Site Assessment Report:

BLM Red Top Retort Site
Wood River, Alaska

Prepared for AQE, Inc.

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AQE TO1

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Introduction: Project Purpose

This report presents chemical and observational data collected and evaluated during a Site Assessment made in support of a Remedial Investigation of a site administered by the U.S. Bureau of Land Management. The objectives of the Site Assessment were to identify the nature and extent of potential contaminants for the purposes of mitigating contaminant exposure by selecting appropriate and timely remedial responses. This report presents the Risk Assessment developed as a result of Site Assessment data evaluation and interpretation, and an analysis of and recommendation for Treatment Alternatives.

1.0 Project Background and Summary

1.1 Site Physical Setting

The site is located on the eastern bank of the Wood River, approximately 3/4 of a mile downstream from the point where the Wood River exits Aleknagik Lake, and approximately 18 miles north of the town of Dillingham, in the southwest quadrant of the State of Alaska. The site's legal description is Section 29, Township 10 South, Range 55 West, Seward Meridian.

The site is situated on the relatively inactive Wood River flood plain, and is formed primarily of riverine gravels containing varying amounts of silt, overlain with approximately 6" of humus and peat. Groundwater flows down the adjacent Marsh Mountain in a more-or-less southwesterly direction into the tide-influenced Wood River. No ponds, streams or other wetland features were observed, with the exception of a small stream approximately 400' south (downriver) of the site. Mean average precipitation, including snowfall, is 24.44 inches, according to the National Weather Service. The site's primary permanent man-made feature is a modest shack constructed of wooden support posts and galvanised metal sides and roof, measuring approximately 18' by 12'. The shack sits in level attitude approximately 30' inland of the Wood River, and approximately 12 inches above the high river mark.

Small amounts of debris are scattered about the site, as were 22 steel barrels of 55 and 110-gallon volumes filled to varying levels with POLs now identified as primarily Bunker-C.

1.2 Site Background

Following the discovery of the mercury ore Cinnabar (mercuric sulphide) near the peak of Marsh Mountain in the 1940s, the retort shack site was used to house the roasting/retorting (recovery through distillation) component of a small-scale mercury mining project which began at the end of World War II and ceased in the 1950's. A crushing (ball) mill was erected on Marsh Mountain, approximately 1 mile east of the retort shack, and crushed ore was transported by road to the site. Crushed ore was introduced into the roaster/retort cavity. Mercury vapor was extracted by the application of wood-fueled heat, and liquid mercury was subsequently condensed within two air-cooled steel pipe sections (condensers). Simple in design, such recovery processes were reputedly highly efficient in operation.

According to anecdotal information, the barrels of Bunker C distillate petroleum were to be used to more efficiently fuel the roaster/retort. According to the Bureau of Land Management, both the State of Alaska Department of Environmental Conservation and Greenpeace have recently conducted sampling at the site. Reports of these activities have not been presented to assessment personnel in their entirety, and will not be discussed here.

1.3 Site Assessment Summary

A Site Assessment was conducted by QE on 27 June through 1 July, 1994. Soil, water, product and dust swipe samples collected at the site were analyzed by Analytical Technologies, Inc. (ATI) of Renton, Washington. Elemental (free) mercury and mercuric sulphide (cinnabar) were discovered within the site's soils in significant concentrations. Site soils are also contaminated with the petroleum product Bunker-C. Relatively small amounts of asbestos containing building material debris are also present on the site.

2.0 Methodology

The site assessment was performed in accordance with the basic quality controls and data quality objectives outlined in QE's ADEC approved Quality Assurance Program Plan (QAPP) by C. J. Elsmann of QE. Although this assessment has no relationship with underground storage tanks, the same standards of quality control, sample collection, sample treatment and analytical methodologies were utilized. Sample quantities and methodologies are listed below (where not specifically identified, sample amounts include quality control replicate and split replicate samples).

- Forty-three (43) soil samples were analyzed at ATI by EPA Test Method 7471 for mercury. Splits of each sample (exclusive of QC splits) were held at ATI's laboratory. Twelve (12) of these splits were later analyzed for mercury following a 1311 (TCLP) extraction.

- Two (2) soil samples were analyzed at ATI by EPA Test Methods 6010 and 7060 for antimony and arsenic, respectively.

- Two (2) soil samples were analyzed at ATI by EPA Test Methods 8100 mod., 8020 and 8010 for Diesel Range Organics (DRO), BTEX, and Halogenated Volatile Organics (HVO), respectively.

- Three (3) groundwater samples were analyzed at ATI for mercury by EPA Test Method 7471.

- One (1) groundwater sample was analyzed at ATI by EPA Test Methods 418.1 and 8020 for Total Recoverable Petroleum Hydrocarbons (TRPH) and BTEX, respectively.

- One (1) surface (river) water sample was analyzed at ATI by EPA Test Method 7471 for mercury.

- Two (2) river-bottom sediment samples were analyzed at ATI for mercury by EPA Test Method 7471.

- One (1) trip blank water sample was analyzed at ATI by EPA Test Method 8020 for BTEX.

- One (1) equipment rinsate water sample was analyzed at ATI by EPA Test Method 7471 for mercury, and one (1) equipment rinsate water sample was analyzed by EPA Test Methods 8100 mod., 8010 and 8020 for DRO, HVO and BTEX, respectively.

- Six (6) swipe samples were collected from interior areas of the retort shack and analyzed at ATI for mercury by EPA Test Method 7471.

- Two (2) mineral specimens were analyzed by ATI for mercury by EPA Test Method 7471. These samples were also re-analyzed following a TCLP extraction (1311).

- Four (4) drum product samples were analyzed by ATI's subcontractor lab' by ASTM-93, and EPA Methods AES 0029, 8080 and 9076 for Flash Point, Total Metals, Polychlorinated Biphenyls (PCBs), and Total Organic Halogens, respectively, to satisfy the EPA "Burn-Specifications."

- Thirty-five (35) soil samples were analyzed on site with the BiMelyze Mercury Assay Tube Kit For Solid Matrices manufactured by BioNebraska, Inc. of Lincoln, Nebraska. Results were disappointing; BioNebraska Inc. will reconform the assay kit to conform with expected project requirements, should this field kit be used in future.

- Three building material samples were analyzed at QE for asbestos by the EPA Interim Method for the Detection of Asbestos in Building Materials.

Samples were individually numbered at the time of collection within eight series of samples according to the following method:

94RTM1 series, soil samples;

94RTM2 series, surface and rinsate water samples;

94RTM3 series, river sediment samples;

94RTM4 series, asbestos building material samples;

94RTM5 series, groundwater samples;

94RTM6 series, surface mercury swipe samples;

94RTM7 series, barrel contents samples;

94RTM8 series, mineral samples.

Soil samples were collected into appropriate sized glass containers with new, clean disposable spoons. Groundwater samples were collected into glass and plastic containers with a hand-pump attached to a Vapor-Probe soil penetration device after having purged the bore-hole for five minutes. Surface water and rinsate water samples were collected directly into sample containers. Swipe samples were collected by rubbing a cotton swipe over a measured one-foot square area, and then sealing the swipe within a clean 40 ml glass container. River sediment samples were placed into glass containers after having been retrieved from the river bottom with an aluminum and steel benthic "clamshell" type sampling device. Barrel contents samples were placed into glass sampling containers with disposable glass "drum thieves." Asbestos samples were sealed within plastic bags. Mineral samples were also sealed within plastic bags.

Samples were quickly containerized, and those requiring refrigeration were immediately put into a cooler kept at less than four degrees Celsius with artificial "ice".

Test Holes were advanced with a post-hole digger until groundwater was reached (a maximum depth of 1.8 feet). Test Holes were sealed for over half their depths with Bentonite Clay hydrated each six-inch lift. Test Holes were completed at measured distances from the retort shack, individually numbered, and marked with wooden survey stakes. Non-disposable sampling equipment was decontaminated with a solution of Simple Green and deionized water, followed by three rinses with distilled water. Proper custody was maintained over samples at all times. Samples were carried by hand to ATI in Anchorage, Alaska.

3.0 Project Narrative

3.1 27 June 1994

Elsmann and McGowan of QE arrived on site for the initial inspection, wearing Type B SCBA personnel protection equipment. Eighteen points about the general site and within the retort shack were tested for the presence of mercury vapors with a real-time Jerome 431-X-Gold Film Hg Analyzer. As all tests were < .002 ppm, assessment personnel doffed SCBA gear and began developing a site plan and making initial observations. Weather was sunny with cloudy intervals, with temperatures in the mid-sixties, Fahrenheit, and a light ~ 2-knot wind.

3.2 28 June 1994

The exclusion, contaminant reduction and clean zones were established. Equipment and personnel decontamination stations were constructed. Test Hole 1 was advanced and sampled. POL stained areas were noted. Weather was overcast, with temperatures in the sixties, Fahrenheit, and a light ~ 5-knot wind.

3.3 29 June 1994

Test Holes 2 through 12 were advanced and sampled. The depth to water in the Test Holes varied from 1.25 to 1.8 feet, depending on the tide. Dust swipe samples from the retort shack interior were collected. Weather conditions were sunny with cloudy intervals, with temperatures in the seventies, Fahrenheit, and a light ~ 5-knot wind.

3.4 30 June 1994

Test Hole 13 was advanced and sampled. Asbestos samples were collected. Most surface soil samples were collected. Groundwater and river sediment samples were collected. One of the four drum contents samples was collected. One mercury sampling equipment rinsate water sample was collected. Free mercury in the form of fine (often < 1 mm dia.) droplets was observed at or slightly beneath the soil surface within the retort shack. Weather conditions were sunny, with temperatures in the mid-sixties, Fahrenheit, and a light ~ 1-knot wind.

3.5 01 July 1994

The balance of soil and drum samples was collected. The river water was sampled at the surface 10 feet offshore of the site's landing area. One POL equipment rinsate water sample was collected. One sample of reddish cinnabar ore and one sample of brown processed

cinnabar (slag) were collected. The site was secured with appropriate warning signage, and personnel and equipment were demobilized. Weather conditions were cloudy with light rain, with temperatures in the low sixties, Fahrenheit, and a light ~ 5-knot wind.

4.0 Analytical Results and Discussion

4.1 Metals in Soil

Site soils, particularly within and proximal to the retort shack, are heavily contaminated with elemental (free) mercury.

Soil samples collected within the retort shack and tested for mercury produced a range of concentrations from 61 ppm in sample 1031 to 15,000 ppm in sample 1034.

Soil samples collected at the surface ten feet from the retort shack and tested for mercury produced a range of concentrations from 22 ppm at Test Hole 6, to 2,200 ppm at Test Hole 2.

Subsurface soil samples collected ten feet from the retort shack and tested for mercury produced a range of concentrations from None Detected at Test Hole 7 at a depth of 1.8 feet, to 140 ppm at Test Hole 2 at a depth of 1.25 feet.

Soil samples collected at the surface five feet from the river bank and tested for mercury produced a range of concentrations from 9.9 ppm at Test Hole 11, to 300 ppm at Test Hole 9.

Subsurface soil samples collected five feet from the river bank and tested for mercury produced a range of concentrations from None Detected at Test Hole 11 at a depth of 1.5 feet, to 2.4 ppm at Test Hole 10, also at a depth of 1.5 feet.

Soil sample 1039 and it's split replicate 1040 were collected from the surface 20 feet east of the retort shack's east corner, and when analyzed for mercury produced results of 9.2 ppm and 12 ppm, respectively.

Soil sample 1041 and it's split replicate 1042 were collected from the surface 30 feet east of the retort shack's east corner, and when analyzed for mercury produced results of 5.8 ppm and 8.6 ppm, respectively.

Background soil sample 1038 was collected from the surface 75 feet north of the retort shack's north corner, and when analyzed for mercury produced results of 0.19 ppm.

Arsenic levels ranged from 4.9 ppm in background sample 1038 to 57 ppm in sample 1033 collected at the surface of Test Hole 13, within the retort shack.

Antimony, another metal associated with mercury roasting/retorting operations, was not detected in the two samples analyzed (1033 and 1038).

Cinnabar ore sample 8001 showed a mercury concentration of 3.1 ppm.

Processed ore (slag) sample 8002 showed a mercury concentration of 14 ppm.

Twelve (12) of the above samples were also analyzed for TCLP mercury. These concentrations ranged from None Detected in samples 1004, 1021, 1022, 1038, 8001 and 8002, to 0.17 ppm in sample 1034, which had a results of 15,000 ppm after the standard (initial) extraction.

Mercury concentrations decreased as collection points moved away from the contamination source (the retort shack) and were also in greater concentrations at the surface than at depth. Laboratory results and observations at the site point to a low incidence of reaction on the part of mercury with other available chemicals. Environmental factors also appear to have had little effect on the mercury, particularly within the retort shack itself. The presence of free mercury droplets, drums and the shack itself all in a relatively undisturbed state points to the fortunate stability of the river's flood-plain, i.e., there does not appear to have been significant flooding within the past 50 years.

4.2 Metals in Water

The three (3) groundwater samples analyzed for mercury produced results of 0.00097 ppm (sample 5001 from a point 9' south [downstream] of the retort shack), 0.0014 ppm (sample 5002 from a point 25' south [downstream]of the retort shack) and 0.00099 (sample 5005 from a point 100' upstream of the retort shack).

Surface water sample 2001 from the surface 10 feet offshore of the site's landing area produced a mercury concentration of 0.00035 ppm.

All groundwater and surface water samples analyzed for mercury were less than the state and federal Maximum Contaminant Level (MCL) of 0.002 ppm for drinking water.

4.3 Metals in Other Matrices

Mercury swipe sample results, all collected from surfaces within the retort shack, ranged from a low of 7.7 ppm (sample 6002, collected from the midpoint of the northeast interior wall) to 940 ppm (sample 6003, collected from directly above the retort hearth on the carbon-black coated ceiling).

The two samples of river sediment tested for mercury yielded results of 0.19 ppm (sample 3001 from a point 15' offshore of the site landing area at a depth of approximately 5') to None Detected (sample 3002 from 100' downstream of the site, 15' offshore and at a depth of approximately 5').

4.4 POLs in Soil

Portions of the site are heavily contaminated with Bunker-C refined petroleum. All such areas are also contaminated with mercury.

Sample 1004 was analyzed for petroleum products along with mercury. The sample was collected from a darkly stained area (Test Hole 2) 10' northwest of the retort shack's northwest side. The analysis by EPA Test Method 8100 modified produced DRO results of 1200 ppm. Analyses by EPA Test Methods 8020 and 8010 both produced results of None Detected.

Sample 1043 was also analyzed for petroleum products along with mercury. The sample was collected from a darkly stained area 15' southwest of the retort shack's southwest side. The analysis by EPA Test Method 8100 modified produced DRO results of 140,000 ppm. Analyses by EPA Test Methods 8020 and 8010 both produced results of None Detected.

4.5 POLs in Water

Sample 5003 from a point 18" south of Test Hole 2, one of the heaviest stained areas, was tested for TRPH by EPA Test Method 418.1 and BTEX by EPA Test Method 8020. Both analyses produced results of None Detected.

4.6 Drummed POLs

Twenty-two drums containing product were found at the site. The following is a list of each drum's characteristics:

Field No. / Drum Volume, Gal.	Location	Suspected Contents, Desc.	Approx. Quan., Gal.	Comments
1 / 55	Under Tarp	Bunker-C	35	
2 / 55	Under Tarp	Bunker-C	25	Sample 7002
3 / 55	Under Tarp	Bunker-C	55	
4 / 55	Under Tarp	Bunker-C	55	
5 / 55	Under Tarp	Gear Oil, Olive	55	Sample 7004
6 / 55	Under Tarp	Bunker-C / Water	10	
7 / 55	Under Tarp	Bunker-C	55	Sample 7002
8 / 55	Under Tarp	Bunker-C	55	
9 / 55	Under Tarp	Bunker-C	55	Sample 7002
10 / 55	Under Tarp	Bunker-C	25	
11 / 55	Under Tarp	Bunker-C	55	Sample 7002
12 / 55	NW Shack Wall	Motor Oil, Brown	30	Sample 7001
13 / 55	NW Shack Wall	Bunker-C / Water	20	
14 / 55	NW Shack Wall	Bunker-C / Water	20	Sample 7002
15 / 110	By Shore	Bunker-C	110 (Pumped Into Two 55-Gal. Drums)	
16 / 55	By Shore	Bunker-C	55	
17 / 110	By Shore	Bunker-C	110 (Pumped Into Two 55-Gal. Drums)	
18 / 110	By Shore	Bunker-C	110 (Pumped Into Two 55-Gal. Drums)	7002
19 / 110	By Shore	Bunker-C	110 (Pumped Into Two 55-Gal. Drums)	
20 / 110	By Shore	Bunker-C	110 (Pumped Into Two 55-Gal. Drums)	7002
21 / 110	By Shore	Bunker-C	110 (Pumped Into Two 55-Gal. Drums)	7002
22 / 110	By Shore	Bunker-C	110 (Pumped Into Two 55-Gal. Drums)	

Product samples (7001, 7002 and 7003 and 7004) were analyzed by the Fuel Identification modified EPA Test Method 8015. Sample 7001, collected from drum 12, produced results indicative of mineral oil. Samples 7002 and 7003 produced results indicative of Bunker-C. Sample 7004 produced results indicative of a heavier oil, such as might be used as a lubricant.

These samples were also analyzed in compliance with the EPA requirements for use as fuels, the so-called "Burn Spec." Cadmium, chromium, arsenic, PCBs and Total Organic Halogens were not detected in any sample. Slight amounts of lead were detected in 7001, 7002, and 7003. Results indicate use as a fuel is appropriate for the drummed POLs found on site.

4.7 Asbestos

Cement Asbestos Board (CAB) debris observed around the retort shack was found to contain 25% chrysotile asbestos. Gasket material from the lower end of the retort was found to contain 90% chrysotile asbestos.

The following are tabulated laboratory results. Copies of lab' data are presented in Section 9.

Table I: Test Hole Soil Analyses Results

Collect. Date,'94	Lab[1]	Sample No.[2]	Location / Depth, Feet	Analyte / Method	Result, ppm	Field Analysis Result, ppm [3]	TCLP Result, ppm
28 June	ATI	1001	TH 1 / Surface	Hg / 7471	64	0.51	***
28 June	ATI	1002	TH 1 / 1.5	Hg / 7471	0.55	0.04	***
29 June	ATI	1003	TH 2 / Surface	Hg / 7471	2200	0.63	0.027
29 June	ATI	1004	TH 2 / 1.25	Hg / 7471	140	0.25	ND
				DRO / 8100 mod.	1200		
				BTEX / 8020	ND		
				HVO / 8010	ND		
29 June	ATI	1005	TH 3 / Surface	Hg / 7471	960	0.55	***
29 June	ATI	1006	TH 3 / 1.25	Hg / 7471	0.52	0.08	***
29 June	ATI	1007	TH 4 / Surface	Hg / 7471	1400	0.75	***
29 June	ATI	1008	TH 4 / 1.25	Hg / 7471	17	0.11	***
29 June	ATI	1009	TH 5 / Surface	Hg / 7471	590	0.37	***
29 June	ATI	1010	TH 5 / 1.25	Hg / 7471	3.4	0.09	***
29 June	ATI	1011	TH 6 / Surface	Hg / 7471	22	0.25	***
29 June	ATI	1012	TH 6 / 1.25	Hg / 7471	6.1	0.0, 0.01	***
29 June	ATI	1013	TH 7 / Surface	Hg / 7471	30	0.06	***
29 June	ATI	1014	TH 7 / 1.8	Hg / 7471	ND	0.02	***

1 Analytical Technologies, Inc. of Anchorage, Alaska.

2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.

3 Mercury field screening with the BiMelyze Immunoassay kit.

DRO Diesel Range Organics: C_{12} through C_{28}.

BTEX Benzene, Toluene, Ethylbenzene and Xylenes, shown here as a total.

HVO Halogenated Volatile Organics.

*** Not analyzed.

ND None Detected; i.e, less than the method detection limit

Table I: Test Hole Soil Analyses Results, Cont.

Collect. Date,'94	Lab[1]	Sample No.[2]	Location / Depth, Feet	Analyte / Method	Result, ppm	Field Analysis Result, ppm[3]	Hg TCLP Result, ppm
29 June	ATI	1015	TH 8 / Surface	Hg / 7471	24	0.2, 0.19	***
29 June	ATI	1016	TH 8 / 1.8	Hg / 7471	1.6	***	***
29 June	ATI	1017	TH 9 / Surface	Hg / 7471	300	0.63	***
29 June	ATI	1018	TH 9 / 1.5	Hg / 7471	1.8	***	***
29 June	ATI	1019	TH 10 / Surface	Hg / 7471	17	0.53	***
29 June	ATI	1020	TH 10 / 1.5	Hg / 7471	2.4	***	***
29 June	ATI	1021	TH 11 / Surface	Hg / 7471	9.9	0.11	ND
29 June	ATI	1022	TH 11 / 1.5	Hg / 7471	ND	***	ND
29 June	ATI	1023	TH 12 / Surface	Hg / 7471	13	0.02	***
29 June	ATI	1024	TH 12 / 1.5	Hg / 7471	0.75	***	***
30 June	ATI	1033	TH 13 / Surface	Hg / 7471	4300	2.04	***
				As / 7060	57		
				Sb / 6010	ND		
30 June	ATI	1037	TH 13 / 1.5	Hg / 7471	370	***	***

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2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.
3 Mercury field screening with the BiMelyze Immunoassay kit.
DRO Diesel Range Organics: C_{12} through C_{28}.
BTEX Benzene, Toluene, Ethylbenzene and Xylenes, shown here as a total.
HVO Halogenated Volatile Organics.
*** Not analyzed.
ND None Detected; i.e, less than the method detection limit

Table II: Surface Soil Analyses Results

Collect. Date,'94	Lab[1]	Sample No.[2]	Location	Analyte / Method	Result, ppm	Field Analysis Result, ppm[3]	Hg TCLP Result, ppm
30 June	ATI	1025	Shack Interior	Hg / 7471	1600	1.69	0.021
30 June	ATI	1026	QC Split of 1025	Hg / 7471	1500	***	0.023
30 June	ATI	1027	Shack Interior	Hg / 7471	1200	1.03	***
30 June	ATI	1028	QC Split of 1027	Hg / 7471	1600	***	***
30 June	ATI	1029	Shack Interior	Hg / 7471	500	1.46, 1.60, 1.57, 1.57, 1.62, 1.62	0.0045
30 June	ATI	1030	QC Split of 1029	Hg / 7471	650	***	***
30 June	ATI	1031	Shack Interior	Hg / 7471	61	0.53	0.00037
30 June	ATI	1032	Shack Interior	Hg / 7471	1300	***	***
30 June	ATI	1034	Shack Interior	Hg / 7471	15000	***	0.17
30 June	ATI	1035	Shack Interior	Hg / 7471	1000	0.43, 0.57, 0.60, 0.37, 0.35, 0.36	***
30 June	ATI	1036	Shack Interior	Hg / 7471	480	***	***

1 Analytical Technologies, Inc. of Anchorage, Alaska.
2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.
3 Mercury field screening with the BiMelyze Immunoassay kit.
DRO Diesel Range Organics: C_{12} through C_{28}.
BTEX Benzene, Toluene, Ethylbenzene and Xylenes, shown here as a total.
HVO Halogenated Volatile Organics.
*** Not analyzed.
ND None Detected; i.e, less than the method detection limit

Table II: Surface Soil Analyses Results, Cont.

Collect. Date,'94	Lab[1]	Sample No.[2]	Location	Analyte / Method	Result, ppm	Field Analysis Result, ppm[3]	Hg TCLP Result, ppm
30 June	ATI	1038	Background	Hg / 7471	0.19	0.08	ND
				Sb / 6010	ND		
				As / 7060	4.9		
01 July	ATI	1039	TH 7 + 10'	Hg / 7471	9.2	***	***
01 July	ATI	1040	QC Split of 1039	Hg / 7471	12	***	***
01 July	ATI	1041	TH 7 + 20'	Hg / 7471	5.8	***	***
01 July	ATI	1042	QC Split of 1041	Hg / 7471	8.6		***
01 July	ATI	1043	POL Stained Soil by Shack	DRO / 8100 mod.	140000		
				BTEX / 8020	ND		
				HVO / 8010	ND		

1 Analytical Technologies, Inc. of Anchorage, Alaska.
2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.
3 Mercury field screening with the BiMelyze Immunoassay kit.
DRO Diesel Range Organics: C_{12} through C_{28}.
BTEX Benzene, Toluene, Ethylbenzene and Xylenes, shown here as an additive total.
HVO Halogenated Volatile Organics.
*** Not analyzed.
ND None Detected; i.e, less than the method detection limit

Table III: Water Analyses Results

Collect. Date,'94	Lab[1]	Sample No.[2]	Location	Analyte / Method	Result, ppm
30 June	ATI	5001	Groundwater[3] 9' Downstream of Shack, 1.5' Depth	Hg / 7470	0.00097
30 June	ATI	5002	Groundwater[3] 3' N. of TH 11, 1.5' Depth	Hg / 7470	0.0014
30 June	ATI	5003	Groundwater[3] 18" S. of TH 2, 1.5' Depth	TRPH / 418.1	ND
				BTEX / 8020	ND
30 June	ATI	5004	Trip Blank	BTEX / 602	toluene 1.3 ppb, TTL xylenes 0.7 ppb
30 June	ATI	5005	Groundwater[3] 100' Upstream of Shack, 1.5' Depth	Hg / 7470	0.00099
01 July	ATI	2001	River Water Opposite Shack	Hg / 7470	0.00035
01 July	ATI	2002	QC Split of 2001	Hg / 7470	0.00046
30 June	ATI	2003	QC Rinsate from Hg Sampling Equip.	Hg / 7470	ND
01 July	ATI	2004	QC Rinsate from POL Sampling Equip.	DRO / 8100 mod.	ND
				BTEX / 8020	ND

1 Analytical Technologies, Inc. of Anchorage, Alaska.
2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.
3 Groundwater collected with vapor-probe tool and hand pump.
DRO Diesel Range Organics: C_{12} through C_{28}.
BTEX Benzene, Toluene, Ethylbenzene and Xylenes, shown here as an additive total.
HVO Halogenated Volatile Organics.
ND None Detected; i.e, less than the method detection limit

Table IV: Miscellaneous Analyses Results

Collect. Date,'94	Lab[1]	Sample No. [2]	Location	Matrix	Analyte / Method	Result, ppm
29 June	ATI	6001	NW. Wall Shack	Dust[3]	Hg / 7471	85
29 June	ATI	6002	NE. Wall Shack	Dust	Hg / 7471	7.7
29 June	ATI	6003	Ceiling Above Retort	Dust	Hg / 7471	940
29 June	ATI	6004	SE. Wall Shack	Dust	Hg / 7471	50
29 June	ATI	6005	Upper End Retort	Dust	Hg / 7471	15
29 June	ATI	6006	Lower End Retort	Dust	Hg / 7471	23
30 June	QE	4001	15' SW. of Shack	CAB	Asbestos / PLM	25 % Chryso.
30 June	QE	4002	Lower End Retort	Gasket	Asbestos / PLM	90 % Chryso.
30 June	QE	4003	Beneath Retort	Cement	Asbestos / PLM	ND
30 June	ATI	3001	River Sediment, by Site Landing	Sediment	Hg / 7471	0.19
30 June	ATI	3002	River Sediment, 100' Downstream of Site	Sediment	Hg / 7471	ND
1 July	ATI	8001[4]	Cinnabar Ore (mercuric sulphide)	Mineral	Hg / 7471	3.1
1 July	ATI	8002[4]	Processed Cinnabar Ore (Slag)	Mineral	Hg / 7471	14

1 Analytical Technologies, Inc. of Anchorage, Alaska.
2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.
3 Surface dust swipe collected from one foot^2 area upon cotton fabric swipe.
4 TCLP mercury extraction results are "None Detected" for both samples.
ND None Detected; i.e, less than the method detection limit
Chryso. Chrysotile form asbestos.

