11073-HB-8-2	95	5 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.	TOSCO #11073, #0328-089.02	Sampled:	May 11, 1994
18912 N Creek Parkway, #100	Sample Matrix	Soil	Relogged	May 13, 1994
Bothell, WA 98011	Analysis Method	WTPH-D Extended	Extracted:	May 13, 1994
Attention Mike Noll	First Sample #	405-0537	Analyzed.	May 14, 1994
			Reported:	May 16, 1994

TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE EXTENDED

Sample Number	Sample Description	Diesel Result mg/kg (ppm)	Heavy Oil Result mg/kg (ppm)	Surrogate Recovery %
405-0537	#11073-HB-5-1 5	32	160	96
405-0538	#11073-HB-6-2	11	46	85
405-0540	#11073-HB-8-2	50	190	91
BLK051394	Method Blank	N D	N D.	87
Reporting Limit:		**4.0**	**15**	

2-Fluorobiphenyl Surrogate Recovery Control Limits are 50 - 150%
Extractable Hydrocarbons are quantitated as Diesel Range Organics (C12 - C24) and Heavy Oil Range Organics (>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

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EMCON Northwest	Client Project ID:	TOSCO #11073, #0328-089.02	Analyst: D Anderson
18912 N Creek Parkway, #100	Sample Matrix:	Soil	
Bothell, WA 98011	Analysis Method:	WTPH-D	Extracted: May 13, 1994
Attention: Mike Noll	Units:	mg/kg (ppm)	Analyzed: May 14, 1994
			Reported: May 16, 1994

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

Diesel	
Spike Conc. Added:	70
Spike Result:	70
% Recovery:	100
Upper Control Limit %:	122
Lower Control Limit %:	84

PRECISION ASSESSMENT
Sample Duplicate

Diesel Range Hydrocarbons	
Sample Number:	405-0452
Original Result:	9,500
Duplicate Result:	8,900
Relative % Difference	6.6
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 5/11/94 PAGE 1 OF 1

PROJECT NAME TESCO 11073 — 0322.097.02
PROJECT Alan McNell
COMPANY ADDRESS 18410 N Creek Pkwy
PHONE 485-5000
SAMPLERS SIGNATURE [signature]

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

SAMPLE ID	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH HCID	TPH G BTEX	TPH D	HOLD	REMARKS
11073-HB1-1	5/11/94	0950	4050533	Soil	2				+	
11073-HB1-2		1020	4050534				x	+		24 hr TAT
11073-HB2-1		1040	4050535						+	
11073-HB2-2		1110	4050536				x	+		24 hr TAT
11073-HB5-1.5		1220	4050537					(X)	+	
11073-HB6-2		1237	4050538					(X)	+	
11073-HB7-1		1250	4050539						+	
11073-HB8-2		1300	4050540					(X)	+	

RELINQUISHED BY: [signature] Printed Name: Frank D. Tracy, Firm: EMCON NW, Date/Time: 5/11/94 1830

RECEIVED BY: Russell Lister, Printed Name: Russell Lister, Firm: NCA, Date/Time: 5-11-94 18:30

TURNAROUND REQUIREMENTS: X 24 h

REPORT REQUIREMENTS / INVOICE INFORMATION / SAMPLE RECEIPT

RELINQUISHED BY: RECEIVED BY:

SPECIAL INSTRUCTIONS/COMMENTS:

24 hr RUSH

(X) Run samples for WTPH-D extended 24-hr Rush, Results Monday (5/16/94) by 2pm.

Post-it™ Fax Note 7671

To	Matt Essig	From	Mike Noll
Co./Dept	North Creek	Co.	Emcon Northwest
Phone #	481-9200	Phone #	485-5000
Fax #	485-2992	Fax #	486-9766

Date 5/13/94, # of pages 1

Tim Collins NCA 5/13/94 1500.

(2)