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CONTAMINATION ASSESSMENT REPORT DEFENSE FUEL SUPPLY POINT (DFSP) HANAHAN CNC CHARLESTON SC

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CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPPLY POINT (DFSP) HANAHAN
HANAHAN, SOUTH CAROLINA

NAVY CLEAN - DISTRICT I
UNIT IDENTIFICATION CODE (UIC): HZZZ45
CONTRACT NO. N62467-89-D-0317/010

JANUARY 1995

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29419-9010

PRINTED ON RECYCLED PAPER

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT (DFSP) HANAHAN
HANAHAN, SOUTH CAROLINA

Unit Identification Code (UIC): HZZZ45

Contract No. N62467-89-D-0317/010

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January 1995

FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 established a national regulatory program for managing underground storage tanks (USTs) containing hazardous materials, primarily petroleum products. Hazardous wastes stored in USTs were already regulated under the Resource Conservation and Recovery Act (RCRA) of 1976, which was also an amendment to SWDA. Subtitle I requires that the U.S. Environmental Protection Agency (USEPA) promulgate UST regulations. The program was designed to be administered by the individual States, who were allowed to develop more stringent standards, but not less stringent standards. Local governments were permitted to establish regulatory programs and standards that are more stringent, but not less stringent than either State or Federal regulations. The USEPA UST regulations are found in the Code of Federal Regulations, Title 40, Part 280 (Title 40 CFR 280), *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*, and Title 40 CFR 281, *Approval of State Underground Storage Tank Programs*. Title 40 CFR 280 was revised and published on September 23, 1988, and became effective December 22, 1988.

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of the South Carolina Department of Health and Environmental Control regulations pertaining to petroleum contamination.

Questions regarding this report should be addressed to the Commanding Officer, Defense Fuel Supply Point Hanahan, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 1841, at (803) 743-0607.

EXECUTIVE SUMMARY

ABB Environmental Services, Inc. (ABB-ES), was contracted (No. N62467-89-D-0317, Contract Task Order [CTO] No. 0010) by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) at the Defense Fuel Supply Point (DFSP) in Hanahan, Berkeley County, South Carolina (hereafter referred to as the "site"). A Corrective Action Plan (CAP) is to be submitted to the South Carolina Department of Health and Environmental Control (SCDHEC), Ground-Water Protection Division, in accordance with Section 280, Subpart F, of Regulation R. 61-92.

The objective of the CA was to assess the horizontal and vertical extent of groundwater contamination at the site and, if appropriate, at adjacent properties. Contaminated soil at the site had been delineated in previous studies conducted by the U.S. Geological Survey (USGS; Robertson and others, 1993) and McClelland Engineers (1987a: 1987b). The CA described in this report was conducted in accordance with ABB-ES' SCDHEC-approved Contamination Assessment Plan, or subsequent modifications thereof, which was submitted to SOUTHNAVFAC-ENGCOM in March 1992.

This CA addresses the DFSP and adjacent properties as required, with the exception of the north boundary and the adjacent Gold Cup Springs subdivision. The areas not included in the CA have been assessed in previous studies and continue to be monitored by the USGS. However, USGS groundwater quality data from these areas have been incorporated into this report to give a more complete picture of the contaminant plumes. The CA focused on known areas of petroleum-contaminated soil determined by the USGS, namely in the area of the tank truck loading stand, the railcar loading stand, the southeast side of Tank 2 and extending along the eastern side of Tank 5, southeast of Tank 6, and the properties west of the site.

Due diligence was exercised to not duplicate previous work, but to incorporate the data where needed. The extent of contaminated soil and the site geology and hydrogeology were not reassessed during this CA; however, the results of previous investigators have been summarized in this report.

The purpose of this Contamination Assessment Report (CAR) is to provide SCDHEC the first part of the CAP by documenting the results of this CA and summarizing previous investigations performed at the site.

The results of this CA indicate there are three major petroleum contaminant plumes at the site. All three plumes have migrated laterally offsite in the northwesterly direction of groundwater flow, and downward to the top of the Cooper Formation. The western plume has commingled with the southwest corner of the Tank 1 plume, but the Tank 1 plume is separate from the eastern plume. Two areas of free product, located north of Tank 1 and Tank 3 near the site boundary, have been delineated by the USGS. The area between Tanks 4, 5, and 7, and south and east of Tank 7 appears to be free of petroleum contamination.

Each of the three plumes has two or more areas of high BTEX concentrations and, with the exception of the offsite part of the Tank 1 plume, are the suspected contamination source areas. The east and west plumes are possibly commingled plumes from two, or three, onsite sources. The west plume also appears to have two offsite sources. The separate offsite area of high BTEX concentrations in

the Tank 1 plume is suspected to be the result of pumping from extraction wells EW-5 through EW-8. The six suspected onsite sources are listed below:

- Tank 1,
- the area around Tank 3,
- the tank truck loading stand,
- the pump station for the tank truck loading stand,
- the main pump station near the railcar loading stand, and
- the removed heating oil UST for the office building.

Two chemically distinguishable and unrelated petroleum contaminant plumes were identified on the adjacent properties west of the site. The smaller, southern plume appears to be associated with a 1000-gallon underground oil-water separator behind the Gregory Poole building. The larger, northern plume appears to be associated with the USTs of the former 7-11 convenience store and gas station that is now Jimmy's Place (Ground-Water Protection Division [GWPD] No. 01174). It is also possible that the UST at Hanahan Fuel Express (GWPD No. 11801) may have contributed to the plume.

Pumping from the extraction wells appears to be effective in capturing and remediating contaminated groundwater at the site. Contaminated groundwater outside the capture zone, however, is migrating downgradient and away from the site. ABB-ES recommends that the CAP address remediation of contaminated soil at the site and contaminated groundwater outside the effective capture zone of the existing extraction well system.

The CAP, a conceptual plan for site remediation, will be submitted to SCDHEC by IT Corporation subsequent to this CAR.

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AST	aboveground storage tank
bls	below land surface
BOD	biochemical oxygen demand
BTEX	benzene, toluene, ethylbenzene, and xylenes
CA	contamination assessment
CAP	Corrective Action Plan
CAR	Contamination Assessment Report
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CO_2	carbon dioxide
CTO	Contract Task Order
DFSC	Defense Fuel Supply Center
DFSP	Defense Fuel Supply Point
DLA	Defense Logistics Agency
DNAPL	dense non-aqueous phase liquid
ft/day	feet per day
ft/ft	feet per foot
ft/sec	feet per second
ft^2/day	square feet per day
GC	gas chromatograph
gpm	gallons per minute
GWPD	Ground-Water Protection Division
HSWA	Hazardous and Solid Waste Amendments
(ICF-Clement)	ICF-Clement Associates
ID	inner diameter
lbs	pounds
Missimer	Missimer and Associates, Inc.
μ/ℓ	micrograms per liter
msl	mean sea level
MTBE	methyl tert-butyl ether
MCL	maximum contaminant level
NAVD	North American Vertical Datum
O&M	operation and maintenance
OVA	organic vapor analyzer
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride

RCRA	Resource Conservation and Recovery Act
RMT	RMT, Inc.
SAIC	Science Applications International Corporation
SCDHEC	South Carolina Department of Health and Environmental Control
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
SWDA	Solid Waste Disposal Act
TOC	top of casing
TRPH	total recoverable petroleum hydrocarbons
VOC	volatile organic compound
USAF	U.S. Air Force
USAEHA	U.S. Army Environmental Hygiene Agency
USGS	U.S. Geological Survey
UST	underground storage tank

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), was contracted (No. N62467-89-D-0317, Contract Task Order [CTO] No. 0010) by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) at the Defense Fuel Supply Point (DFSP) in Hanahan, Berkeley County, South Carolina (hereafter referred to as the "site"). A Corrective Action Plan (CAP) is to be submitted to the South Carolina Department of Health and Environmental Control (SCDHEC), Ground-Water Protection Division (GWPD), in accordance with Section 280, Subpart F, of Regulation R. 61-92.

1.1 OBJECTIVE AND SCOPE. The objective of the CA was to assess the horizontal and vertical extent of groundwater contamination at the site and, if appropriate, at adjacent properties. Contaminated soil at the site had been delineated in previous studies conducted by the U.S. Geological Survey (USGS; Robertson and others, 1993) and McClelland Engineers (1987a: 1987b). The CA described in this report was conducted in accordance with ABB-ES' SCDHEC-approved Contamination Assessment Plan, or subsequent modifications thereof, which was submitted to SOUTHNAVFACENGCOM in March 1992.

The scope of services for the CA required that the field investigation be performed in two phases. During Phase 1, the areal extent of groundwater contamination was approximated in the field using a portable gas chromatograph (GC) to analyze groundwater samples collected through probes or temporary well points. During Phase 2, permanent monitoring wells were installed at locations based on the GC screening results, and groundwater samples were collected for laboratory analysis. Aquifer tests were also performed. A letter report, which summarized the work performed and the results obtained, was submitted to SCDHEC after the completion of each phase, A Phase 3 field investigation was initiated in response to SCDHEC's comments to the Phase 2 Technical Memorandum.

This CA addresses the DFSP and adjacent properties as required, with the exception of the north boundary and the adjacent Gold Cup Springs subdivision. The areas not included in the CA have been assessed in previous studies and continue to be monitored by the USGS. However., USGS groundwater quality data from these areas have been incorporated into this report to give a more complete picture of the contaminant plumes. The CA focused on known areas of petroleum-contaminated soil determined by the USGS, namely in the area of the tank truck loading stand, the railcar loading stand, the southeast side of Tank 2 and extending along the eastern side of Tank 5, southeast of Tank 6, and the properties west of the site.

The purpose of this Contamination Assessment Report (CAR) is to provide SCDHEC the first part of the CAP by documenting the results of this CA and summarizing previous investigations performed at the site.

1.2 SITE LOCATION AND DESCRIPTION. The site is located in Hanahan, South Carolina, on the east side of North Rhett Avenue approximately 0.6 mile north of Remount Road (Figure 1-1). The site occupies approximately 55 acres, and includes seven aboveground storage tanks (ASTs), a fuel loading stand for tank trucks and one for railcars (with a pumping station at each), an office, a quality assurance laboratory, a warehouse, and a guard house, all enclosed by a

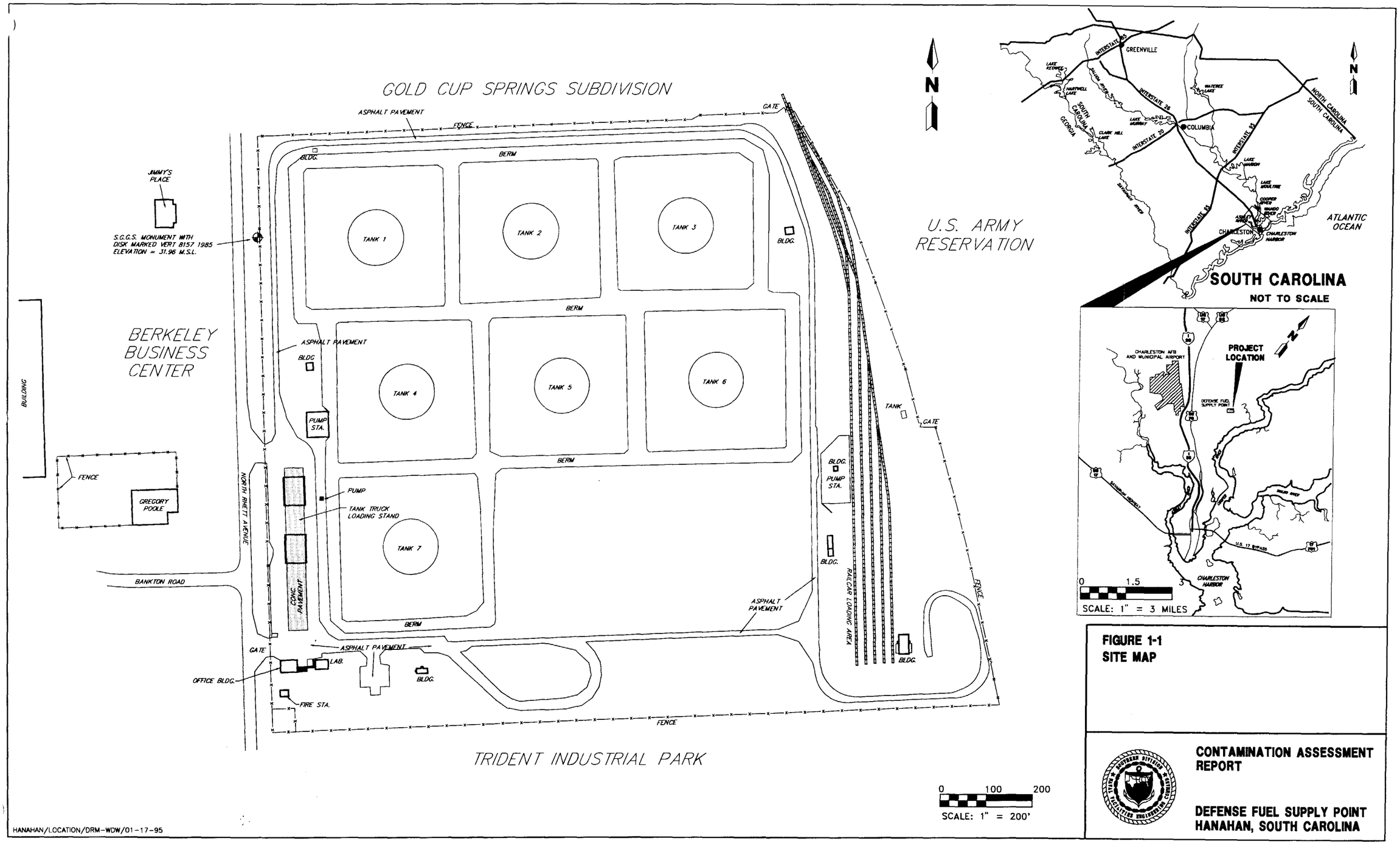

FIGURE 1-1
SITE MAP

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DEFENSE FUEL SUPPLY POINT
HANAHAN, SOUTH CAROLINA

HANAHAN/LOCATION/DRM-WDW/01-17-95

chain-link fence. Each AST is constructed of welded steel with a floating roof and an aluminum dome top, and measures 120 feet in diameter and 40 feet in height (with an 80,000-barrel or 3.36 million-gallon rated capacity). Surrounding each AST is an earthen berm with a limerock gravel veneer that is coated with tar and measures approximately 340 feet square (Figure 1-1).

Since April 1994, the primary product stored in the ASTs is JP-8 jet turbine fuel. Some JP-5 jet fuel is still stored and handled on the site and, historically, JP-4 jet fuel was one of the primary products stored and handled on the site. Leaded gasoline (MOGAS) and aviation fuel (AVGAS 115/145), however, were stored in Tanks 3 and 6, respectively, until sometime in 1980 or 1981. Periodically since then, JP-5 jet fuel has been stored in these two ASTs. The fuel is supplied by ships that dock on the Cooper River, where it is pumped 3.5 miles to the DFSP via two 18-inch diameter pipelines. The DFSP supplies fuel directly to the Charleston Air Force Base via a 7.5-mile, 8-inch diameter pipeline.

The site is bounded on the north side by Gold Cup Springs residential subdivision. A U.S. Army Reservation occupies the adjacent property east of the site. The Trident Industrial Park bounds the south side, and the partially developed Berkeley Business Center is on the west side of North Rhett Avenue, opposite the site. Both these business developments are zoned for light industry.

The DFSP facility is managed by the Defense Fuel Supply Center (DFSC) of the Defense Logistics Agency (DLA), Alexandria, Virginia, but the property itself is owned by the U.S. Air Force (USAF). The DLA has contracted with Continental Service Company to operate the facility.

2.0 HISTORICAL BACKGROUND

2.1 SITE HISTORY. The site was purchased by the USAF in 1951 from private owners. Construction of the facility began in 1952 and was completed in 1953. In October 1975, a leak developed in the bottom of Tank 1 (northwest corner of site) immediately after it had been cleaned and put back into service. Within a 20-day period, approximately 84,000 gallons of JP-4 fuel (based on inventory records) had leaked into the ground before the tank was closed on November 4th. A water bottom was placed in the tank to confirm leakage. The leakage was confirmed, and the tank was completely emptied on November 12th. A manual inspection of the tank bottom revealed a small hole.

The 1975 JP-4 leak initiated a series of environmental investigations of the site and adjacent properties. Some of these investigations found soil and groundwater contamination associated with petroleum sources other than Tank 1. Past site activities suggest the potential for several contaminant sources. Prior to July 1984, water bottoms in the ASTs were periodically drained into the tank berms, none of which have an impermeable lining. As a consequence, the petroleum contaminated water percolated down to the groundwater table. Water bottoms are no longer permitted; however, water that accumulates in the fuel tanks is now pumped through a pipe system to a collection AST, which is emptied when full and the contaminated water is transported to a disposal facility. Rainwater that collects in the berms now drains to an oil-water separator before discharging into the drainage ditch along the east site boundary. Other potential contaminant sources are the two fuel loading stands, one for tank trucks and one for railcars, both of which lacked spill containment 10 to 12 years ago.

2.2 CHRONOLOGY OF PREVIOUS INVESTIGATIONS The environmental investigations of the site and adjacent properties that began in 1975 are summarized in Table 2-1.

2.2 HISTORY OF ADJACENT PROPERTIES. There are several facilities within the adjacent business developments that have potential sources for petroleum contamination. Within the Trident Industrial Park, the Spartan Equipment Company once leased property adjoining part of the south site boundary. In December 1991, three 1,000-gallon underground storage tanks (USTs) (one gasoline and two diesel), located near the common property line, were removed. The closure report indicated that a release had occurred (Richard Catlin & Associates, 1992), but no contamination assessment has been performed.

Three facilities within the Berkeley Business Center (Gregory Poole, Jimmy's Place, and Hanahan Fuel Express) also have potential sources of petroleum contamination. Gregory Poole has a 1,000-gallon concrete underground oil-water separator behind their building (Craig, 1994). Jimmy's Place, which was previously a 7-11 convenience store and gas station, had four 4,000-gallon USTs. All four USTs presumably stored gasoline only and were removed in March 1987 (Southland Corp., 1987). There is no UST closure report on file with SCDHEC, nor was a contamination assessment ever performed. There are two 10,000-gallon USTs (unleaded and diesel) and one 5,000-gallon premium gasoline UST at Hanahan Fuel Express, located adjacent to and west of Jimmy's Place. Petroleum contamination

Table 2-1
Chronology of Investigations

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Hanahan, South Carolina

Investigator	Type of Investigation	Dates (field investigation and reports)	No. of Soil Borings and CPT	Monitoring Wells Installed	Soil Samples and Analysis[1]	Groundwater Samples and Analysis[1]
U.S. Army Environmental Hygiene Agency	FP Delineation	November 1975 Report December 1975	12	None	22/Infr	2/Infr
	IRA	Nov. 1975 through May 1977 Report September 1977	7	5	70/Infr, 2/GC	None
	Consulting	Oct. through Nov. 1979 Report February 1980	None	None	None	None
Dames & Moore	CA	June 1980, November 1981 through April 1982 Report August 1982	17	17 (W-101 through W-108, B-101 through B-109)	None	10 (twice)/TOC, O&G, FSII
Science Applications International Corp.	IRP (Phase 2, Stage 1), USAF	April through December 1985 Report June 1986	None	3 (W-1 through W-3)	None	15/O&G
McClelland Engineers, Inc.	IRP (Phase 2, Stage 2), Navy	Aug. through Oct. 1986 Report March 1987	22, 22 CPT, 10 VZV	7 (MW-4 through MW-10)	32/FID/GC, 22/O&G, 1/8020	19+3 SW/602, TOC 5/$BOD_{5,20}$, N, P
		Jan. through March 1987 Addendum Report May 1987	37 VZV	None	37/FID/GC	5+3 SW/602
RMT, Inc.	Risk Assess. Data Collect.	June through July 1987 Report July 1987	8 (surface)	None	8/BTEX, TOC, TOH	8/BTEX, 3 SW/BTEX, TOC, TOH, BOD
	CA	Aug. through Dec. 1987 Report January 1988	8	8 (MW-11 through 13, 15 through 17, 11A, 12A)	None	25/BTEX, 9/Phenols, Naphthalene, 2-methylnaphthalene.
	GW & SW Monitoring	July through Aug. 1989 Report September 1989	None	2 (MW-18, 19)	None	34/BTEX, TOC, BOD_5 3/8240, 8270, 608.
		November 1989 Report January 1990	None	None	None	31/BTEX, TOC, BOD_5 3/601, 602, 603, 604, 608, 625
ICF-Clement Associates	Risk Assess.	Report October 1987a; 1987b	None	None	None	None

See notes at end of table.

Table 2-1 (Continued)
Chronology of Investigations

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Investigator	Type of Investigation	Dates (field investigation & reports)	No. of Soil Borings and CPT	Monitoring Wells Installed	Soil Samples/Analysis[1]	Groundwater Samples/Analysis[1]
U.S. Geological Survey	Bioremediation Pilot Study	October 1987 to present				
		Report 1988	2	none	2/bacteria count	none
		Report 1989	10	none	56/TRPH	none
	Passive soil gas survey	June through July 1990 Report 1993	114	none	114/VOCs, Toluene, Ethylbenzene	none
ABB Environmental Services, Inc.	CA, Phase 1	July through August 1992 Letter report Sep. 1992	57	55 TMW	105/FID	55/BTEX, MTBE
	Phase 2	April, Oct. through Nov. 1993 Tech. Memo April 1994	2	27 (DFSP-MW-1 through 25, 3D, 21D)	none	32/624, 625, BOD_5, Pb 1/As, Cd, Cr
	Phase 3	October 1994 Report January 1995	none	3 (DFSP-MW-26 through 28)	none	18/602, 610, Pb

[1] Numbers refer to U.S. Environmental Protection Agency (USEPA) Methods.