Table V: Drummed Product Analyses Results

Collect. Date,'94	Lab[1]	Sample No.[2]	Location	Analyte	Result, ppm
01 July	ATI	7001[3]	Clear Brown/Amber Suspect POL, Bbl. 12	Fuel ID	<5000 GRO, 630000 DRO
				Cd	ND
				Cr	ND
				Pb	1
				As	ND
				PCBs	ND
				FP	> 210 F
				TOH	ND
01 July	ATI	7002[4]	Suspect Bunker C, Composite of Bbls. 2, 7, 9, 11	Fuel ID	<4900 GRO, 570000 DRO
				Cd	ND
				Cr	ND
				Pb	12
				As	ND
				PCBs	ND
				FP	> 210 F
				TOH	ND

1 Analytical Technologies, Inc. of Anchorage, Alaska.
2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.
3 Sample chromatogram indicates petroleum hydrocarbons characteristic of mineral oil.
4 Sample chromatogram indicates petroleum hydrocarbons characteristic of both diesel and mineral oil.
Fuel ID EPA Method 8015 mod.
DRO Diesel Range Organics: C_{10} through C_{28}
GRO Gasoline Range Organics: C_7 through C_{10}
FP Flash Point by ASTM D-93 in degrees Fahrenheit.
Total Metals EPA Method AES 0029
PCBs Polychlorinated Biphenyls by EPA Method 8080.
TOH Total Organic Halogens by EPA Method 9076 mod.
ND None Detected; i.e, less than the method detection limit

Table V: Drummed Product Analyses Results, Cont.

Collect. Date,'94	Lab[1]	Sample No.[2]	Location	Analyte	Result, ppm
30 June	ATI	7003[3]	Suspect Bunker C, Composite of Bbls. 14, 18, 20, 21	Fuel ID	<4500 GRO, 580000 DRO
				Cd	ND
				Cr	ND
				Pb	14
				As	ND
				PCBs	ND
				FP	> 210 F
				TOH	ND
01 July	ATI	7004[4]	Translucent Olive/Green Suspect POL, Bbl. 5	Fuel ID	<370 GRO, 12000 DRO
				Cd	ND
				Cr	ND
				Pb	ND
				As	ND
				PCBs	ND
				FP	> 210 F
				TOH	ND

1 Analytical Technologies, Inc. of Anchorage, Alaska.
2 Sample number prefixes (94RTM) are not shown. The first digit of each sample No. denotes the sample series, e.g, "1" equals the soil sample series, "2" equals the surface water sample series, etc.
3 Sample chromatogram indicates petroleum hydrocarbons characteristic of both diesel and mineral oil.
4 Sample chromatogram indicates petroleum hydrocarbons heavier than mineral or gear oil.
Fuel ID EPA Method 8015 mod.
DRO Diesel Range Organics: C_{10} through C_{28}
GRO Gasoline Range Organics: C_7 through C_{10}
FP Flash Point by ASTM D-93 in degrees Fahrenheit.
Total Metals EPA Method AES 0029
PCBs Polychlorinated Biphenyls by EPA Method 8080.
TOH Total Organic Halogens by EPA Method 9076 mod.
ND None Detected; i.e, less than the method detection limit

5.0 Quality Control

Quality assurance objectives for this project are discussed below. Table VI compares project and replicate sample results.

- Field personnel used proper sample collection and handling procedures.
- Field equipment calibration standards were met.
- The Relative percent difference (RPD) between split-replicate samples was within bounds except for sample set 2001, 2001, which had an RPD of 27.5 instead of the 20% maximum allowable. This lack of precision is not interpreted as significant to project goals.
- Internal laboratory quality assurance objectives were not all met. POL rinsate water sample 2004 was analyzed past its holding time. The MSD result for this sample was also out of limits due to unacceptable surrogate recovery. Sample 1043 was improperly diluted. These departures are not considered sufficient to significantly impact project data.
- Sample holding times were met, except for sample 2004, noted above.
- The percent completeness goal for the project was met.

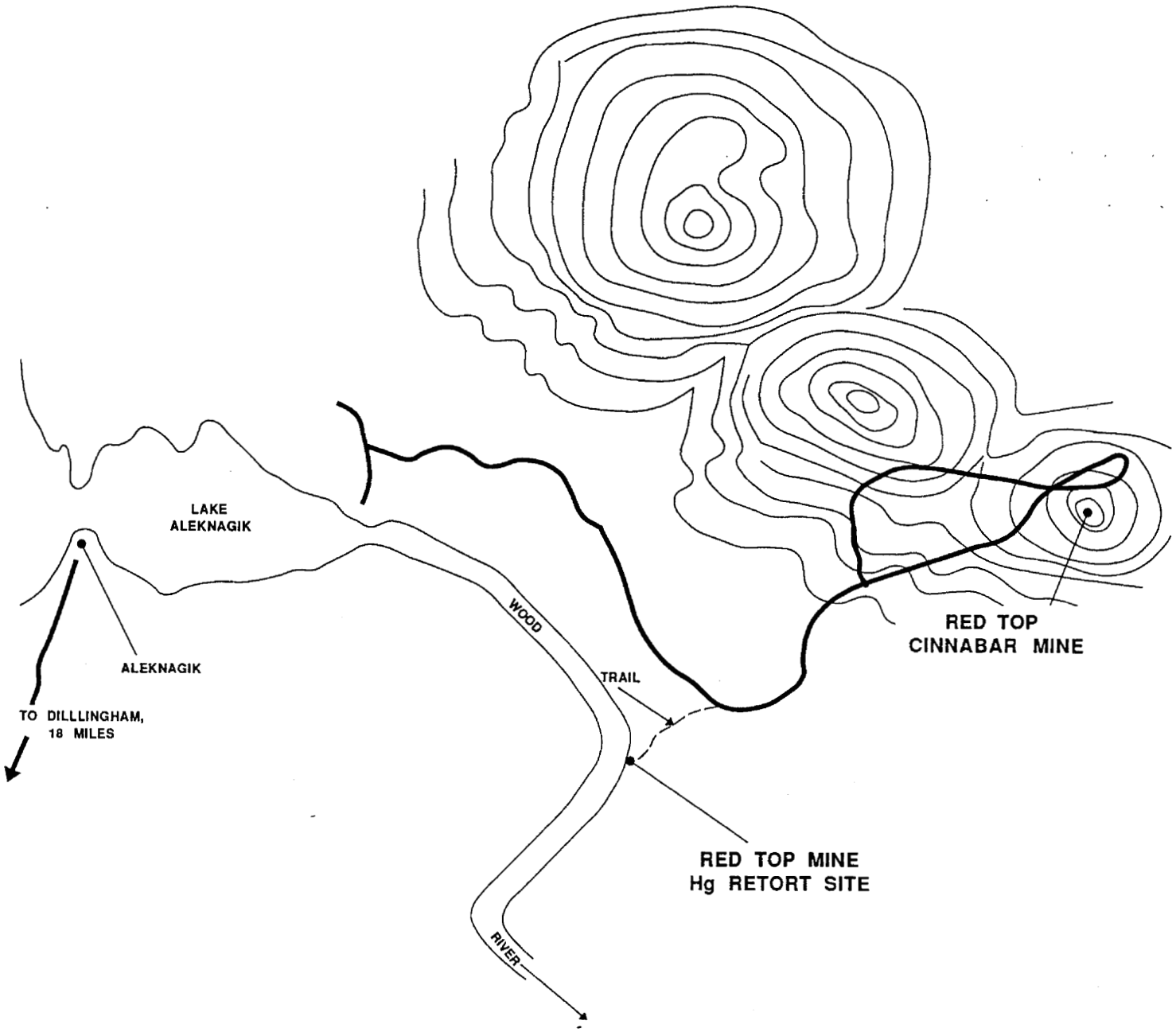
Table VI: QC Precision Comparisons

PROJECT SAMPLE No. / RESULT	REPLICATE SAMPLE No. / RESULT	RPD	GOAL
94RTM1025 / 1600 ppm	94RTM1026 / 1500 ppm	6.45	< 40
94RTM1027 / 1200 ppm	94RTM1028 / 1600 ppm	28.5	< 40
94RTM1029 / 500 ppm	94RTM1030 / 650 ppm	26	< 40
94RTM1039 / 9.2 ppm	94RTM1040 / 12 ppm	26.4	< 40
94RTM1041 / 5.8 ppm	94RTM1042 / 8.6 ppm	38.8	< 40
94RTM2001 / 0.00035 ppm	94RTM2002 / 0.00046 ppm	27.5	< 20

Overall field quality and data quality objectives for this project are considered acceptable.

6.0 Drawings

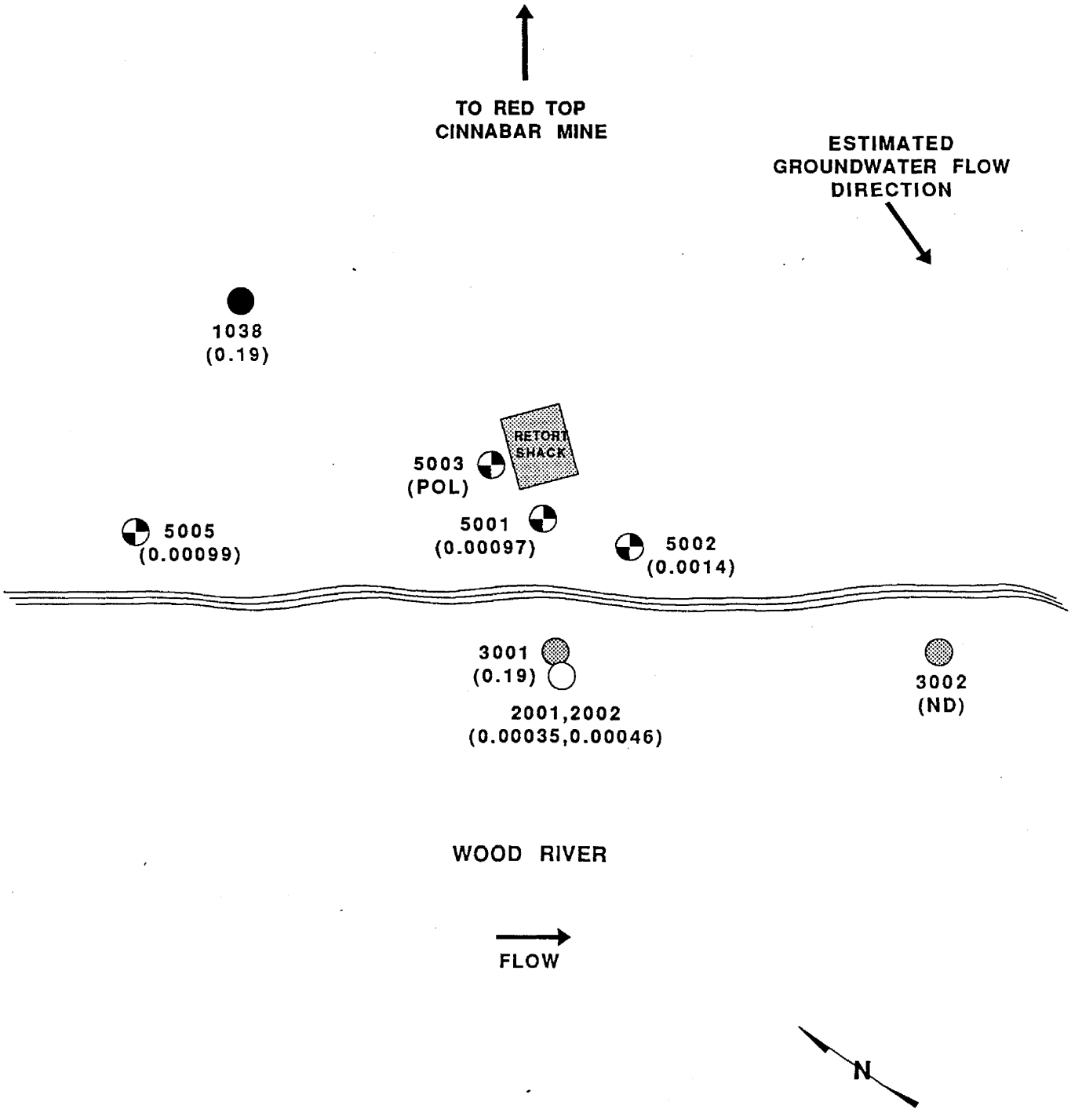
The following drawings are presented for informational purposes only. Scales are approximate.



N

MILES
1/2 1/4 0 1/2 1

Drawn by CJE July, 1994	Scale: 1"= 1/2 Mile
Vicinity Map, Red Top Retort Site Wood River, Ak	
Quest Environmental	Fig. 1



Drawn by CJE July, 1994	Scale: 1"= 40 Feet
Groundwater, Surface Water, Sediment and Background Soil Sample Locations and Results (ppm).	
Quest Environmental	Fig. 2

OVERLAY KEY:

FREE MERCURY ~ ≤ 1mm

SURFACE POL STAINING

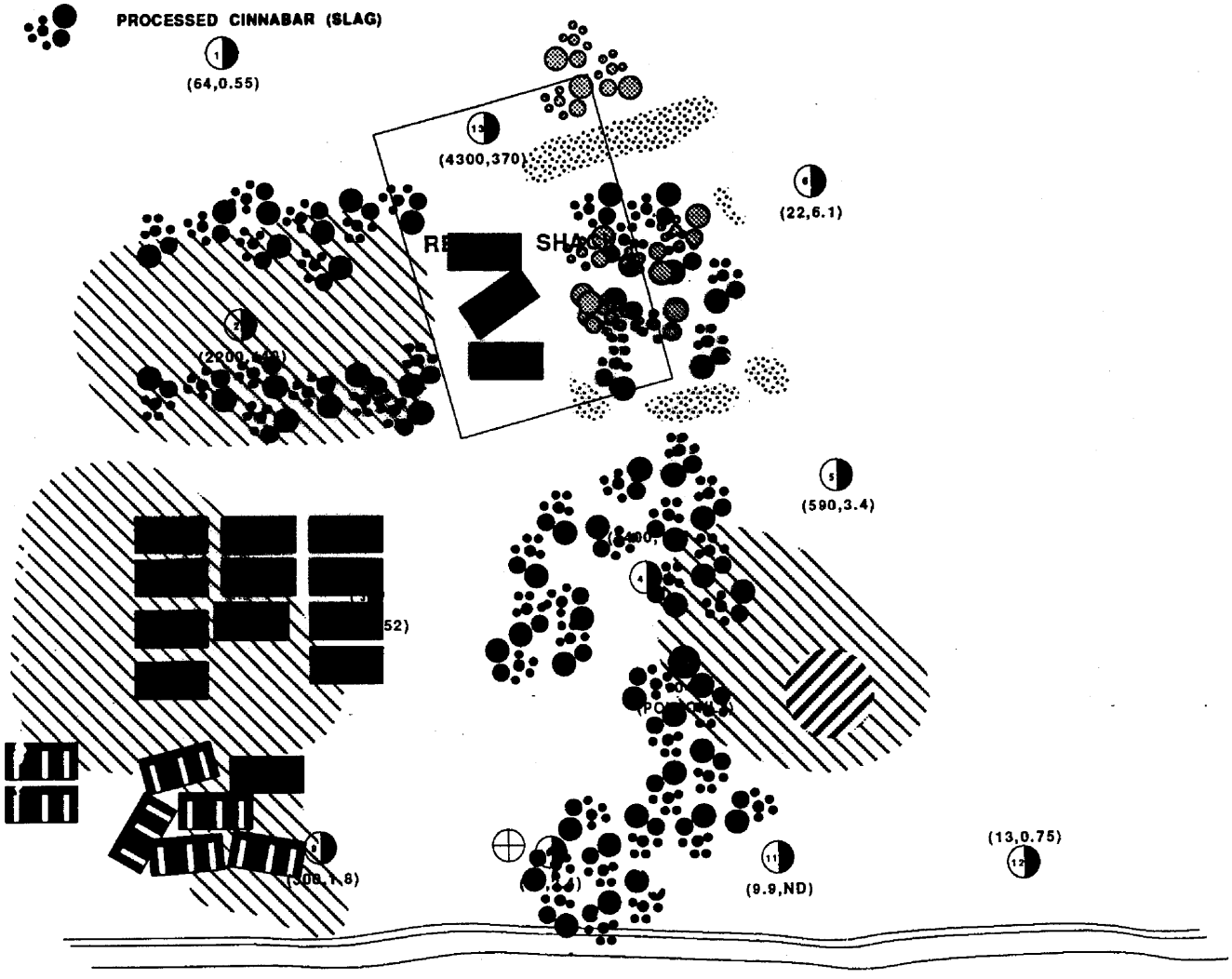
CAB SPILL

55-GALLON DRUM

110-GALLON DRUM

CINNABAR ORE

PROCESSED CINNABAR (SLAG)

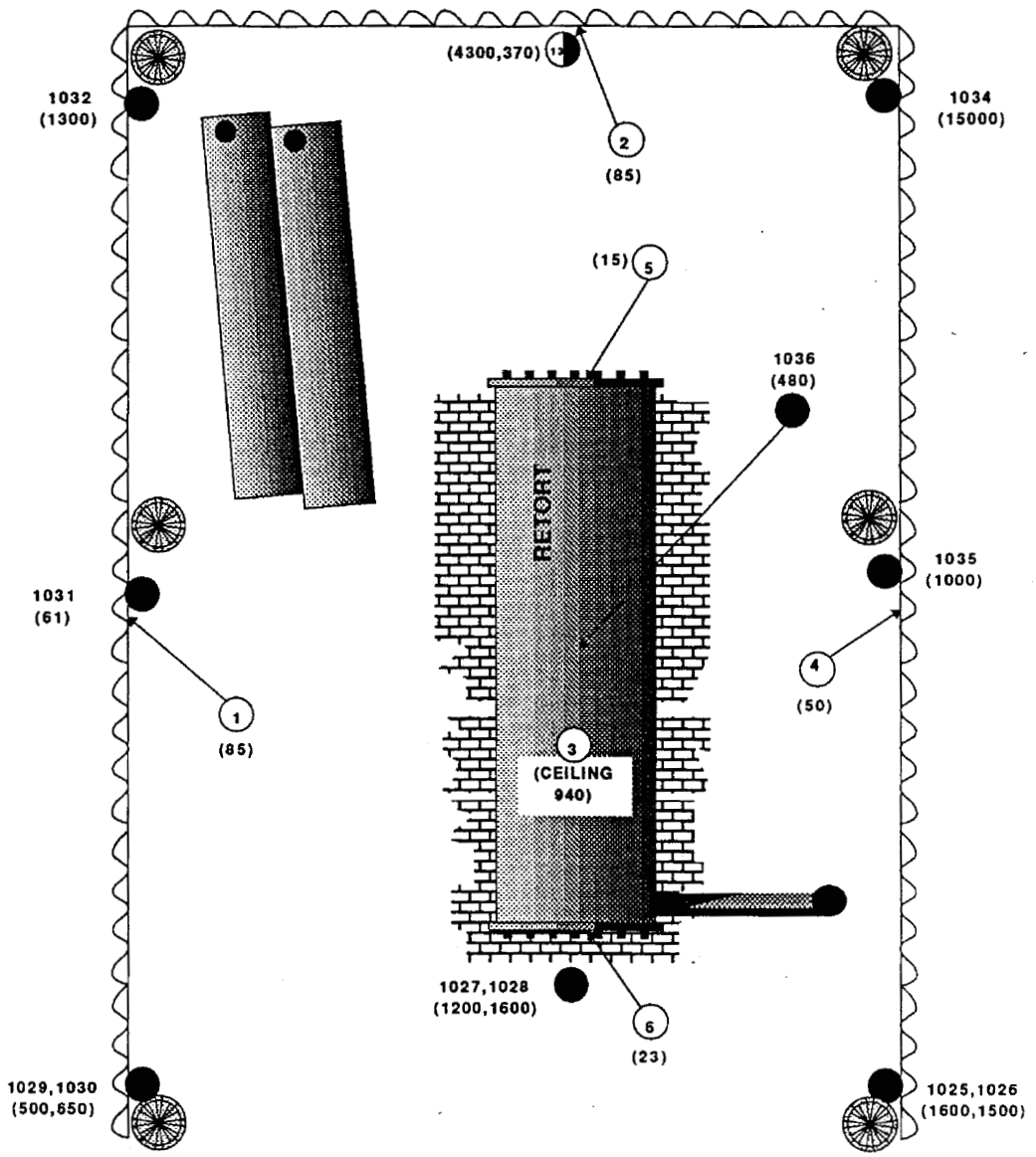


KEY:

- SURFACE SOIL SAMPLE (SAMPLE SERIES "RTM1")
- TEST HOLE LOCATION (SAMPLE SERIES "RTM1"), WITH RESULTS SHOWN FIRST AT SURFACE AND AT AVERAGE DEPTH OF 1.45'
- BLM MARKER "BM2"

N

Drawn by CJE July, 1994	Scale: 1"= 10 Feet
Retort Shack Area Test Hole Locations, and Sample Results ( ) in ppm.	
Quest Environmental	Fig. 3



KEY:

- SURFACE SOIL SAMPLE (SAMPLE SERIES "RTM1")
- 13 TEST HOLE No. 13 (SAMPLE 1033 AT SURFACE, 1037 AT 1.5')
- 2 SURFACE SWIPE (SAMPLE SERIES "RTM6")
  N.B: SWIPE SAMPLE "3" TAKEN FROM CEILING ABOVE RETORT

FEET

3 1.5 0 3 6

N

Drawn by CJE July, 1994	Scale: 1"= 3 Feet
Retort Shack Sample Locations and Results ( ) in ppm (Debris and Roof Deleted for Clarity)	
Quest Environmental	Fig. 4

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 1 OF 13
	LOCATION COORDINATES 10' N. OF N. CORNER RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN

HOLE No.	TYPE OF HOLE	WEATHER
1	TEST HOLE	LT. RAIN, ± 60° F

DEPTH DRILLED	TOTAL DEPTH	SIZE AND TYPE OF BIT	TYPE OF EQUIPMENT
18 INCHES	24 INCHES	NOT APPLICABLE	POST HOLE DIGGER

No. OF SAMPLES	SAMPLE TYPE	DEPTH TO GW	FIELD INVESTIGATOR (PRINT AND SIGN)	DATE
2	GRAB	18 INCHES	C.J.ELSMANN	28 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		001	NA		BROWN HUMUS / PEAT (PT)
4					
6					
8					
10					
12					
14					TAN CLAYEY SILT (ML)
16					
18	▽	002			
20					
22					BROWN SILTY GRAVEL, WELL GRADED, ≤ 0.5" (GM)
24					
26					
28					
30					
32					
34					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE
36					

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 2 OF 13
	LOCATION COORDINATES 10' NW. OF NW. SIDE RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN

HOLE No.	TYPE OF HOLE	WEATHER
2	TEST HOLE	SUNNY, ± 70° F

DEPTH DRILLED	TOTAL DEPTH	SIZE AND TYPE OF BIT	TYPE OF EQUIPMENT
18 INCHES	18 INCHES	NOT APPLICABLE	POST HOLE DIGGER

No. OF SAMPLES	SAMPLE TYPE	DEPTH TO GW	FIELD INVESTIGATOR (PRINT AND SIGN)	DATE
2	GRAB	14 INCHES	C.J.ELSMANN	29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		003	NA		BROWN HUMUS / PEAT (PT) HEAVILY STAINED W/POL (ASSUMED BUNKER C), STRONG ODOR
14	▽	004			REDDISH-BROWN CLAYEY SILT (ML) MOD. STAINED W/POL, MOD. ODOR
18					BROWN SILTY GRAVEL, WELL GRADED, ≤ 0.5" (GM), MOD. ODOR, SHEEN ON WATER
					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 3 OF 13
	LOCATION COORDINATES 10' W. OF W. CORNER RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN

HOLE No.	TYPE OF HOLE	WEATHER
3	TEST HOLE	SUNNY, ± 70° F

DEPTH DRILLED	TOTAL DEPTH	SIZE AND TYPE OF BIT	TYPE OF EQUIPMENT
18 INCHES	18 INCHES	NOT APPLICABLE	POST HOLE DIGGER

No. OF SAMPLES	SAMPLE TYPE	DEPTH TO GW	FIELD INVESTIGATOR (PRINT AND SIGN)	DATE
2	GRAB	15 INCHES	C.J.ELSMANN	29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		005	NA		BROWN HUMUS / PEAT (PT)
4					
6					
8					
10					REDDISH-BROWN CLAYEY SILT (ML)
12					
14					
16	▽	006			TAN CLAYEY SILT (ML)
18					
20					
22					
24					
26					
28					
30					
32					
34					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE
36					

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 4 OF 13
	LOCATION COORDINATES 10' SW. OF SW. (OPEN) SIDE RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN

HOLE No.	TYPE OF HOLE	WEATHER
4	TEST HOLE	SUNNY, ± 70° F

DEPTH DRILLED	TOTAL DEPTH	SIZE AND TYPE OF BIT	TYPE OF EQUIPMENT
18 INCHES	18 INCHES	NOT APPLICABLE	POST HOLE DIGGER

No. OF SAMPLES	SAMPLE TYPE	DEPTH TO GW	FIELD INVESTIGATOR (PRINT AND SIGN)	DATE
2	GRAB	15 INCHES	C.J.ELSMANN	29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		007	NA		BROWN HUMUS / PEAT (PT)
4					
6					
8					
10					REDDISH-BROWN CLAYEY SILT (ML)
12					
14					
16	▽	008			TAN CLAYEY SILT (ML)
18					
20					
22					
24					
26					
28					
30					
32					
34					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE
36					

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 5 OF 13
	LOCATION COORDINATES 10' S. OF S. CORNER RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN
HOLE No. 5	TYPE OF HOLE TEST HOLE	WEATHER SUNNY, ± 70° F
DEPTH DRILLED 18 INCHES	TOTAL DEPTH 18 INCHES	SIZE AND TYPE OF BIT NOT APPLICABLE
		TYPE OF EQUIPMENT POST HOLE DIGGER
No. OF SAMPLES 2	SAMPLE TYPE GRAB	DEPTH TO GW 15 INCHES
		FIELD INVESTIGATOR (PRINT AND SIGN) C.J.ELSMANN
		DATE 29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		009	NA		BROWN HUMUS / PEAT (PT)
4					
6					
8					
10					REDDISH-BROWN CLAYEY SILT (ML)
12					
14	▽	010			
16					TAN CLAYEY SILT (ML)
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					

N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231		LOG 6 OF 13
	LOCATION COORDINATES 10' SE. OF SE. SIDE RETORT SHACK		
EXPLORATION LOG	DRILLING CO./AGENCY QE		DRILLER NAME ELSMANN / MCGOWAN
HOLE No. 6	TYPE OF HOLE TEST HOLE		WEATHER SUNNY, ± 70° F
DEPTH DRILLED 18 INCHES	TOTAL DEPTH 18 INCHES	SIZE AND TYPE OF BIT NOT APPLICABLE	TYPE OF EQUIPMENT POST HOLE DIGGER
No. OF SAMPLES 2	SAMPLE TYPE GRAB	DEPTH TO GW 15 INCHES	FIELD INVESTIGATOR (PRINT AND SIGN) C.J.ELSMANN
			DATE 29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		011	NA		BROWN HUMUS / PEAT (PT)
14	▽	012			REDDISH-BROWN CLAYEY SILT (ML)
18					TAN CLAYEY SILT (ML)

N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231		LOG 7 OF 13
	LOCATION COORDINATES 10' E. OF E. CORNER RETORT SHACK		
EXPLORATION LOG	DRILLING CO./AGENCY QE		DRILLER NAME ELSMANN / MCGOWAN
HOLE No. 7	TYPE OF HOLE TEST HOLE		WEATHER SUNNY, ± 70° F
DEPTH DRILLED 24 INCHES	TOTAL DEPTH 24 INCHES	SIZE AND TYPE OF BIT NOT APPLICABLE	TYPE OF EQUIPMENT POST HOLE DIGGER
No. OF SAMPLES 2	SAMPLE TYPE GRAB	DEPTH TO GW 20 INCHES	FIELD INVESTIGATOR (PRINT AND SIGN) C.J.ELSMANN DATE 29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		013	NA		BROWN HUMUS / PEAT (PT)
4					
6					
8					
10					REDDISH-BROWN CLAYEY SILT (ML)
12					
14					
16					
18					
20	▽	014			TAN CLAYEY SILT (ML)
22					
24					
26					
28					
30					
32					
34					
36					

N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 8 OF 13
	LOCATION COORDINATES 10' NE. OF NE. SIDE RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN

HOLE No.	TYPE OF HOLE	WEATHER
8	TEST HOLE	SUNNY, ± 70° F

DEPTH DRILLED	TOTAL DEPTH	SIZE AND TYPE OF BIT	TYPE OF EQUIPMENT
24 INCHES	24 INCHES	NOT APPLICABLE	POST HOLE DIGGER

No. OF SAMPLES	SAMPLE TYPE	DEPTH TO GW	FIELD INVESTIGATOR (PRINT AND SIGN)	DATE
2	GRAB	20 INCHES	C.J.ELSMANN	29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		015	NA		BROWN HUMUS / PEAT (PT)
4					
6					
8					
10					
12					REDDISH-BROWN CLAYEY SILT (ML)
14					
16					
18					
20	▽	016			TAN CLAYEY SILT (ML)
22					
24					
26					
28					
30					
32					
34					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE
36					

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231		LOG 9 OF 13
	LOCATION COORDINATES 23.5' W. OF W. CORNER RETORT SHACK		
EXPLORATION LOG	DRILLING CO./AGENCY QE		DRILLER NAME ELSMANN / MCGOWAN
HOLE No. 9	TYPE OF HOLE TEST HOLE		WEATHER SUNNY, ± 70° F
DEPTH DRILLED 18 INCHES	TOTAL DEPTH 18 INCHES	SIZE AND TYPE OF BIT NOT APPLICABLE	TYPE OF EQUIPMENT POST HOLE DIGGER
No. OF SAMPLES 2	SAMPLE TYPE GRAB	DEPTH TO GW NOT APP.	FIELD INVESTIGATOR (PRINT AND SIGN) C.J.ELSMANN
			DATE 29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		017	NA		BROWN HUMUS / PEAT (PT) MIXED WITH CINNARAR ORE/SLAG
18		018			BROWN CLAYEY SILT (ML) TAN CLAYEY SILT (ML)

N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 10 OF 13
	LOCATION COORDINATES 22.6' WSW. OF W. CORNER RETORT SHACK, NEXT TO BM2	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN

HOLE No.	TYPE OF HOLE	WEATHER
10	TEST HOLE	SUNNY, ± 70° F

DEPTH DRILLED	TOTAL DEPTH	SIZE AND TYPE OF BIT	TYPE OF EQUIPMENT
18 INCHES	18 INCHES	NOT APPLICABLE	POST HOLE DIGGER

No. OF SAMPLES	SAMPLE TYPE	DEPTH TO GW	FIELD INVESTIGATOR (PRINT AND SIGN)	DATE
2	GRAB	NOT APP.	C.J.ELSMANN	29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		019	NA		BROWN HUMUS / PEAT (PT)
18		020			REDDISH-BROWN CLAYEY SILT (ML)
					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 11 OF 13
	LOCATION COORDINATES 27' SSW. OF W. CORNER RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN
HOLE No. 11	TYPE OF HOLE TEST HOLE	WEATHER SUNNY, ± 70° F
DEPTH DRILLED 18 INCHES	TOTAL DEPTH 18 INCHES	SIZE AND TYPE OF BIT NOT APPLICABLE
TYPE OF EQUIPMENT POST HOLE DIGGER		
No. OF SAMPLES 2	SAMPLE TYPE GRAB	DEPTH TO GW NOT APP.
FIELD INVESTIGATOR (PRINT AND SIGN) C.J.ELSMANN		DATE 29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		021	NA		BROWN HUMUS / PEAT (PT)
4					
6					
8					
10					
12					REDDISH-BROWN CLAYEY SILT (ML)
14					
16					
18		022			TAN CLAYEY SILT (ML)
20					
22					
24					
26					
28					
30					
32					
34					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE
36					

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 12 OF 13
	LOCATION COORDINATES 33.6' S. OF W. CORNER RETORT SHACK	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN / MCGOWAN
HOLE No. 12	TYPE OF HOLE TEST HOLE	WEATHER SUNNY, ± 70° F
DEPTH DRILLED 18 INCHES	TOTAL DEPTH 18 INCHES	SIZE AND TYPE OF BIT NOT APPLICABLE
		TYPE OF EQUIPMENT POST HOLE DIGGER
No. OF SAMPLES 2	SAMPLE TYPE GRAB	DEPTH TO GW NOT APP.
		FIELD INVESTIGATOR (PRINT AND SIGN) C.J.ELSMANN
		DATE 29 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		023	NA		BROWN HUMUS / PEAT (PT)
12					REDDISH-BROWN CLAYEY SILT (ML)
18		024			TAN CLAYEY SILT (ML)
36					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE

QUEST ENVIRONMENTAL 220 CENTER COURT ANCHORAGE, AK 99518 (907) 563-0050, 563-0085 FAX	PROJECT NAME/No. RED TOP RETORT SITE ASSESSMENT: 5231	LOG 13 OF 13
	LOCATION COORDINATES INTERIOR OF RETORT SHACK, AGAINST NE. WALL, MIDWAY	
EXPLORATION LOG	DRILLING CO./AGENCY QE	DRILLER NAME ELSMANN

HOLE No.	TYPE OF HOLE	WEATHER
13	TEST HOLE	SUNNY, ± 70° F

DEPTH DRILLED	TOTAL DEPTH	SIZE AND TYPE OF BIT	TYPE OF EQUIPMENT
18 INCHES	18 INCHES	NOT APPLICABLE	POST HOLE DIGGER

No. OF SAMPLES	SAMPLE TYPE	DEPTH TO GW	FIELD INVESTIGATOR (PRINT AND SIGN)	DATE
2	GRAB	NOT APP.	C.J.ELSMANN	30 JUNE 94

DEPTH IN INCHES	WATER	LAB SAMPLE No.	PID RESULT (ppm)	SOIL LEGEND	DESCRIPTION AND REMARKS
2		033	NA		BROWN HUMUS / PEAT (PT) WITH DROPLETS OF FREE MERCURY ≤ 1MM DIA. AT SURFACE DOWN TO 6"
4					
6					
8					
10					
12					REDDISH-BROWN CLAYEY SILT (ML)
14					
16					
18		037			
20					
22					
24					
26					
28					
30					
32					
34					N.B: TOTAL DEPTH OF TEST HOLE SEALED WITH BENTONITE CHIPS, MARKED WITH SURVEY STAKE, TH No., AND ORANGE SURVEY TAPE
36					

7.0 Photographs

The following photographs were taken during the course of the project.

Photo. 1

The retort shack looking east. Note the test hole equipment decontamination buckets in the foreground.

Photo. 2

The interior of the retort shack looking northeast.

The large metal cylindrical object in the center is the 8 1/2-foot long by 2-foot wide retort chamber, into which was introduced cinnabar ore.

To the left and on the ground are the two condensation chambers.

Photo. 3

A view from the rear of the retort shack looking west through a window opening.

The back half of the roof is no longer in place; sections have fallen to the floor, where these galvanized sheets have acted as a barrier between the elements and the free mercury condensate found beneath them. See photograph No. 9.

Photo. 4

Three 110-gallon drums as found at the site, looking towards the east.

An area of Bunker-C contaminated soil can be seen in the extreme right foreground.

These barrels, with their heavy-duty almost "ironclad" appearence are typical of POL drums manufactured during the early to mid-1900s.

Photo. 5

A closeup of the same Bunker-C stained soil, looking towards the northeast.

Photo. 6

Looking towards the southwest and another POL stained area, this one approximately 20 feet southwest of the open end of the retort shack.

The shingle-like objects are fractured pieces of Cement Asbestos Board which were abated during the initial site visit.

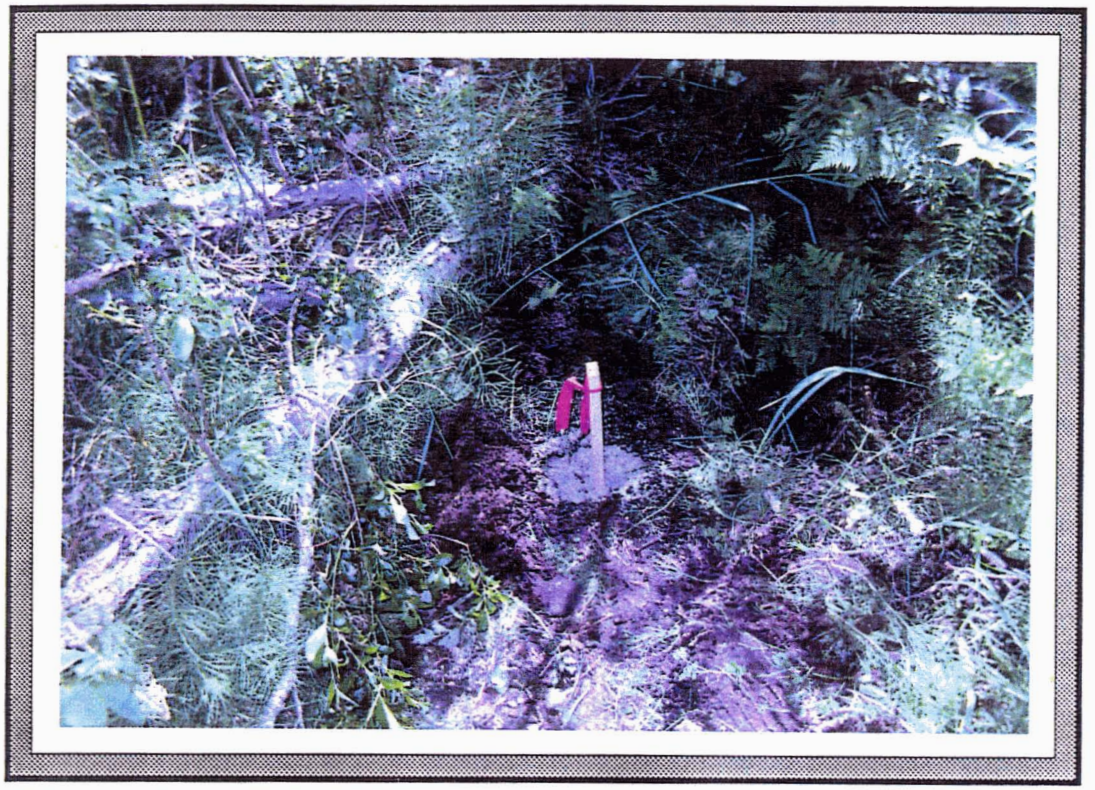


Photo. 7

Test Hole six, ten feet southeast of the southest side of the retort shack.

Note the Bentonite chips used as a seal to prevent contaminant migration downward into the subsurface aquifer.

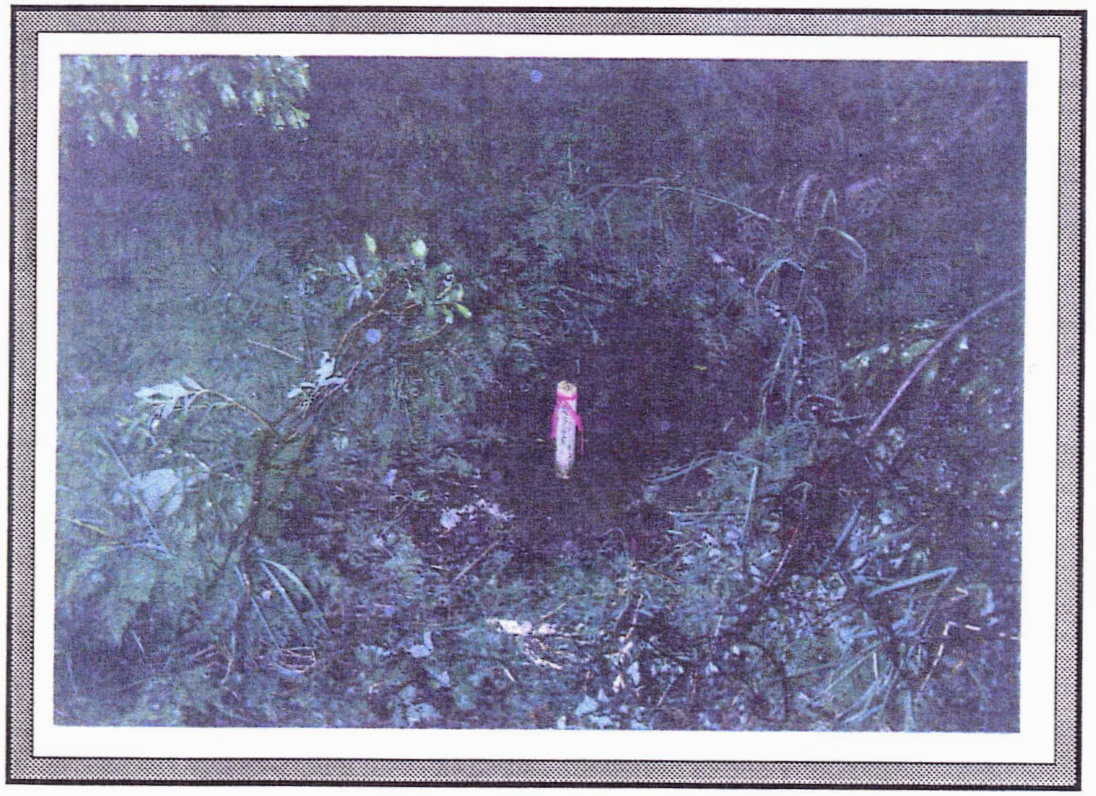


Photo. 8

Test Hole seven, ten feet east of the retort shack's east corner.

Photo. 9

Test Hole thirteen by the northest interior wall of the retort shack.

A sheet of galvanized roofing, which can be seen leaning against the northwest wall, was lifted off the floor to expose thousands of tiny mercury droplets which had lain undisturbed for almost fifty years.

The pedestal portion of a scale is visible in the center foreground.

Photo 10

View of the retort shack looking south, showing secured 55-gallon transfer barrels of (primarily) Bunker C. Part of the equipment decontamination station is visible in the foreground.

8.0 Conclusions, Risk Assessment and Recommendations

The following conclusions and recommendations have been developed in part as a result of historical, field and laboratory data interpretation.

8.1 Conclusions

Site soils are contaminated with elemental (free) mercury and relatively heavy molecular weight refined petroleum products (Bunker-C) to the extent that remediation is necessary. The subsurface aquifer does not appear to have been significantly impacted by either contaminant. Site biota may be impacted by mercury and / or Bunker-C, but this possibility is considered slight given the low leachability of mercury from TCLP analysis and the lack of significant POL migration.

The retort shack structure itself is contaminated with mercury which has escaped during the retort process and condensed on interior walls and the retort structures. These materials will also require remediation.

Left undisturbed, the asbestos discovered on site does not present a significant danger to health or the environment; however, since it must be removed in order to remediate the site, removal must take place under controlled conditions.

Mercury and its compounds are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act of 19980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA / SARA).

Bunker-C is not classified as a hazardous substance, however, once it reaches the soils and / or groundwater of the State of Alaska, it becomes regulated by the State of Alaska Department of Environmental Conservation (ADEC).

Asbestos is not classified as a hazardous substance, but the handling of asbestos containing substances is regulated by the Federal Occupational Safety and Health Administration (OSHA), and the State of Alaska Department of Safety and Health (DOSH), and emissions of asbestos fibers are regulated by the National Emission Standards for Hazardous Air Pollutants (NESHAPS).

8.2 Risk Assessment

8.2.1 Contaminant Identification

Mercury has been identified as the site's contaminant of concern because of its intrinsic toxic properties and because of its potential for migration into critical exposure pathways. For the purpose of this risk assessment, other contaminants are much less significant.

8.2.2 Toxicity Assessment

Very little uncertainty exists regarding mercury's adverse effects. Mercury is a general protoplasmic poison; after absorption, it circulates in the blood and is stored in the liver, kidneys, spleen and bone. Central nervous system disorders are typical manifestations of

acute mercury poisoning. Spilled and heated elemental mercury are particularly hazardous. Mercury and its compounds can be introduced through the respiratory tract, gastrointestinal tract, and intact skin. In the environment, mercury can be efficiently transported along the food chain until concentrations reach critically high levels in humans and other predatory species.

8.2.3 Exposure Assessment

The source of potential contaminant migration is the retort shack and its immediate vicinity. The most likely mechanisms for the introduction of mercury into transport media are flooding of the Wood River, scouring by river ice, earthquake damage, or vandalism. Primary potential environmental transport media exist in the form of biological contact , both human and non-human, groundwater, and soil. Potential receptors are the Wood River ecosystem and local inhabitants or recreational visitors. A *publicly perceived* receptor may be the Bristol Bay fishery, since several species of commercially caught fish from that region depend upon the Wood River System for food and reproductive purposes. Routes of exposure to humans exists primarily in the form of dermal absorption of mercury, accidental ingestion into the gastrointestinal tract, and the consumption of contaminated prey.

8.2.4 Risk Characterization

Although the site has remained relatively undisturbed thus far, the risk potential for this site is considered high, since an extremely toxic substance is so closely associated with a rich ecosystem

8.3 Recommendations

Two primary methods of remediation were considered: removal and stabilization. The proximity of the Wood River and the potential for contaminant migration which exists even in stabilized matrices has been cause enough to reject stabilization as a viable alternative.

Removal of mercury / POL contaminated soil and transportation to a disposal facility is considered the best method to mitigate the site's contamination and, hence, reduce the risk of environmental exposure. EPA Land Disposal Restrictions (LDR or "Land Ban") effective 1992 require mercury contaminated soils to be treated to specific LDR standards prior to disposal. The alternatives are to conduct treatment at the site or near the eventual disposal facility. Two firms capable of remediating the soil to acceptable LDR standards were contacted, and both the cost and timeliness of transporting and erecting treatment process machinery precludes the consideration of on-site contaminant reduction. Our recommendation is to transport the contaminated soil to a treatment facility near the eventual disposal facility.

The site's mercury cleanup level has not yet been determined. Normal background levels may be relatively high, given that sampled material may contain varying amounts of cinnabar.

The site's POL soil cleanup levels are determined by application of the ADEC's Cleanup Matrix, presented below.

Table VII: ADEC POL Soil Cleanup Matrix Evaluation

Matrix Factor No.	Factor Description	Site Condition	Score
1.	Depth to Subsurface Water from Contamination	< 5 Feet	10
2.	Mean Annual Precipitation	15-25 Inches	3
3.	Soil Type	Coarse W/Fines	8
4.	Potential Receptors	Highest Given	15
5.	Volume of Contaminated Soil	25-100 Yards^3	5
		Total	**41**

The evaluation total of 41 points requires a Level A cleanup (100 ppm of DRO).

It is recommended asbestos debris be cleaned up under appropriate conditions prior to disposal of underlying mercury contaminated soils.

A Corrective Action Plan should be developed and submitted to the appropriate ADEC office for review.

9.0 Support Documents

The following documents (laboratory reports, internal laboratory QC data, etc.) are not paginated to conform with this report.

Analytical Technologies, Inc.
560 Naches Avenue, S.W., Suite 101, Renton, WA 98055 (206) 228-8335
Karen L. Mixon, Laboratory Manager

ATI I.D. # 407062

August 9, 1994

AQE
220 Center Court
Anchorage AK 99518-1621

Attention : Cliff Elsmann

Project Number : 5231

Project Name : Red Top Retort Site

Dear Mr. Elsmann:

On July 8, 1994, Analytical Technologies, Inc. (ATI), received 66 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.

The analyses for polychlorinated biphenyls (PCBs), arsenic, cadmium, chromium, lead in the product samples, flash point and total halogen were performed by a subcontractor. Their report is included as an appendix.

Sincerely,

Jeffery L. Pettit
Senior Project Manager

JLP/hal/mrj

Enclosure

Analytical Technologies, Inc.

ATI I.D. # 407062

SAMPLE CROSS REFERENCE SHEET

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
407062-1	94 RTM 1001	06/28/94	SOIL
407062-2	94 RTM 1002	06/28/94	SOIL
407062-3	94 RTM 1003	06/29/94	SOIL
407062-4	94 RTM 1004	06/29/94	SOIL
407062-5	94 RTM 1005	06/29/94	SOIL
407062-6	99 RTM 1006	06/29/94	SOIL
407062-7	94 RTM 1007	06/29/94	SOIL
407062-8	94 RTM 1008	06/29/94	SOIL
407062-9	94 RTM 1009	06/29/94	SOIL
407062-10	94 RTM 1010	06/29/94	SOIL
407062-11	94 RTM 1011	06/29/94	SOIL
407062-12	94 RTM 1012	06/29/94	SOIL
407062-13	94 RTM 1013	06/29/94	SOIL
407062-14	94 RTM 1014	06/29/94	SOIL
407062-15	94 RTM 1015	06/29/94	SOIL
407062-16	94 RTM 1016	06/29/94	SOIL
407062-17	94 RTM 1017	06/29/94	SOIL
407062-18	94 RTM 1018	06/29/94	SOIL
407062-19	94 RTM 1019	06/29/94	SOIL
407062-20	94 RTM 1020	06/29/94	SOIL
407062-21	94 RTM 1021	06/29/94	SOIL
407062-22	94 RTM 1022	06/29/94	SOIL
407062-23	94 RTM 1023	06/29/94	SOIL
407062-24	94 RTM 1024	06/29/94	SOIL
407062-25	94 RTM 1025	06/29/94	SOIL
407062-26	94 RTM 1026	06/29/94	SOIL
407062-27	94 RTM 1027	06/29/94	SOIL
407062-28	94 RTM 1028	06/29/94	SOIL
407062-29	94 RTM 1029	06/29/94	SOIL
407062-30	94 RTM 1030	06/29/94	SOIL
407062-31	94 RTM 1031	06/29/94	SOIL
407062-32	94 RTM 1032	06/29/94	SOIL
407062-33	94 RTM 1033	06/29/94	SOIL
407062-34	94 RTM 1034	06/29/94	SOIL
407062-35	94 RTM 1035	06/29/94	SOIL
407062-36	94 RTM 1036	06/29/94	SOIL
407062-37	94 RTM 6001	06/29/94	WIPE
407062-38	94 RTM 6002	06/29/94	WIPE
407062-39	94 RTM 6003	06/29/94	WIPE
407062-40	94 RTM 6004	06/29/94	WIPE

CONTINUED ON NEXT PAGE

Analytical Technologies, Inc.