Notes:
CPT = cone penetrometer test.
FP = free product.
Infr = Infrared analysis for total hydrocarbons.
IRA = Initial Remedial Action.
GC = gas chromatograph (volatile organic compound analysis).
CA = contamination assessment.
TOC = total organic carbons.
O&G = oil and grease.
FSII = fuel system icing inhibitor.
IRP = Installation Restoration Program.
USAF = U.S. Air Force.
VZV = vadose zone vapor probes.
FID = flame ionization detector (analysis of organic vapors).
8020 = USEPA Method for aromatic volatile organics.
602 = USEPA Method for purgeable aromatics.
BOD = biochemical oxygen demand (5 or 20 day test).
N = nitrogen.
P = phosphorus.
BTEX = benzene, toluene, ethylbenzene, and total xylenes.
TOH = total organic halocarbons.
GW = groundwater
SW = surface water
8240 = USEPA Method for volatile organics.
8270 8240 = USEPA Method for semivolatile organics.
608 = USEPA Method for pesticides and polychlorinated biphenyls.
601 = USEPA Method for purgeable halocarbons.
602 = USEPA Method for purgeable aromatics.
603 = USEPA Method for acrolein and acrylonitrile.
604 = USEPA Method for phenols.
625 = USEPA Method for base-neutrals, acids, and pesticides.
TRPH = total recoverable petroleum hydrocarbons.
VOC = volatile organic compounds.
TMW = temporary monitoring well.
MTBE = methyl tert-butyl ether.
DFSP = Defense Fuel Supply Point.
pb = lead.
As = arsenic
Cd = cadmium.
Cr = chromium.
610 = USEPA Method for polynuclear aromatic hyrdocarbons.

was detected in two of the compliance wells during an initial investigation by Missimer & Associates, Inc. (Missimer), in August 1991. Missimer submitted the laboratory analytical results, and the results of integrity tests performed on the USTs and integral piping, with an Expanded Assessment Plan for additional work (Missimer, 1992). The integrity tests determined that the USTs and piping were tight; therefore, Missimer concluded that the petroleum release was due to over-filling and spillage during daily fueling operations. It is not known if the assessment was ever performed.

2.3 INITIAL REMEDIAL ACTIONS. Several initial remedial actions have been implemented to remove the free product floating on the water table. The first effort was in 1975 soon after the leak was discovered at Tank 1. The U.S. Army Environmental Hygiene Agency (USAEHA) used a well point system to recover approximately 25 percent of the 84,000 gallons released. The USAEHA made two other attempts to recover additional free product, but failed. In 1976, a 36-inch diameter recovery well was installed northwest of Tank 1. An unknown amount of free product has been recovered from the well by a skimmer pump.

? In 1988 a Navy contractor installed 18 extraction wells and an infiltration gallery to prevent further offsite migration of both free product and petroleum-contaminated groundwater. The operation and maintenance (O&M) of the system and free product recovery has been the responsibility of the USGS, who have been conducting pilot studies in bioremediation. Continuous pumping has not occurred in all 18 extraction wells since their installation. The USGS has turned off some of the pumps periodically to conduct a pilot study, and some of the pumps permanently to prevent the plumes from migrating to clean areas. Free product has been and continues to be found in some of the extraction wells and monitoring wells downgradient of Tank 1, including EW-6, EW-7, and W-103. The extraction wells where free product has been found have skimmer pumps to recover the free product into 30-gallon containers located at the wellhead. As of 1994, free product has also been found in W-108, which is downgradient of Tank 3. In 1994, IT Corporation was contracted by the DLA to take over free product recovery and the O&M of the system. No initial remedial actions have been taken to date for the contaminated soil onsite.

3.0 SITE CONDITIONS

3.1 PHYSIOGRAPHY. The site lies within the central part of the Lower Coastal Plain subprovince of the Atlantic Coastal Plain Physiographic Province. In Charleston and Berkeley Counties, the subprovince encompasses a series of four ancient marine terraces. These terraces mark the ocean bottom during the Pleistocene Epoch when the sea, having transgressed beyond the present shoreline, remained stationary for long periods as it regressed episodically. With each episode of sea regression, the former sea floor became exposed as a broad, gently sloping plain, and a low scarp along the landward edge marked the abandoned shoreline, which parallels the present coast. The site lies on an edge of the Talbot terrace (42 to 25 feet above mean sea level [msl]), with surface elevations at the site ranging from 31 to 42 feet above msl. Immediately north of the site is a scarp to the lower Pamlico terrace (25 to 10 feet above msl). The Talbot and Pamlico terraces are dissected by two connecting stream valleys that form a peninsula in the vicinity of the site. Goose Creek is to the northwest of the site and flows around to the east, where it empties into the Cooper River, which is to the southeast of the site (Cooke, 1986; Park, 1985).

The site is situated within the Cooper River drainage basin. Surface drainage from the site flows to Goose Creek via natural valleys or man-made ditches, and ultimately to Cooper River. The head of a northwest-trending valley that cuts through Gold Cup Springs subdivision is immediately north of the site. An earthen dam across this valley has created a small lake, referred to in this report as "Gold Cup Springs Lake." The head of a west-trending valley is south of the site. There is also a man-made ditch along the eastern site boundary that empties into Gold Cup Springs Lake. Figure 3-1 shows the local topography and surface drainage.

3.2 GEOLOGY.

3.2.1 Regional The Lower Coastal Plain of South Carolina consists of a series of unconsolidated to partially consolidated sedimentary formations of Late Cretaceous to Quaternary Age. These successively overlapping formations strike northeast-southwest and dip to the southeast (seaward). The formations are wedge-shaped, thickening seaward. Figure 3-2 is a northwest-southeast regional geologic cross section down to Late Cretaceous formations. These formations in the area covering Berkeley and Charleston Counties are described in ascending order (Park, 1985).

The lowest formation within the Cretaceous units is the Middendorf Formation, which overlies the basement rocks. The sediments of the Middendorf Formation are continental and marginal marine deposits of red to gray-green clay and silty clay interbedded with quartz sand that is muddy in the lower part and poorly sorted and feldspathic in the upper part. The formation is locally about 600 feet thick (Cooke, 1936; Park, 1985).

The overlying Black Creek Formation is composed of Late Cretaceous marginal marine to middle shelf deposits of alternating fossiliferous silty clay, muddy sand, and clean, well-sorted sands and silts, with some thin interbeds of shelly limestone. The thickness ranges from about 500 feet in northern Berkeley County to 750 feet in southern Charleston County (Cooke, 1936; Park, 1985).

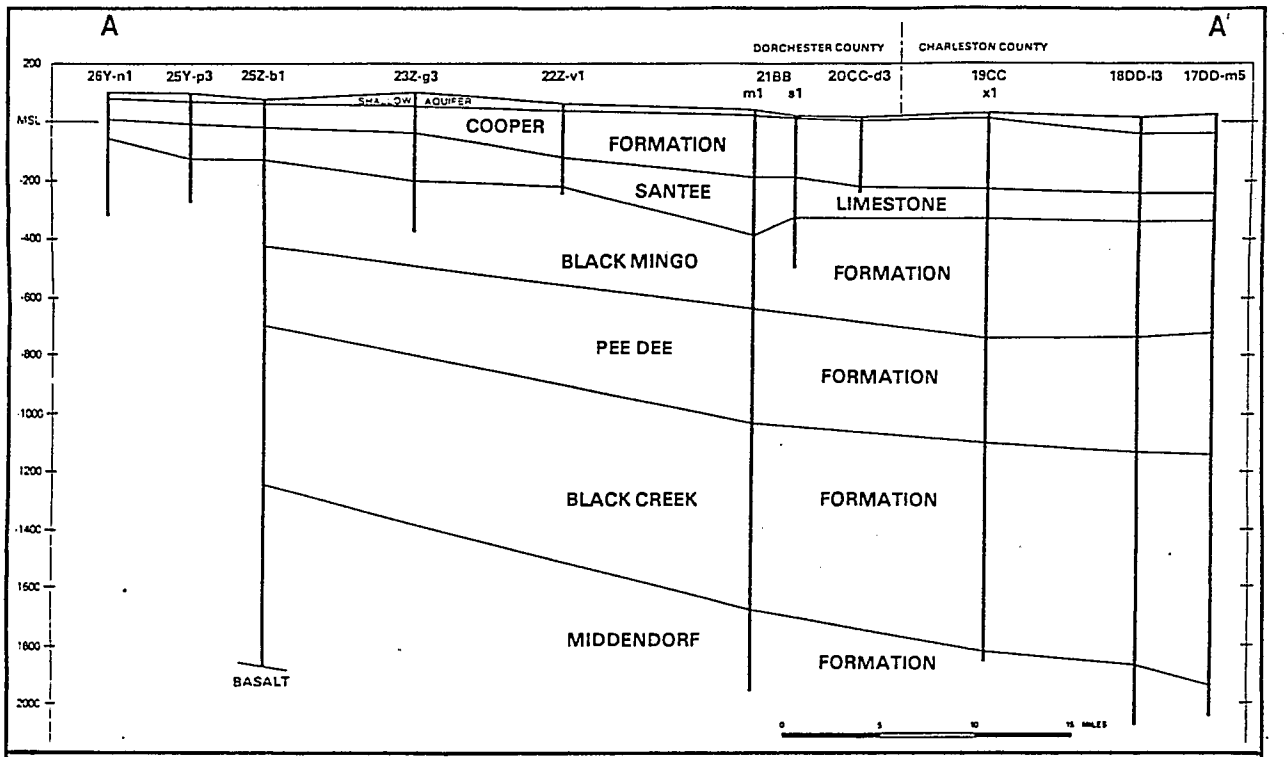
FIGURE 3-1

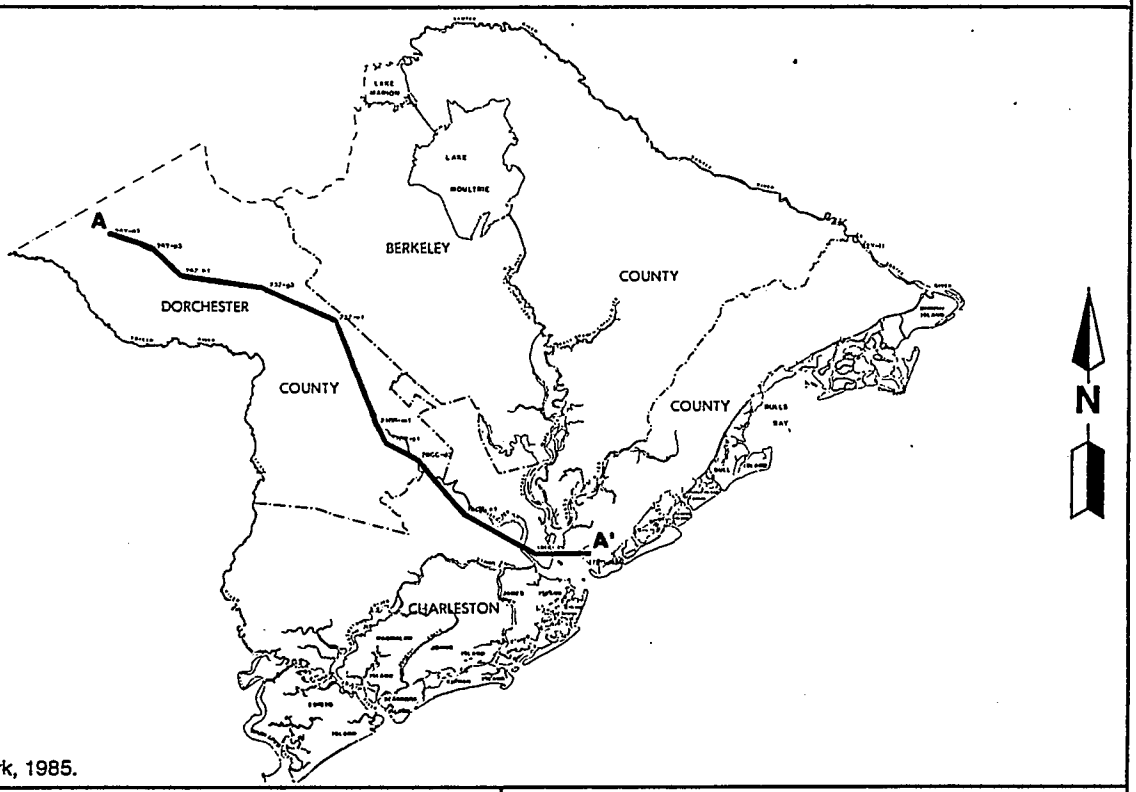
LOCAL TOPOGRAPHY AND SURFACE DRAINAGE MAP

CONTAMINATION ASSESSMENT REPORT

DFSP HANAHAN
HANAHAN, SOUTH CAROLINA

7508-61 941229WEM





Source: Park, 1985.

FIGURE 3-2

REGIONAL GEOLOGIC CROSS SECTION FROM REEVESVILLE TO CHARLESTON, SOUTH CAROLINA

CONTAMINATION ASSESSMENT REPORT

DFSP HANAHAN
HANAHAN, SOUTH CAROLINA

7508-61 941229WEM

The Peedee Formation was the last Late Cretaceous deposit. The Peedee is composed predominantly of olive- to medium-gray, fossiliferous, muddy sand in the lower part, and olive- to medium-gray, silty and sandy, calcareous clay in the upper part. The formation ranges from 320 to 450 feet in thickness.

The Black Mingo Formation of Paleocene Age is heterogeneous in the dip direction due to a regressing and transgressing sea. The depositional environment ranged from inner-shelf and marginal marine in the updip part, to inner or middle shelf in the lower downdip part, overlain by inner-shelf and marginal marine deposits. The sediments of the Black Mingo Formation are generally a mixture of detrital material and volcanic ash, composed of a fossiliferous sequence of white to pale gray limestone, green to gray argillaceous sand, carbonate- and silica-cemented sandstone, and greenish-gray to black clay. The formation ranges from 300 to 400 feet thick (Cooke, 1936; Park, 1985).

The overlying Santee Limestone of Eocene Age is a creamy-white to gray, fossiliferous and slightly glauconitic calcilutite to calci-rudite. The Santee Limestone is divided into two members: the lower Moultrie Member is characterized by biosparrites and bryozoan hash, and the unconformably overlying Cross Member by brachiopod-bivalve biomicrites. The thickness of the Santee Limestone ranges from a few feet at the north edge in northern Berkeley County to more than 300 feet at the coast, and is 40 to 50 feet thick in the vicinity of the site (Cooke, 1936; Park, 1985).

The Santee Limestone is overlain by the Cooper Formation, which consists of three members deposited during the Eocene and Oligocene Epochs. The lower Harleyville Member (Eocene) varies from a phosphatic, calcareous clay to a clayey, very fine-grained limestone. The overlying Parkers Ferry Member (Eocene) is a glauconitic, clayey, fine-grained, abundantly fossiliferous limestone. The unconformably overlying Ashley Member (Oligocene) is a phosphatic, muddy, calcareous sand. These marine deposits of the Cooper Formation are massive, with no signs of bedding, and are uniform in color (grayish-green to olive brown) and texture. The formation begins just south of the Santee River and thickens southward to more than 300 feet at the coast. In the vicinity of the site the thickness is 200 feet (Cooke, 1936; Park, 1985).

Because of erosion, the Pleistocene deposits unconformably overlie the Cooper Formation. The Miocene deposits, such as the Hawthorn Formation, are believed to be absent in the Charleston area (Malde, 1959), although Cooke's 1936 geologic map shows the Hawthorn pinching out east of the Cooper River (Cooke, 1936). The Pleistocene deposits are represented by a topographic succession of four terraces that are the result of an episodic regression of a glacially controlled sea. These marine sediments consist of light-colored, fine- to medium-grained sand, shelly sand, and shell beds, with lenses of varicolored clay. From highest to lowest topographically, the terraces are named Wicomico, Penholoway, Talbot, and Pamlico. The Talbot and Penholoway terraces constitute the Ladson Formation (Malde, 1959). Its contact with the Cooper Formation is denoted by coarse-grained sand or gravel of phosphate rock.

<u>3.2.2 Site-Specific</u> Site stratigraphy has been determined from soil boring and cone penetrometer data collected during past investigations. Surficial sediments within the study area consist of fill material (sand) overlying the light brown to gray, silty, fine-grained quartz sand and clayey sand with interbedded sandy clay of the Ladson Formation. The beds and lenses of sandy clay were encountered

at depths ranging from 1.0 foot below land surface (bls) at the southern boundary to 14 feet bls at the northern boundary. The average thickness is 2 to 3 feet. The base of the Ladson Formation is denoted by a zone of reworked shell fragments and black, gravel-sized phosphate rock from the eroded surface of the Cooper Formation. The sharp contact has a veneer of phosphate gravel. The contact is 25 to 35 feet bls at the site, but is shallower to the north of the site where there is no fill material and the Talbot terrace has been removed by the Pamlico sea. Figures 3-3 and 3-4 are perpendicular cross sections down to the Cooper Formation that cover the northern edge of the site and adjacent properties to the north and west.

The Cooper Formation was observed to be a dark green-gray to olive brown, calcareous silty clay with zones of interbedded sand, silt, and clay. This description appears to correspond with the lower Harleyville Member.

3.3 HYDROGEOLOGY.

3.3.1 Regional The Charleston, South Carolina, area is underlain by four water-bearing zones. These zones include the shallow water table aquifer, the tertiary aquifer system, the Black Creek Aquifer, and the Middendorf Aquifer.

Within the unconsolidated sediments of the Ladson Formation is the unconfined to semi-confined shallow aquifer. Local beds or lenses of clay near the water table may produce slightly confined conditions. The shallow aquifer is recharged largely by the infiltration of precipitation over the area. Locally, the aquifer may be recharged by seepage from the underlying Santee Limestone in areas where the Cooper Formation is absent. Discharge from the shallow aquifer occurs principally by evapotranspiration and through natural seepage to surface water bodies. Shallow wells account for only a small amount of discharge from this aquifer and vertical migration into underlying aquifers is limited by the Cooper Formation. Depth to the water table of the shallow aquifer ranges from 3 to 15 feet bls and generally reflects changes in the local topography. Well yields average approximately 85 gallons per minute (gpm) (Park, 1985). The groundwater is commonly acidic and may contain high iron concentrations.

Unconformably underlying the Ladson Formation and forming a confining unit between the shallow aquifer and the tertiary aquifer system is the massive, impermeable Cooper Formation. The Cooper Formation requires only a few feet of thickness to effectively retard vertical groundwater flow.

Underlying the Cooper Formation and comprising the tertiary aquifer system are the Santee Limestone and the Black Mingo Formation. Water bearing zones occur where fractures and bedding planes have opened by leaching in the Santee Limestone, and in the interbedded sand layers of the Black Mingo Formation. Wells tapping both these units generally yield between 100 and 300 gpm, but 400 to 1,000 gpm have been reported locally. The wells are under artesian conditions except in the Charleston area. The tertiary aquifer system is recharged by infiltration in updip outcrop zones inland of the project area. Groundwater flow in the aquifer is to the southeast under relatively flat regional hydraulic gradients (Aucott and Speiran, 1985). Excessive hardness and high iron and fluoride concentrations are common in the groundwater of the Santee Limestone. Brackish water can be found at the coastal margin of Charleston County.

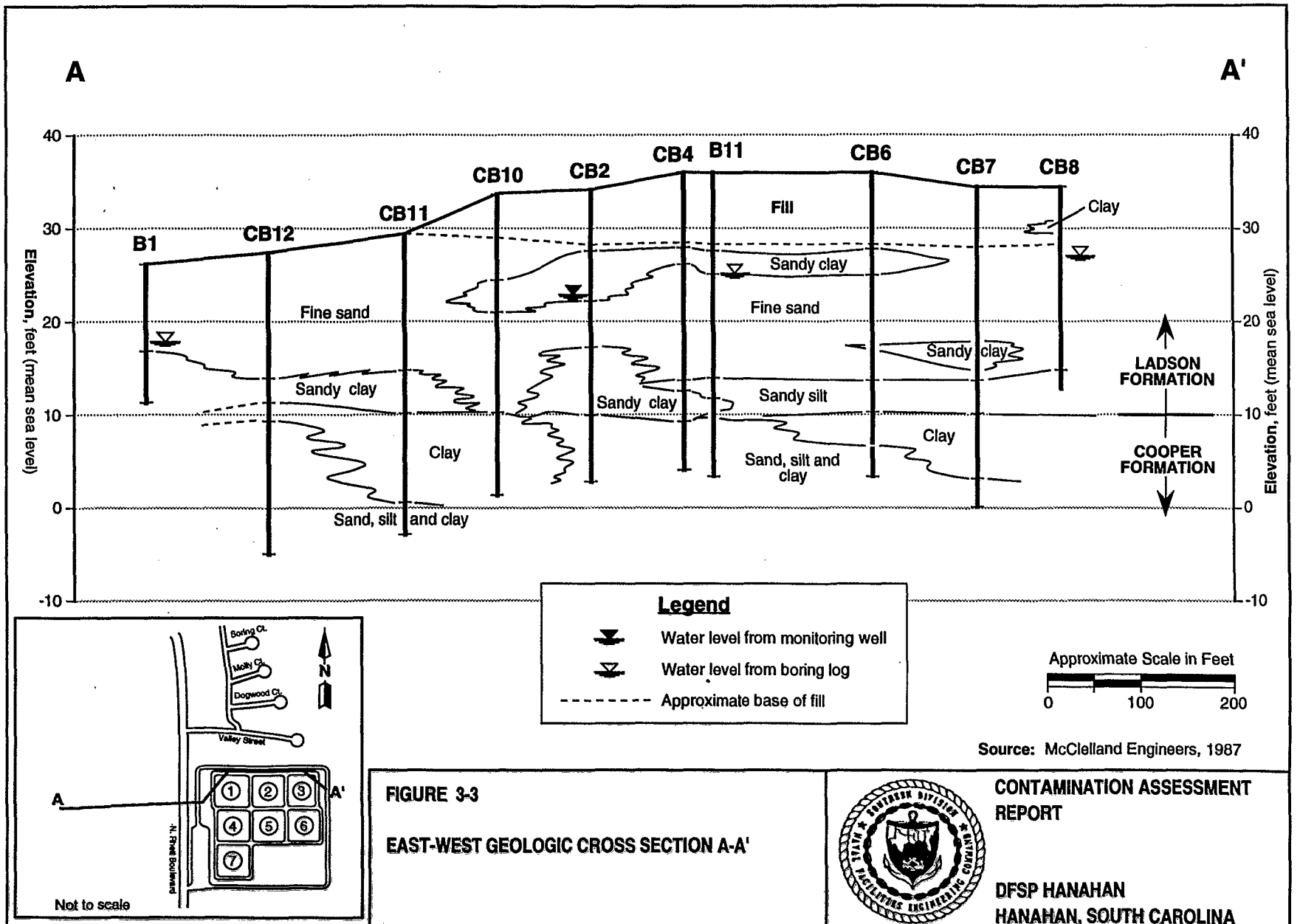


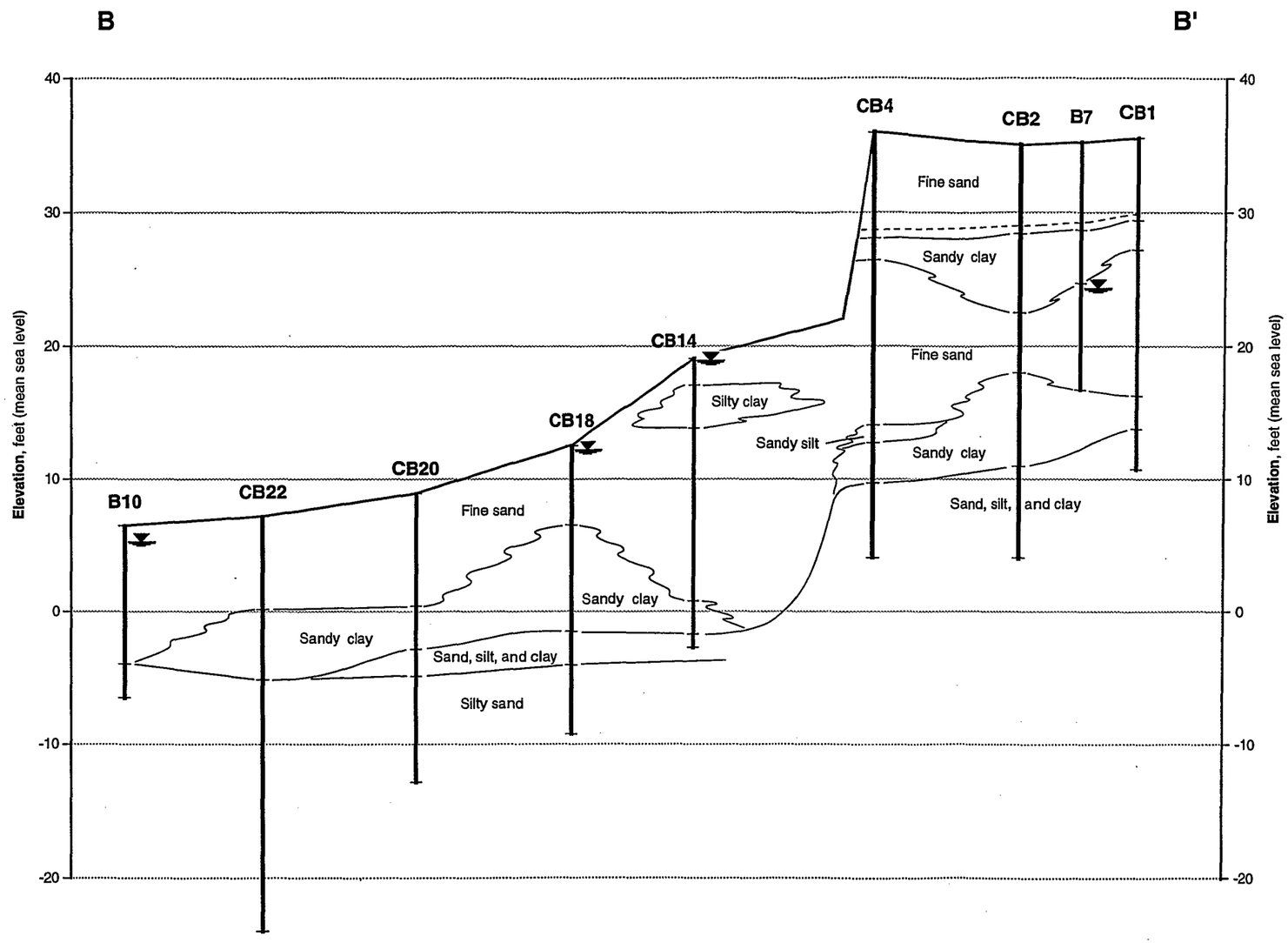
FIGURE 3-3

EAST-WEST GEOLOGIC CROSS SECTION A-A'

CONTAMINATION ASSESSMENT REPORT

DFSP HANAHAN
HANAHAN, SOUTH CAROLINA

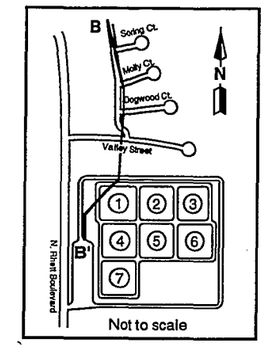
7508-61 941228WEM



Legend

Water level from monitoring well

Approximate base of fill



Approximate Scale in Feet

0 100 200

Source: McClelland Engineers, 1987

FIGURE 3-4

NORTH-SOUTH GEOLOGIC CROSS SECTION B-B'

CONTAMINATION ASSESSMENT REPORT

DFSP HANAHAN
HANAHAN, SOUTH CAROLINA

7508-61 941228WEM

Underlying the Black Mingo Formation approximately 700 feet below msl are the Peedee, Black Creek, and Middendorf Formations. Each of these formations is capable of producing groundwater under artesian pressure; however, the major water bearing zones are the Black Creek Aquifer in the Black Creek Formation and the Middendorf Aquifer in the Middendorf Formation. The lower part of the Black Mingo Formation and the Peedee Formation contains sufficient clays and silts to form an effective vertical hydraulic barrier between the upper tertiary aquifer system and the lower Black Creek Aquifer. Another confining unit exists in the lower Black Creek Formation and upper Middendorf Formation to separate the Black Creek Aquifer from the Middendorf Aquifer.

Wells set in the upper 200 feet of the Black Creek Formation produce 125 to 275 gpm, as compared to the greater than 700 gpm obtained from wells screened in the lower 200 feet (Park, 1985). Groundwater flow direction in the Black Creek Aquifer is to the east. The Middendorf Aquifer is the most productive of the two aquifers, with yields of 300 to 500 gpm. One well north of Goose Creek has a non-pumping flow rate of greater than 900 gpm. The groundwater flow direction in both aquifers is to the east or east-northeast under a gentle regional hydraulic gradient (Aucott and Speiran, 1985). Both aquifers contain potable water; however, in some areas water quality may have excessive concentrations of dissolved sodium, bicarbonate, and fluoride.

3.3.2 Site Specific The shallow aquifer at the site extends from the water table down to the surface of the Cooper Formation. Lenses of clay divide the aquifer into a series, and may even cause percolating rainwater to be perched. The depth to the water table varies from about 1 foot bls along the east side to about 17 feet bls along the north side, but averages about 4 to 5 feet bls over the central area. The general direction of groundwater flow in the shallow aquifer is north-northwest. Localized groundwater flow directions at the site may be controlled by topography or ditches, with groundwater flow toward the west in the southwest corner of the site, and toward the east or southeast in the southeast corner.

North of the DFSP site the groundwater generally flows toward the centerline of the northwest-trending stream valley. There are numerous springs in the Gold Cup Springs subdivision from which groundwater discharges and flows down the valley as a creek. McClelland (1987a) performed slug tests in four monitoring wells in the subdivision and calculated an average hydraulic conductivity of 2.8×10^{-5} feet per second (ft/sec). The average groundwater flow velocity was calculated to be 0.24 feet per day (ft/day).

4.0 FIELD INVESTIGATION: METHODOLOGIES AND EQUIPMENT

4.1 SOIL SCREENING (Phase I). McClelland Engineers performed *in situ* soil vapor tests along the northern site boundary and offsite to the north and west (1987a), and later inside the seven tank berms (1987b), using probes and a portable organic vapor analyzer (OVA) equipped with a GC. Excessive soil contamination (>1,000 parts per million [ppm]) was detected offsite along the entire length of Valley Street, down East Lakeside Drive past Spring Court, and west of Tank 1 along Bankton Road. Onsite excessive soil contamination was detected along the northern site boundary and over large areas inside the berms of Tanks 1, 2, and 3, and in places near Tanks 4 and 6.

In 1990, the USGS conducted a passive soil gas survey to assess the horizontal extent of soil contamination over the site south of Tanks 1, 2, and 3, and the property west of the site. Figure 4-1 shows the results of that survey. Passive soil gas surveys involve the burial of vapor collectors (in this case, inverted empty test tubes sealed in polyethylene bags) in the unsaturated zone or in the bottom sediment of streams. With sufficient burial time, the soil vapor equilibrates with the air space in the collector. Upon retrieval of the collector, an air sample is then extracted with a syringe and injected into a GC for analysis. The USGS reported total detector response values (in volt-seconds), which was the summation of the integration areas of all detected volatile organic compound (VOC) peaks having retention times between 45 and 300 seconds. A total response value of 10 volt-seconds or greater at the low calibration range was used to delineate soil with elevated VOC concentrations.

ABB-ES conducted OVA-FID headspace analyses on soil samples collected during the Phase I groundwater screening program to verify previous findings. One to five soil samples were collected at 57 of the 62 boring locations, depending on depth to groundwater, during the installation of the well points. Excessive contamination was confirmed inside the tank berms between Tanks 2 and 3, and near the tank truck loading stand and pump station. The area in the vicinity of the holding tank (AST), used to store tank bottom water, and the oil-water separator also had excessive soil contamination. Table 4-1 lists the OVA results, and Figure 4-1 shows the locations of the temporary well points and contoured OVA results superimposed onto the USGS' passive soil gas survey results for comparison.

4.2 GROUNDWATER QUALITY ASSESSMENT.

4.2.1 Groundwater Screening (Phase I) The Phase I field investigation delineated the horizontal extent of petroleum contamination by analyzing groundwater samples in the field with an HNU 311 portable GC. Groundwater samples were collected by augering a 3-inch diameter boring that terminated 2 to 3 feet below the water table, inserting a temporary well point, and either bailing or pumping with a peristaltic pump. Fifty-five locations were sampled in this way (attempts to reach groundwater failed at seven locations). Groundwater samples were also collected from 12 existing wells. All samples were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tert-butyl ether (MTBE). Phase 1 sample locations and the approximate areal extent of BTEX contamination are shown in Figure 4-2. The GC analytical results are provided in Table 4-1.

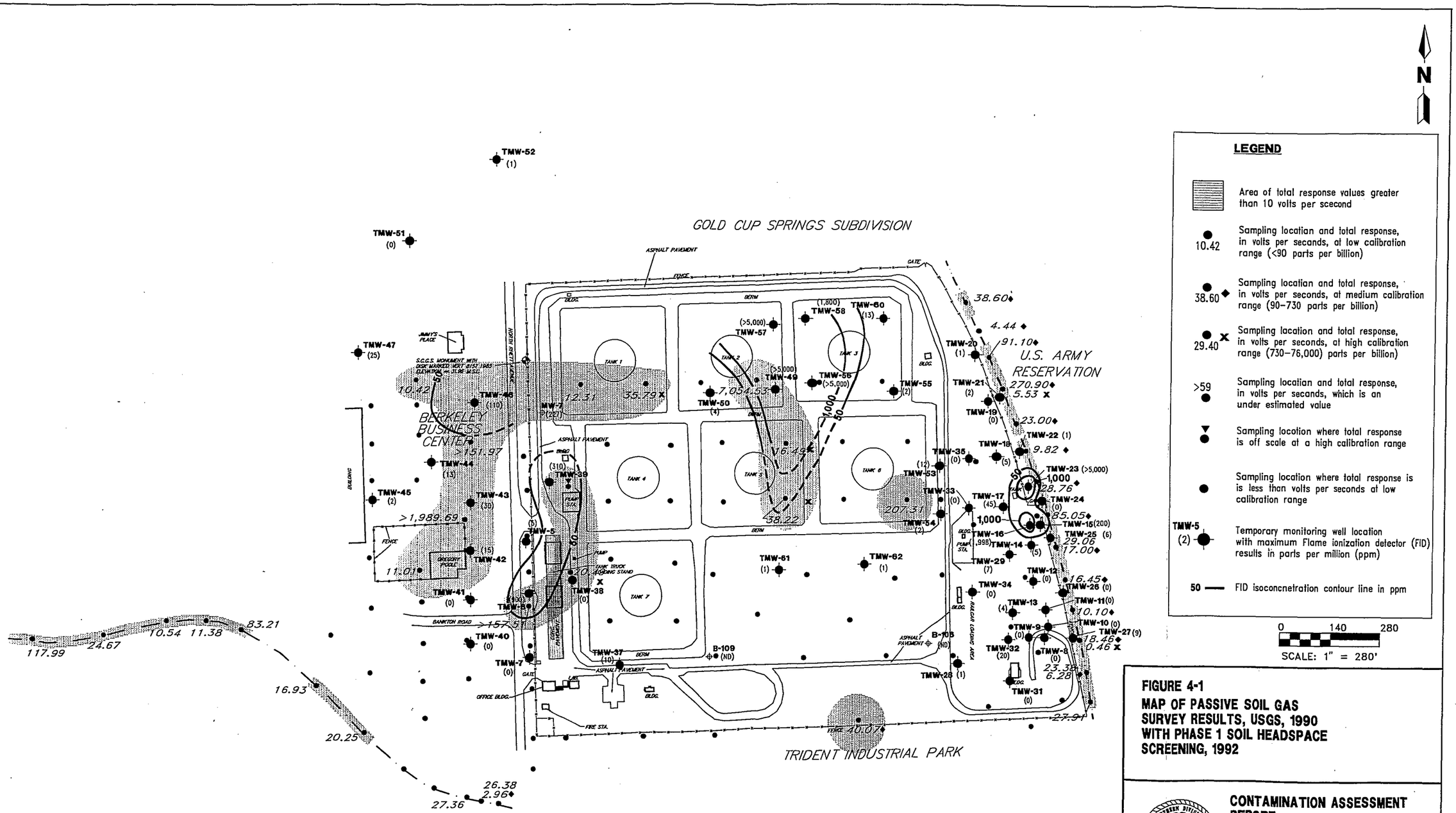


FIGURE 4-1
MAP OF PASSIVE SOIL GAS SURVEY RESULTS, USGS, 1990 WITH PHASE 1 SOIL HEADSPACE SCREENING, 1992

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA

Source: Robertson, et al., 1993.

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Table 4-1
Summary of Preliminary Screening Data, Phase I

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Sample Number	OVA/FID Results		GC Results		
	Depth (ft bls)	Concentration[1] (ppm)	Depth (ft bls)	BTEX (ppb)	MTBE (ppb)
TMW-1	NS	NA	NS	NA	NA
TMW-2	NS	NA	NS	NA	NA
TMW-3	NS	NA	NS	NA	NA
TMW-4	NS	NA	NS	NA	NA
TMW-5	4.0	0	NA	NA	NA
	6.5	2	NA	NA	NA
	8.0	2	NA	NA	NA
	9.0	5	9.0	>954	80
TMW-6	3.0	0			
	4.5	0			
	9.0	900	9.0	643	39
TMW-7	3.0	0	NA	NA	NA
	6.0	0	NA	NA	NA
	8.0	0	8.0	ND	ND
TMW-8	1 to 2	0	3.0	5	ND
TMW-9	1 to 2	0	3.0	2	ND
TMW-10	1 to 2	0	3.0	ND	ND
TMW-11	1 to 2	0	3.0	40	ND
TMW-12	1 to 2	0	3.0	1	ND
TMW-13	1 to 2	100	3.0	ND	ND
TMW-14	1.5 to 2.5	5	3.5	5	ND
TMW-15	1 to 2	200	NA	NA	NA
	2 to 3	150	3.0	36	12
TMW-16	2 to 3	1,998	3.0	13	ND
TMW-17	4.0	45	4.0	4	22
TMW-18	3.5	5	3.5	10	ND
TMW-19	3.5	0	3.5	ND	ND
TMW-20	3.5	1	3.5	ND	ND
TMW-21	4.0	2	3.5	4	ND
TMW-22	5.0	1	5.0	ND	ND
TMW-23	5.0	>5,000	5.0	190	ND
TMW-24	3.5	0	3.5	4	ND
TMW-25	3.0	6	3.0	ND	ND
TMW-26	3.0	0	3.0	3	ND
TMW-27	3.0	9	3.0	1	ND
TMW-28	3.0	1	NA	NA	NA
	4.0	1	NA	NA	NA
	6.0	0	6.0	1	ND
TMW-29	3.0	7	3.0	54	73
TMW-30	2.0	6	Refusal	NA	NA
TMW-31	3.0	0	3.0	ND	ND

See notes at end of table.

Table 4-1
Summary of Preliminary Screening Data, Phase I

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Sample Number	OVA/FID Results		GC Results		
	Depth (ft bls)	Concentration[1] (ppm)	Depth (ft bls)	BTEX (ppb)	MTBE (ppb)
TMW-32	3.0	20	3.0	ND	ND
TMW-33	3.0	0	3.0	114	246
TMW-34	3.0	0	3.0	ND	2
TMW-35	3.0	0	3.0	4	8
TMW-36	NS	NA	NS	NA	NA
TMW-37	4.0	10	NA	NA	NA
	6.0	2	9.0	ND	ND
TMW-38	4.0	0	NA	NA	NA
	6.0	0	6.0	16	ND
TMW-39	3.5	0	NA	NA	NA
	6.0	1	NA	NA	NA
	7.5	310	7.5	556	105
TMW-40	3.0	0	NA	NA	NA
	5.0	0	6.0	ND	3
TMW-41	3.0	0	NA	NA	NA
	5.0	0	6.0	ND	ND
TMW-42	4.0	15	6.0	101	15
TMW-43	3.0	20	NA	NA	NA
	4.5	30	5.0	114	47
TMW-44	3.0	13	6.0	303	73
TMW-45	3.0	65	5.0	2	2
TMW-46	4.0	60	NA	NA	NA
	6.0	110	7.5	289	368
TMW-47	3.0	25	NA	NA	NA
	6.0	10	NA	NA	NA
	7.0	15	9.0	23	9
TMW-48	4.0	20	NA	NA	NA
	6.0	15	NA	NA	NA
	9.0	15	NA	NA	NA
	10.0	60	NS	NA	NA
TMW-49	1.5	>,5000	NA	NA	NA
	3.0	4,200	NA	NA	NA
	4.0	4,400	6.0	408	ND
TMW-50	3.0	4	NA	NA	NA
	4.5	2	6.0	ND	ND
TMW-51	3.0	0	NA	NA	NA
	5.0	0	10.0	1	ND
TMW-52	3.0	0	NA	NA	NA
	6.0	1	NA	NA	NA
	9.0	0	12.0	9	ND

See notes at end of table.

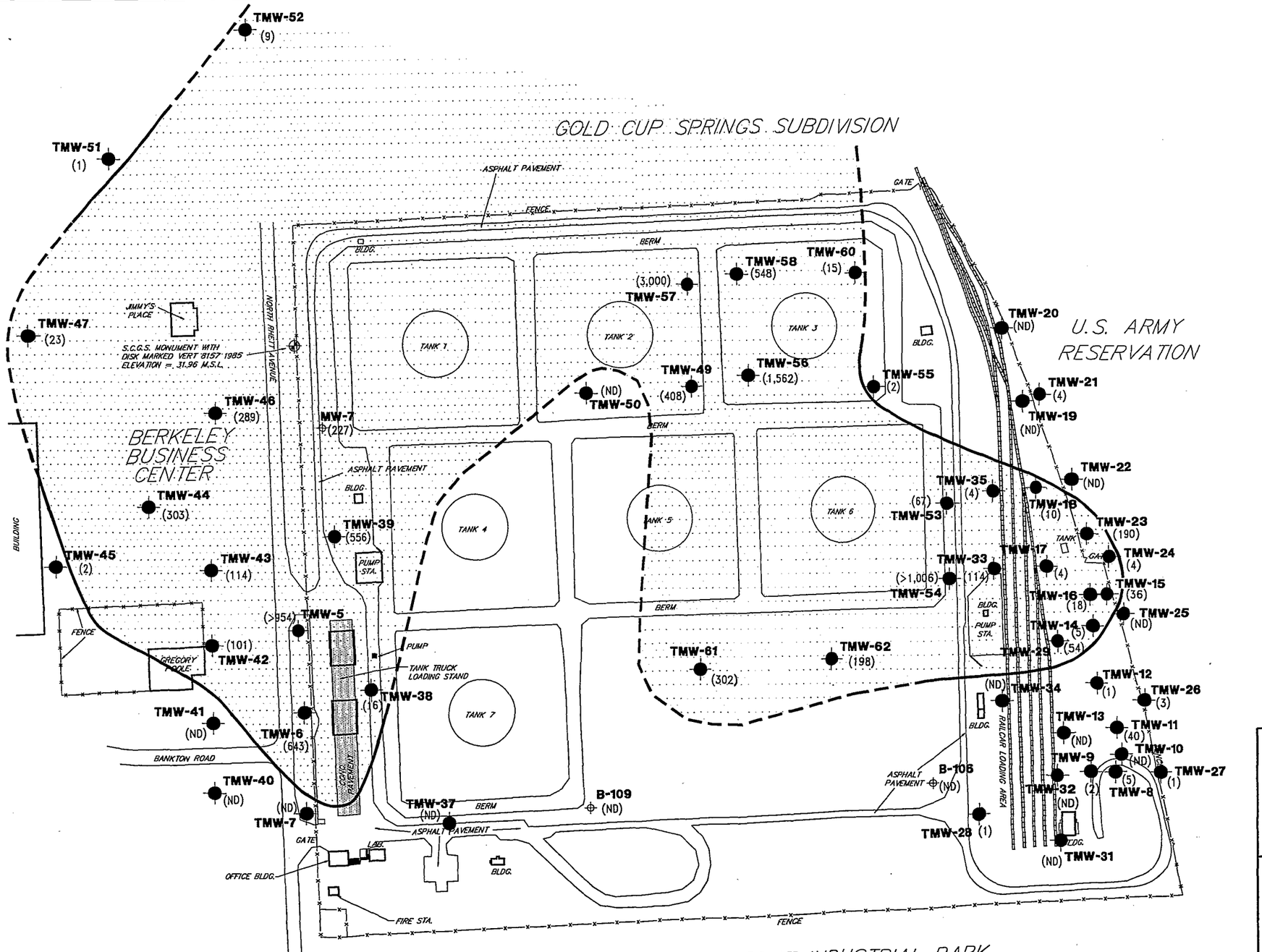
Table 4-1
Summary of Preliminary Screening Data, Phase I

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Sample Number	OVA/FID Results		GC Results		
	Depth (ft bls)	Concentration[1] (ppm)	Depth (ft bls)	BTEX (ppb)	MTBE (ppb)
TMW-53	3.0	0	NA	NA	NA
	6.0	0	NA	NA	NA
	7.0	0	NA	NA	NA
	9.0	0	NA	NA	NA
	10.0	12	12.0	67	800
TMW-54	3.0	0	NA	NA	NA
	6.0	0	NA	NA	NA
	9.0	2	12.0	>1,006	4,028
TMW-55	3.0	0	NA	NA	NA
	5.5	2	7.5	2	ND
TMW-56	3.0	22	NA	NA	NA
	5.0	>5,000	7.5	1562	ND
TMW-57	3.0	>5,000	NA	NA	NA
	4.5	>5,000	NA	NA	NA
	6.5	>5,000	9.0	3,000	500
TMW-58	3.0	50	NA	NA	NA
	5.0	1,800	6.5	548	ND
TMW-59	3.0	>5,000	NA	NA	NA
	4.5	>5,000	NA	NA	NA
	6.0	>5,000	NA	NA	NA
	9.0	>5,000	NS	NA	NA
TMW-60	3.0	13	NA	NA	NA
	5.5	2	7.5	15	ND
TMW-61	3.0	1	NA	NA	NA
	5.5	1	NA	NA	NA
	9.0	0	11.0	302	236
TMW-62	3.0	0	NA	NA	NA
	6.0	0	NA	NA	NA
	9.0	1	12.0	198	2
MW-7(ME)	NA	NA	NA	227	127
B-106	NA	NA	NA	ND	ND
B-109	NA	NA	NA	ND	ND

[1] Corrected for methane

Notes:
OVA/FID = organic vapor analyzer equipped with a flame ionization detector.
GC = gas chromatograph.
ft bls = feet below land surface.
ppm = parts per million.
BTEX = total of benzene, toluene, ethylbenzene, and xylenes.
MTBE = methyl tert butyl ether.
ppb = parts per billion.
NS = not sampled.
NA = not applicable or available.
ND = none detected.