ATI I.D. # 407062

SAMPLE CROSS REFERENCE SHEET
CONTINUED

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
407062-41	94 RTM 6005	06/29/94	WIPE
407062-42	94 RTM 6006	06/29/94	WIPE
407062-43	94 RTM 1037	06/30/94	SOIL
407062-44	94 RTM 1038	06/30/94	SOIL
407062-45	94 RTM 5001	06/30/94	WATER
407062-46	94 RTM 5002	06/30/94	WATER
407062-47	94 RTM 5003	06/30/94	WATER
407062-48	94 RTM 5004	06/30/94	WATER
407062-49	94 RTM 5005	06/30/94	WATER
407062-50	94 RTM 7001	06/30/94	PRODUCT
407062-51	94 RTM 3001	06/30/94	SOIL
407062-52	94 RTM 3002	06/30/94	SOIL
407062-53	94 RTM 2003	06/30/94	WATER
407062-54	94 RTM 1039	07/01/94	SOIL
407062-55	94 RTM 1040	07/01/94	SOIL
407062-56	94 RTM 1041	07/01/94	SOIL
407062-57	94 RTM 1042	07/01/94	SOIL
407062-58	94 RTM 1043	07/01/94	SOIL
407062-59	94 RTM 7002	07/01/94	PRODUCT
407062-60	94 RTM 7003	07/01/94	PRODUCT
407062-61	94 RTM 7004	07/01/94	PRODUCT
407062-62	94 RTM 8001	07/01/94	ROCK
407062-63	94 RTM 8002	07/01/94	ROCK
407062-64	94 RTM 2001	07/01/94	WATER
407062-65	94 RTM 2002	07/01/94	WATER
407062-66	94 RTM 2004	07/01/94	WATER

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	45
WATER	9
PRODUCT	4
WIPE	6
ROCK	2

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. # 407062

ANALYTICAL SCHEDULE

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

ANALYSIS	TECHNIQUE	REFERENCE	LAB
PURGEABLE HALOCARBONS	GC/ELCD	EPA 8010	R
POLYCHLORINATED BIPHENYLS (PCBs)	GC/ECD	EPA 8080	SUB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R
DIESEL RANGE ORGANICS	GC/FID	AK DEC DRO	R
PETROLEUM HYDROCARBONS	IR	EPA 418.1	R
ANTIMONY	ICAP	EPA 6010	R
ARSENIC	AA/GF	EPA 7060	R
ARSENIC	DCP	EPA AES 0029	SUB
CADMIUM	DCP	EPA AES 0029	SUB
CHROMIUM	DCP	EPA AES 0029	SUB
LEAD	DCP	EPA AES 0029	SUB
MERCURY	AA/COLD VAPOR	EPA 7470	R
MERCURY	AA/COLD VAPOR	EPA 7471	R
FLASH POINT	P.M.C.C.	ASTM D-93	SUB
TOTAL HALOGENS	COULOMETRIC	EPA 9076	SUB
MOISTURE	GRAVIMETRIC	CLP SOW ILM01.0	R

R = ATI - Renton
SD = ATI - San Diego
PHX = ATI - Phoenix
PTL = ATI - Portland
ANC = ATI - Anchorage
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 407062

CASE NARRATIVE

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

CASE NARRATIVE: VOLATILE ORGANICS ANALYSIS

Two (2) soil samples and one (1) water sample were received by ATI on July 8, 1994, for the following analysis: EPA method 8010.

The matrix spike/matrix spike duplicate (MS/MSD) associated with the water sample 407062-66 (94 RTM 2004) had a recovery of trichloroethene that was beyond the linear range of the instrument. The results were flagged with a "C" and noted on the analytical data page. The surrogate recovery in the MSD was outside of the current ATI control limits due to matrix interferences. The result was flagged with an "F" and noted on the analytical data page.

Sample 407062-66 (94 RTM 2004) was analyzed after the recommended holding time had expired.

Sample 407062-58 (94 RTM 1043) required a dilution during the extraction process in order to have any recoverable methanol extract to analyze. The final volume during the extraction process was ten mLs rather than the specified five mLs.

The blank spike (BS) recovery for 1,1-dichloroethene was outside of the current ATI control limits. The MS/MSD recoveries were within limits. No further action was taken.

All other corresponding quality assurance and quality control results defined as MS/MSD, BS, method blank and surrogate recoveries were within the established control limits.

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/25/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8010	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<1.0
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<1.0
CHLOROFORM	<0.2
CHLOROMETHANE	<2.0
1,2-DIBROMOETHANE (EDB)	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DIBROMOCHLOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
CIS-1,2-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<1.0

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	99	58 - 126

Analytical Technologies, Inc.

ATI I.D. # 407062-66

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/26/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8010	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<1.0
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<1.0
CHLOROFORM	<0.2
CHLOROMETHANE	<2.0
1,2-DIBROMOETHANE (EDB)	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DIBROMOCHLOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
CIS-1,2-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<1.0

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	114	58 - 126

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : WATER
EPA METHOD : 8010

SAMPLE I.D. # : BLANK
DATE EXTRACTED : N/A
DATE ANALYZED : 07/25/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
CHLOROBENZENE	<0.500	4.00	4.58	115	N/A	N/A	N/A
1,1-DICHLOROETHENE	<0.200	4.00	5.09	127	N/A	N/A	N/A
TRICHLOROETHENE	<0.200	4.00	4.49	112	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
CHLOROBENZENE	79 - 141	33
1,1-DICHLOROETHENE	56 - 158	22
TRICHLOROETHENE	72 - 138	21

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOCHLOROMETHANE	111	N/A	38 - 140

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : WATER
EPA METHOD : 8010

SAMPLE I.D. # : 407082-3
DATE EXTRACTED : N/A
DATE ANALYZED : 07/25/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
CHLOROBENZENE	<0.500	4.00	4.09	102	3.72	93	9
1,1-DICHLOROETHENE	<0.200	4.00	4.63	116	4.27	107	8
TRICHLOROETHENE	15.7	4.00	21.3C	140	21.4C	142	0

CONTROL LIMITS	% REC.	RPD
CHLOROBENZENE	61 - 160	33
1,1-DICHLOROETHENE	37 - 182	22
TRICHLOROETHENE	61 - 149	21

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOCHLOROMETHANE	114	128F	38 - 140

F = Out of limits due to matrix interference.
C = Estimated, value above linear range.

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8010	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.010
BROMOFORM	<0.010
BROMOMETHANE	<0.050
CARBON TETRACHLORIDE	<0.010
CHLOROBENZENE	<0.025
CHLOROETHANE	<0.050
CHLOROFORM	<0.010
CHLOROMETHANE	<0.10
1,2-DIBROMOETHANE (EDB)	<0.025
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
DIBROMOCHLOROMETHANE	<0.010
1,1-DICHLOROETHANE	<0.010
1,2-DICHLOROETHANE	<0.010
1,1-DICHLOROETHENE	<0.010
CIS-1,2-DICHLOROETHENE	<0.010
TRANS-1,2-DICHLOROETHENE	<0.010
1,2-DICHLOROPROPANE	<0.010
CIS-1,3-DICHLOROPROPENE	<0.010
TRANS-1,3-DICHLOROPROPENE	<0.010
METHYLENE CHLORIDE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.010
TETRACHLOROETHENE	<0.010
1,1,1-TRICHLOROETHANE	<0.010
1,1,2-TRICHLOROETHANE	<0.010
TRICHLOROETHENE	<0.010
TRICHLOROFLUOROMETHANE	<0.025
VINYL CHLORIDE	<0.050

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	118	38 - 140

Analytical Technologies, Inc.

ATI I.D. # 407062-4

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 06/29/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: 94 RTM 1004	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8010	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.018
BROMOFORM	<0.018
BROMOMETHANE	<0.091
CARBON TETRACHLORIDE	<0.018
CHLOROBENZENE	<0.045
CHLOROETHANE	<0.091
CHLOROFORM	<0.018
CHLOROMETHANE	<0.18
1,2-DIBROMOETHANE (EDB)	<0.045
1,2-DICHLOROBENZENE	<0.045
1,3-DICHLOROBENZENE	<0.045
1,4-DICHLOROBENZENE	<0.045
DIBROMOCHLOROMETHANE	<0.018
1,1-DICHLOROETHANE	<0.018
1,2-DICHLOROETHANE	<0.018
1,1-DICHLOROETHENE	<0.018
CIS-1,2-DICHLOROETHENE	<0.018
TRANS-1,2-DICHLOROETHENE	<0.018
1,2-DICHLOROPROPANE	<0.018
CIS-1,3-DICHLOROPROPENE	<0.018
TRANS-1,3-DICHLOROPROPENE	<0.018
METHYLENE CHLORIDE	<0.18
1,1,2,2-TETRACHLOROETHANE	<0.018
TETRACHLOROETHENE	<0.018
1,1,1-TRICHLOROETHANE	<0.018
1,1,2-TRICHLOROETHANE	<0.018
TRICHLOROETHENE	<0.018
TRICHLOROFLUOROMETHANE	<0.045
VINYL CHLORIDE	<0.091

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	120	38 - 140

Analytical Technologies, Inc.

ATI I.D. # 407062-58

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: 94 RTM 1043	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8010	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.043
BROMOFORM	<0.043
BROMOMETHANE	<0.22
CARBON TETRACHLORIDE	<0.043
CHLOROBENZENE	<0.11
CHLOROETHANE	<0.22
CHLOROFORM	<0.043
CHLOROMETHANE	<0.43
1,2-DIBROMOETHANE (EDB)	<0.11
1,2-DICHLOROBENZENE	<0.11
1,3-DICHLOROBENZENE	<0.11
1,4-DICHLOROBENZENE	<0.11
DIBROMOCHLOROMETHANE	<0.043
1,1-DICHLOROETHANE	<0.043
1,2-DICHLOROETHANE	<0.043
1,1-DICHLOROETHENE	<0.043
CIS-1,2-DICHLOROETHENE	<0.043
TRANS-1,2-DICHLOROETHENE	<0.043
1,2-DICHLOROPROPANE	<0.043
CIS-1,3-DICHLOROPROPENE	<0.043
TRANS-1,3-DICHLOROPROPENE	<0.043
METHYLENE CHLORIDE	<0.43
1,1,2,2-TETRACHLOROETHANE	<0.043
TETRACHLOROETHENE	<0.043
1,1,1-TRICHLOROETHANE	<0.043
1,1,2-TRICHLOROETHANE	<0.043
TRICHLOROETHENE	<0.043
TRICHLOROFLUOROMETHANE	<0.11
VINYL CHLORIDE	<0.22

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	97	38 - 140

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : SOIL
EPA METHOD : 8010

SAMPLE I.D. # : BLANK
DATE EXTRACTED : 07/12/94
DATE ANALYZED : 07/13/94
UNITS : mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
CHLOROBENZENE	<0.0250	0.400	0.373	93	N/A	N/A	N/A
1,1-DICHLOROETHENE	<0.0100	0.400	0.135	34H	N/A	N/A	N/A
TRICHLOROETHENE	<0.0100	0.400	0.277	69	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
CHLOROBENZENE	71 - 163	20
1,1-DICHLOROETHENE	51 - 161	22
TRICHLOROETHENE	55 - 146	24

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOCHLOROMETHANE	105	N/A	38 - 140

H = Out of limits.

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : SOIL
EPA METHOD : 8010

SAMPLE I.D. # : 407010-3
DATE EXTRACTED : 07/12/94
DATE ANALYZED : 07/13/94
UNITS : mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
CHLOROBENZENE	<0.0250	0.400	0.392	98	0.396	99	1
1,1-DICHLOROETHENE	<0.0100	0.400	0.140	35	0.164	41	16
TRICHLOROETHENE	<0.0100	0.400	0.272	68	0.253	63	7

CONTROL LIMITS	% REC.	RPD
CHLOROBENZENE	55 - 166	20
1,1-DICHLOROETHENE	35 - 141	22
TRICHLOROETHENE	49 - 139	24

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOCHLOROMETHANE	98	102	38 - 140

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	99	76 - 120

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	95	76 - 120

Analytical Technologies, Inc.

ATI I.D. # 407062-47

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 06/30/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: N/A
CLIENT I.D.	: 94 RTM 5003	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	99	76 - 120

Analytical Technologies, Inc.

ATI I.D. # 407062-48

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 06/30/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: N/A
CLIENT I.D.	: 94 RTM 5004	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	1.3
TOTAL XYLENES	0.7

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	99	76 - 120

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ATI I.D. # 407062-66

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: N/A
CLIENT I.D.	: 94 RTM 2004	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	99	76 - 120

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : WATER
EPA METHOD : 8020 (BETX)

SAMPLE I.D. # : BLANK
DATE EXTRACTED : N/A
DATE ANALYZED : 07/12/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.500	20.0	19.8	99	19.8	99	0
TOLUENE	<0.500	20.0	19.8	99	19.7	99	1
TOTAL XYLENES	<0.500	40.0	39.4	99	39.1	98	1

CONTROL LIMITS	% REC.	RPD
BENZENE	89 - 110	10
TOLUENE	89 - 113	10
TOTAL XYLENES	89 - 111	10

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	98	98	76 - 120

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : WATER
EPA METHOD : 8020 (BETX)

SAMPLE I.D. # : BLANK
DATE EXTRACTED : N/A
DATE ANALYZED : 07/13/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.500	20.0	19.4	97	20.0	100	3
TOLUENE	<0.500	20.0	19.4	97	19.9	100	3
TOTAL XYLENES	<0.500	40.0	38.2	96	39.6	99	4

CONTROL LIMITS	% REC.	RPD
BENZENE	89 - 110	10
TOLUENE	89 - 113	10
TOTAL XYLENES	89 - 111	10

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	97	97	76 - 120

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : WATER
EPA METHOD : 8020 (BETX)

SAMPLE I.D. # : 407075-2
DATE EXTRACTED : N/A
DATE ANALYZED : 07/12/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	648	20.0	352	CG	358	CG	2
TOLUENE	5.40	20.0	24.1	94	24.3	95	1
TOTAL XYLENES	277	40.0	251	CG	242	CG	4

CONTROL LIMITS	% REC.	RPD
BENZENE	86 - 113	10
TOLUENE	87 - 114	10
TOTAL XYLENES	85 - 113	10

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	92	94	76 - 120

C = Estimated, value above linear range.
G = Out of limits due to high levels of target analytes in sample.

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 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

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	108	52 - 116

Analytical Technologies, Inc.

ATI I.D. # 407062-4

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 06/29/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: 94 RTM 1004	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.045
ETHYLBENZENE	<0.045
TOLUENE	<0.045
TOTAL XYLENES	<0.045

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	63	52 - 116

Analytical Technologies, Inc.

ATI I.D. # 407062-58

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: 94 RTM 1043	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.054
ETHYLBENZENE	<0.054
TOLUENE	<0.054
TOTAL XYLENES	<0.054

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	47 F	52 - 116

F = Out of limits due to matrix interference.

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : SOIL
EPA METHOD : 8020 (BETX)

SAMPLE I.D. # : BLANK
DATE EXTRACTED : 07/12/94
DATE ANALYZED : 07/12/94
UNITS : mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.0250	1.00	1.01	101	1.06	106	5
TOLUENE	<0.0250	1.00	1.10	110	1.12	112	2
TOTAL XYLENES	<0.0250	2.00	2.21	111	2.22	111	0

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

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	101	101	52 - 116

Analytical Technologies, Inc.

ATI I.D. # 407062

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : SOIL
EPA METHOD : 8020 (BETX)

SAMPLE I.D. # : 407076-1
DATE EXTRACTED : 07/12/94
DATE ANALYZED : 07/12/94
UNITS : mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.0250	1.00	0.967	97	0.915	92	6
TOLUENE	<0.0250	1.00	1.03	103	0.997	100	3
TOTAL XYLENES	<0.0250	2.00	2.14	107	2.10	105	2

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

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	97	98	52 - 116

Analytical Technologies, Inc.

ATI I.D. # 407062

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/13/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<20
HYDROCARBON RANGE	C7 - C10
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<50
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 407062-50

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 06/30/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/13/94
CLIENT I.D.	: 94 RTM 7001	DATE ANALYZED	: 07/14/94
SAMPLE MATRIX	: PRODUCT	UNITS	: mg/Kg
EPA METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 10

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5000
HYDROCARBON RANGE	C7 - C10
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	630000
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

Sample chromatogram indicates petroleum hydrocarbons characteristic of mineral oil.

Analytical**Technologies,**Inc.

ATI I.D. # 407062-59

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/13/94
CLIENT I.D.	: 94 RTM 7002	DATE ANALYZED	: 07/14/94
SAMPLE MATRIX	: PRODUCT	UNITS	: mg/Kg
EPA METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 10

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<4900
HYDROCARBON RANGE	C7 - C10
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	570000
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

Sample chromatogram indicates petroleum hydrocarbons characteristic of both diesel and mineral oil.

Analytical Technologies, Inc.

ATI I.D. # 407062-60

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/13/94
CLIENT I.D.	: 94 RTM 7003	DATE ANALYZED	: 07/14/94
SAMPLE MATRIX	: PRODUCT	UNITS	: mg/Kg
EPA METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 10

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<4500
HYDROCARBON RANGE	C7 - C10
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	580000
HYDROCARBON RANGE	C12 - C28
HYDROCARBON QUANTITATION USING	DIESEL

Sample chromatogram indicates petroleum hydrocarbons characteristic of both diesel and mineral oil.

Analytical Technologies, Inc.

ATI I.D. # 407062-61

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/13/94
CLIENT I.D.	: 94 RTM 7004	DATE ANALYZED	: 07/14/94
SAMPLE MATRIX	: PRODUCT	UNITS	: mg/Kg
EPA METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<370
HYDROCARBON RANGE	C7 - C10
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	12000
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

Sample chromatogram indicates petroleum hydrocarbons that is heavier than either mineral or gear oil.

Analytical Technologies, Inc.

ATI I.D. # 407062

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/11/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/11/94
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: AK DEC DRO	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<0.25
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	90	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 407062-66

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/11/94
CLIENT I.D.	: 94 RTM 2004	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: AK DEC DRO	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<0.25
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	106	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 407062

DIESEL RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : WATER
METHOD : AK DEC DRO

SAMPLE I.D. # : BLANK
DATE EXTRACTED : 07/11/94
DATE ANALYZED : 07/11/94
UNITS : mg/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<0.250	2.50	2.38	95	2.48	99	4

CONTROL LIMITS	% REC.	RPD
DIESEL	63 - 121	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
O-TERPHENYL	94	97	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 407062

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: N/A
PROJECT #	: 5231	DATE RECEIVED	: N/A
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 07/12/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<10
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	99	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 407062-58

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 07/01/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/13/94
CLIENT I.D.	: 94 RTM 1043	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 100

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	140000
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	I	50 - 150

I = Surrogate out of limits due to sample dilution.

Analytical Technologies, Inc.

ATI I.D. # 407062

DIESEL RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
SAMPLE MATRIX : SOIL
METHOD : AK DEC DRO

SAMPLE I.D. # : BLANK
DATE EXTRACTED : 07/12/94
DATE ANALYZED : 07/12/94
UNITS : mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<10.0	200	197	99	192	96	3

CONTROL LIMITS	% REC.	RPD
DIESEL	66 - 118	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
O-TERPHENYL	100	100	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 407062

DIESEL RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: AQE	SAMPLE I.D. #	: 407062-4
PROJECT #	: 5231	DATE EXTRACTED	: 07/12/94
PROJECT NAME	: RED TOP RETORT SITE	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO		

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
DIESEL	668	810	19	200	1050	191G	1150	G	9

CONTROL LIMITS	% REC.	RPD
DIESEL	50 - 134	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
O-TERPHENYL	111	113	50 - 150

G = Out of limits due to high levels of target analytes in sample.

Analytical Technologies, Inc.

ATI I.D. # 407062

TOTAL PETROLEUM HYDROCARBONS
DATA SUMMARY

CLIENT	: AQE	DATE EXTRACTED	: 07/11/94
PROJECT #	: 5231	DATE ANALYZED	: 07/11/94
PROJECT NAME	: RED TOP RETORT SITE	UNITS	: mg/L
EPA METHOD	: 418.1	SAMPLE MATRIX	: WATER

ATI I.D. #	CLIENT I.D.	TOTAL PETROLEUM HYDROCARBONS
407062-47	94 RTM 5003	<1
METHOD BLANK	-	<1

Analytical Technologies, Inc.

ATI I.D. # 407062

TOTAL PETROLEUM HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: AQE	SAMPLE I.D. #	: BLANK
PROJECT #	: 5231	DATE EXTRACTED	: 07/11/94
PROJECT NAME	: RED TOP RETORT SITE	DATE ANALYZED	: 07/11/94
EPA METHOD	: 418.1	UNITS	: mg/L
SAMPLE MATRIX	: WATER		

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
PETROLEUM HYDROCARBONS	<1.00	N/A	N/A	10.0	10.2	102	9.59	96	6

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

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Dup. Spike Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 407062

METALS ANALYSIS

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : WATER

ELEMENT	DATE PREPARED	DATE ANALYZED
MERCURY	07/13/94	07/14/94

Analytical Technologies, Inc.

ATI I.D. # 407062

METALS ANALYSIS
DATA SUMMARY

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : WATER
UNITS : mg/L

ATI I.D. #	CLIENT I.D.	MERCURY
407062-45	94 RTM 5001	0.00097
407062-46	94 RTM 5002	0.0014
407062-49	94 RTM 5005	0.00099
407062-53	94 RTM 2003	<0.00022
407062-64	94 RTM 2001	0.00035
407062-65	94 RTM 2002	0.00046
METHOD BLANK	-	<0.00020

Analytical**Technologies,**Inc.

ATI I.D. # 407062

METALS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : WATER
UNITS : mg/L

ELEMENT	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC.
MERCURY	BLANK	<0.00020	N/A	N/A	0.00118	0.00100	118
MERCURY	407036-1	<0.00020	<0.00020	NC	0.00125	0.00100	125

NC = Not calculable.

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

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

Analytical Technologies, Inc.

ATI I.D. # 407062

METALS ANALYSIS

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : SOIL

ELEMENT	DATE PREPARED	DATE ANALYZED
ANTIMONY	07/13/94	07/14/94
ARSENIC	07/14/94	07/15/94
MERCURY (SAMPLES -1 THROUGH -35)	07/11/94	07/12/94
MERCURY (SAMPLES -36 THROUGH -44, -51, -52, -54 THROUGH -57, -62, -63)	07/13/94	07/15/94

AnalyticalTechnologies,Inc.

ATI I.D. # 407062

METALS ANALYSIS
DATA SUMMARY

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
RESULTS ARE CORRECTED FOR MOISTURE CONTENT

MATRIX : SOIL
UNITS : mg/Kg

ATI I.D. #	CLIENT I.D.	ANTIMONY	ARSENIC	MERCURY
407062-1	94 RTM 1001	-	-	64
407062-2	94 RTM 1002	-	-	0.55
407062-3	94 RTM 1003	-	-	2200
407062-4	94 RTM 1004	-	-	140
407062-5	94 RTM 1005	-	-	960
407062-6	99 RTM 1006	-	-	0.52
407062-7	94 RTM 1007	-	-	1400
407062-8	94 RTM 1008	-	-	17
407062-9	94 RTM 1009	-	-	590
407062-10	94 RTM 1010	-	-	3.4
407062-11	94 RTM 1011	-	-	22
407062-12	94 RTM 1012	-	-	6.1
407062-13	94 RTM 1013	-	-	30
407062-14	94 RTM 1014	-	-	<0.26
407062-15	94 RTM 1015	-	-	24
407062-16	94 RTM 1016	-	-	1.6
407062-17	94 RTM 1017	-	-	300
407062-18	94 RTM 1018	-	-	1.8
407062-19	94 RTM 1019	-	-	17
407062-20	94 RTM 1020	-	-	2.4
407062-21	94 RTM 1021	-	-	9.9
407062-22	94 RTM 1022	-	-	<0.22
407062-23	94 RTM 1023	-	-	13
407062-24	94 RTM 1024	-	-	0.75
407062-25	94 RTM 1025	-	-	1600
407062-26	94 RTM 1026	-	-	1500
407062-27	94 RTM 1027	-	-	1200
407062-28	94 RTM 1028	-	-	1600
407062-29	94 RTM 1029	-	-	500
407062-30	94 RTM 1030	-	-	650
407062-31	94 RTM 1031	-	-	61
407062-32	94 RTM 1032	-	-	1300
407062-33	94 RTM 1033	<5.7	57	4300
407062-34	94 RTM 1034	-	-	15000
407062-35	94 RTM 1035	-	-	1000
407062-36	94 RTM 1036	-	-	480
407062-37	94 RTM 6001	-	-	85*
407062-38	94 RTM 6002	-	-	7.7*
407062-39	94 RTM 6003	-	-	940*
407062-40	94 RTM 6004	-	-	50*

* Wipe samples, results are nor corrected for moisture.

Analytical Technologies, Inc.

ATI I.D. # 407062

METALS ANALYSIS
DATA SUMMARY

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE
RESULTS ARE CORRECTED FOR MOISTURE CONTENT

MATRIX : SOIL
UNITS : mg/Kg

ATI I.D. #	CLIENT I.D.	ANTIMONY	ARSENIC	MERCURY
407062-41	94 RTM 6005	-	-	15*
407062-42	94 RTM 6006	-	-	23*
407062-43	94 RTM 1037	-	-	370
407062-44	94 RTM 1038	<3.8	4.9	0.19
407062-51	94 RTM 3001	-	-	0.19
407062-52	94 RTM 3002	-	-	<0.12
407062-54	94 RTM 1039	-	-	9.2
407062-55	94 RTM 1040	-	-	12
407062-56	94 RTM 1041	-	-	5.8
407062-57	94 RTM 1042	-	-	8.6
407062-62	94 RTM 8001	-	-	3.1**
407062-63	94 RTM 8002	-	-	14**
METHOD BLANK	-	<2.5	<0.25	<0.10
METHOD BLANK	-	-	-	<0.10

* Wipe samples, results are not corrected for moisture.
** Rock samples, results are not corrected for moisture

Analytical Technologies, Inc.

ATI # 407062

METALS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : SOIL
UNITS : mg/Kg

ELEMENT	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC.
ANTIMONY	BLANK	<2.50	N/A	N/A	42.9	50.0	86
ANTIMONY	407046-2	<4.06	<4.11	NC	35.6	81.4	44
ARSENIC	BLANK	<0.25	N/A	N/A	1.98	2.00	99
ARSENIC	407046-2	28.0	22.6	21	2.30	3.07	G
MERCURY	BLANK	<0.10	N/A	N/A	0.475	0.500	95
MERCURY	BLANK	<0.10	N/A	N/A	0.395	0.500	79
MERCURY	407046-2	<0.155	<0.149	NC	0.863	0.732	118
MERCURY	407046-2	<0.153	<0.154	NC	0.695	0.739	94
MERCURY	407062-8	17.2	13.7	23	15.5	1.31	G
MERCURY	407062-16	1.63	1.52	7	1.32	1.13	F
MERCURY	407062-31	60.8	64.5	6	67.9	0.590	G
MERCURY	407062-44	0.192	0.280	8	1.09	0.740	121

NC = Not Calculable
F = Out of limits due to matrix interference.
G = Out of limits due to high levels of target analytes in sample.