LEGEND

- Temporary monitoring well (TMW) location
- Existing monitoring well location
- BTEX — Benzene, ethyl benzene, toluene, and xylenes
- 5 parts per billion (ppb) BTEX isoconcentration contour line, dashed denotes inferred
- (4) — BTEX concentration (ppb)
- (ND) — None detected
- Area of BTEX contamination greater than 5 ppb

FIGURE 4-2
APPROXIMATE AREAL EXTENT OF BTEX CONTAMINATION (PHASE 1)

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA

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The Phase I results indicated that petroleum-contaminated groundwater is extensive across the west, north, and east central parts of the site. Several sources other than Tank 1, such as the tank truck loading stand and pump station, the railcar loading stand, Tank 3, and Tank 6, were considered possible contaminant sources. The contaminant plumes associated with the western sources extend offsite to the west and north. The results of the Phase I field investigation were submitted to SCDHEC in the form of a letter report dated August 20, 1992.

4.2.2 Monitoring Well Installation (Phases 2 and 3) Based on the results of the Phase 1 field investigation, 20 onsite (DFSP-MW-1 through 20) and 5 offsite (DFSP-MW-21 through 25) shallow monitoring wells were installed to characterize and assess the horizontal extent of the contaminant plumes. Five existing shallow monitoring wells were also planned to be used to accomplish this task (B-106, B-109 [both background], MW-7(ME), MW-18(RMT), and MW-19(RMT)). Likewise, because existing deep monitoring wells MW-11A and MW-12 could be used to assess the vertical extent of the northern contaminant plumes associated with Tank 1 and Tank 3, respectively, only one additional deep well (DFSP-MW-21D) was recommended to assess the vertical extent of the western plumes. However, in response to a request by the USGS for additional data on metals contamination in the northeast corner of the site, ABB-ES also installed deep monitoring well DFSP-MW-3D.

The results of the Phase 2 field investigation were submitted to SCDHEC in April 1994 in the form of a Technical Memorandum. SCDHEC commented that there was insufficient data from the area of the western plumes to differentiate DFSP's contamination from the plumes associated with offsite sources. SCDHEC also commented that the downgradient extent of the Tank 1 plume was not defined. In response to SCDHEC's comments, three additional monitoring wells were installed during the Phase 3 field investigation. Monitoring well DFSP-MW-26 was installed on the Department of Transportation easement beside East Lakeside Drive to assess the downgradient extent of the Tank 1 plume. Monitoring wells DFSP-MW-27 and 28 were installed in the Berkeley Business Center to assess whether DFSP contamination had commingled with or was separate from contaminant plumes associated with offsite sources.

Figure 4-3 shows the location of all monitoring wells installed during Phase 2 and 3. All of the onsite monitoring wells except DFSP-MW-20 were installed April 13-18, 1993. All of the Phase 2 offsite wells and DFSP-MW-20 were installed October 11-14, 1993, after acquiring permission from the land owners. The Phase 3 monitoring wells were installed on October 25 and 26, 1994.

The monitoring wells are constructed of 2-inch inside diameter (ID), flush threaded, Schedule 40 polyvinyl chloride (PVC) screen and casing. The screens are slotted 0.010-inch. The annulus of the screened sections are filled with 20/30 filter sand. Cement grout above a bentonite or fine sand seal was used to fill the remainder of the annular space. For the monitoring wells installed inside the berms and in undeveloped areas offsite, the wellheads are protected by a 4-inch square, zinc coated steel casing with a locking hinged top, which extends 3 feet above land surface. The wellheads of the monitoring wells located outside the berms and in grassy areas are protected by an 8-inch diameter, steel vault with a cast-iron lid, which is flush with the ground surface. Both types of wellhead protection are encased in the center of a 2-foot by 2-foot by 6-inch concrete pad.

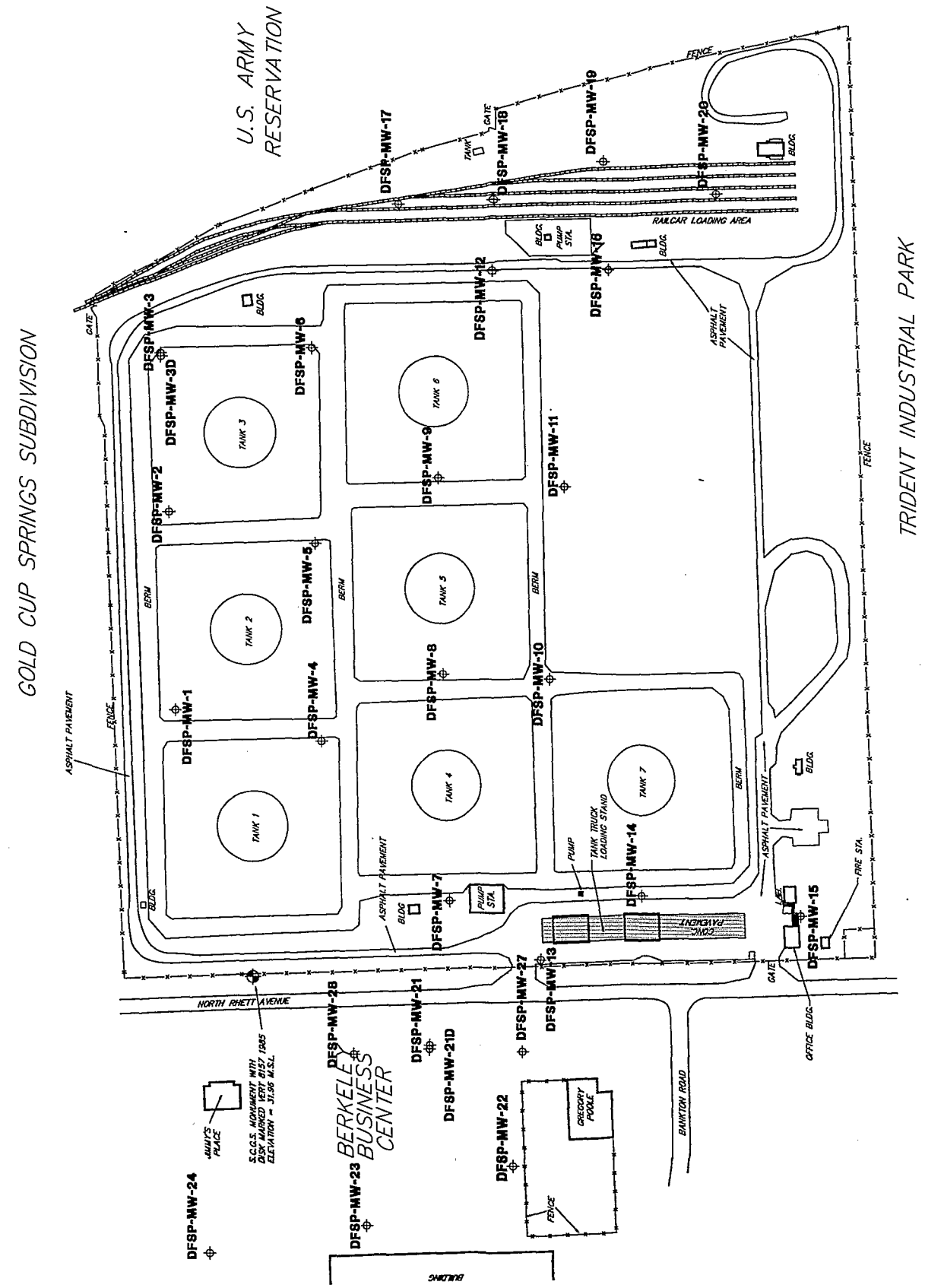

FIGURE 4-3
MONITORING WELL LOCATIONS (PHASE 2 AND 3)

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT
HANAHAN, SOUTH CAROLINA

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The shallow monitoring wells are constructed with 15 feet of screen. This length of screen was necessary to monitor the groundwater above and below a 1- to 3-foot thick sandy clay layer commonly encountered at depths ranging from 6 to 10 feet bls. The deep monitoring wells are constructed with 5 feet of screen, and are set on top of the Cooper Formation. The deep monitoring wells are also constructed with 6-inch PVC surface casing to prevent downward migration of contaminated groundwater above the screened section. Construction details for 8monitoring wells DFSP-MW-1 through DFSP-MW-28 are presented in Table 4-2.

All monitoring wells were developed until they were free of sediment (20 to 45 minutes). A centrifugal pump and a 1.25-inch diameter inlet hose were used to develop the monitoring wells located outside the tank berms. A hand pump was used to develop the monitoring wells located inside the tank berms because of fire hazard restrictions regarding gasoline engines. All development equipment in contact with the groundwater was steam-cleaned between wells. All development water was collected in drums and pumped into the onsite railcar tank used to store contaminated water derived from the site. This water is analyzed and properly disposed when the tank becomes full.

4.2.3 Groundwater Sampling and Analysis (Phases 2 and 3) The Phase 2 monitoring wells were sampled at the time of installation, which occurred on two separate occasions six months apart: April 20 and 21, 1993, and November 10, 1993. The 6-month hiatus was due to an unexpected delay in acquiring permission from the land owners to install the offsite monitoring wells. In April 1993, onsite monitoring wells DFSP-MW-1 through DFSP-MW-19 and existing wells MW-7(ME), B-106, and B-109 were sampled. In November 1993, offsite monitoring wells DFSP-MW-21 through DFSP-MW-25 and existing well MW-18(RMT), and the additional onsite monitoring well DFSP-MW-20 were sampled. DFSP-MW-13 was sampled on both occasions to correlate the two data sets. The groundwater was sampled for the following parameters in accordance with SCDHEC regulations for petroleum releases other than gasoline: purgeable aromatics (U.S. Environmental Protection Agency [USEPA] Method 624 plus xylenes); base, neutral, and acid extractables (USEPA Method 625); lead; 5-day biochemical oxygen demand (BOD_5); and pH (field). Deep monitoring well DFSP-MW-3D was also sampled for arsenic, cadmium, and chromium. The groundwater samples were shipped in coolers packed with ice to CH2M Hill's Montgomery, Alabama, laboratory, which is certified by the SCDHEC (Laboratory No. 75001).

During the Phase 3 field investigation, monitoring wells DFSP-MW-7, DFSP-MW-13 through DFSP-MW-15, and DFSP-MW-21 through DFSP-MW-24, MW-7(ME), MW-18 and MW-19(RMT), EW-1 and EW-2, and W-003, were sampled with DFSP-MW-27 and DFSP-MW-28 to provide current analytical data on the western plumes. To assess the northern extension of the Tank 1 plume, MW-9 was sampled with DFSP-MW-26. The Phase 3 sampling was conducted on October 26 and 27, 1994. The groundwater samples were analyzed by Quanterra Environmental Services' laboratory in Tampa, Florida (Laboratory No. 96032), for parameters included in USEPA Methods 602 and 610, and for lead.

Groundwater samples were collected using Teflon™ bailers. Five well volumes were removed by bailing to purge the wells before sampling, and the purge water was disposed in the same manner as the development water. The sampling protocols were in accordance with ABB-ES's Comprehensive Quality Assurance Plan (No. 870515G) approved by the Florida Department of Environmental Protection, which follows USEPA Region IV guidelines.

Table 4-2
Monitoring Well Construction Details

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Monitoring Well No.	Total Depth	Screened Interval	Sand Interval	Bentonite	Cement Interval	Well Protection
DFSP-MW-1	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	AC
DFSP-MW-2	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	AC
DFSP-MW-3	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	AC
DFSP-MW-3D	32.0	27.0 to 32.0	24.0 to 32.0	1.0	0.0 to 23.0	AC
DFSP-MW-4	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	AC
DFSP-MW-5	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	AC
DFSP-MW-6	17.0	2.0 to 17.0	1.0 to 17.0	0.5	0.0 to 0.5	AC
DFSP-MW-7	16.0	1.0 to 16.0	1.0 to 16.0	0.2	0.0 to 0.8	FV
DFSP-MW-8	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	AC
DFSP-MW-9	19.0	4.0 to 19.0	2.0 to 19.0	1.0	0.0 to 1.0	AC
DFSP-MW-10	20.0	5.0 to 20.0	3.0 to 20.0	0.5	0.0 to 2.5	FV
DFSP-MW-11	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	FV
DFSP-MW-12	21.0	6.0 to 21.0	4.0 to 21.0	1.0	0.0 to 3.0	FV
DFSP-MW-13	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	FV
DFSP-MW-14	16.5	1.5 to 16.5	1.0 to 16.5	0.2	0.0 to 0.8	FV
DFSP-MW-15	17.0	2.0 to 17.0	1.0 to 17.0	0.2	0.0 to 0.8	FV
DFSP-MW-16	22.0	7.0 to 22.0	5.0 to 22.0	1.0	0.0 to 4.0	FV
DFSP-MW-17	11.0	1.0 to 11.0	0.7 to 11.0	0.2	0.0 to 0.5	FV
DFSP-MW-18	11.5	1.5 to 11.5	1.0 to 11.5	0.2	0.0 to 0.8	FV
DFSP-MW-19	11.5	1.5 to 11.5	1.0 to 11.5	0.2	0.0 to 0.8	FV
DFSP-MW-20	11.5	1.5 to 11.5	1.0 to 11.5	0.2	0.0 to 0.8	FV
DFSP-MW-21	18.0	3.0 to 18.0	2.0 to 18.0	0.5	0.0 to 1.5	AC
DFSP-MW-21D	30.0	25.0 to 30.0	23.0 to 30.0	1.0	0.0 to 22.0	AC
DFSP-MW-22	18.0	3.0 to 18.0	2.0 to 18.0	0.5	0.0 to 1.5	AC
DFSP-MW-23	18.0	3.0 to 18.0	2.0 to 18.0	0.5	0.0 to 1.5	AC
DFSP-MW-24	22.0	7.0 to 22.0	6.0 to 22.0	1.0	0.0 to 5.0	FV
DFSP-MW-25	22.0	7.0 to 22.0	6.0 to 22.0	1.0	0.0 to 5.0	FV
DFSP-MW-26	12.0	2.0 to 12.0	1.2 to 12.0	0.2	0.0 to 1.0	FV
DFSP-MW-27	17.0	2.0 to 17.0	1.2 to 17.0	0.2	0.0 to 1.0	AC
DFSP-MW-28	17.0	2.0 to 17.0	1.2 to 17.0	0.2	0.0 to 1.0	AC

Notes: All values are in feet below land surface unless otherwise indicated.

All wells were constructed of 2-inch inside diameter polyvinyl chloride casing. The screens were slotted 0.010-inch and the annulus of the screened sections was filled with 20/30 (standard sieve units) sand.

AC = aboveground casing.
FV = flush vault.

4.3 GROUNDWATER FLOW CHARACTERIZATION.

4.3.1 Flow Direction and Hydraulic Gradient Both the groundwater flow direction and hydraulic gradient within the shallow aquifer at a given locality are assessed by first contouring the surface of the groundwater table (piezometric surface). This was accomplished by measuring the static water level in monitoring wells of the same diameter that have screened sections intersecting the groundwater table. The water levels were measured relative to the top of the casing (TOC) of each monitoring well. The monitoring wells were later surveyed by a South Carolina licensed surveyor to obtain their locations relative to latitude and longitude, and their TOC elevations relative to the North American Vertical Datum (NAVD) of 1988 (Table 4-3). The water levels, which were measured on October 14, 1993, and November 8, 1993, were subtracted from the TOC elevations to obtain the groundwater table elevations relative to mean sea level (msl). These data were plotted on a site map and then contoured to illustrate the piezometric surface (Figures 4-4 and 4-5).

The groundwater flow direction is perpendicular to the isopiestic contour lines, or the dip direction of the slope. There is a mound in the groundwater table in the area of the field located south of Tank 5 and 6, which causes the groundwater to flow away from it toward the west, north, and east. For most of the site, however, the flow direction is to the northwest. Locally, the groundwater flows to the west in the southwest corner of the site, and to the northeast, east, and southeast in the southeastern corner.

The hydraulic gradient was calculated by subtracting groundwater elevations in two monitoring wells that line up parallel to the flow direction, and dividing by the horizontal distance between them. Two monitoring well pairs were chosen: MW-7(ME) and DFSP-MW-10, and DFSP-MW-1 and DFSP-MW-11. The two hydraulic gradient (I) calculations are as follows:

$$I = \frac{\textit{Difference in water elevation in DFSP-MW-10 and MW-7}}{\textit{Horizontal distance between DFSP-MW-10 and MW-7}} = \frac{6.91\ \textit{feet}}{585\ \textit{feet}} = 0.012\ \textit{feet per foot (ft/ft)}$$

$$I = \frac{\textit{Difference in water elevation in DFSP-MW-11 and DFSP-MW-1}}{\textit{Horizontal distance between DFSP-MW-11 and DFSP-MW-1}} = \frac{8.89\ \textit{feet}}{771\ \textit{feet}} = 0.012\ \textit{ft/ft}$$

There is a downward hydraulic head difference of approximately 2 feet between the shallow water-bearing zone and the deeper water-bearing zone, as indicated by the water levels in the two shallow and deep monitoring well pairs (DFSP-MW-3 and DFSP-MW-3D, and DFSP-MW-21 and DFSP-MW-21D).

4.3.2 Hydraulic Conductivity Slug tests were conducted in four monitoring wells (DFSP-MW-4, DFSP-MW-6, DFSP-MW-13, and DFSP-MW-18) to characterize the hydrological properties of the shallow aquifer impacted by petroleum contamination. These wells were selected because they are located near the five main contaminant sources identified at the site. Slug test data are used to calculate the hydraulic conductivity (K), which is used in estimating the groundwater flow velocity and aquifer transmissivity. A slug test is so called

Table 4-3
Monitoring Well Locations and Top of Casing and Groundwater Elevations

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

			October 14, 1993		November 8, 1993	
Monitoring Well No.	Latitude and Longitude	TOC Elevation (feet above msl)	Depth to Water (feet)	Ground-water Elevation (feet above msl)	Depth to Water (feet)	Ground-water Elevation (feet above msl)
DFSP-MW-1	32 54 51.46 N 79 59 3.36 W	37.52	15.34	22.18	15.85	21.67
DFSP-MW-2	32 54 51.54 N 79 58 59.38 W	35.52	9.73	25.79	8.22	27.30
DFSP-MW-3	32 54 51.67 N 79 58 56.20 W	36.23	9.15	27.08	8.94	27.29
DFSP-MW-3D	32 54 51.67 N 79 58 56.26 W	36.24	11.14	25.10	10.92	25.32
DFSP-MW-4	32 54 48.96 N 79 59 4.03 W	37.51	10.87	26.64	11.36	26.15
DFSP-MW-5	32 54 49.05 N 79 59 0.05 W	38.29	9.23	29.06	9.49	28.80
DFSP-MW-6	32 54 49.09 N 79 58 56.14 W	38.01	8.90	29.11	8.68	29.33
DFSP-MW-7	32 54 46.79 N 79 59 7.24 W	34.11	8.33	25.78	8.45	25.66
DFSP-MW-8	32 54 46.88 N 79 59 2.71 W	40.10	10.54	29.56	10.70	29.40
DFSP-MW-9	32 54 46.95 N 79 58 58.77 W	43.82	13.15	30.67	13.38	30.44
DFSP-MW-10	32 54 45.07 N 79 59 2.82 W	42.23	11.93	30.30	12.07	30.16
DFSP-MW-11	32 54 44.81 N 79 58 58.97 W	37.82	6.75	31.07	6.71	31.11
DFSP-MW-12	32 54 46.02 N 79 58 54.66 W	41.09	10.76	30.33	10.34	30.75
DFSP-MW-13	32 54 45.23 N 79 59 8.34 W	36.04	10.61	25.43	10.50	25.54
DFSP-MW-14	32 54 43.49 N 79 59 7.17 W	35.66	7.67	27.99	7.37	28.29
DFSP-MW-15	32 54 40.82 N 79 59 7.59 W	35.92	8.60	27.32	7.97	27.95
DFSP-MW-16	32 54 44.06 N 79 58 54.64 W	39.54	8.86	30.68	8.41	31.13

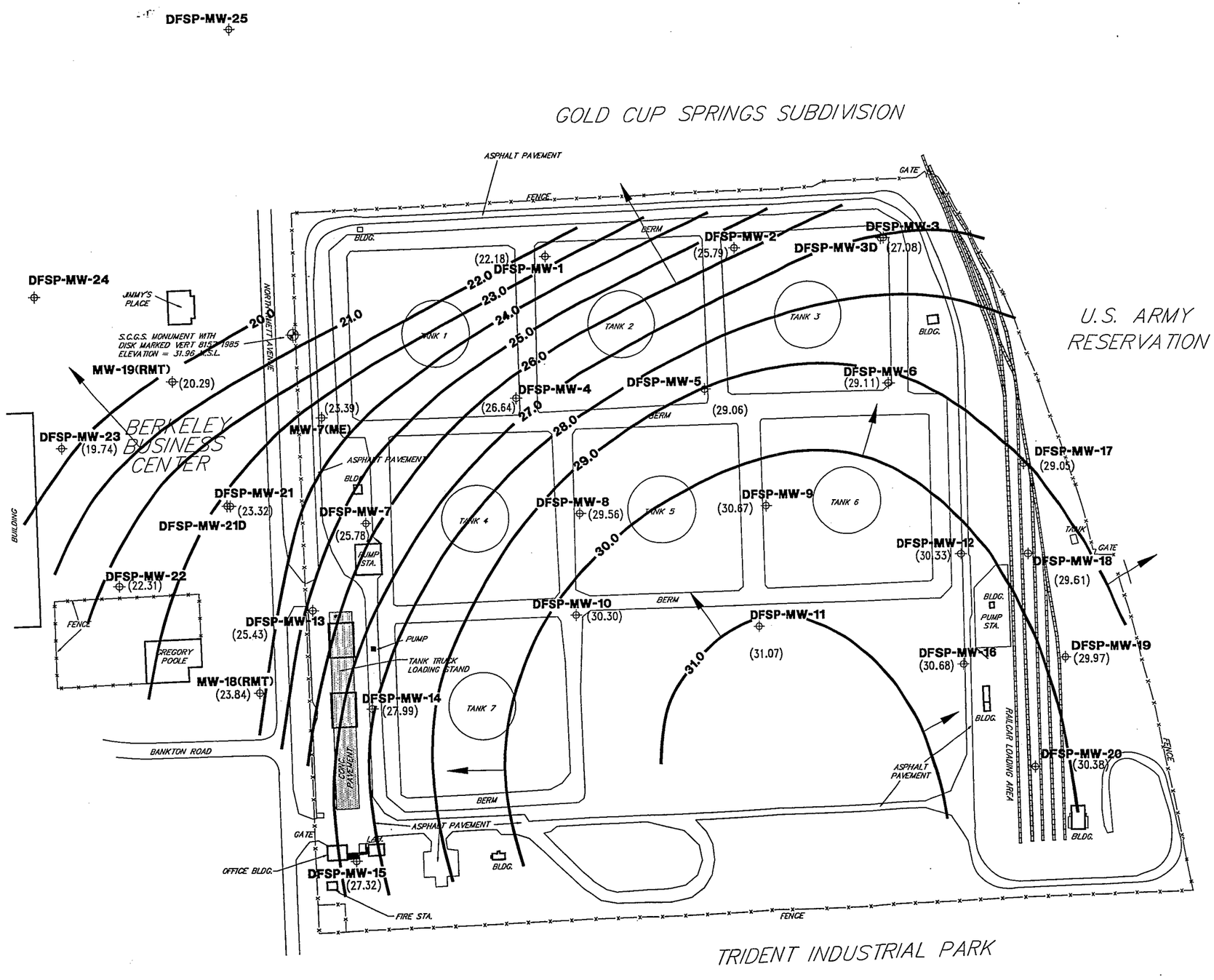
See notes at end of table.