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

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

Analytical Technologies, Inc.

ATI I.D. # 407062

GENERAL CHEMISTRY ANALYSIS

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : SOIL

PARAMETER	DATE ANALYZED
MOISTURE	07/08/94

Analytical Technologies, Inc.

ATI I.D. # 407062

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : SOIL
UNITS : %

ATI I.D. #	CLIENT I.D.	MOISTURE
407062-1	94 RTM 1001	75
407062-2	94 RTM 1002	29
407062-3	94 RTM 1003	29
407062-4	94 RTM 1004	45
407062-5	94 RTM 1005	73
407062-6	99 RTM 1006	54
407062-7	94 RTM 1007	74
407062-8	94 RTM 1008	63
407062-9	94 RTM 1009	80
407062-10	94 RTM 1010	67
407062-11	94 RTM 1011	75
407062-12	94 RTM 1012	66
407062-13	94 RTM 1013	63
407062-14	94 RTM 1014	57
407062-15	94 RTM 1015	76
407062-16	94 RTM 1016	56
407062-17	94 RTM 1017	34
407062-18	94 RTM 1018	52
407062-19	94 RTM 1019	73
407062-20	94 RTM 1020	55
407062-21	94 RTM 1021	66
407062-22	94 RTM 1022	49
407062-23	94 RTM 1023	66
407062-24	94 RTM 1024	51
407062-25	94 RTM 1025	21
407062-26	94 RTM 1026	29
407062-27	94 RTM 1027	53
407062-28	94 RTM 1028	39
407062-29	94 RTM 1029	16
407062-30	94 RTM 1030	15
407062-31	94 RTM 1031	14
407062-32	94 RTM 1032	56
407062-33	94 RTM 1033	55
407062-34	94 RTM 1034	52
407062-35	94 RTM 1035	47
407062-36	94 RTM 1036	9.9

Analytical Technologies, Inc.

ATI I.D. # 407062-4

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: AQE	DATE SAMPLED	: 06/29/94
PROJECT #	: 5231	DATE RECEIVED	: 07/08/94
PROJECT NAME	: RED TOP RETORT SITE	DATE EXTRACTED	: 07/12/94
CLIENT I.D.	: 94 RTM 1004	DATE ANALYZED	: 07/13/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 2

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	1200
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	102	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 407062

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : SOIL
UNITS : %

ATI I.D. #	CLIENT I.D.	MOISTURE
407062-43	94 RTM 1037	43
407062-44	94 RTM 1038	30
407062-51	94 RTM 3001	48
407062-52	94 RTM 3002	17
407062-54	94 RTM 1039	49
407062-55	94 RTM 1040	56
407062-56	94 RTM 1041	45
407062-57	94 RTM 1042	52
407062-58	94 RTM 1043	54

Analytical Technologies, Inc.

ATI I.D. # 407062

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : SOIL
UNITS : %

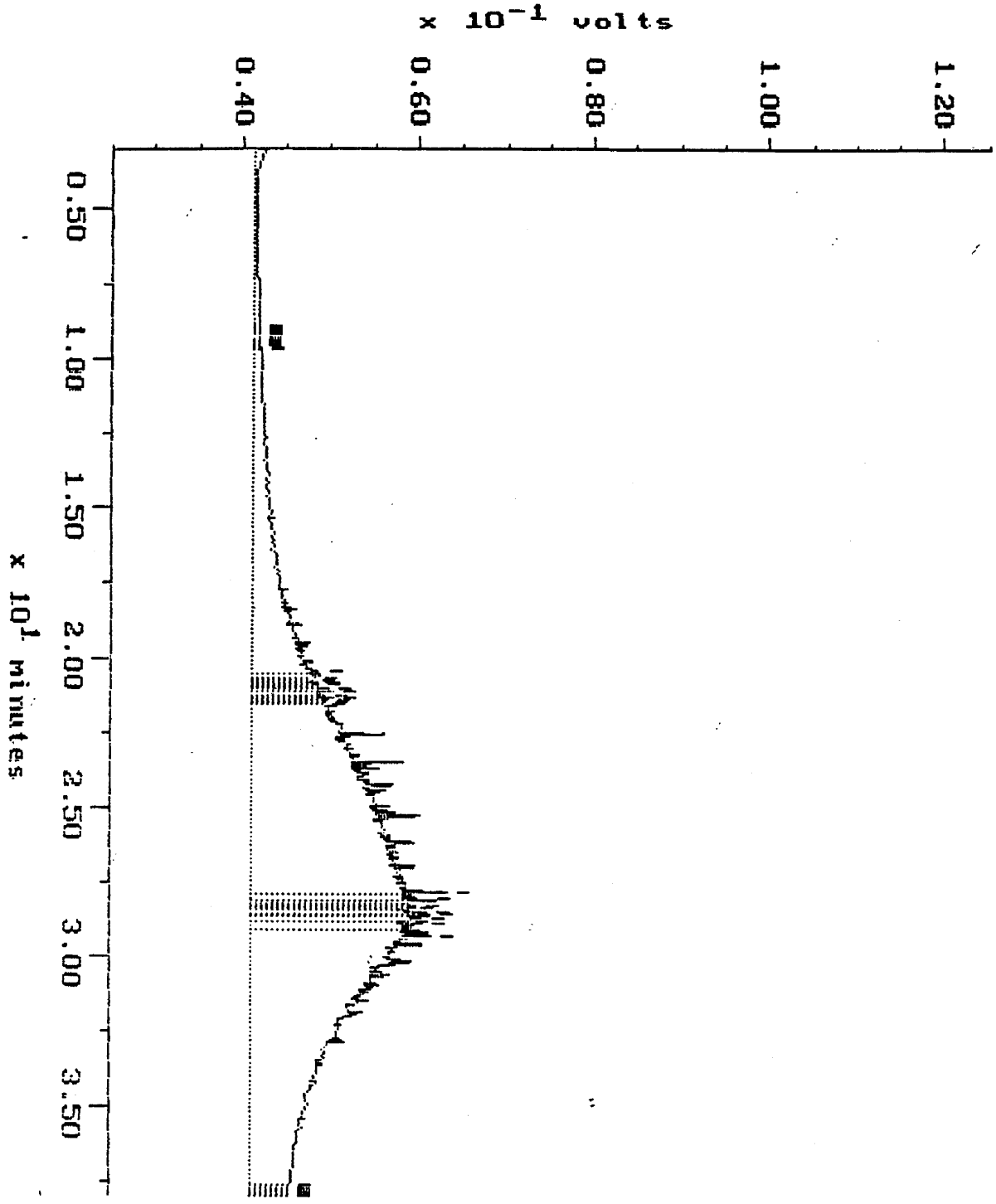
PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	407062-10	67	65	3	N/A	N/A	N/A
MOISTURE	407062-20	55	56	2	N/A	N/A	N/A
MOISTURE	407062-25	21	22	5	N/A	N/A	N/A
MOISTURE	407062-29	16	17	6	N/A	N/A	N/A
MOISTURE	407062-36	9.9	9.6	3	N/A	N/A	N/A

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

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

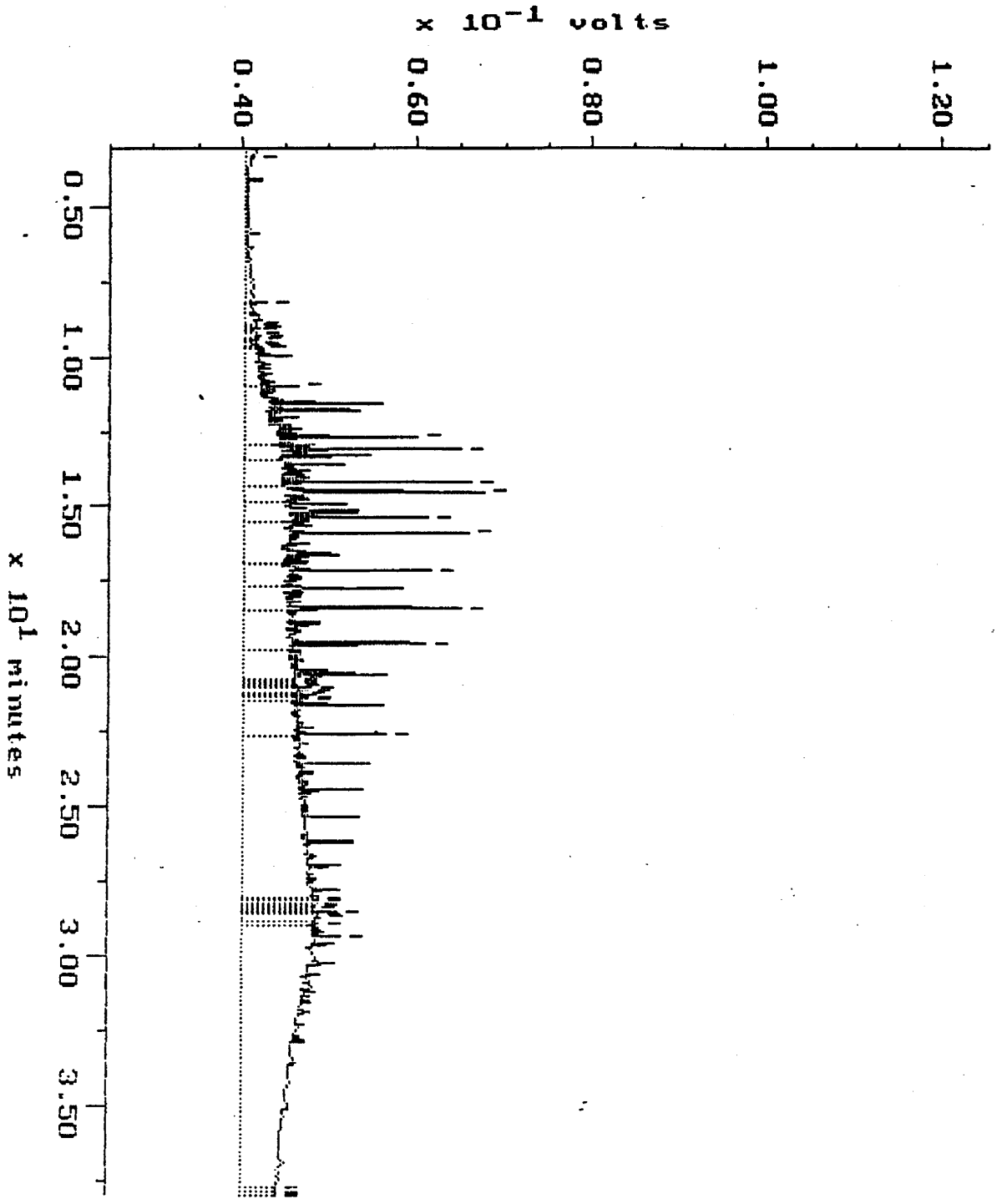
EPA 8015 Modified

Sample: 407062-50 DIL Channel: ERNIE Filename: R7138E07
Acquired: 14-JUL-94 10:30 Method: F:\BRO2\MAXDATA\ERNIE\FUEL0713 Operator: ATI
Dilution: 1 : 10.000
Comments: ATI: THE QUALITY TEAM



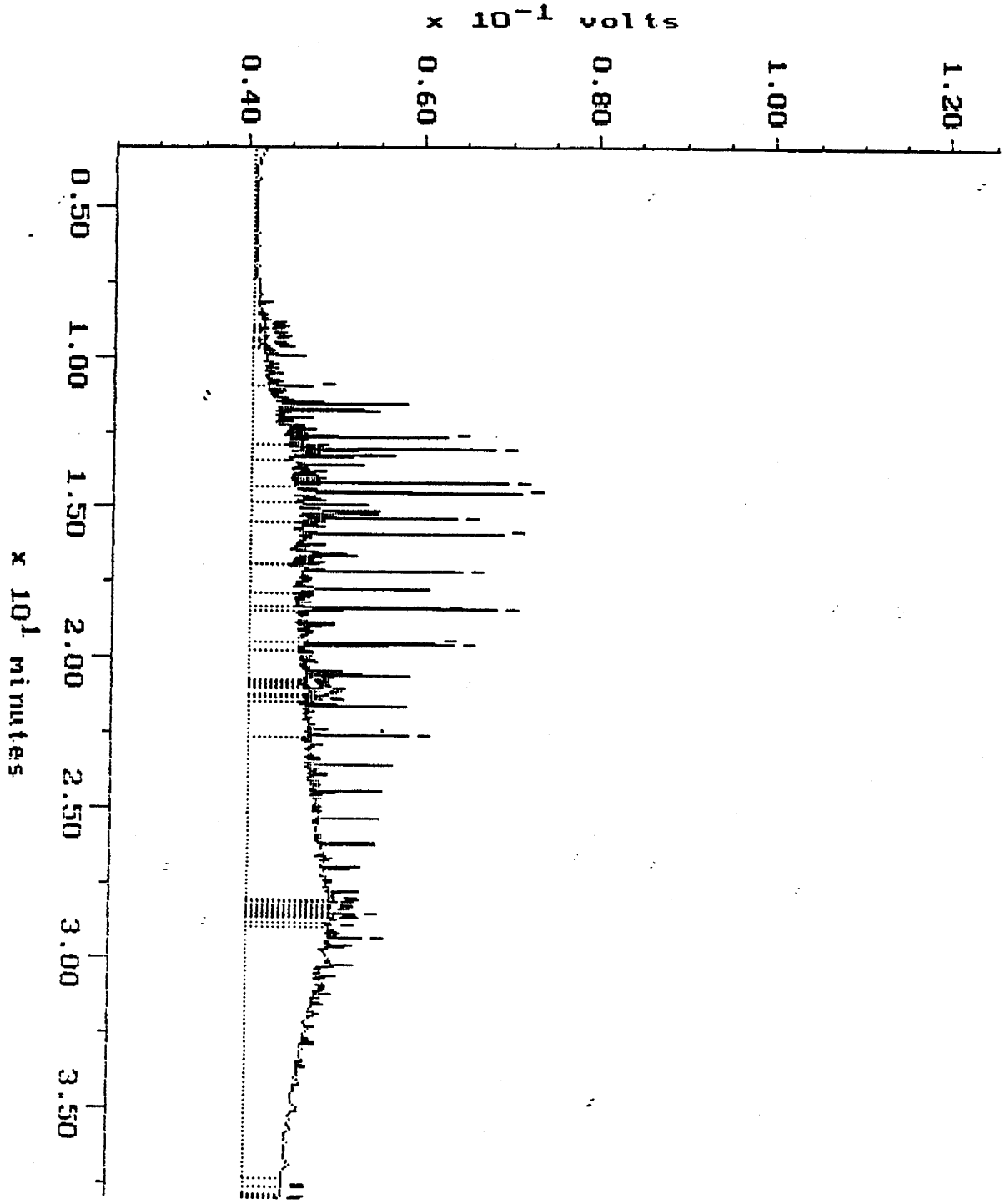
EPA 8015 Modified

Sample: 407062-59 DIL Channel: ERNIE Filename: B7138E13
Acquired: 14-JUL-94 15:12 Method: F:\BRO2\MAXDATA\ERNIE\FUEL0713 Operator: ATI
Dilution: 1 : 10.000
Comments: ATI: THE QUALITY TEAM



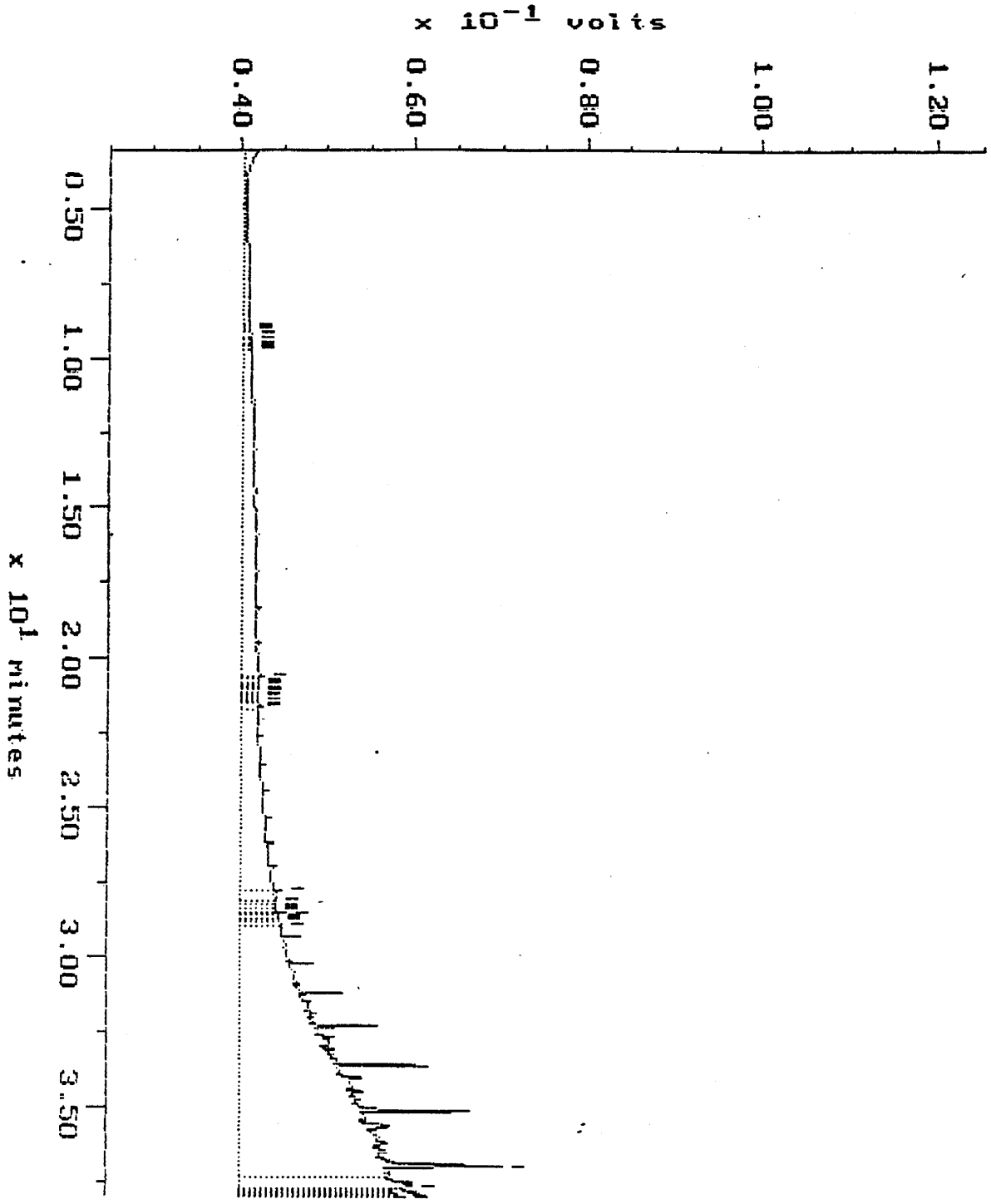
EPA 8015 Modified

Sample: 407062-60 DIL Channel: ERNIE Filename: R7138E11
Acquired: 14-JUL-94 13:38 Method: F:\BRO2\MAXDATA\ERNIE\FUEL0713 Operator: ATI
Dilution: 1 : 10.000
Comments: ATI: THE QUALITY TEAM

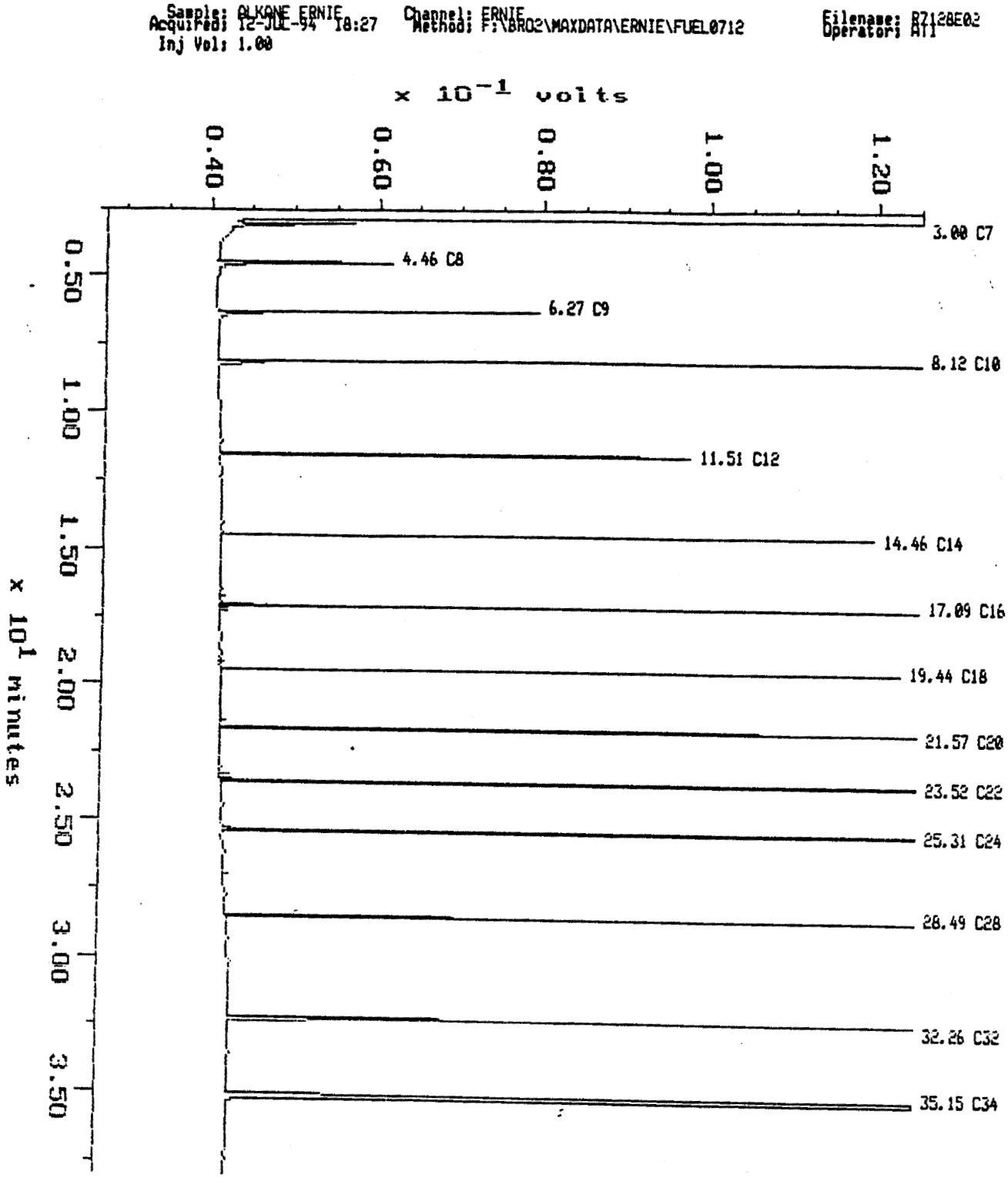


EPA 8015 Modified

Sample: 407062-61 Channel: ERNIE Filename: R7138E15
Acquired: 14-JUL-94 16:45 Method: F:\BRO2\MAXDATA\ERNIE\FUEL0713 Operator: ATI
Comments: ATI: THE QUALITY TEAM

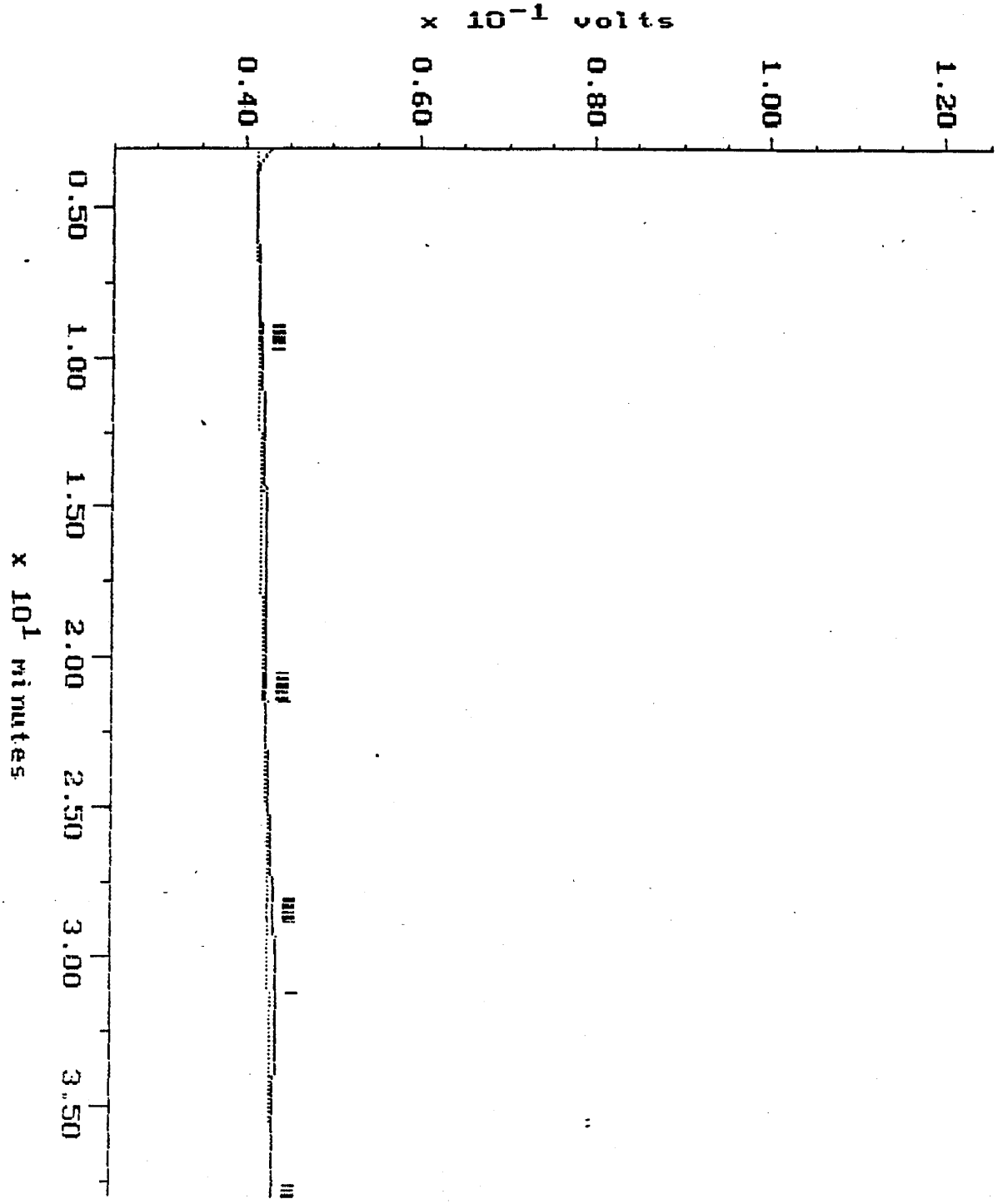


Alkane


Sample: ALKANE ERNIE
Acquired: 12-JUL-94 10:27
Inj Vol: 1.00
Channel: ERNIE
Method: F:\BRO2\MAXDATA\ERNIE\FUEL0712
Filename: R7128E02
Operator: ATI
x 10⁻¹ volts
0.40
0.60
0.80
1.00
1.20
0.50
1.00
1.50
2.00
2.50
3.00
3.50
x 10¹ minutes
3.00 C7
4.46 C8
6.27 C9
8.12 C10
11.51 C12
14.46 C14
17.09 C16
19.44 C18
21.57 C20
23.52 C22
25.31 C24
28.49 C28
32.26 C32
35.15 C34