Table 4-3 (Continued)
Monitoring Well Locations and Top of Casing and Groundwater Elevations

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

			October 14, 1993		November 8, 1993	
Monitoring Well No.	Latitude and Longitude	TOC Elevation (feet above msl)	Depth to Water (feet)	Ground-water Elevation (feet above msl)	Dept h to water (feet)	Ground-water Elevation (feet above msl)
DFSP-MW-17	32 54 47.62 N 79 58 53.30 W	31.12	2.07	29.05	1.49	29.63
DFSP-MW-18	32 54 46.00 N 79 58 53.25 W	31.64	2.03	29.61	1.57	30.07
DFSP-MW-19	32 54 44.15 N 79 58 52.49 W	31.35	1.38	29.97	NM	NC
DFSP-MW-20	32 54 42.22 N 79 58 53.16 W	31.99	1.61	30.38	1.10	30.89
DFSP-MW-21	32 54 47.14 N 79 59 10.10 W	31.36	8.04	23.32	8.30	23.06
DFSP-MW-21D	32 54 47.14 N 79 59 10.18 W	31.60	10.58	21.02	10.56	21.04
DFSP-MW-22	32 54 45.74 N 79 59 12.49 W	29.25	6.94	22.31	6.48	22.77
DFSP-MW-23	32 54 48.23 N 79 59 13.65 W	29.69	9.95	19.74	9.66	20.03
DFSP-MW-24	32 54 50.93 N 79 59 14.17 W	27.85	NM	NC	10.75	17.10
DFSP-MW-25	32 54 55.59 N 79 59 9.95 W	22.01	NM	NC	10.84	11.17
MW-7(ME)	32 54 48.69 N 79 59 8.16 W	37.47	14.08	23.39	NM	NC
MW-18(RMT)	32 54 43.81 N 79 59 9.56 W	31.64	7.80	23.84	7.50	24.14
MW-19(RMT)	32 54 49.38 N 79 59 11.27 W	31.07	10.78	20.29	11.58	19.49

Notes: NM = not measured.
msl = mean sea level.
NC = not calculated.



LEGEND

- Monitoring well location
- 31.0 — Isopiestic line in feet contour interval = 1 foot
- (29.61) Groundwater elevation in feet
- Groundwater flow direction

0 100 200
SCALE: 1" = 200'

FIGURE 4-4
PIEZOMETRIC SURFACE MAP, OCTOBER 14, 1993

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT
HANAHAN, SOUTH CAROLINA

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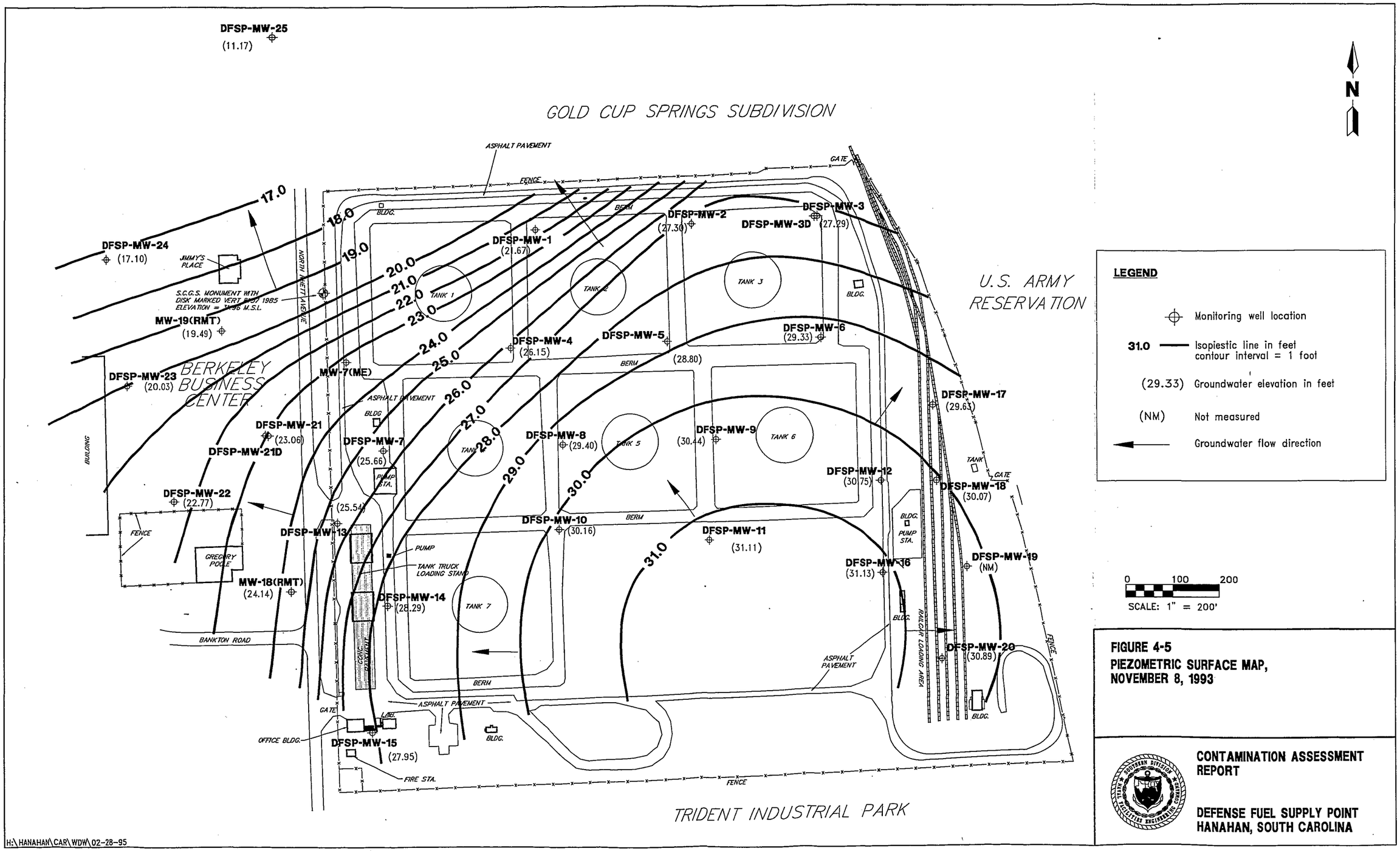

FIGURE 4-5
PIEZOMETRIC SURFACE MAP, NOVEMBER 8, 1993

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT
HANAHAN, SOUTH CAROLINA

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because a slug (fixed volume) is either added to or removed from a monitoring well to displace the water column relative to the static water level. The test measures the recovery rate as the displaced water column equilibrates to the static water level. The recovery rate is directly proportional to the hydraulic conductivity of the aquifer. The equipment used for a slug test consists of a slug (a 5- or 10-foot length of 1-inch PVC pipe filled with sand and sealed at both ends), a data logger, and a pressure transducer. A nylon string tied to an eye-bolt located on one end of the slug is used to lower it into and remove it from the monitoring well.

Slug tests were conducted in the field by executing the following steps: (1) lowering a pressure transducer connected to a data logger into and close to the bottom of a monitoring well to electronically record water levels; (2) lowering a slug into the well, which creates a positive displacement of the water column; (3) allowing the water level in the well to equilibrate to the static water level; (4) rapidly withdrawing the slug from the well, which creates a negative displacement of the water column; and (5) electronically recording the recovery rate as the water column rises to equilibrate with the static water level.

5.0 CONTAMINATION ASSESSMENT RESULTS

5.1 RESULTS OF PREVIOUS INVESTIGATIONS In November 1975, the USAEHA from Aberdeen Proving Ground, Maryland, investigated the JP-4 leak and performed initial remedial actions. Twelve well points were installed in soil borings drilled within the berm of Tank 1 to delineate the extent of free product, determine groundwater flow direction, and collect soil samples for chemical and physical analysis (USAEHA, 1975). As a result of the findings, a 50-well point system was installed in December 1975. The effluent was discharged into the berm drainage system that terminates with an oil-water separator, where the product was skimmed and pumped into a tank truck. Five monitoring wells were installed inside the berm to measure drawdown in the groundwater table because of pumping. By January 1976, 20,850 gallons (about 25 percent) of product had been recovered before the system became ineffective and was removed. A collection ditch was then excavated to 17 feet bls in the northwest inside corner of the berm to collect the remaining product. When no groundwater or product had accumulated after 1 month, the ditch was backfilled. A second well point system with 40 points set 3 feet deeper was installed in March 1976, but when no product had been recovered after a month of pumping, it was removed (USAEHA, 1977).

In late 1979 the USAEHA investigated and evaluated petroleum odors and sheens reported by residents along Valley Street adjacent to the north boundary of the site. The USAEHA determined that the most likely source of the petroleum was the leak from Tank 1 in 1975. It was suggested that petroleum may have been trapped in the ground and was forced to the surface by the prolonged rainy season that terminated with a 200-year storm in September 1979, which caused the groundwater table to rise. A monitoring program to determine the extent and characteristics of the plume was recommended, to be followed by more initial remediation before implementing a designed recovery system (USAEHA, 1980). Consequently, DFSP installed a 36-inch diameter recovery well in the northwest corner of the site to collect residual free product.

In June 1980, Dames & Moore performed an "environmental survey of hydrocarbon contamination of ground water" onsite. Their report (dated November 3, 1980) recommended that a groundwater monitoring program be implemented along the north site boundary where northward migrating contamination from tank leakage could be detected before entering adjacent residential areas. It also recommended a soil survey to delineate petroleum contamination (Dames & Moore, 1982).

Dames & Moore followed up with a field investigation to implement the installation of a groundwater monitoring well network consisting of 17, 6-inch monitoring wells in soil borings to obtain both geologic and hydrogeologic data and groundwater samples for analysis. Eight of these monitoring wells were located along the north boundary (W-101 through W-108), and the other nine wells were installed outside the tank berms throughout the site (B-101 through B-109). The report (dated August 24, 1982) provides the site geology with cross sections, two groundwater contour maps, and groundwater analyses of samples collected on two occasions from only the B-series wells and W-104. The analyses included total organic carbon, oil and grease, and FSII (diethylene glycol monomethyl ether, a fuel system icing inhibitor in jet fuel). Dames & Moore concluded that contamination was present in low concentrations in several areas around the site, but that there was no consistency or obvious pattern to the contamination. Furthermore, Dames & Moore suggested that the ongoing skimming operations at the

36-inch recovery well, as well as the degradation by natural physical, chemical, and biological processes, would be sufficient to eliminate residual contamination, and that additional remedial efforts would likely be ineffective (Dames & Moore, 1982).

Science Applications International Corporation (SAIC) was contracted by the U.S. Air Force in April 1985 to implement Phase 2 Stage 1 operations (confirmation and quantification) of the Installation Restoration program for Charleston Air Force Base and its satellites (including DFSP). Field activities included sampling 15 of the existing monitoring wells installed by Dames & Moore for oil and grease analyses. Only one sample contained high concentrations of oil and grease (44,000 ppm), which came from a well located near the north site boundary downgradient of Tank 1 (W-103). Offsite migration of the 1975 JP-4 leak was considered likely, so SAIC installed three offsite monitoring wells (W-1 through W-3) further downgradient and side gradient to Tank 1 (SAIC, 1986). However, the DLA transferred the environmental responsibilities for the DFSP site from the Air Force to the Navy before SAIC completed its investigation.

In 1986 SOUTHNAVFACENGCOM contracted with McClelland Engineers, Inc. (McClelland), to assess the site under the Phase 2, Stage 2 (characterization) guidelines of the Navy Assessment and Control of Installation Pollutants program. The field investigation focused on the areas north and west of the site, and included 12 soil borings, 7 monitoring wells installed in selected boreholes, and 22 cone penetrometer soundings. The purposes of the field investigation were to determine the stratigraphy; characterize the hydrogeology; collect groundwater, soil, surface water, and private well water samples for analyses; and analyze soil headspace by FID. Six of the seven monitoring wells were installed within Gold Cup Springs subdivision and one was installed onsite. Groundwater samples were not only collected from the seven newly installed wells, but also from five existing onsite wells. Groundwater samples collected and analyzed by General Engineering Laboratories in May 1986 from some of the existing onsite monitoring wells and the three offsite wells installed by SAIC were also presented. The seven new monitoring wells were numbered according to the sequence started by SAIC (MW-4 through MW-10).

The report (McClelland, 1987a) provides two perpendicular geologic cross sections and hydraulic conductivity and flow velocity calculations for the shallow aquifer. All 12 groundwater samples were analyzed for BTEX and total organic carbon, and five samples were tested for biotreatment parameters: 5-day BOD_5, 20-day BOD_{20}, nitrogen (as ammonia), and orthophosphate. The BTEX analyses indicated that two contaminant plumes had migrated into Gold Cup Springs subdivision from Tanks 1 and 3. The soil vapor survey included 32 sample locations, and indicated three areas of contaminated soil: one extending north down the valley along East Lakeside Drive, one extending north of Tank 3, and one extending northwest of the truck loading station. Twelve soil samples were analyzed for oil and grease; however, these data did not correlate with the FID results. Water samples from four private wells and three surface water locations were collected and analyzed for BTEX and total organic carbon. Water samples collected from two of the private wells and one from the surface water, all of which were located within the plume associated with Tank 1, contained petroleum contamination. The biotreatment parameters indicated that nutrient enhancement would be required for successful biological remediation, which the report recommended pending further work that McClelland Engineers deemed necessary to complete the assessment.

An Addendum No. 1 report was also submitted by McClelland (1987b), which documented the results of additional work and resampling. Five monitoring wells and the same three surface water locations were resampled to verify the previous results. The new analyses were in general agreement with the results obtained 4 months earlier. The additional work included a step-down and long-term pumping test on W-104, soil vapor screening inside the seven tank berms, a review of inventory records for the periods January 1984 through June 1984 and August 1986 through January 1987, and a preliminary risk assessment to evaluate exposure to BTEX. Soil vapor screening revealed large areas of excessively contaminated soil around Tanks 1, 2, and 3.

In response to the preliminary risk assessment, SOUTHNAVFACENGCOM retained RMT, Inc. (RMT), in June 1987 to collect the necessary data to determine the exposure levels to petroleum-contaminated media for residents of Gold Cup Springs subdivision. The field investigation included the sampling of air, groundwater, surface water, and soil. Analyses of air samples indicated that concentrations of fuel-related aromatic organic vapors inside houses and crawl spaces, and outside in drainage ditches, storm sewers, points of groundwater discharge, and ambient air were very low. Analyses of groundwater samples from seven existing monitoring wells and two private irrigation wells indicated that the contaminant plume had migrated downgradient. High concentrations of BTEX were detected in two surface water samples collected from a drainage ditch along Valley Street, and minor concentrations were detected in a sample from Gold Cup Springs Lake. The eight soil samples collected were mainly from the ditches, but two were from backyards along the north boundary of the site. Only two samples had significant concentrations of BTEX. Two sediment samples from the lake had only minor petroleum contamination (RMT, 1987).

Using these collected data, ICF-Clement Associates (ICF-Clement), who were retained by RMT, evaluated the possible health risks to residents of Gold Cup Springs subdivision. The risk assessment reports (ICF-Clement, 1987a; 1987b) concluded that the maximum risk of cancer from exposure to benzene was 3 in 10,000 by inhalation, 3 in 1,000 by ingestion, and 9 in 100 by dermal absorption and incidental ingestion while swimming in pools filled with contaminated groundwater. The latter pathway was considered most likely, while ingestion was considered very unlikely because the groundwater was not used for drinking. The hazard index for exposure to noncarcinogens under the maximum exposure scenario by these pathways was less than 1, greater than 1, and substantially greater than 1, respectively.

In August 1987, RMT was contracted to continue the groundwater assessment. The field investigation included the installation of eight additional monitoring wells (six shallow and two deep) within soil borings, split-spoon sampling at 5-foot intervals for lithologic description, two pumping tests, and a monitoring well elevation and topographic survey. The numbering system for the new monitoring wells continued the sequence from the last well installed by McClelland (MW11 through MW13 and MW15 through MW17). The two deep wells were paired with shallow wells installed along the north site boundary (MW11/11A and MW12/12A), and were set with 5 feet of screen on top of the Cooper Formation. Selected soil samples collected from these two deep borings were sent to a laboratory for vacuum extraction feasibility experiments (RMT, 1988).

Groundwater samples were collected from 16 existing monitoring wells and 4 private irrigation wells in addition to the eight newly installed wells. All the

samples were analyzed for BTEX, and nine samples were also analyzed for naphthalene, 2-methylnaphthalene, and total phenols. The results were compared with analyses conducted within the past year, which indicated that the two contaminant plumes extending north-northwest from Tanks 1 and 3 were decreasing in BTEX concentrations near the source and increasing in central downgradient locations. The lateral extent of the Tank 1 plume appeared to decrease. Increased BTEX concentrations in samples collected from MW-7 and B-101 indicated a third plume on the west side of the site (RMT, 1988).

RMT was contracted again in June 1989 to install additional monitoring wells and collect two complete rounds of groundwater samples for analyses. Two additional monitoring wells were installed on adjacent property to the west of the site (MW-18 and MW-19). An inventory of all monitoring wells located onsite and offsite was submitted in a report to SOUTHNAVFACENGCOM in September 1989. The results of the first round of groundwater sampling and analyses were submitted in a report dated September 1989, and the second round in a report dated January 1990. The analytical results revealed that the three contaminant plumes had migrated northwestward within that time, and that a newly identified plume associated with the railcar loading stand had moved in the same direction. The data indicated that the two northern plumes may eventually commingle.

As a result of the investigations at the site, the USGS was contracted by SOUTHNAVFACENGCOM in October 1987 to conduct and monitor a pilot program of enhanced *in situ* bioremediation, and then assess and document its potential. The USGS began the program by collecting saturated soil samples beside two existing monitoring wells, one where the shallow aquifer was known to be contaminated, and one where the aquifer was uncontaminated. The soil samples were tested for bacterial activity and JP-4 reduction under aerobic and anaerobic conditions, with the addition of different concentrations of JP-4 and nitrate, phosphate, and nitrate plus phosphate as nutrients. The USGS concluded that bacteria capable of degrading JP-4 were present at the site, and that the bacteria were more efficient at JP-4 biodegradation in already contaminated areas. Nutrient enrichment was found to slightly enhance JP-4 biodegradation under aerobic conditions, but was greatly enhanced under anaerobic conditions. A field-scale experiment was recommended to evaluate the effectiveness of enhanced in situ biodegradation as a remedial alternative (Chapelle and others, 1988).

The field-scale experiment began in 1988 with the installation of 17 extraction wells along the northern property boundary and 1 in Gold Cup Springs subdivision. A single, three-sectioned, linear infiltration gallery within the cones of depression was constructed along the outside of the north berm of Tanks 1, 2, and 3. The groundwater removed by pumping is discharged to the North Charleston sewer system. Clean water from a separate well that penetrates the Santee Formation is pumped to the infiltration gallery after nutrients are added. The system has only pumped 1.5 to 6 gallons per minute (gpm) from each extraction well in an effort to minimize the cone of depression and still prevent the spread of the contaminant plumes. The biodegradation enhancement experiments have included the use of nitrate, phosphate, sulfate, and oxygen, as compared to natural conditions. Groundwater monitoring is performed in some wells monthly and in others quarterly.

Before the system could be calibrated, the USGS performed additional soil sampling in 1989 to estimate the volume and concentration of JP-4 in the soil. Fifty-six soil samples were collected by split spoon from 10 locations along the

west and north site boundaries, at depths ranging from 2 to 27 feet bls. The samples were analyzed by a laboratory for total recoverable petroleum hydrocarbons (TRPH). Three areas of petroleum contamination were identified and are associated with the following sources: the truck loading stand, Tank 1, and Tank 3. Preliminary calculations indicated that 14,500 pounds (lbs) of hydrocarbons were in the soil in the north boundary area, and that 14,800 lbs of nitrate would be required to biotransform the hydrocarbons to carbon dioxide (CO_2) (McMahon, 1989).

In mid-1990, the USGS was contracted to perform a reconnaissance study over the remainder of the site south of Tanks 1, 2, and 3, and west of the site to identify areas of potential petroleum contamination. The bottom sediment in the drainage ditch along the east site boundary and in the stream flowing west from the southern boundary was included in the study. The results were to help direct subsequent investigations in delineating the groundwater contaminant plumes. The USGS conducted a passive soil gas survey using two techniques for comparison. A grid pattern of 50- to 250-foot spacing was used to ensure coverage. The results revealed high VOC concentrations in the soil in the following areas: the field west of the site, around the tank truck loading stand and pump station, southeast of Tank 2 and extending along the east side of Tank 5, southeast of Tank 6, along the southern site boundary adjacent to Spartan Equipment Co., and parts of the two stream beds (Robertson and others, 1993). Because of these results, ABB-ES was contracted to investigate and verify potential groundwater contamination in the same areas as part of the Comprehensive Long-Term Environmental Action, Navy (CLEAN) program.

5.2 CONTAMINANT PLUME EXTENT AND CHARACTERIZATION. Laboratory analytical results are presented in Appendix A. The analytical results from the April and November 1993 Phase 2 field investigation were plotted and contoured together on site maps. Analytical data showing the offsite plumes west of the site represent November 1993 data. The onsite and northern plumes, however, represent April 1993 data. The analytical results from the USGS groundwater sampling in April 1993 of 30 preexisting northern wells and in October 1993 of two preexisting western wells are also included. The selection of preexisting wells to be sampled for analysis was based on geographical distribution, well diameter, and the screened interval. The analytical results from the October 1994 Phase 3 field investigation are plotted separately. Phase 2 and Phase 3 analytical results are summarized in Table 5-1.

The BTEX isoconcentration map for the Phase 2 analytical data (Figure 5-1) provides an indication of the total area impacted by petroleum releases. The map shows five areas of high BTEX concentrations onsite that are in the vicinity of five potential sources of petroleum contamination: Tank 1, Tank 3, the tank truck loading stand, the tank truck pump station, and the main pump station near the railroad tracks. Groundwater samples from monitoring wells DFSP-MW-8, DFSP-MW-10, B-109, and B-106 confirmed that petroleum contamination is not present in the central and southern areas of the site (i.e., between Tanks 4, 5, and 7, and south and east of Tank 7).

Table 5-1
Summary of Analytical Results for Groundwater Samples, Phases 2 and 3

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Monitoring Well/Sample No.	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	Total Naphthalene	Lead
Phase 2, April 20 and 21, 1993 (ABB-ES)							
DFSP-MW-1	[1]39	2E	500	2,700	3,241	98	44.7
DFSP-MW-2	[1]14	[1]1,900	120	790	2,824	26	[1]71.2
DFSP-MW-3	[1]17	95	25	42	179	60	23.9
DFSP-MW-3D	[1]7	ND	ND	ND	7	ND	ND
DFSP-MW-4	[1]5	6	2E	32	45	7	30.4
DFSP-MW-5	ND	3E	ND	ND	3	ND	37.1
DFSP-MW-6	[1]59	510	25	97	691	94	42.6
DFSP-MW-7	[1]125	<25	400	220	745	120	[1]136
DFSP-MW-8	ND	ND	ND	ND	ND	ND	43.0
DFSP-MW-9	ND	ND	60	120	180	ND	27.1
DFSP-MW-10	ND	ND	ND	ND	ND	ND	25.9
DFSP-MW-11	ND	ND	ND	14	14	3E	[1]77.8
DFSP-MW-12	ND	4E	66	120	190	39	[1]52.6
DFSP-MW-13	[1]570	<15	61	31	662	219	49.1
DFSP-MW-14	<50	<50	350	2,500	2,850	270	40.0
DFSP-MW-15	[1]200	<50	500	1,300	2,000	238	39.8
DFSP-MW-16	ND	1E	ND	2E	3	46	[1]73.4
DFSP-MW-17	<15	210	240	860	1,310	71	20.9
DFSP-MW-18	[1]47	320	140	530	1,037	76	28.2
DFSP-MW-19	ND	ND	ND	ND	ND	ND	39.7
MW-7(ME)	ND	ND	20	67	87	38	16.6
B-106	ND	ND	ND	ND	ND	ND	6.2
B-109	ND	ND	ND	ND	ND	ND	15.7
SCDHEC MCL	5	1,000	700	10,000	--	None	50

See notes at end of table.

Table 5-1 (Continued)
Summary of Analytical Results for Groundwater Samples, Phases 2 and 3

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Monitoring Well/Sample No.	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	Total Naphthalene	Lead
Phase 2, November 10, 1993 (ABB-ES)							
DFSP-MW-13	[1]5E	ND	37	ND	42	280	ND
DFSP-MW-20	ND	ND	ND	ND	ND	ND	ND
DFSP-MW-21	[1]5E	ND	21	ND	26	113	30.3
DFSP-MW-21D	[1]13	ND	27	ND	40	3E	1.8E
DFSP-MW-22	[1]51	42	86	140	319	61	1.5E
DFSP-MW-23	3E	ND	ND	ND	3	1E	ND
DFSP-MW-24	3E	ND	2E	ND	5	6E	3.3
DFSP-MW-25	ND	ND	ND	ND	ND	ND	5.3
MW-18(RMT)	[1]84	ND	36	3E	123	9E	36.9
April 1, 2, 6, and 7, 1993 (USGS)							
EW-1	[1]25.8	ND	106	<20	131.8	NA	NA
EW-2	[1]135	21.9	174	367	697.9	NA	NA
EW-3	ND	ND	ND	ND	ND	NA	NA
EW-4	ND	ND	ND	ND	ND	NA	NA
EW-5	[1]247	243	153	736	1,379	NA	NA
EW-6	[1]363	654	227	859	2,103	NA	ND
EW-7	[1]39.3	473	122	619	1,253	NA	ND
EW-8	[1]16.6	14.7	87.7	292	411	NA	NA
EW-9	[1]27.2	16.9	31.4	156	231.5	NA	NA
MW-4	[1]1,690	<100	651	2,830	5,171	255	NA
MW-5	ND	ND	ND	4.1	4.1	NA	ND
MW-6	[1]35.1	<20	135	493	663.1	NA	NA
MW-8	ND	5.1	ND	ND	5.1	NA	NA
MW-9	ND	ND	133	530	663	NA	NA
MW-11A	<100	<100	230	741	971	79.1	NA
MW-12	[1]69	<20	89	244	402	ND	10.6
MW-12A	[1]45.1	269	456	1,410	2,180	NA	15.9
MW-15	ND	ND	ND	ND	ND	NA	NA
MW-17	[1]13.6	106	15.9	56.5	192	NA	ND
SCDHEC MCL	5	1,000	700	10,000	–	None	50

See notes at end of table.

Table 5-1 (Continued)
Summary of Analytical Results for Groundwater Samples, Phases 2 and 3

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Monitoring Well/Sample No.	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	Total Naphthalene	Lead
MWGS-20	[1]5.6	10.4	3.5	5.8	25.3	NA	ND
MWGS-21	ND	3.9	ND	ND	3.9	NA	ND
MWGS-22	[1]174	173	264	1,310	1,921	NA	ND
MWGS-32A	[1]23	879	113	309	1,324	NA	ND
MWGS-35	[1]775	80.9	372	1,110	2,338	NA	NA
MWGS-36	[1]651	[1]2,280	391	2,030	5,352	NA	NA
MWGS-37	<100	140	165	798	1,103	NA	NA
MWGS-39	[1]26.16	<20	203	578	807.6	NA	NA
W-001	[1]23.9	31.7	79.2	592	726.8	NA	NA
W-105	ND	ND	ND	ND	ND	NA	NA
PW-2	[1]127	[1]1,470	447	2,240	4,284	182	ND
October 14, 1993 (USGS)							
MW-19	[1]159	172	665	216	1,212	NA	NA
W-003	[1]13.7	ND	ND	ND	13.7	NA	NA
Phase 3, October 27 and 28, 1994 (ABB-ES)							
DFSP-MW-7	[1]37	330	7.2	210	584.2	111	[1]136
DFSP-MW-13	[1]390	110	8.6	ND	508.6	364	10.1
DFSP-MW-14	ND	10	1.6	58	69.6	76	9.9
DFSP-MW-15	[1]370	260	ND	630	1260	146	13.8
DFSP-MW-21	[1]14	78	ND	ND	92	24	7.8
DFSP-MW-22	[1]53	100	35	350	538	164	1.9
DFSP-MW-23	ND	ND	ND	ND	ND	ND	1.1
DFSP-MW-24	2.1	1.5	ND	ND	3.6	4.0	1.4
DFSP-MW-26	ND	ND	ND	ND	ND	ND	3.0
DFSP-MW-27	[1]17	6.4	ND	12	35.4	74	48
DFSP-MW-28	[1]49	270	7.2	46	372.2	107	13.1
EW-1	[1]24	84	ND	ND	108	45	4.3
EW-2	[1]100	160	17	570	847	38	4.0
MW-7(ME)	1.7	21	ND	33	55.7	23.3	28.1
MW-9(ME)	ND	ND	ND	5.0	5.0	ND	10.4
SCDHEC MCL	5	1,000	700	10,000	--	None	50

See notes at end of table.

Table 5-1 (Continued)
Summary of Analytical Results for Groundwater Samples, Phases 2 and 3

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Monitoring Well/Sample No.	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	Total Naphthalene	Lead
MW-18(RMT)	[1]160	93	1.7	7.8	262.5	7.5	8.7
MW-19(RMT)	ND	ND	ND	ND	ND	ND	20.4
W-003	0.97	ND	ND	ND	0.97	ND	6.3
SCDHEC MCL	5	1,000	700	10,000	--	None	50

[1] Concentration equals or exceeds South Carolina Department of Health and Environmental Control maximum contaminant level.

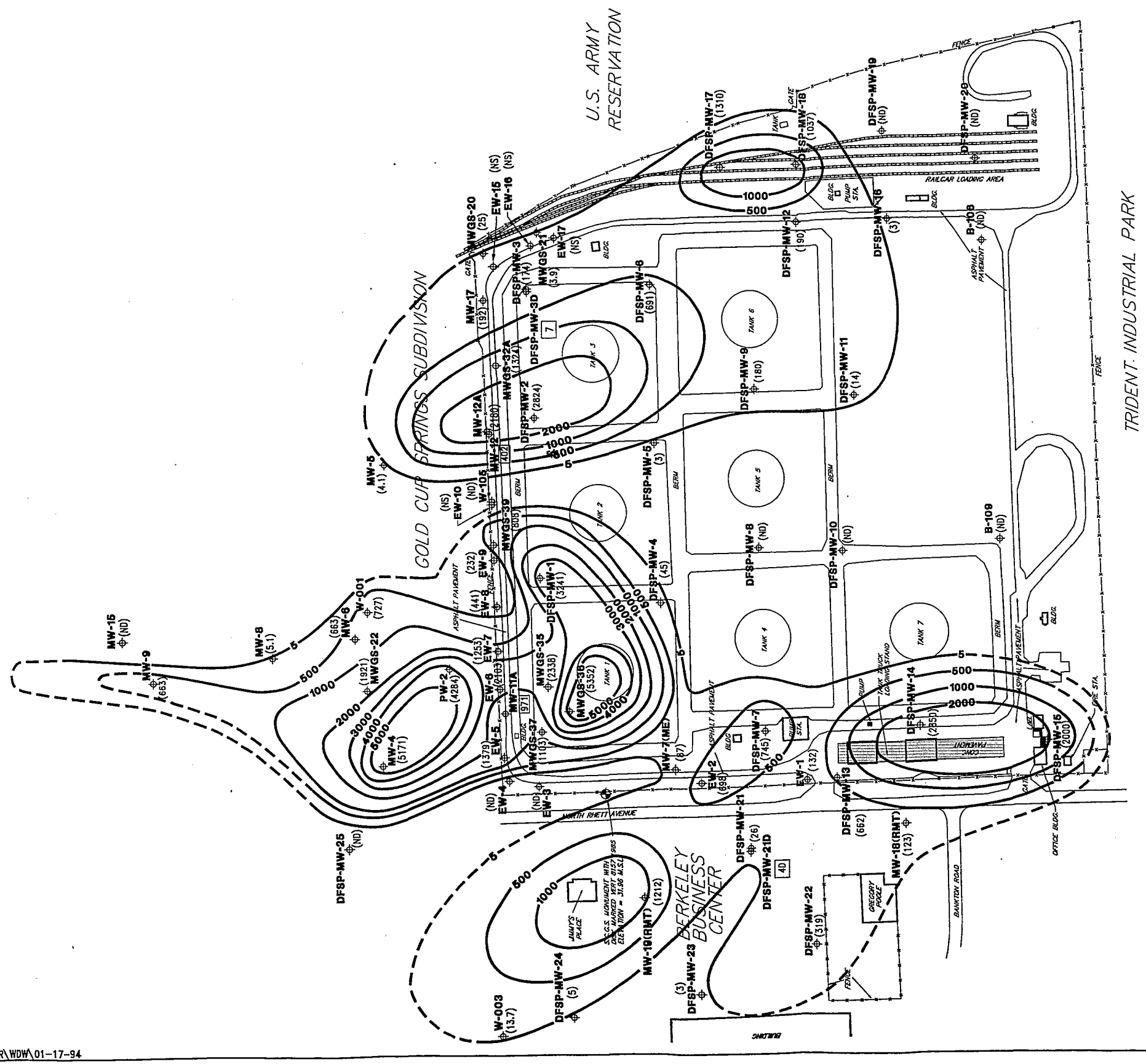
Notes:
All concentrations are in parts per billion (ppb).
BTEX = benzene, toluene, ethylbenzene, and total xylenes.
ABB-ES = ABB Environmental Services, Inc.
ND = not detected below method detection limit.
NA = not analyzed.
E = estimated value when concentration is below detection limit.
USGS = U.S. Geological Survey.

The BTEX concentrations within the Tank 1 plume have been reduced in the vicinity of the extraction wells. The two areas of high BTEX concentrations seen in Figure 5-1 appear to be the result of pumping in EW-5 through EW-8, which has bisected the plume. Pumping in extraction wells EW-9 and EW-10 is also drawing BTEX contamination from Tank 1 toward the northeast. In April 1993, the Tank 1 contaminant plume was still separate from the Tank 3 plume, as evidenced by the non-detection analytical results of the groundwater sample from W-105. The analytical data also indicated that BTEX contamination north of the extraction wells extends down the valley to the north and northeast. To assess how far the Tank 1 plume extends past MW-9, monitoring well DFSP-MW-26 was installed and sampled with MW-9 during the Phase 3 field investigation in October 1994. BTEX analytical results show (Figure 5-2) that the Tank 1 plume does not extend as far as DFSP-MW-26.

Figure 5-1 also shows two areas of high BTEX concentrations on the adjacent property west of the DFSP site in the vicinity of potential offsite sources. One area is Jimmy's Place, which was a 7-11 convenience store and gas station, and the adjoining Hanahan Fuel Express (not shown on Figure 5-1). The other area is behind the Gregory Poole building, where there is a 1,000-gallon underground concrete oil-water separator. There were insufficient data from the Phase 2 field investigation to determine whether the petroleum contamination apparently originating from these sources had commingled with the western DFSP plumes, or were separate. To collect sufficient data, two monitoring wells (DFSP-MW-27 and DFSP-MW-28) were installed and sampled with other pertinent monitoring wells during the Phase 3 field investigation. Figure 5-2 shows that the DFSP contamination and the contamination at Jimmy's Place were clearly separate in October 1994. BTEX concentrations in the groundwater at MW-19 (RMT) decreased from 1,212 parts per billion (ppb) in November 1993 to non-detection. Groundwater analytical results from DFSP-MW-27 also show a separation between the DFSP contamination and the contaminant plume associated with Gregory Poole.

Benzene values from the Phase 2 and Phase 3 analytical data were plotted and contoured on Figures 5-3 and 5-4, respectively. Benzene is the primary constituent of BTEX that exceeds the South Carolina maximum contaminant levels (MCL) for groundwater. The MCL for benzene is 5 micrograms per liter $\mu g/\ell$ (ppb). Toluene was the only other BTEX constituent that exceeded the MCL (1,000 ppb). Toluene concentrations exceeding the MCL were detected in samples from only three wells (MWGS-36, PW-2, and DFSP-MW-2). These three wells are located within the areal extent of benzene contamination. Figure 5-3, therefore, shows the total area of petroleum contamination that exceeds South Carolina standards. A comparison of Figure 5-3 to Figure 5-4 shows that the areal extent and concentrations of benzene in the western plumes decreased after 1 year.

Because naphthalene is a constituent of jet fuel, total naphthalene values from the Phase 2 analytical data were also plotted and contoured. However, many of the monitoring wells that the USGS sampled quarterly were not analyzed for naphthalene; therefore, the extent of naphthalene in the northern parts of the Tank 1 and Tank 3 plumes is not known. A comparison of Figure 5-5 to Figure 5-6 shows that the high naphthalene concentrations in the western plumes have become more localized after 1 year because of a decrease in every monitoring well sample except DFSP-MW-13 and DFSP-MW-22.



LEGEND

- ⊕ Monitoring well location
- BTEX Benzene, ethyl benzene, toluene, and xylenes
- ——— BETX isoconcentration contour line in parts per billion (ppb), dashed denotes inferred
- (3) BETX concentration (ppb)
- [7] BETX concentration at deep monitoring wells
- (ND) None detected
- (NS) Not sampled

0 125 250

SCALE: 1" = 250'

FIGURE 5-1
BETX ISOCONCENTRATION MAP (PHASE 2), INCLUDING USGS DATA, APRIL AND NOVEMBER 1993

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA

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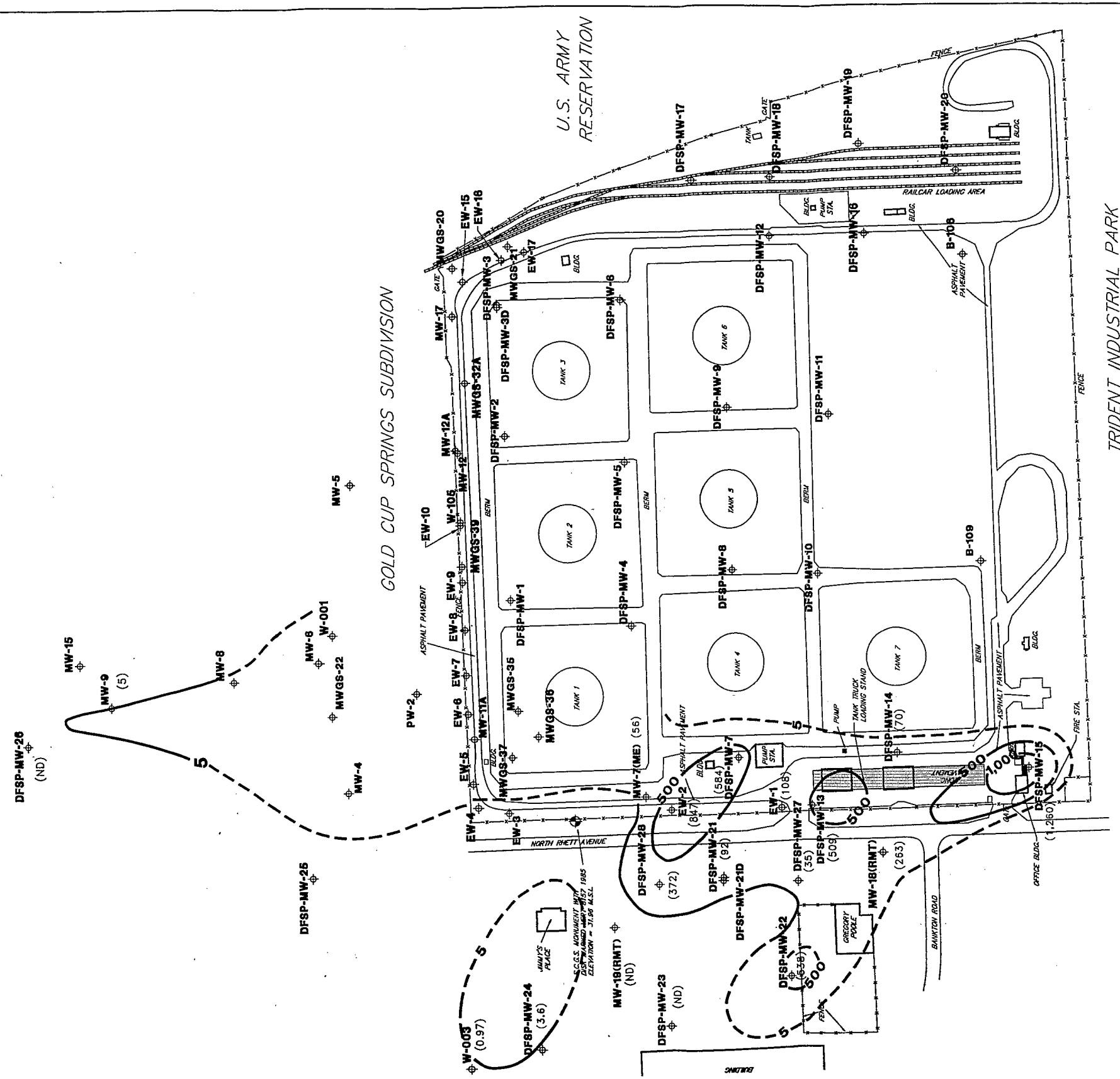

LEGEND

- ⊕ Monitoring well location
- BTEX Benzene, ethyl benzene, toluene, and xylenes
- ——— BTEX isoconcentration contour line in parts per billion (ppb), dashed denotes inferred
- (35) BTEX concentration (ppb)
- (ND) Not detected

Note: Monitoring wells with no values were not sampled.