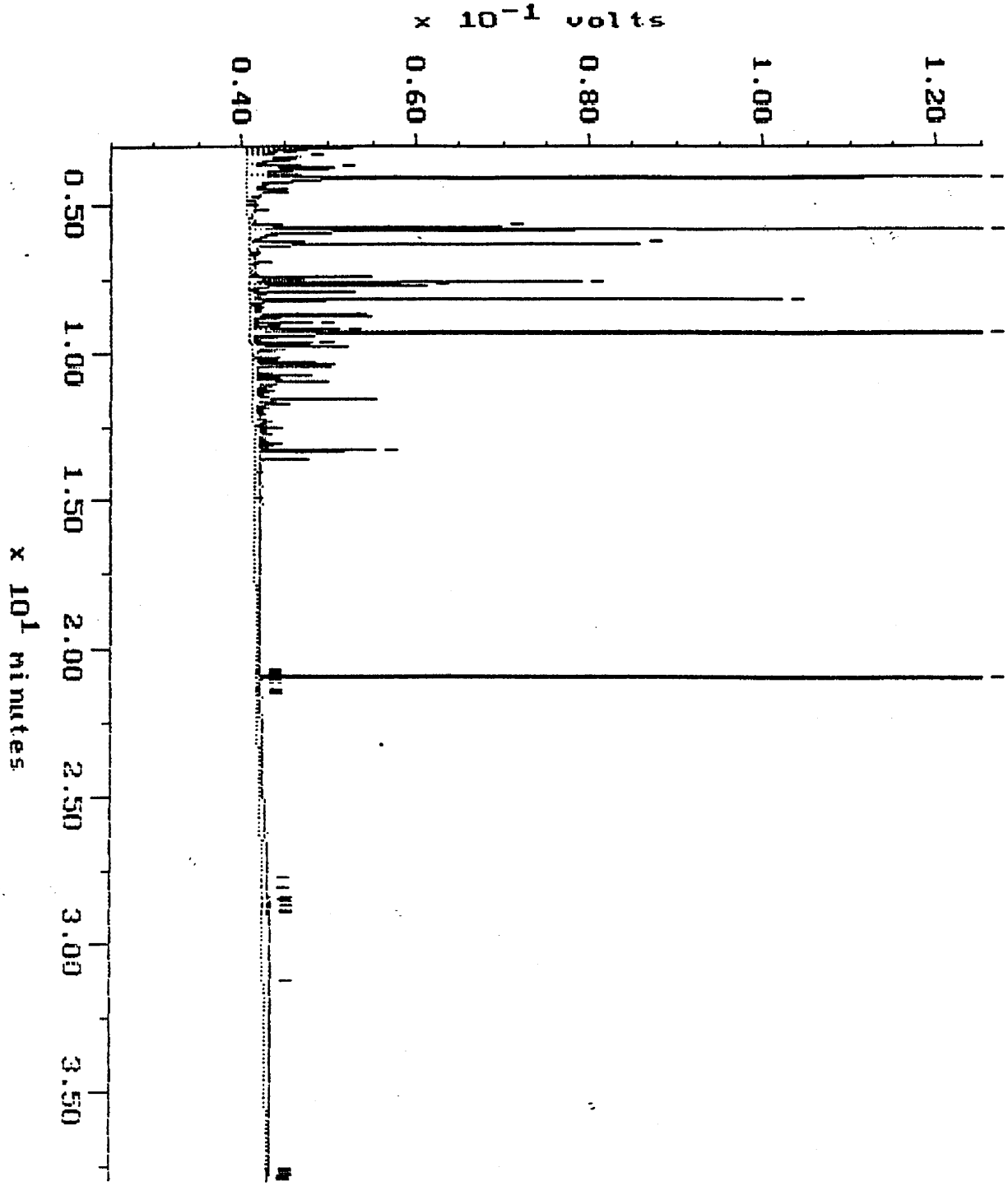
EPA 8015 Modified Blank

Sample: BLK 7-13 MECL2 Channel: ERNIE Filename: R7138E04
Acquired: 13-JUL-94 23:13 Method: F:\BRO2\MAXDATA\ERNIE\FUEL0713 Operator: ATI
Comments: ATI: THE QUALITY TEAM



CONTINUING CALIBRATION

Sample: GAS 400 Channel: ERNIE Filename: B7138E01
Acquired: 13-JUL-94 20:53 Method: F:\BRO2\MAXDATA\ERNIE\FUEL0713 Operator: ATI
Comments: ATI: THE QUALITY TEAM

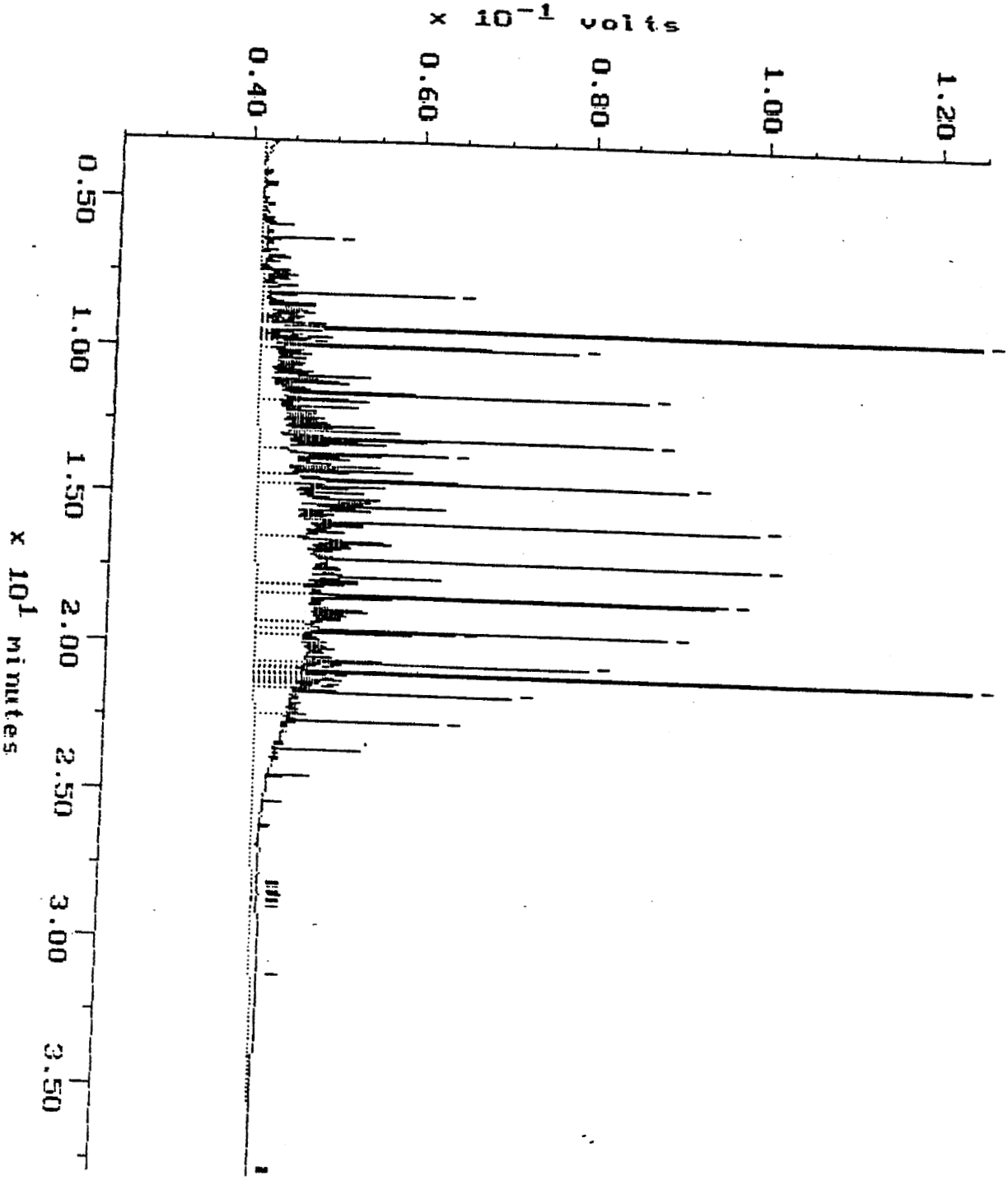


CONTINUING CALIBRATION

Sample: D 500
Acquired: 13-JUL-94 21:40
Comments: ATI: THE QUALITY TEAM

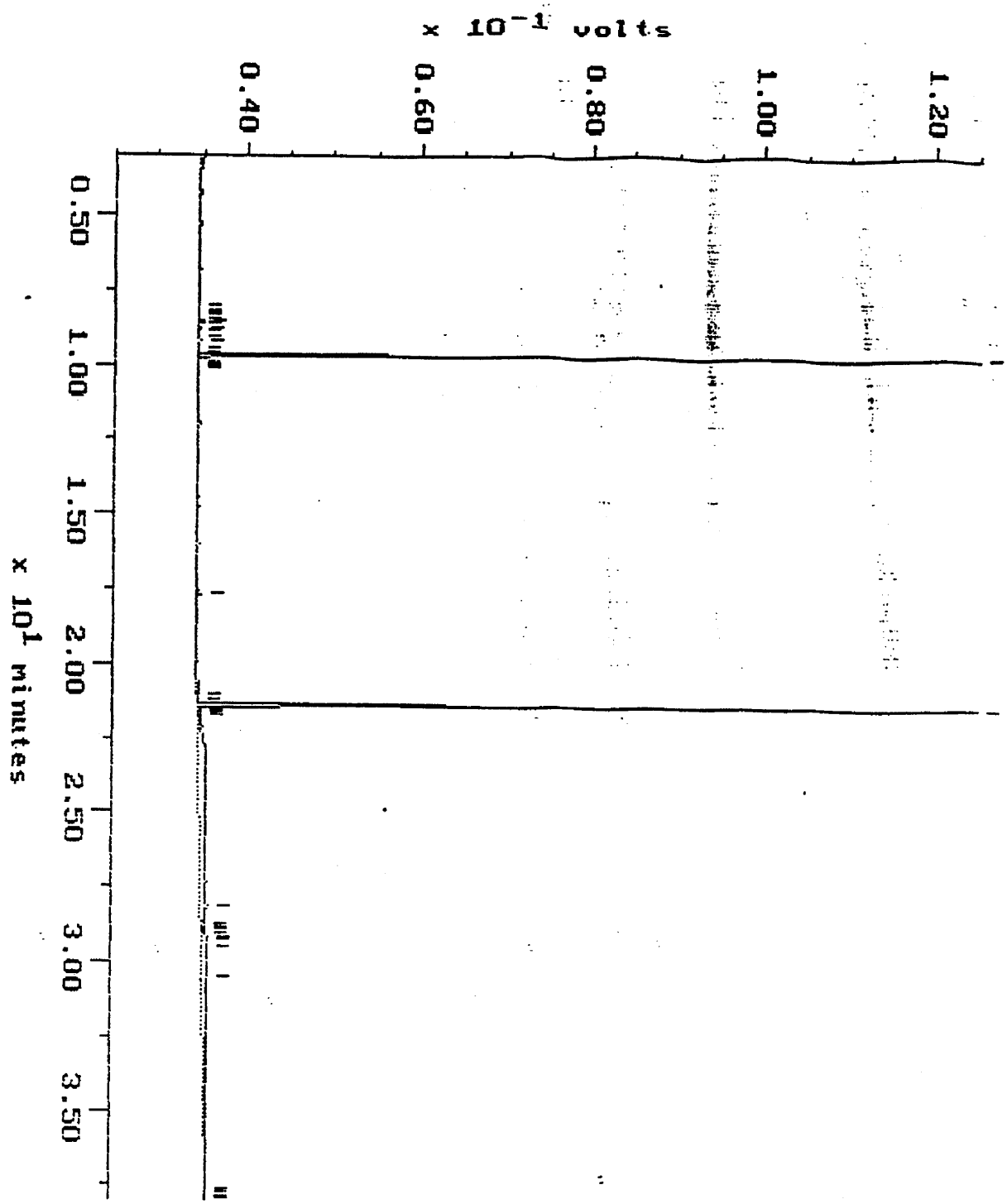
Channel: ERNIE
Method: F:\BR02\MAXDATA\ERNIE\FUEL0713

Filename: R7138E02
Operator: ATI

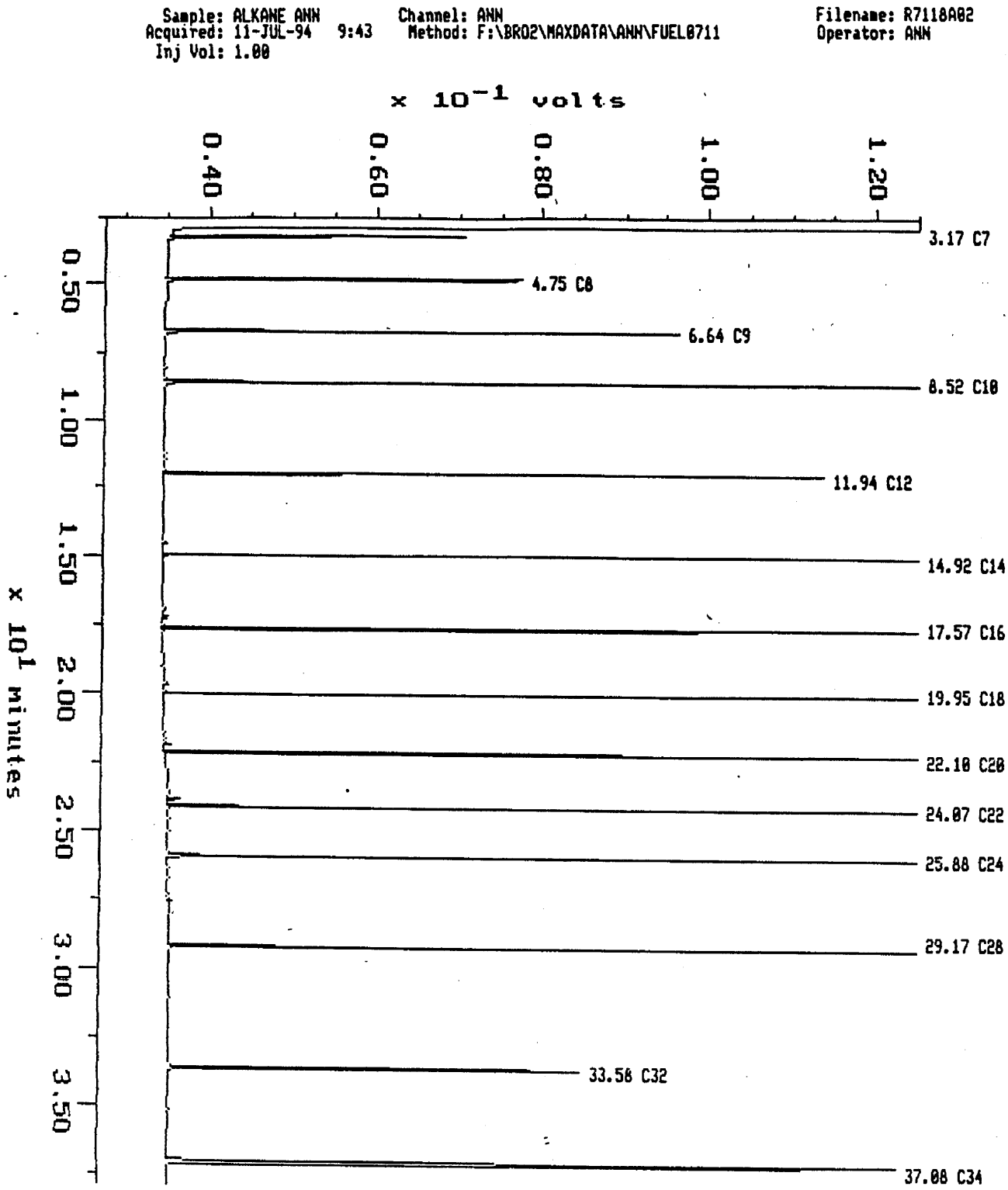


AK DEC DRO

Sample: 407062-66
Acquired: 12-JUL-94 2:38
Channel: ANN
Method: F:\BRD2\MAXDATA\ANN\FUEL0711
Filename: R7118A18
Operator: ANN



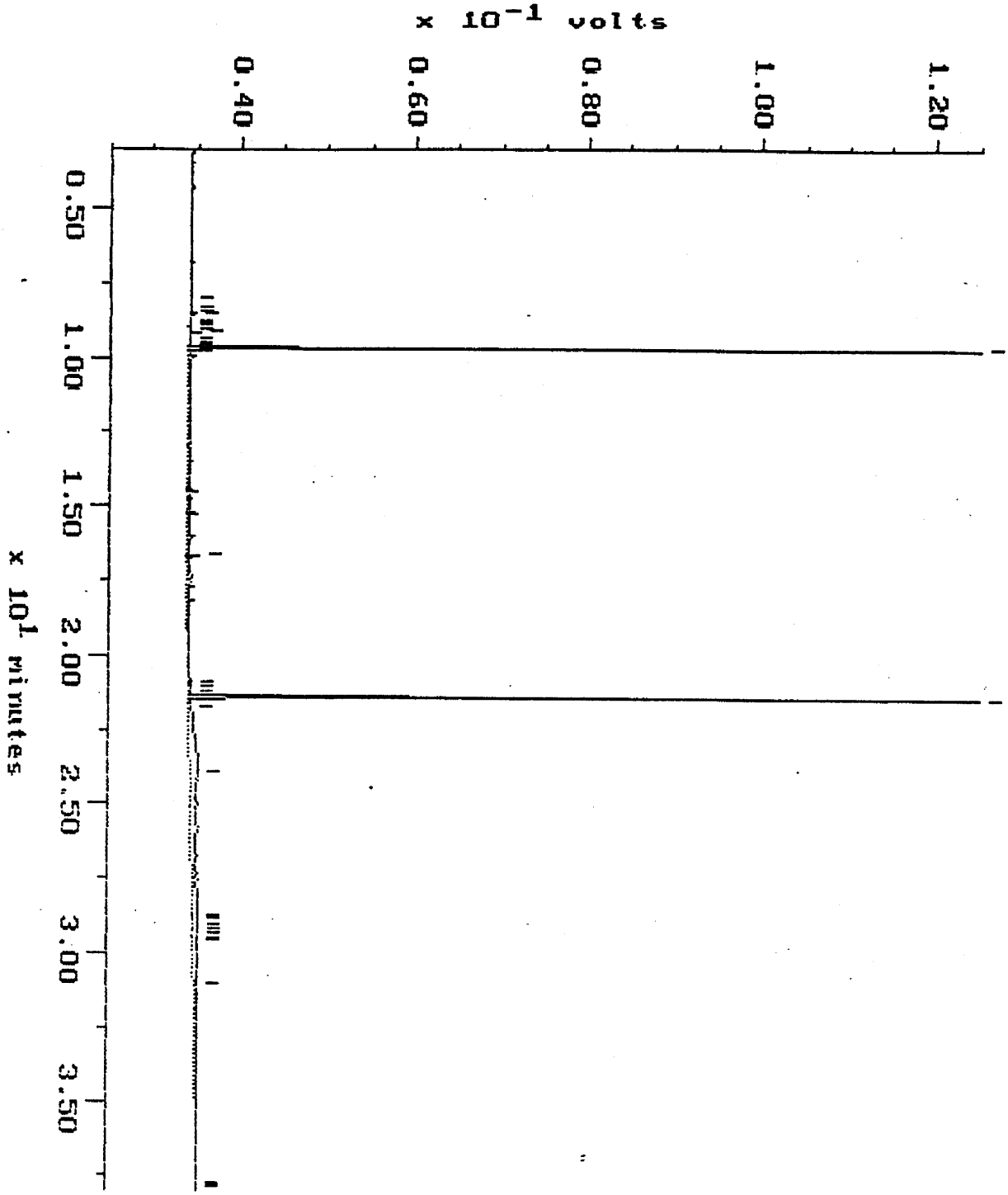
Alkane


Sample: ALKANE ANN
Acquired: 11-JUL-94 9:43
Inj Vol: 1.00
Channel: ANN
Method: F:\BRO2\MAXDATA\ANN\FUEL0711
Filename: R7118A02
Operator: ANN
x 10⁻¹ volts
0.40
0.60
0.80
1.00
1.20
0.50
1.00
1.50
2.00
2.50
3.00
3.50
x 10¹ minutes
3.17 C7
4.75 C8
6.64 C9
8.52 C10
11.94 C12
14.92 C14
17.57 C16
19.95 C18
22.10 C20
24.07 C22
25.88 C24
29.17 C28
33.56 C32
37.08 C34

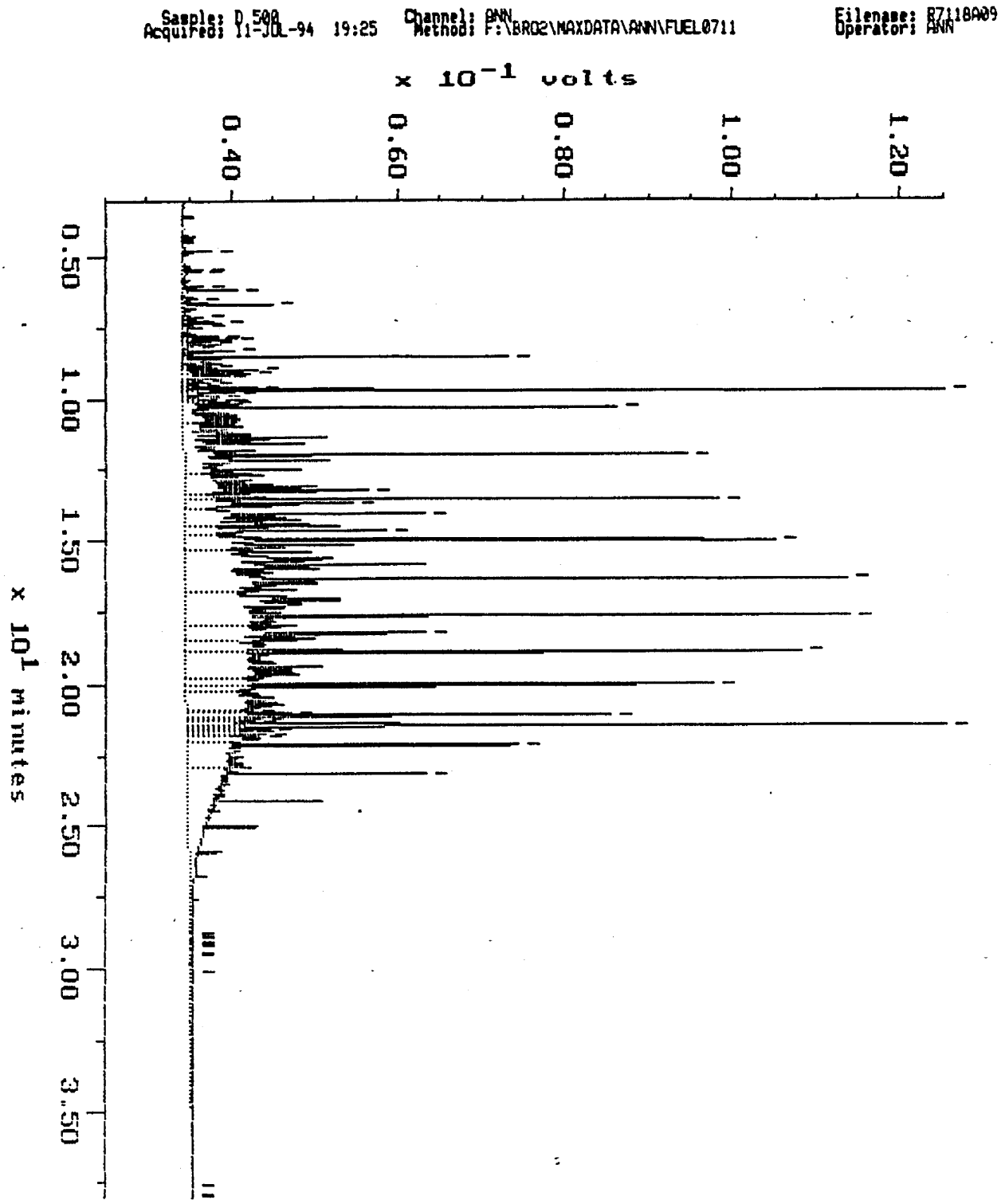
AK DEC DRO

Blank

Sample: WRB 7-11
Acquired: 11-JUL-94 20:14
Channel: ANN
Method: F:\BRD2\MAXDATA\ANN\FUEL0711
Filename: R7118A10
Operator: ANN