0 125 250

SCALE: 1" = 250'

FIGURE 5-2
BTEX ISOCONCENTRATION MAP (PHASE 3), OCTOBER 1994

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA

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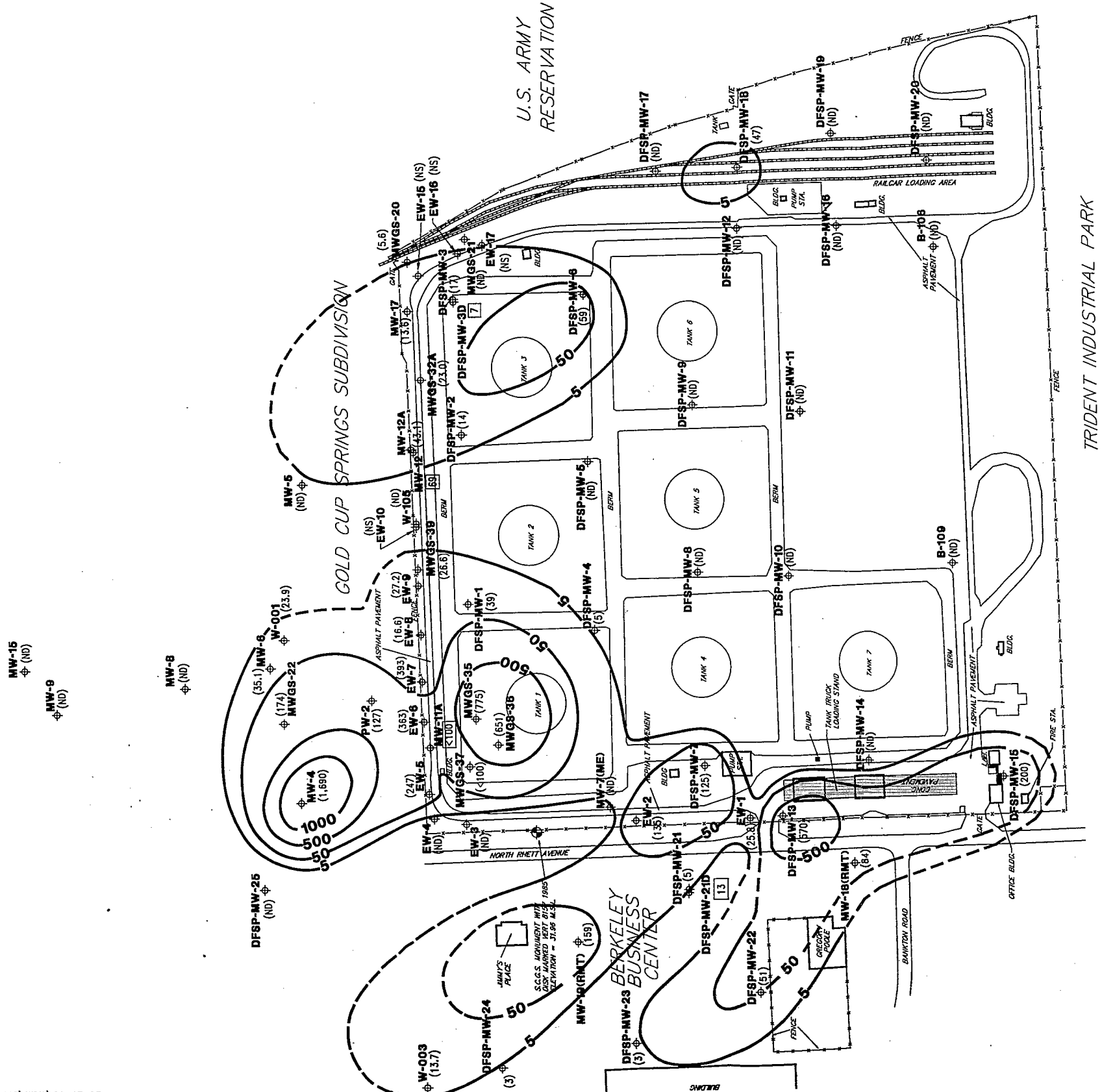

LEGEND

- ⊕ Monitoring well location
- Benzene isoconcentration contour line in parts per billion (ppb), dashed denotes inferred
- (14) Benzene concentration (ppb)
- [7] Benzene concentration at deep monitoring wells
- (ND) None detected
- (NS) Not sampled

0 125 250

SCALE: 1" = 250'

FIGURE 5-3
BENZENE ISOCONCENTRATION MAP (PHASE 2), INCLUDING USGS DATA, APRIL AND NOVEMBER 1993

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA

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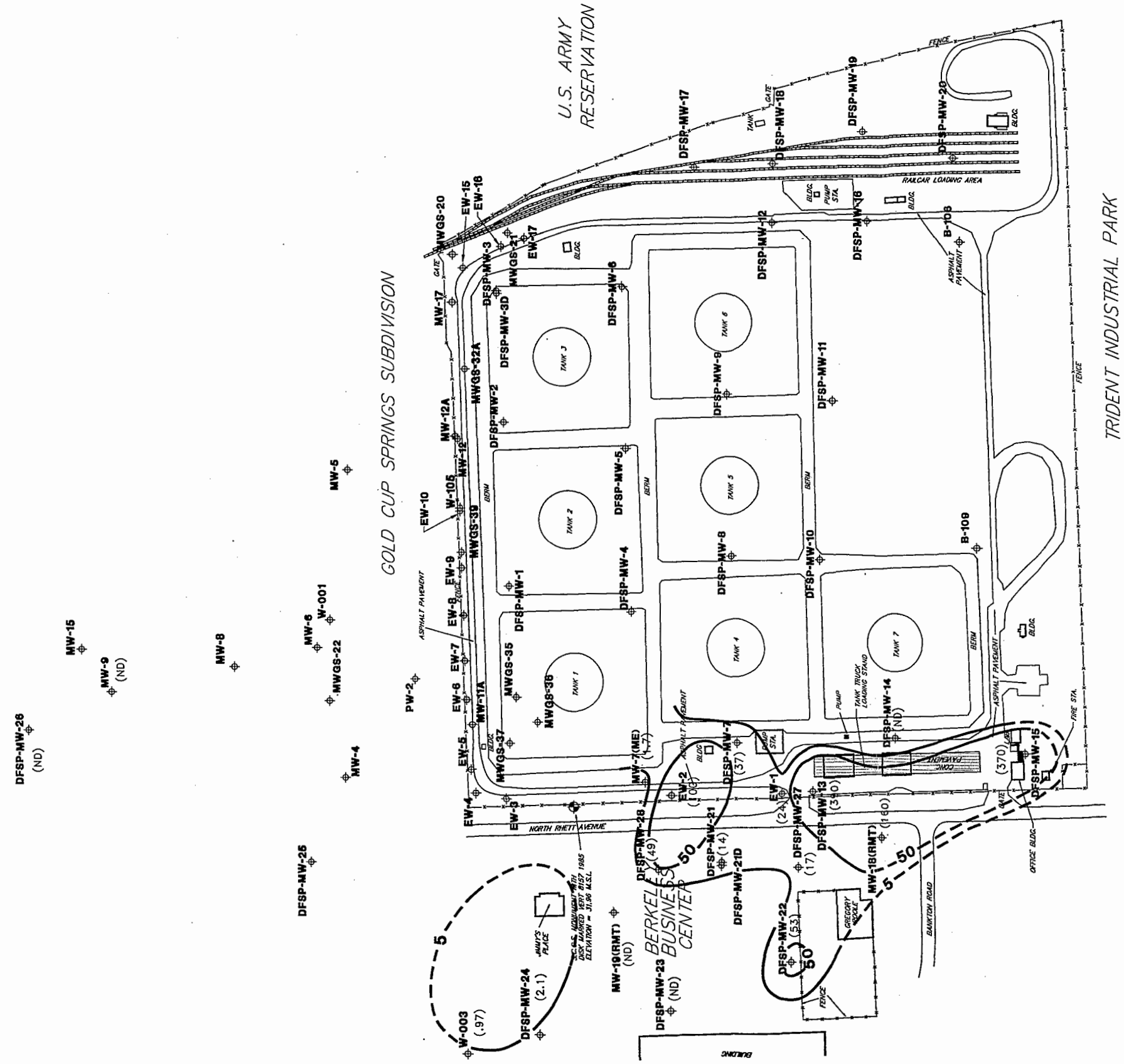

LEGEND

- Monitoring well location
- Benzene isoconcentration contour line in parts per billion (ppb), dashed denotes inferred
- (24) Benzene concentration (ppb)
- (ND) Not detected

Note: Monitoring wells with no values were not sampled.

0 125 250

SCALE: 1" = 250'

FIGURE 5-4
BENZENE ISOCONCENTRATION MAP (PHASE 3), OCTOBER 1994

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA

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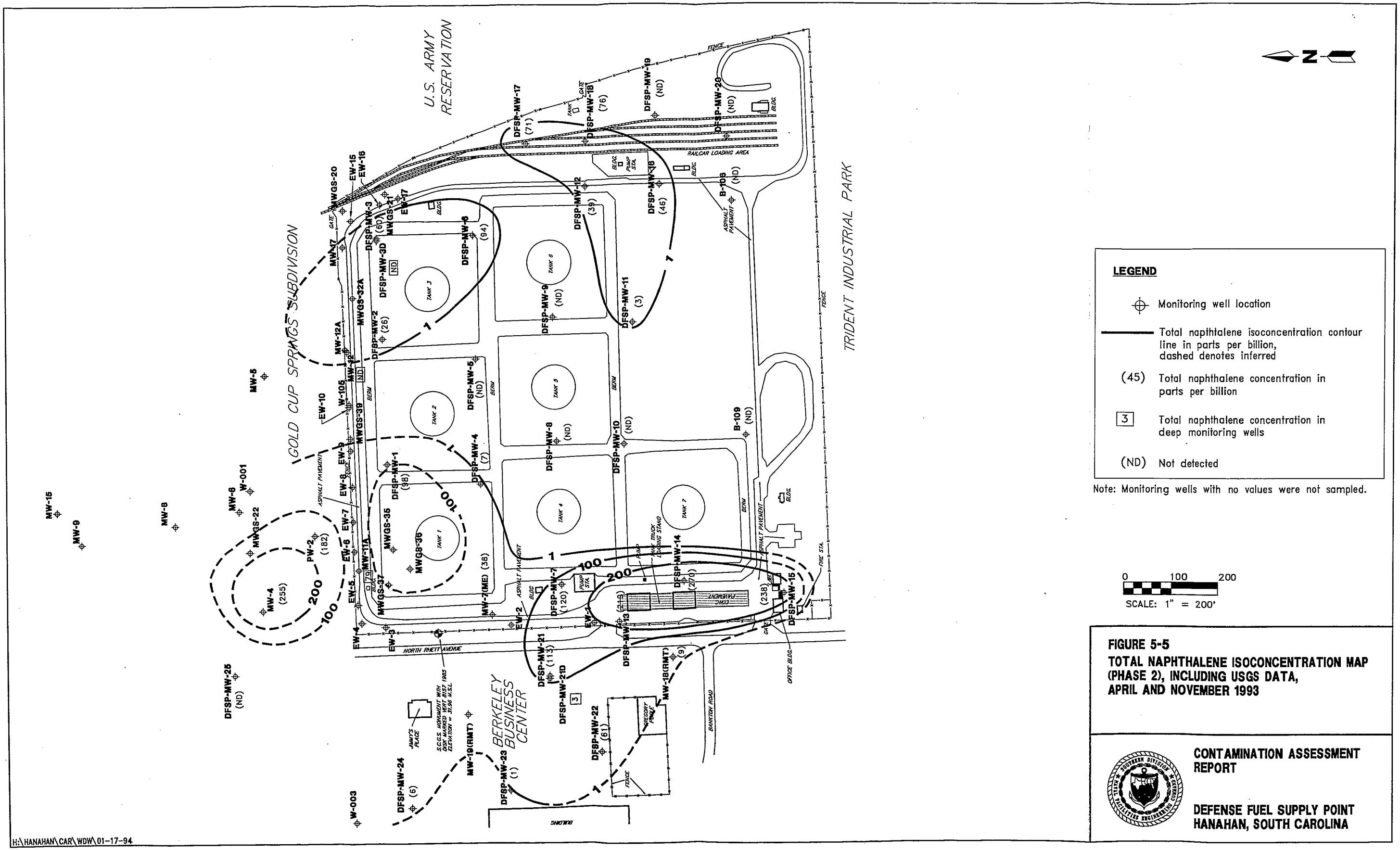
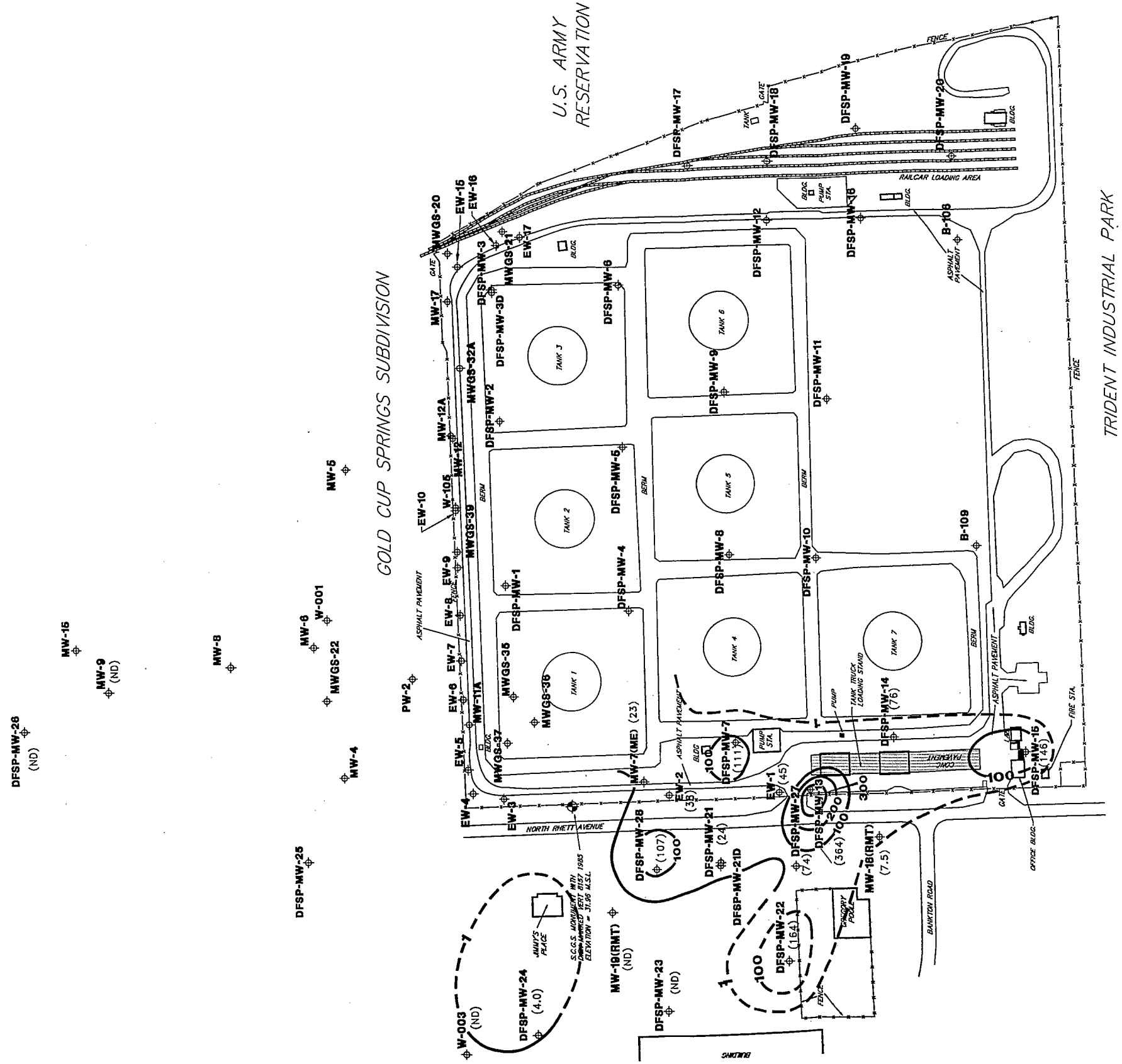


FIGURE 5-5
TOTAL NAPHTHALENE ISOCONCENTRATION MAP (PHASE 2), INCLUDING USGS DATA, APRIL AND NOVEMBER 1993

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA



LEGEND

- Monitoring well location
- Total napthtalene isoconcentration contour line in parts per billion (ppb), dashed denotes inferred
- (45) Total naphthalene concentration in ppb
- (ND) Not detected

Note: Monitoring wells with no values were not sampled.

0 125 250

SCALE: 1" = 250'

FIGURE 5-6
TOTAL NAPHTHALENE ISOCONCENTRATION MAP (PHASE 3), OCTOBER 1994

CONTAMINATION ASSESSMENT REPORT

DEFENSE FUEL SUPPLY POINT HANAHAN, SOUTH CAROLINA

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Petroleum contamination in the northern and western plumes extends vertically to the top of the Cooper Formation (30 to 32 feet bls), as indicated by the analytical results of the deep well groundwater samples (MW-11A, MW-12, DFSP-MW-3D, and DFSP-MW-21D). The contaminant concentrations, however, were minor in three of these groundwater samples. In MW-11A, the BTEX concentration (971 ppb) is higher than in the adjacent shallow monitoring well (MW-11, 59.2 ppb). The USGS theorized that free product is being stratigraphically trapped under a clay lens in this area (see Figures 3-3 and 3-4). The concentrations of inorganics in the deep well groundwater samples were also very low. Arsenic, chromium, and lead were below detection limits in the samples from DFSP-MW-3D and cadmium was 0.4 ppb.

5.3 AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS Lithologic logs for borings conducted during the assessment are presented in Appendix B. The shallow, semiconfined aquifer occurs in the unconsolidated Pleistocene sediments of fine sand with lenses of sandy clay that overlie the Cooper Formation. The Cooper Formation, which is 25 to 35 feet bls at the site, is an aquiclude. The groundwater table ranges from 1.4 to 10.8 feet bls, and slopes to the northwest at an average gradient of 1.2×10^{-2} feet per foot (ft/ft) over most of the site. The shallow aquifer has a downward hydraulic head difference of approximately 2 feet between the upper and lower water-bearing zones.

Slug tests were performed in four onsite monitoring wells located near the five main sources of petroleum contamination. The average hydraulic conductivities (K) and flow velocities for each well and source area are summarized in Table 5-2. Hydraulic conductivities were calculated from the slug test data by the Bouwer and Rice (Bouwer, 1989) method for partially penetrating wells in an unconfined aquifer using the computer program AQTESOLV™, the graphs of which are provided in Appendix C. Pore water velocities were calculated using an estimated porosity of 30 percent. Using an average aquifer thickness of 20 feet, the transmissivity ranged from 187 square feet per day (ft^2/day) to 71 ft^2/day.

Table 5-2
Slug Tests Results

Contamination Assessment Report
Defense Fuel Supply Point
Hanahan, South Carolina

Monitoring Well No.	Number of Tests	Average K (ft/day)	RSD (percent)	Average Flow Velocity (ft/day)	Average Transmissivity (ft^2/day)
DFSP-MW-18	2	3.53	16.69	1.41×10^{-1}	70.6
DFSP-MW-6	2	9.35	4.45	3.74×10^{-1}	187.0
DFSP-MW-4	3	8.19	0.34	3.28×10^{-1}	163.8
DFSP-MW-13	3	4.73	6.12	1.89×10^{-1}	94.6

Notes: K = hydraulic conductivity
RSD = relative standard deviation
ft/day = feet per day
ft^2/day = square feet per day

6

6.0 SUMMARY AND CONCLUSIONS.

6.1 SUMMARY. Due to the release of approximately 84,000 gallons of JP-4 from Tank 1 in October 1975, the site and adjacent properties have been the subject of many environmental investigations over the past 19 years. ABB-ES was contracted in December 1990 to perform a CA of the site and adjacent properties to assess groundwater quality in the areas of known petroleum-contaminated soil, as determined by a passive soil gas survey conducted by the USGS in 1990. Due diligence was exercised to not duplicate previous work, but to incorporate the data where needed. Therefore, the CA excluded the north site boundary and adjacent Gold Cup Springs subdivision because these areas have been sufficiently studied by previous investigators and the groundwater has been monitored in these areas by the USGS since 1988. The extent of contaminated soil and the site geology and hydrogeology were also not reassessed during this CA; however, the results of previous investigators have been summarized in this report. The field investigation was conducted in three phases commencing in July 1992 and ending in October 1994. A letter report summarizing the tasks performed and the results obtained was submitted to SCDHEC after the completion of the first and second phases. This CAR is being submitted in fulfillment of the first part of the CAP.

During Phase I of the CA, the areal extent of petroleum-contaminated groundwater was approximated in the field using a portable GC to analyze samples collected through 55 temporary well points. Headspace analyses by an OVA-FID of 105 soil samples collected during the installation of these well points was conducted to verify the results of previous investigations. During Phase 2, 27 permanent monitoring wells (25 shallow and 2 deep) were installed at locations based on the GC screening results and groundwater samples were collected from 31 wells for laboratory analyses. Laboratory data of the same period for groundwater samples collected by the USGS from several northern and western wells were incorporated to provide a more complete picture of the contaminant plumes. Aquifer tests for hydraulic conductivity were also performed. Three additional offsite monitoring wells were installed during Phase 3 to further characterize the horizontal extent of the western and Tank 1 plumes. A second round of groundwater sampling was conducted in October 1994 in 16 western wells and 2 northern wells to provide current analytical data on the contaminant plumes in these areas.

6.2 CONCLUSIONS. The results of this CA indicate there are three major petroleum contaminant plumes at the site. All three plumes have migrated laterally offsite in the northwesterly direction of groundwater flow and downward to the top of the Cooper Formation. The western plume has commingled with the southwest corner of the Tank 1 plume, but the Tank 1 plume is separate from the eastern plume. Two areas of free product, located north of Tank 1 and Tank 3 near the site boundary, have been delineated by the USGS. The area between Tanks 4, 5, and 7, and south and east of Tank 7 appears to be free of petroleum contamination.

Each of the three plumes has two or more areas of high BTEX concentrations and, with the exception of the offsite part of the Tank 1 plume, are the suspected contaminant source areas. The east and west plumes are possibly commingled plumes from two, or three, onsite sources. The west plume also appears to have two offsite sources. The separate offsite area of high BTEX concentrations in the Tank 1 plume is suspected to be the result of pumping from extraction wells EW-5 through EW-8. The six suspected onsite sources are listed below:

- Tank 1,
- the area around Tank 3,
- the tank truck loading stand,
- the pump station for the tank truck loading stand,
- the main pump station near the railcar loading stand, and
- the removed heating oil UST for the office building.

All the source areas that are apparently associated with past leakage or spillage have been abated; namely, Tank 1, the tank truck loading stand and pump station, the main pump station, and the UST. However, any resulting contaminated soil or free product in these areas will continue to be sources of petroleum contamination until remediated.