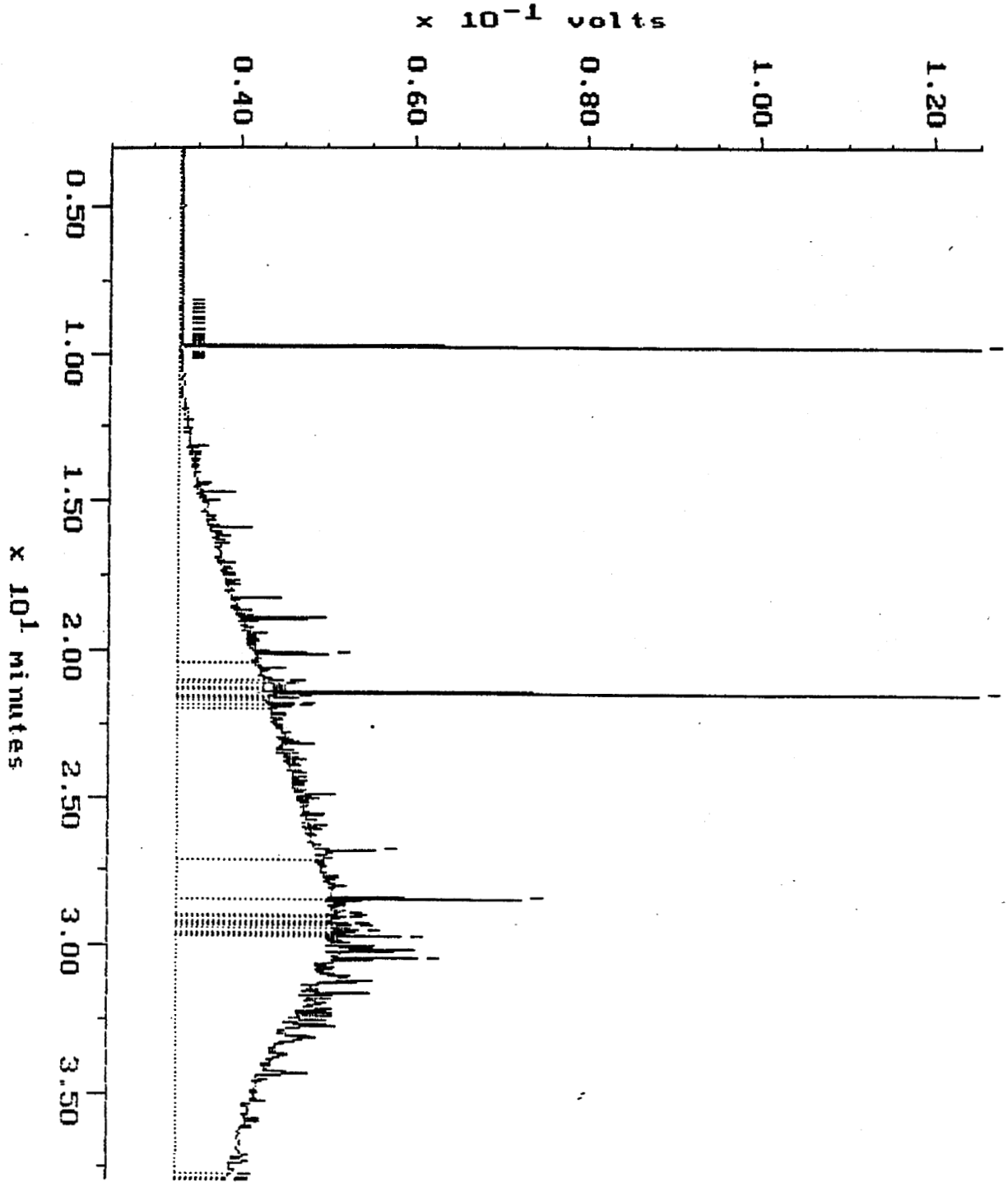
CONTINUING CALIBRATION



AK DEC DRO

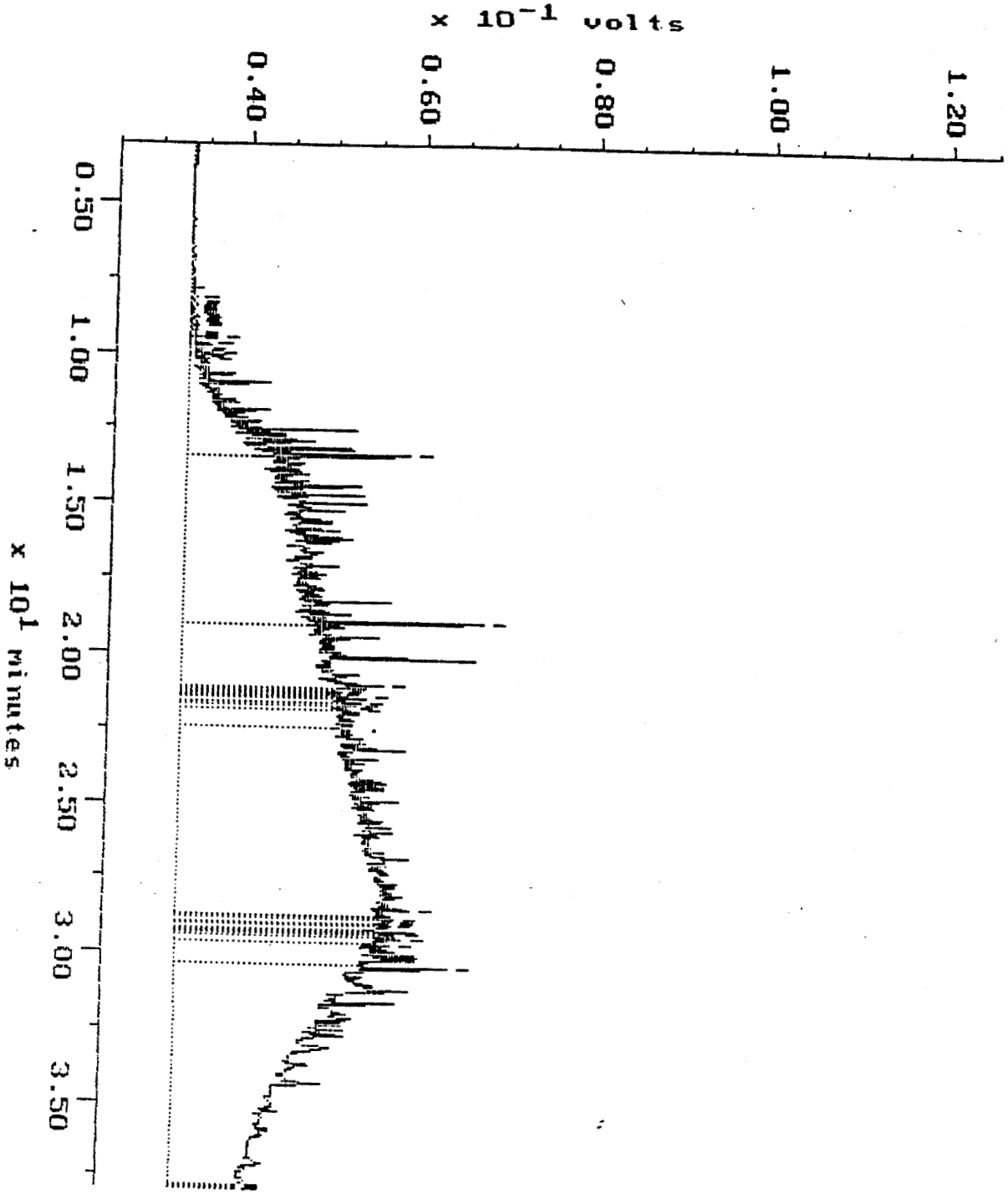
AK DEC DRO

Sample: 407062-4 DIL Channel: NANCY Filename: R7138N02
Acquired: 13-JUL-94 14:54 Method: F:\BRO2\MAXDATA\NANCY\FUEL0713 Operator: ATI
Dilution: 1 : 2.000
Comments: ATI RUSH FUELS:PROVIDERS OF EXCELLENCE AND QUALITY IN CLIENT SERVICE



AK DEC DRO

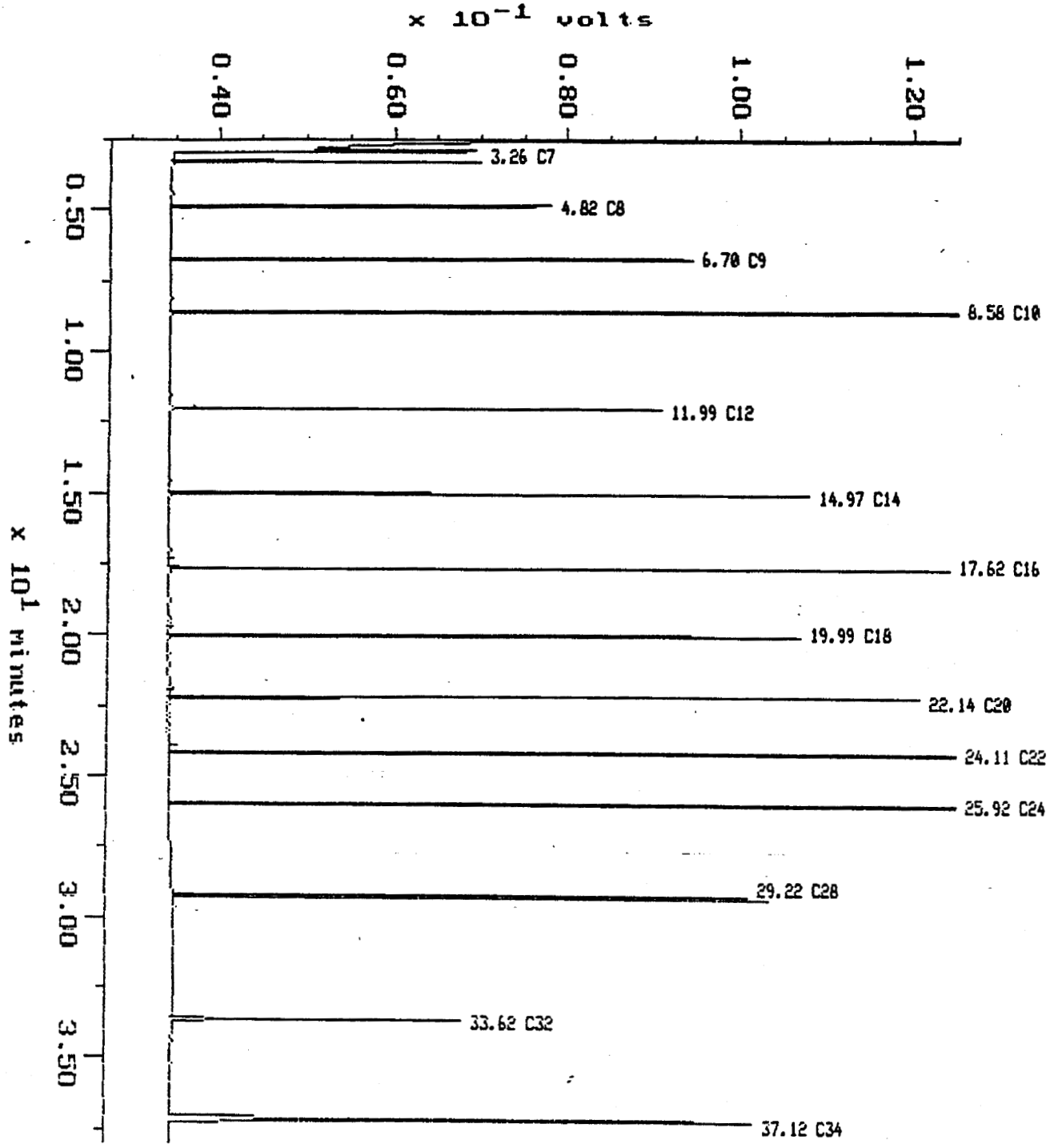
Sample: 407062-58 DIL
Acquired: 13-JUL-94 21:33
Dilution: 1 : 100.000
Channel: NANCY
Method: F:\BRO2\MAXDATA\NANCY\FUEL0713
Filename: R7138N10
Operator: ATI
Comments: ATI RUSH FUELS:PROVIDERS OF EXCELLENCE AND QUALITY IN CLIENT SERVICE



AK DEC DRO

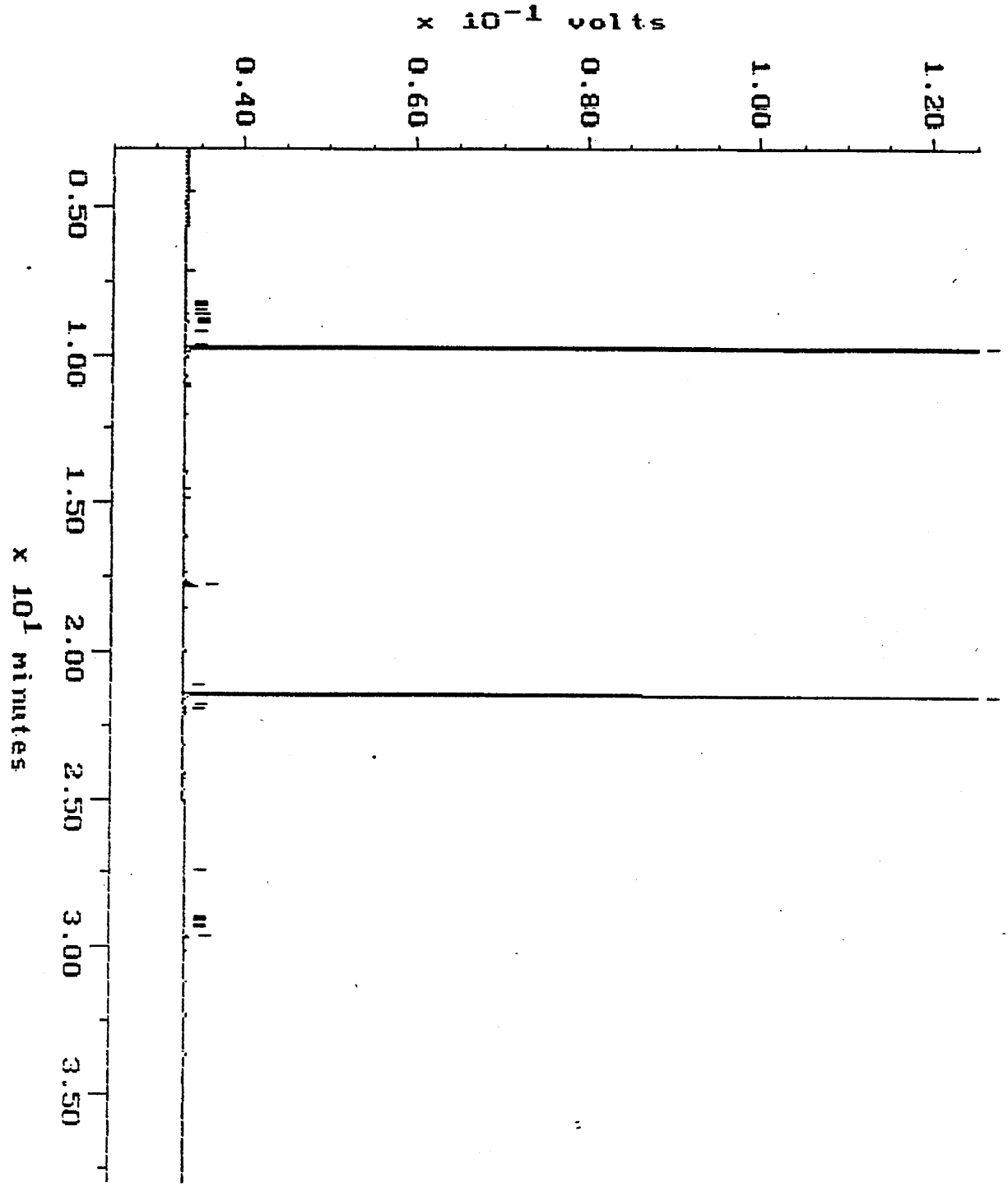
Alkane

Sample: ALKANE NANCY Channel: NANCY Filename: R7118N02
Acquired: 11-JUL-94 9:43 Method: F:\BRO2\MAXDATA\NANCY\FUEL0711 Operator: ATI
Inj Vol: 1.00



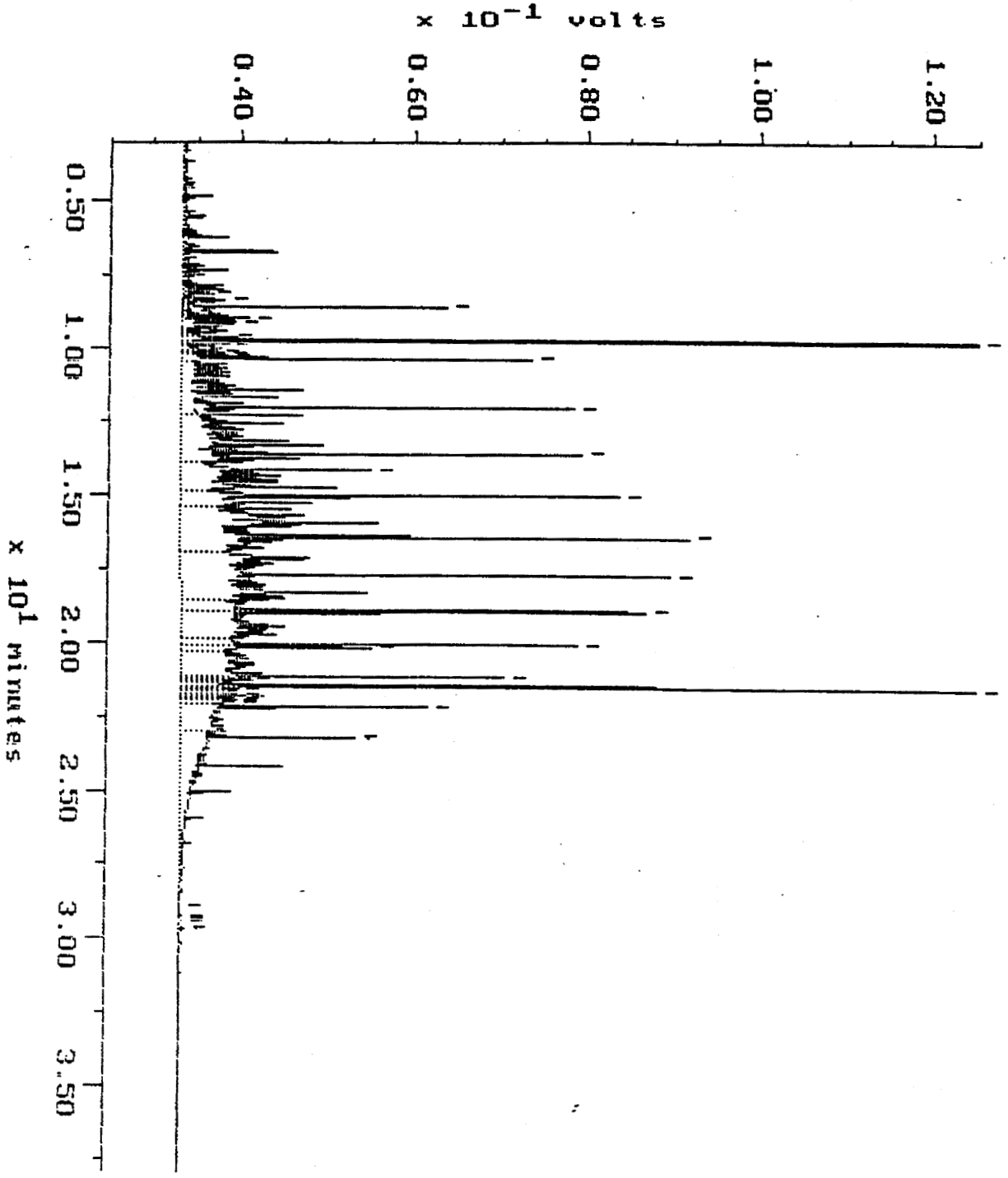
AK DEC DRO Blank

Sample: SRB 7-12 Channel: NANCY Filename: R7128N02
Acquired: 12-JUL-94 20:26 Method: F:\BRO2\MAXDATA\NANCY\FUEL0712 Operator: ATI
Comments: ATI RUSH FUELS:PROVIDERS OF EXCELLENCE AND QUALITY IN CLIENT SERVICE



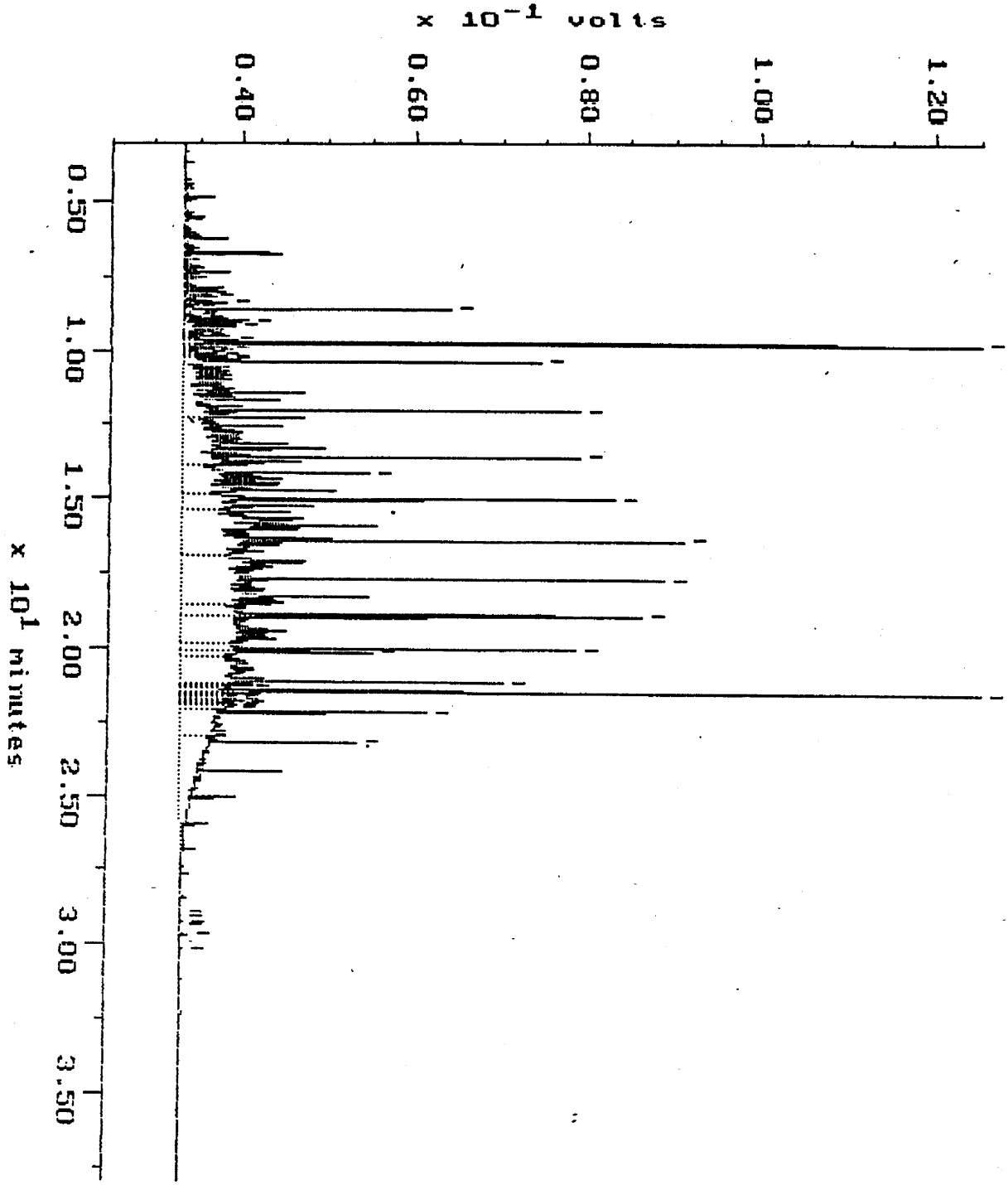
CONTINUING CALIBRATION

Sample: D 500 Channel: NANCY
Acquired: 12-JUL-94 19:37 Method: F:\ERD2\MAXDATA\NANCY\FUEL0712 Filename: R7128N01
Operator: ATI
Comments: ATI RUSH FUELS:PROVIDERS OF EXCELLENCE AND QUALITY IN CLIENT SERVICE



CONTINUING CALIBRATION

Sample: D-500 Channel: NANCY Filename: B7138N01
Acquired: 13-JUL-94 14:05 Method: F:\BRO2\MAXDATA\NANCY\FUEL0713 Operator: ATI
Comments: ATI RUSH FUELS:PROVIDERS OF EXCELLENCE AND QUALITY IN CLIENT SERVICE



407062 ATI-AK 407011

CHAIN OF CUSTODY RECORD

PROJ. No.	PROJECT NAME
5231	RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.) ELSMANN

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	7421 dry/wet Hg per client	7421 (TOTAL Hg)	1311 EXTRACT *	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO	HYDROCARBON I.D.	OIL BURN SPECS	LOCATION
1	6/28	1610	Ref. To	94RTM1001	1	•	•							soil
2	↓	1615	4°C	1002			•	•						
3	6/29	1020	(All)	1003			•	•						
4		1040		1004	3	•	•	•	•	•				
5		1120		1005										
6		1125		1006										
7		1210		1007										
8		1215		1008										
9		1230		1009										
10		1235		1010										
11		1300		1011										
12		1310		1012										
13		1325		1013										
14		1330		1014										
15		1335		1015										
16		1345		1016										
17		1700		1017										
18		1710		1018										soil

NOTES: * PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

SHIP TO (LABORATORY AND ADDRESS): ATI : ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES: Hg, POSSIBLE POL

RELIQUISHED BY: (SIG., DATE, TIME)	RECEIVED BY: (SIG., DATE, TIME)
1030 hrs. 7 July 94	→ B. McSorley 7/7/94
B. McSorley 7/7/94	→ Kim Sullo ATI AK 10:55 7/7/94
Kim Sullo ATI AK 18:00 7/7/94	→ 7.8.94 10:30
	→

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO: C.J. ELSMANN

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 1 OF 4

Rec'd good condit 15.5°C

407062

ATI-AK 407011

CHAIN OF CUSTODY RECORD

PROJ. No.	PROJECT NAME
5231	RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.) ELSMANN

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	7471 (TOTAL Hg)	7471 (TCLP Hg)	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO	HYDROCARBON I.D.	OIL BURN SPEC'S	6010 (SB)	7060 (Pb)	LOCATION
19	6/29	1725	REF. TO	94RTM1019	1	•	•								soil
20		1740	4°C	" 1020											
21		1805	(All)	" 1021											
22		1810		" 1022											
23		1825		" 1023											
24		1835		" 1024											
25		1030		" 1025											
26		1125		" 1026											
27		1045		" 1027											
28		1050		" 1028											
29		1230		" 1029											
30		1235		" 1030											
31		1250		" 1031											
32		1300		" 1032											
33		1310		" 1033						•	•				
34		1320		" 1034											
35		1325		" 1035											
36		1330		" 1036											soil

NOTES: * PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

SHIP TO (LABORATORY AND ADDRESS)

ATI : ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES:

Hg, POSSIBLE POL

RELIQUISHED BY: (SIG., DATE, TIME)	RECEIVED BY: (SIG., DATE, TIME)
1030 HRS. 7 July 94	B. McSwain 7/7/94
B. McSwain 7/7/94	Kim Sellso ATI-AK 7/7/94 10:55
Kim Sellso ATI-AK 7/7/94 18:00	7.8.94 10:30

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO:

C.J. ELSMANN

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 2 OF 4

Recd good condit 15.5°C

407062

ATI-AK 407011

CHAIN OF CUSTODY RECORD

PROJ. No.	PROJECT NAME
5231	RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.) ELSMANN

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	7471 Hg (CV) (TOTAL Hg)	1311 (TCLP) EXTRACT *	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO	HYDROCARBON I.D.	OIL BURN SPECS	7000 (Ag) (As) (Ba) (Cd) (Cr) (Pb) (Se)	418.1	LOCATION
37	6/29	1535	REF. TO	94RTM 6001	1	•									wipe
38		1540	4°C	11 6002	1	•									
39		1543	(All)	11 6003	1	•									
40		1550		11 6004	1	•									
41		1553		11 6005	1	•									
42		1555		11 6006	1	•									
43	6/30	1450		11 1037	1	•	•								soil
44		1555		11 1038	1	•	•				•	•			soil
45		1525		11 5001	1		•								H_2O
46		1635		11 5002	1		•								
47 ~~02~~		1800		11 5003	3			•				•			
48 ~~03~~		1800		11 5004	2			•							
49		1825		11 5005	1		•			4 3					H_2O
50 ~~04~~		1200		11 7001	6					•	•				product pls homogenize all jars
51		1907		11 3001	1	•	•								soil
52		1920		11 3002	1	•	•								soil per Bruce 7/
53		1600		11 2003	1		•								H_2O

NOTES: * PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

418.1 preserved with H_2SO_4

SHIP TO (LABORATORY AND ADDRESS): ATI - ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES: Hg, POSSIBLE POL

RELINQUISHED BY: (SIG., DATE, TIME)	RECEIVED BY (SIG., DATE, TIME)
1030 HRS. 7 July 94	→ B.M'Donar 7/7/94
B.M'Donar 7/7/94	→ Kim Sullo ATI-AK 10:55
Kim Sullo ATI-AK 7/7/94 18:00	→ 7.8.94 10:30
	→

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO: C.J. ELSMANN

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 3 OF 4

Redd good condit 15.5°C

407062

ATI-AK 407011

CHAIN OF CUSTODY RECORD

PROJ. No.: 5231

PROJECT NAME: RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.): ELSMANN [signature]

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	7471 [initials] 7/8/94 per client	~~7421~~ TOTAL Hg	~~1310~~/1311 EXTRACT *	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO	HYDROCARBON I.D.	OIL BURN SPEC'S	LOCATION
54	7/1	1128	Ref. to	94 RTM·1039	1	•	•							soil
55	↓	1130	4°C	〃 1040	1	•	•							|
56		1133	(All)	〃 1041	1	•	•							|
57		1135	↓	〃 1042	1	•	•							|
58 ~~04~~		1336		〃 1043	~~1~~ 3 7/8/94			•	•	•				soil
59 ~~06~~		1215		〃 7002	6 [initials]						•	•		Homogenize pro
60 ~~07~~		1230		〃 7003	6						•	•		Homogenize pr
61 ~~08~~		1245		〃 7004	6						•	•		product
62		1045		〃 8001	1	•								Rock
63		1045		〃 8002	1	•								Rock
64		1103		〃 2001	1		•							H_2O
65		1105		〃 2002	1		•					X		|
66 ~~05~~	↓	1340	↓	〃 2004	3			•	•	•				|

NOTES: *PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

SHIP TO (LABORATORY AND ADDRESS): ATI : ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES: Hg, POSSIBLE POL

RELIQUISHED BY: (SIG., DATE, TIME)		RECEIVED BY: (SIG., DATE, TIME)
[signature] 1030 Hrs. 7 July 94	→	B. McSaven 7/7/94
B. McSaven 7/7/94	→	Kim [signature] ATI-AK 7/7/94 10:55
Kim [signature] ATI-AK 7/7/94 18:00	→	[signature] 7·8·94
	→	

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO: C.J. ELSMANN

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 4 OF 4

Rec'd good condit 15.5°C

APPENDIX

SPECTRA Laboratories, Inc.

2221 Ross Way • Tacoma, WA 98421 • (206) 272-4850

July 19, 1994

Analytical Technologies, Inc.
560 Naches Ave. S.W., Suite #101
Renton WA 98055

Attn: Jeff Pettit

PO #42862
Sample ID: 407062-50
Sample Matrix: Oil
Date Sampled: 7-1-94
Date Received: 7-13-94
Spectra Project: S407-076
Spectra #8323

Total Metals, mg/Kg

Cadmium	(Cd)	<1
Chromium	(Cr)	<1
Lead	(Pb)	1
Arsenic	(As)	<1
PCB's, mg/Kg		<1
Flash, PMCC Deg. F		>210
Total Halogen (organic), mg/Kg		<1

Total Metals testing performed by EPA Method AES 0029
PCB's by EPA Method 8080
Flash Point P.M.C.C. by ASTM D-93
Total Halogen testing performed by EPA Method 9076 Modified

SPECTRA LABORATORIES, INC.

Steven G. Hibbs, Chemist

SPECTRA Laboratories, Inc.

2221 Ross Way • Tacoma, WA 98421 • (206) 272-4850

July 19, 1994

Analytical Technologies, Inc.
560 Naches Ave. S.W., Suite #101
Renton WA 98055

Attn: Jeff Pettit

PO #42862
Sample ID: 407062-59
Sample Matrix: Oil
Date Sampled: 7-1-94
Date Received: 7-13-94
Spectra Project: S407-076
Spectra #8321

Total Metals, mg/Kg

Cadmium	(Cd)	<1
Chromium	(Cr)	<1
Lead	(Pb)	12
Arsenic	(As)	<1
PCB's, mg/Kg		<1
Flash, PMCC Deg. F		>210
Total Halogen (organic), mg/Kg		<1

Total Metals testing performed by EPA Method AES 0029
PCB's by EPA Method 8080
Flash Point P.M.C.C. by ASTM D-93
Total Halogen testing performed by EPA Method 9076 Modified

SPECTRA LABORATORIES, INC.

Steven G. Hibbs, Chemist

SPECTRA Laboratories, Inc.

2221 Ross Way • Tacoma, WA 98421 • (206) 272-4850

July 19, 1994

Analytical Technologies, Inc.
560 Naches Ave. S.W., Suite #101
Renton WA 98055

Attn: Jeff Pettit

PO #42862
Sample ID: 407062-60
Sample Matrix: Oil
Date Sampled: 7-1-94
Date Received: 7-13-94
Spectra Project: S407-076
Spectra #8322

Total Metals, mg/Kg

Cadmium	(Cd)	<1
Chromium	(Cr)	<1
Lead	(Pb)	14
Arsenic	(As)	<1
PCB's, mg/Kg		<1
Flash, PMCC Deg. F		>210
Total Halogen (organic), mg/Kg		<1

Total Metals testing performed by EPA Method AES 0029
PCB's by EPA Method 8080
Flash Point P.M.C.C. by ASTM D-93
Total Halogen testing performed by EPA Method 9076 Modified

SPECTRA LABORATORIES, INC.

Steven G. Hibbs, Chemist

EASE FAX ANALYSIS COPY OF THIS TO PROJECT MANAGER

~~TO FORT COLLINS, CO~~ Spectra

Analytical Technologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

DATE 7/13/94 PAGE 1 OF 1

LABORATORY NUMBER:

PROJECT MANAGER: Jeff Pettit

ANALYTICAL TECHNOLOGIES, INC.
560 NACHES AVE SW, SUITE 101
RENTON, WA 98055
(206) 228-8335

SAMPLE DISPOSAL INSTRUCTIONS

☐ ATI Disposal ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8240 GC/MS Volatiles	8270 GC/MS BNA's	8310 HPLC PNA's	8080 Pest/PCB's	PCB's only	8150 Herbicides	TOC 9060	TOX 9020	BOD	COD	CYANIDE	MBAS	NITRATE/NITRITE	PP METALS	EPTOX METALS	TCLP METALS	TCLP 8240 (ZHE)	TCLP 8270	TCLP 8150	TCLP 8080	PHENOLS, total	% MOISTURE	Flashpoint	AS Pb Cd Cr			NUMBER OF CONTAINERS
407062 - 59	7/1/94		product						X			X					5	4	0	7	0	7	6	-	8321		X	X			1
- 60	7/1/94		1						X			X													8322		X	X			1
407062 - 50	6/30/94		1						X			X													8323		X	X			1

PROJECT INFORMATION	SAMPLE RECEIPT
ATI PROJ #: 407062	TOTAL NUMBER OF CONTAINERS
ATI PROJ NAME:	COC SEALS/INTACT? Y/N/NA
CLIENT PROJ: P.O.# 42862	RECEIVED GOOD COND./COLD
	RECEIVED VIA:

SPECIAL INSTRUCTIONS:

VERBALS DUE: 7/27

HARDCOPY DUE: 7/29

PRICE: _____ DISC: ____%

DIGESTION NEEDED?

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date: Jefferyl Pettit 7/13/94	Printed Name: Date:	Printed Name: Date:
Company: ATI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time: D Guirsch 4:15	Signature: Time:	Signature: Time:
Printed Name: Date: D Guirsch 7/13	Printed Name: Date:	Printed Name: Date:
Company: Spectra	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

SPECTRA Laboratories, Inc.

2221 Ross Way • Tacoma, WA 98421 • (206) 272-4850

July 27, 1994

Analytical Technologies, Inc.
560 Naches Ave. S.W., Suite #101
Renton WA 98055

Attn: Jeff Pettit

PO #43504
Sample ID: 407062-61
Sample Matrix: Oil
Date Sampled: 7-1-94
Date Received: 7-22-94
Spectra Project: S407-148
Spectra #8555
RUSH

Total Metals, mg/Kg

Cadmium	(Cd)	<1
Chromium	(Cr)	<1
Lead	(Pb)	<1
Arsenic	(As)	<1
PCB's, mg/Kg		<1
Flash, PMCC Deg. F		>210
Total Halogen, mg/Kg		<1

Total Metals testing performed by EPA Method AES 0029
PCB's by EPA Method 8080
Flash Point P.M.C.C. by ASTM D-93
Total Halogen testing performed by EPA Method 9076 Modified

SPECTRA LABORATORIES, INC.

Steven G. Hibbs, Chemist

EAS AX A SHEE PY C HIS TO PR

Spectra -

AnalyticalTechnologies,Inc.

560 Naches Avenue SW, Suite 101 Renton,WA 98055 (206)228-8335

Chain of Custody

LABORATORY NUMBER:

DATE 7/22/94 PAGE 1 OF 1

PROJECT MANAGER: Jeff Pettit

ANALYTICAL TECHNOLOGIES, INC.
560 NACHES AVE SW, SUITE 101
RENTON, WA 98055
(206) 228-8335

SAMPLE DISPOSAL INSTRUCTIONS

☐ ATI Disposal ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8240 GC/MS Volatiles	8270 GC/MS BNA's	8310 HPLC PNA's	8080 Pest/PCB's	PCB's only	8150 Herbicides	TOC 9060	TOX 9020	BOD	COD	CYANIDE	MBAS	NITRATE/NITRITE	PP METALS	EPTOX METALS	TCLP METALS	TCLP 8240 (ZHE)	TCLP 8270	TCLP 8150	TCLP 8080	PHENOLS, total	% MOISTURE	Flashpoint	As, Pb, Cr, Cd			NUMBER OF CONTAINERS
407062-61	7/1/94		Product						X			X															X	X			1

5407-148-8555

PROJECT INFORMATION	
ATI PROJ #:	407062
ATI PROJ NAME:	-
CLIENT PROJ:	- P.O.# 43504

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
COC SEALS/INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
RECEIVED VIA:	

SPECIAL INSTRUCTIONS:

VERBALS DUE: 7/28

HARDCOPY DUE: 8/1

PRICE: ______ DISC: ____%

DIGESTION NEEDED?

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time:	Signature: Time:	Signature: Time:
Printed Name: Jeff Pettit Date: 7/22/94	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: [signature] Time: 3:30	Signature: Time:	Signature: Time:
Printed Name: D Guirsch Date: 7/22	Printed Name: Date:	Printed Name: Date:
Company: Spectra	Company:	Analytical Technologies, Inc.

Analytical Technologies, Inc.
560 Naches Avenue, S.W., Suite 101, Renton, WA 98055 (206) 228-8335
Karen L. Mixon, Laboratory Manager

ATI I.D. # 407209

August 8, 1994

AQE
220 Center Court
Anchorage AK 99518-1621

Attention : Cliff Elsmann

Project Number : 5231

Project Name : Red Top Retort Site Assessment

Dear Mr. Elsmann:

On July 8, 1994, Analytical Technologies, Inc. (ATI), received 66 samples for analysis. The samples were analyzed with EPA methodology or equivalent methods. The results, sample cross reference, and quality control data are being issued under ATI accession number 407062.

Per client request, 12 samples were reaccessioned on July 22, 1994, for additional analyses. The report for the additionally requested analyses is enclosed.

Sincerely,

Jeffery L. Pettit
Senior Project Manager

JLP/hal/elf

Enclosure

Analytical Technologies, Inc.

ATI I.D. # 407209

SAMPLE CROSS REFERENCE SHEET

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
407209-1	94 RTM 1003	06/29/94	SOIL
407209-2	94 RTM 1004	06/29/94	SOIL
407209-3	94 RTM 1021	06/29/94	SOIL
407209-4	94 RTM 1022	06/29/94	SOIL
407209-5	94 RTM 1025	06/29/94	SOIL
407209-6	94 RTM 1026	06/29/94	SOIL
407209-7	94 RTM 1029	06/29/94	SOIL
407209-8	94 RTM 1031	06/29/94	SOIL
407209-9	94 RTM 1034	06/29/94	SOIL
407209-10	94 RTM 1038	06/30/94	SOIL
407209-11	94 RTM 8001	07/01/94	ROCK
407209-12	94 RTM 8002	07/01/94	ROCK

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	10
ROCK	2

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. # 407209

ANALYTICAL SCHEDULE

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

ANALYSIS	TECHNIQUE	REFERENCE	LAB
TCLP PREPARATION	-	EPA 1311	R
MERCURY	AA/COLD VAPOR	EPA 7470	R

R = ATI - Renton
SD = ATI - San Diego
PHX = ATI - Phoenix
PTL = ATI - Portland
ANC = ATI - Anchorage
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 407209

TCLP METALS ANALYSIS

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : LEACHATE

ELEMENT	DATE LEACHED	DATE DIGESTED	DATE ANALYZED
MERCURY (SAMPLES -1, -2)	07/22/94	07/25/94	07/26/94
MERCURY (SAMPLES -3, -4)	07/25/94	07/29/94	08/01/94
MERCURY (SAMPLES -5, -6)	07/25/94	08/02/94	08/03/94
MERCURY (SAMPLES -7, -8, -11, -12)	07/27/94	07/29/94	08/01/94
MERCURY (SAMPLES -9, -10)	07/27/94	08/02/94	08/03/94

Analytical Technologies, Inc.

ATI I.D. # 407209

TCLP METALS ANALYSIS
DATA SUMMARY

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : LEACHATE
UNITS : mg/L

ATI I.D. #	CLIENT I.D.	MERCURY
407209-1	94 RTM 1003	0.0027
407209-2	94 RTM 1004	<0.00022
407209-3	94 RTM 1021	<0.00020
407209-4	94 RTM 1022	<0.00020
407209-5	94 RTM 1025	0.021
407209-6	94 RTM 1026	0.023
407209-7	94 RTM 1029	0.0045
407209-8	94 RTM 1031	0.00037
407209-9	94 RTM 1034	0.17
407209-10	94 RTM 1038	<0.0020
407209-11	94 RTM 8001	<0.00020
407209-12	94 RTM 8002	<0.00020
METHOD BLANK	-	<0.00020
METHOD BLANK	-	<0.00020
METHOD BLANK	-	<0.00020
METHOD BLANK	-	<0.00020
TCLP BLANK	-	<0.00020
TCLP BLANK	-	<0.00020
TCLP BLANK	-	<0.00020

Analytical Technologies, Inc.

ATI I.D. # 407209

TCLP METALS ANALYSIS
QUALITY CONTROL DATA

CLIENT : AQE
PROJECT # : 5231
PROJECT NAME : RED TOP RETORT SITE

MATRIX : LEACHATE
UNITS : mg/L

ELEMENT	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MERCURY	BLANK	<0.000200	N/A	N/A	0.00120	0.00100	102
MERCURY	BLANK	<0.000200	N/A	N/A	0.00109	0.00100	109
MERCURY	BLANK	<0.000200	N/A	N/A	0.00104	0.00100	104
MERCURY	BLANK	<0.000200	N/A	N/A	0.00107	0.00100	107
MERCURY	407145-1	<0.000200	<0.000200	NC	0.00110	0.00100	110
MERCURY	407161-5	<0.000200	<0.000200	NC	0.00109	0.00100	109
MERCURY	407174-15	<0.000200	<0.000200	NC	0.00104	0.00100	104
MERCURY	820033-3	<0.000200	0.00029	NC	0.00107	0.00100	107

NC = Not calculable.

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

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

~~407062~~ . ATI-AK ~~407011~~ 407209

CHAIN OF CUSTODY RECORD

PROJ. No.	PROJECT NAME
5231	RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.) [signature] ELSMANN

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	~~7471~~ 7421 due 7/8/94 per client (TOTAL Hg)	~~7470~~ W/1311 EXTRACT *	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO	HYDROCARBON I.D.	OIL BURN SPEC'S	LOCATION
1-'	6/28	1610	REF. TO	94 RTM 1001	1	•	•						Soil
2-'	↓	1615	4° C	" 1002	↓	•	•						↓
-1 3-'	6/29	1020	(All)	" 1003 -1		•	•						
24 ~~4-~~'	↓	1040	↓	" 1004 -2	3	•	•	•	•	•			
5-'		1120		" 1005		↓	↓						
6-'		1125		" 1006									
7-'		1210		" 1007									
8-'		1215		" 1008									
9-'		1230		" 1009									
10-'		1235		" 1010									
11-'		1300		" 1011									
12-'		1310		" 1012									
13-'		1325		" 1013									
14-'		1330		" 1014									
15'		1335		" 1015									
16'		1345		" 1016									
17'		1700		" 1017									
18'	↓	1710	↓	" 1018	↓	↓	↓						Soil

NOTES: *PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

SHIP TO (LABORATORY AND ADDRESS): ATL : ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES: Hg, POSSIBLE POL

RELINQUISHED BY (SIG., DATE, TIME)	RECEIVED BY (SIG., DATE, TIME)
[signature] 7 July 94 1030 hrs.	B. McSowan 7/7/94
B. McSowan ~~7/8/94~~ 7/7/94	Kim Sutto ATI AK 7/7/94 10:55
Kim Sutto ATI AK 7/7/94 18:00	[signature] 7-8-94 10:30

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO: C.J. ELSMANN

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 1 OF 4

Rec'd good condit 15.5°C

TOTUBE 407209 ATI-AK ~~407044~~

CHAIN OF CUSTODY RECORD

PROJ. No.	PROJECT NAME
5231	RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.)

ELSMANN

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	7471 or 7470 as per client	7421* (TOTAL Hg)	7421* 1311 (EXTRACT.)*	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO HYDROCARBONS I.D.	OIL BURN SPEC'S	6010 (SB)	7060 (AS)	LOCATION
19	6/29	1725	REF. TO	94RTM1019	1	•	•								Soil
20		1740	4°C	" 1020											
21	-3	1805	(ALL)	" 1021											
22	-4	1810		" 1022											
23		1825		" 1023											
24		1835		" 1024											
25	-5	1080		" 1025											
26	-6	1125		" 1026											
27		1045		" 1027											
28		1050		" 1028											
29	-7	1230		" 1029											
30		1235		" 1030											
31	-8	1250		" 1031											
32		1300		" 1032											
33		1310		" 1033							•	•			
34	-9	1320		" 1034											
35		1325		" 1035											
36		1330		" 1036											Soil

NOTES: * PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

SHIP TO (LABORATORY AND ADDRESS)

ATI : ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES:

Hg, POSSIBLE POL

RELIQUISHED BY: (SIG., DATE, TIME)	RECEIVED BY: (SIG., DATE, TIME)
1030 HRS. 7 July 94	B. McSwain 7/7/94
B. McSwain 7/7/94	Kim Sellso ATI-AK 7/7/94 10:55
Kim Sellso ATI-AK 7/7/94 18:00	7.8.94 10:30

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO:

C.J. ELSMANN

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 2 OF 4

Recd good condit 15.5°C

~~401060~~ 401209 √ ATI-AK 407011

CHAIN OF CUSTODY RECORD

PROJ. No.: 5231

PROJECT NAME: RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.): ELSMANN [signature]

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	7471 (for 7 day key)	7471 TOTAL Hg	7470W/1311 EXTRACT *	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO	HYDROCARBON I.D.	OIL BURN SPEC'S	6010 (Sb)	7060 (As)	418.1	LOCATION
37	6/29	1535	Ref. To	94 RTM 6001	1	•											wipe
38	↓	1840	4°C	11 6002	1	•											↓
39	↓	1543	(All)	11 6003	1	•											↓
40	↓	1550	↓	11 6004	1	•											↓
41	↓	1553	↓	11 6005	1	•											↓
42	↓	1555	↓	11 6006	1	•											↓
43	6/30	1450	↓	11 1037	1	•	•										soil
44	-10	1555	↓	11 1038	1	•	•						•	•			soil
45	↓	1525	↓	11 5001	1		•										H_2O
46	↓	1635	↓	11 5002	1		•										↓
47 ~~02~~	↓	1800	↓	11 5003	3				•						•		↓
48 ~~03~~	↓	1800	↓	11 5004	2				•								↓
49	↓	1825	↓	11 5005	1		•										H_2O
50 ~~04~~	↓	1200	↓	11 7001	6						• (4)	• (2)					product pls homogenize
51	↓	1907	↓	11 3001	1	•	•										soil
52	↓	1920	↓	11 3002	1	•	•										soil per Bn
53	↓	1600	↓	11 2003	1		•										H_2O

NOTES: *PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

418.1 preserved with H_2SO_4

SHIP TO (LABORATORY AND ADDRESS): ATI : ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES: Hg, POSSIBLE POL

RELINQUISHED BY: (SIG., DATE, TIME)	RECEIVED BY: (SIG., DATE, TIME)
[signature] 7 July 94 1030 HRS.	B. McGowan 7/7/94
B. McGowan 7/7/94	Kim Sutto ATI-AK 7/7/94 10:55
Kim Sutto ATI-AK 7/7/94 18:00	[signature] 7·8·94 10:30

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO: C.J. ELSMANN

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 3 OF 4

Recd good condit 15.5°C

7U1U6L 4012C09 ATI-AK 407011

CHAIN OF CUSTODY RECORD

PROJ. No. 5231

PROJECT NAME: RED TOP RETORT SITE ASSESSMENT

SAMPLER (SIG.): ELSMANN

	DATE 94	TIME	PRES.	SAMPLE No.	NUMBER OF CONTAINERS	7471 Hg (CVAA)	TOTAL Hg	1311/1310 EXTRACT *	8100 ADEC MOD. DRO	8020/602 BTEX	8010 HVO	HYDROCARBON I.D.	OIL BURN SPECS	LOCATION
54	7/1	1128	REF. TO	94RTM1039	1	•	•							soil
55		1130	4°C	1040	1	•	•							
56		1133	(ALL)	1041	1	•	•							
57		1135		1042	1	•	•							
58		1336		1043	13	7/8/94	•	•	•					soil
59		1215		7002	6	mm					•	•		Homogenize per
60		1230		7003	6						•	•		Homogenize
61		1245		7004	6						•	•		product
62	7/11	1045		8001	1	•								Rock
63	7/12	1045		8002	1	•								Rock
64	~~7/11~~	1103		2001	1	•								H_2O
65		1105		2002	1	•					X			
66	~~05~~	1340		2004	3		•	•	•					

NOTES: * PLEASE ARCHIVE 1/2 (4 OZ.) OF SOIL SAMPLES SLATED FOR 7421, AS THESE SAMPLES MAY ALSO UNDERGO A 1311 (TCLP) EXTRACTION, PENDING RESULTS OF TOTAL Hg ANALYSIS

WATER SAMPLES ARE PRESERVED WITH HNO3 (POLY') AND HCL (GLASS) EXCEPT FOR 8100 ANALYSIS

SHIP TO (LABORATORY AND ADDRESS): ATI : ANCHORAGE, ALASKA

HAZARDS ASSOCIATED WITH SAMPLES: Hg, POSSIBLE POL

TAT AND DATA LEVEL: STANDARD TAT, LEVEL II DATA

DELIVER REPORTS TO: C.J. ELSMANN

RELIQUISHED BY: (SIG., DATE, TIME)	RECEIVED BY: (SIG., DATE, TIME)
1030HRS. 7 JULY 94	B. M Dawes 7/7/94
B. M Dawes 7/8/94	Kim Sund ATI-AK 7/7/94 10:55
Kim Sund ATI-AK 7/7/94 18:00	7.8.94

AQE, INC.
220 CENTER COURT
ANCHORAGE, AK 99518
(907) 563-0050, 563-0085 FAX

SHEET 4 OF 4

Recd good condit 15.5°C