The source of contamination around Tank 3 was caused by burial of water bottoms (the sludge that precipitates out of stored petroleum and settles onto the bottom of the tank). The USGS found high TRPH and inorganic concentrations below the water table in this area, which is consistent with the dense non-aqueous phase liquid (DNAPL) water components of JP-4 that forms tank bottom sludge. McClelland (1987b) found excessive soil contamination between Tanks 2 and 3, which was verified by ABB-ES. Furthermore, the USGS has delineated an area of free product north of Tank 3 as far as W-108. The free product may possibly be the result of fuel separating out of the sludge.

Buried tank bottom sludge may also explain the groundwater contamination found in samples collected from monitoring wells DFSP-MW-11 and 16, which are upgradient of both Tank 6 and the main pump station (the nearest possible sources). A leak at Tank 6 has also never been reported. Only xylene (the heaviest constituent of BTEX) and naphthalene were detected in these samples. This area south of Tank 6 is most apparent as a contaminant source on Figure 5-5.

The Tank 1 plume is believed to be solely the result of the 84,000-gallon fuel leak in 1975. The IRA recovered approximately 25 percent of the free product, and the USGS has been slowly skimming free product from several extraction wells along the north site boundary. The USGS has delineated an area of free product floating on top of the water table onsite north of Tank 1, and believes that more free product is stratigraphically trapped under a clay lense in that area. Since 1975, the plume appears to have migrated offsite toward the northwest and northeast where the groundwater discharges in Gold Cup Springs. The contaminant plume does not extend as far downgradient as monitoring well DFSP-MW-26.

The eastern plume appears to have formed as a result of commingling of three plumes from three sources. The main pump station near the railcar loading stand is believed to be the source of high contaminant concentrations detected in the groundwater from monitoring wells DFSP-MW-17 and DFSP-MW-18. The area of high concentrations is downgradient (northeast) of the pump station where surface spills along the railroad tracks would most likely occur. Most of the eastern plume has migrated to the northwest, extending offsite as far as MW-5. Petroleum contamination near the railroad tracks is migrating east and northeast toward the drainage ditch that parallels the eastern boundary.

The western plume may also have had two or more sources: the tank truck loading stand and the associated pump station. High contaminant concentrations detected in groundwater samples from monitoring well DFSP-MW-15 indicate that the heating

oil UST removed from that area may also have been a source. Petroleum contamination from these sources appears to have merged with the southwest corner of the Tank 1 plume and with the southeast corners of the two offsite plumes. Merging of the plumes may have been enhanced by pumping of extraction wells EW1 and EW-2, mounding, and downgradient migration. Pumping at extraction well EW-1, located between the tank truck loading stand and the associated pump station, may also have contributed to merging of the plumes.

Two chemically distinguishable and unrelated petroleum contaminant plumes were identified on the adjacent properties west of the site. The smaller, southern plume appears to be associated with a 1,000-gallon underground oil-water separator behind the Gregory Poole building. The larger, northern plume appears to be associated with the USTs of the former 7-11 convenience store and gas station that is now Jimmy's Place (GWPD No. 01174). It is also possible that Hanahan Fuel Express UST's (GWPD No. 11801) may have contributed to the plume.

Pumping from the extraction wells appears to be effective in capturing and remediating contaminated groundwater at the site. Contaminated groundwater outside the capture zone, however, is migrating downgradient and away from the site. ABB-ES recommends that the CAP address remediation of contaminated soil at the site and contaminated groundwater outside the effective capture zone of the existing extraction well system.

The CAP, a conceptual plan for site remediation, will be submitted to SCDHEC by IT Corporation subsequent to this CAR.

7

7.0 PROFESSIONAL CERTIFICATION

This contamination assessment report was prepared using scientific principles and professional judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report or referenced in public literature. Recommendations are based upon interpretations of applicable regulatory requirements and guidelines. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This Contamination Assessment Report, Volume 1 of the Corrective Action Plan, was developed for the DFSP Hanahan site in Hanahan, South Carolina, and should not be construed to apply to any other site.

Joseph H. Daniel
Professional Geologist
License No. 1120
Expiration Date: June 30, 1995

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Appendix A

APPENDIX A

LABORATORY ANALYTICAL DATA

Quanterra Environmental Services

Quanterra Incorporated
5910 Breckenridge Parkway, Suite H
Tampa, Florida 33610

813 621-0784 Telephone
813 623-6021 Fax

ANALYTICAL REPORT

PROJECT NO. 7508.40

HANAHAN FIELD

KAREN HARTNETT

ABB ENVIRONMENTAL SERVICES

QUANTERRA INCORPORATED
Certification Numbers: E84059,HRS84297
FDEP CompQAP: 870270G

Joanne Anderson
Project Manager

November 14, 1994

Quanterra Environmental Services

EXECUTIVE SUMMARY - Detection Highlights

B4J280019

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD
DFSP-MW15				
Benzene	370	10	ug/L	USEPA 602
Ethylbenzene	260	10	ug/L	USEPA 602
Xylenes, Total	630	10	ug/L	USEPA 602
Methyl tert-butyl ether	13	10	ug/L	USEPA 602
2-Methylnaphthalene	42	4.0	ug/L	USEPA 610
Naphthalene	63	4.0	ug/L	USEPA 610
1-Methylnaphthalene	41	4.0	ug/L	USEPA 610
Lead	13.8	5.0	ug/L	MCAWW 239.2
DFSP-MW14				
Ethylbenzene	10	1.0	ug/L	USEPA 602
Toluene	1.6	1.0	ug/L	USEPA 602
Xylenes, Total	58	1.0	ug/L	USEPA 602
2-Methylnaphthalene	35	2.0	ug/L	USEPA 610
Naphthalene	16	2.0	ug/L	USEPA 610
1-Methylnaphthalene	25	2.0	ug/L	USEPA 610
Lead	9.9	5.0	ug/L	MCAWW 239.2
DFSP-MW13				
Benzene	390	5.0	ug/L	USEPA 602
Ethylbenzene	110	5.0	ug/L	USEPA 602
Toluene	8.6	5.0	ug/L	USEPA 602
Methyl tert-butyl ether	150	5.0	ug/L	USEPA 602
2-Methylnaphthalene	88	10	ug/L	USEPA 610
Naphthalene	210	10	ug/L	USEPA 610
1-Methylnaphthalene	66	10	ug/L	USEPA 610
Lead	10.1	5.0	ug/L	MCAWW 239.2
DFSP-MW7				
Benzene	37	5.0	ug/L	USEPA 602
Ethylbenzene	330	5.0	ug/L	USEPA 602
Toluene	7.2	5.0	ug/L	USEPA 602
Xylenes, Total	210	5.0	ug/L	USEPA 602
Methyl tert-butyl ether	5.5	5.0	ug/L	USEPA 602
2-Methylnaphthalene	39	4.0	ug/L	USEPA 610
Naphthalene	46	4.0	ug/L	USEPA 610
1-Methylnaphthalene	26	4.0	ug/L	USEPA 610
Lead	136	10.0	ug/L	MCAWW 239.2
EW-1				
Benzene	24	1.0	ug/L	USEPA 602

Quanterra Environmental Services

EXECUTIVE SUMMARY - Detection Highlights

B4J280019

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD
Ethylbenzene	84	1.0	ug/L	USEPA 602
Methyl tert-butyl ether	1.2	1.0	ug/L	USEPA 602
Fluorene	3.1	2.0	ug/L	USEPA 610
2-Methylnaphthalene	16	2.0	ug/L	USEPA 610
Naphthalene	12	2.0	ug/L	USEPA 610
1-Methylnaphthalene	17	2.0	ug/L	USEPA 610
Lead	4.3 J	5.0	ug/L	MCAWW 239.2
EW-2				
Benzene	100	5.0	ug/L	USEPA 602
Ethylbenzene	160	5.0	ug/L	USEPA 602
Toluene	17	5.0	ug/L	USEPA 602
Xylenes, Total	570	5.0	ug/L	USEPA 602
2-Methylnaphthalene	13	2.0	ug/L	USEPA 610
Naphthalene	15	2.0	ug/L	USEPA 610
1-Methylnaphthalene	10	2.0	ug/L	USEPA 610
Lead	4.0 J	5.0	ug/L	MCAWW 239.2
MW-7 (ME)				
Benzene	1.7	1.0	ug/L	USEPA 602
Ethylbenzene	21	1.0	ug/L	USEPA 602
Xylenes, Total	33	1.0	ug/L	USEPA 602
Methyl tert-butyl ether	1.3	1.0	ug/L	USEPA 602
2-Methylnaphthalene	9.4	4.0	ug/L	USEPA 610
Naphthalene	5.7	4.0	ug/L	USEPA 610
1-Methylnaphthalene	8.2	4.0	ug/L	USEPA 610
Lead	28.1	5.0	ug/L	MCAWW 239.2
DFSP-MW28				
Benzene	49	5.0	ug/L	USEPA 602
Ethylbenzene	270	5.0	ug/L	USEPA 602
Toluene	7.2	5.0	ug/L	USEPA 602
Xylenes, Total	46	5.0	ug/L	USEPA 602
2-Methylnaphthalene	29	2.0	ug/L	USEPA 610
Naphthalene	51	2.0	ug/L	USEPA 610
1-Methylnaphthalene	27	2.0	ug/L	USEPA 610
Lead	13.1	5.0	ug/L	MCAWW 239.2
DUP-2				
Benzene	40	5.0	ug/L	USEPA 602
Ethylbenzene	360	5.0	ug/L	USEPA 602

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EXECUTIVE SUMMARY - Detection Highlights

B4J280019

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD
Toluene	7.7	5.0	ug/L	USEPA 602
Xylenes, Total	230	5.0	ug/L	USEPA 602
2-Methylnaphthalene	50	2.0	ug/L	USEPA 610
Naphthalene	52	2.0	ug/L	USEPA 610
1-Methylnaphthalene	35	2.0	ug/L	USEPA 610
Lead	168	5.0	ug/L	MCAWW 239.2

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ANALYTICAL METHODS SUMMARY

Parameters	Methods
Volatile Organics	USEPA 602
Polynuclear Aromatic Hydrocarbons	USEPA 610
Lead	MCAWW 239.2

References:

MCAWW Methods for Chemical Analysis of Water and Wastes, EMSL: Cincinnati, OH: March 1983 and subsequent revisions

USEPA Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, 40CFR, Part 136, Appendix A, October 26,1984 and subsequent revisions

Quanterra
Environmental Services

pH Table

Laboratory Id #	Sample Id #	pH
B4J280019-001	Field Blank	NA
B4J280019-002	Equipment Blank	NA
B4J280019-003	DFSP-MW15	4.91
B4J280019-004	DFSP-MW14	5.68
B4J280019-005	DFSP-MW13	5.22
B4J280019-006	DFSP-MW7	5.58
B4J280019-007	EW-1	5.87
B4J280019-008	EW-2	6.00
B4J280019-009	MW-7 (ME)	5.68
B4J280019-010	DFSP-MW28	6.08
B4J280019-011	DUP-2	NA
B4J280019-012	TRIP BLANK	NA

Quanterra
Environmental Services

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

WO #	LABORATORY ID	SAMPLE IDENTIFICATION
A12D1	B4J280019-001	FIELD BLANK
A12D3	B4J280019-002	EQUIPMENT BLANK
A12D6	B4J280019-003	DFSP-MW15
A12D8	B4J280019-004	DFSP-MW14
A12DA	B4J280019-005	DFSP-MW13
A12DD	B4J280019-006	DFSP-MW7
A12DF	B4J280019-007	EW-1
A12DG	B4J280019-008	EW-2
A12DM	B4J280019-009	MW-7 (ME)
A12DP	B4J280019-010	DFSP-MW28
A12DR	B4J280019-011	DUP-2
A12DT	B4J280019-012	TRIP BLANK

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

FIELD BLANK

WO #: A12D1103
LAB #: B4J280019-001
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/01/94	4306038
Chlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
Ethylbenzene	ND	1.0	USEPA 602	11/01/94	4306038
Toluene	ND	1.0	USEPA 602	11/01/94	4306038
Xylenes, Total	ND	1.0	USEPA 602	11/01/94	4306038
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/01/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	97	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

FIELD BLANK

WO #: A12D1102
LAB #: B4J280019-001
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Acenaphthylene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Anthracene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Benzo(a)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/03-11/08/94	4307131
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(a)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Chrysene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Fluoranthene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Fluorene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	430[illegible]
2-Methylnaphthalene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Naphthalene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Phenanthrene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Pyrene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
1-Methylnaphthalene	ND	2.0	USEPA 610	11/03-11/08/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	72	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

FIELD BLANK

WO #: A12D1
LAB #: B4J280019-001
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	ND	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

EQUIPMENT BLANK

WO #: A12D3103
LAB #: B4J280019-002
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/01/94	4306038
Chlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306038
Ethylbenzene	ND	1.0	USEPA 602	11/01/94	4306038
Toluene	ND	1.0	USEPA 602	11/01/94	4306038
Xylenes, Total	ND	1.0	USEPA 602	11/01/94	4306038
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/01/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	97	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

EQUIPMENT BLANK

WO #: A12D3102
LAB #: B4J280019-002
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Acenaphthylene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Anthracene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Benzo(a)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/03-11/08/94	4307131
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(a)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Chrysene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Fluoranthene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Fluorene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
2-Methylnaphthalene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Naphthalene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Phenanthrene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Pyrene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
1-Methylnaphthalene	ND	2.0	USEPA 610	11/03-11/08/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	88	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

EQUIPMENT BLANK

WO #: A12D3
LAB #: B4J280019-002
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	ND	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW15

WO #: A12D6103
LAB #: B4J280019-003
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	370	10	USEPA 602	11/01/94	4306038
Chlorobenzene	ND	10	USEPA 602	11/01/94	4306038
1,2-Dichlorobenzene	ND	10	USEPA 602	11/01/94	4306038
1,3-Dichlorobenzene	ND	10	USEPA 602	11/01/94	4306038
1,4-Dichlorobenzene	ND	10	USEPA 602	11/01/94	4306038
Ethylbenzene	260	10	USEPA 602	11/01/94	4306038
Toluene	ND	10	USEPA 602	11/01/94	4306038
Xylenes, Total	630	10	USEPA 602	11/01/94	4306038
Methyl tert-butyl ether	13	10	USEPA 602	11/01/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	97	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW15

WO #: A12D6102
LAB #: B4J280019-003
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Acenaphthylene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Anthracene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Benzo(a)anthracene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(b)fluoranthene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(k)fluoranthene	ND	0.30	USEPA 610	11/03-11/09/94	4307131
Benzo(ghi)perylene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(a)pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Chrysene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Fluoranthene	ND	0.40	USEPA 610	11/03-11/09/94	4307131
Fluorene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
2-Methylnaphthalene	42	4.0	USEPA 610	11/03-11/09/94	4307131
Naphthalene	63	4.0	USEPA 610	11/03-11/09/94	4307131
Phenanthrene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Pyrene	ND	0.40	USEPA 610	11/03-11/09/94	4307131
Dibenzo(a,h)anthracene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
1-Methylnaphthalene	41	4.0	USEPA 610	11/03-11/09/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	82	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW15

WO #: A12D6
LAB #: B4J280019-003
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	13.8	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW14

WO #: A12D8103
LAB #: B4J280019-004
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/01-11/02/94	4306038
Chlorobenzene	ND	1.0	USEPA 602	11/01-11/02/94	4306038
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/01-11/02/94	4306038
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/01-11/02/94	4306038
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/01-11/02/94	4306038
Ethylbenzene	10	1.0	USEPA 602	11/01-11/02/94	4306038
Toluene	1.6	1.0	USEPA 602	11/01-11/02/94	4306038
Xylenes, Total	58	1.0	USEPA 602	11/01-11/02/94	4306038
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/01-11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW14

WO #: A12D8102
LAB #: B4J280019-004
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Acenaphthylene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Anthracene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Benzo(a)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/03-11/08/94	4307131
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(a)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Chrysene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Fluoranthene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Fluorene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
2-Methylnaphthalene	35	2.0	USEPA 610	11/03-11/08/94	4307131
Naphthalene	16	2.0	USEPA 610	11/03-11/08/94	4307131
Phenanthrene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Pyrene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
1-Methylnaphthalene	25	2.0	USEPA 610	11/03-11/08/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	88	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW14

WO #: A12D8
LAB #: B4J280019-004
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	9.9	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW13

WO #: A12DA103
LAB #: B4J280019-005
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	390	5.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
Ethylbenzene	110	5.0	USEPA 602	11/02/94	4306038
Toluene	8.6	5.0	USEPA 602	11/02/94	4306038
Xylenes, Total	ND	5.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	150	5.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	96	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW13

WO #: A12DA102
LAB #: B4J280019-005
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	10	USEPA 610	11/03-11/09/94	4307131
Acenaphthylene	ND	10	USEPA 610	11/03-11/09/94	4307131
Anthracene	ND	10	USEPA 610	11/03-11/09/94	4307131
Benzo(a)anthracene	ND	0.50	USEPA 610	11/03-11/09/94	4307131
Benzo(b)fluoranthene	ND	0.50	USEPA 610	11/03-11/09/94	4307131
Benzo(k)fluoranthene	ND	0.75	USEPA 610	11/03-11/09/94	4307131
Benzo(ghi)perylene	ND	0.50	USEPA 610	11/03-11/09/94	4307131
Benzo(a)pyrene	ND	0.50	USEPA 610	11/03-11/09/94	4307131
Chrysene	ND	0.50	USEPA 610	11/03-11/09/94	4307131
Fluoranthene	ND	1.0	USEPA 610	11/03-11/09/94	4307131
Fluorene	ND	10	USEPA 610	11/03-11/09/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.50	USEPA 610	11/03-11/09/94	4307131
2-Methylnaphthalene	**88**	**10**	**USEPA 610**	**11/03-11/09/94**	**4307131**
Naphthalene	**210**	**10**	**USEPA 610**	**11/03-11/09/94**	**4307131**
Phenanthrene	ND	10	USEPA 610	11/03-11/09/94	4307131
Pyrene	ND	1.0	USEPA 610	11/03-11/09/94	4307131
Dibenzo(a,h)anthracene	ND	0.50	USEPA 610	11/03-11/09/94	4307131
1-Methylnaphthalene	**66**	**10**	**USEPA 610**	**11/03-11/09/94**	**4307131**

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	DIL OUT	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW13

WO #: A12DA
LAB #: B4J280019-005
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	10.1	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW7

WO #: A12DD103
LAB #: B4J280019-006
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	37	5.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
Ethylbenzene	330	5.0	USEPA 602	11/02/94	4306038
Toluene	7.2	5.0	USEPA 602	11/02/94	4306038
Xylenes, Total	210	5.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	5.5	5.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	100	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW7

WO #: A12DD102
LAB #: B4J280019-006
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Acenaphthylene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Anthracene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Benzo(a)anthracene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(b)fluoranthene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(k)fluoranthene	ND	0.30	USEPA 610	11/03-11/09/94	4307131
Benzo(ghi)perylene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(a)pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Chrysene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Fluoranthene	ND	0.40	USEPA 610	11/03-11/09/94	4307131
Fluorene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
2-Methylnaphthalene	39	4.0	USEPA 610	11/03-11/09/94	4307131
Naphthalene	46	4.0	USEPA 610	11/03-11/09/94	4307131
Phenanthrene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Pyrene	ND	0.40	USEPA 610	11/03-11/09/94	4307131
Dibenzo(a,h)anthracene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
1-Methylnaphthalene	26	4.0	USEPA 610	11/03-11/09/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	84	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW7

WO #: A12DD
LAB #: B4J280019-006
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	136	10.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

EW-1

WO #: A12DF103
LAB #: B4J280019-007
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	24	1.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
Ethylbenzene	84	1.0	USEPA 602	11/02/94	4306038
Toluene	ND	1.0	USEPA 602	11/02/94	4306038
Xylenes, Total	ND	1.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	1.2	1.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	105	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

EW-1

WO #: A12DF102
LAB #: B4J280019-007
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Acenaphthylene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Anthracene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Benzo(a)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/03-11/08/94	4307131
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(a)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Chrysene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Fluoranthene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Fluorene	3.1	2.0	USEPA 610	11/03-11/08/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	430[illegible]1
2-Methylnaphthalene	16	2.0	USEPA 610	11/03-11/08/94	4307131
Naphthalene	12	2.0	USEPA 610	11/03-11/08/94	4307131
Phenanthrene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Pyrene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
1-Methylnaphthalene	17	2.0	USEPA 610	11/03-11/08/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	103	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

EW-1

WO #: A12DF
LAB #: B4J280019-007
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	4.3 J	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

EW-2

WO #: A12DG103
LAB #: B4J280019-008
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	100	5.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
Ethylbenzene	160	5.0	USEPA 602	11/02/94	4306038
Toluene	17	5.0	USEPA 602	11/02/94	4306038
Xylenes, Total	570	5.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	ND	5.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	96	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

EW-2

WO #: A12DG102
LAB #: B4J280019-008
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Acenaphthylene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Anthracene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Benzo(a)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/03-11/08/94	4307131
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Benzo(a)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Chrysene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
Fluoranthene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Fluorene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
2-Methylnaphthalene	**13**	**2.0**	**USEPA 610**	**11/03-11/08/94**	**4307131**
Naphthalene	**15**	**2.0**	**USEPA 610**	**11/03-11/08/94**	**4307131**
Phenanthrene	ND	2.0	USEPA 610	11/03-11/08/94	4307131
Pyrene	ND	0.20	USEPA 610	11/03-11/08/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/03-11/08/94	4307131
1-Methylnaphthalene	**10**	**2.0**	**USEPA 610**	**11/03-11/08/94**	**4307131**

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	100	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

EW-2

WO #: A12DG
LAB #: B4J280019-008
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	4.0 J	5.0	ug/L	MCAWW 239.2	11/07-11/10/94	4311032

NOTE: AS RECEIVED
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

MW-7 (ME)

WO #: A12DM103
LAB #: B4J280019-009
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	1.7	1.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
Ethylbenzene	21	1.0	USEPA 602	11/02/94	4306038
Toluene	ND	1.0	USEPA 602	11/02/94	4306038
Xylenes, Total	33	1.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	1.3	1.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	110	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW-7 (ME)

WO #: A12DM102
LAB #: B4J280019-009
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Acenaphthylene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Anthracene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Benzo(a)anthracene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(b)fluoranthene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(k)fluoranthene	ND	0.30	USEPA 610	11/03-11/09/94	4307131
Benzo(ghi)perylene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Benzo(a)pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Chrysene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Fluoranthene	ND	0.40	USEPA 610	11/03-11/09/94	4307131
Fluorene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
2-Methylnaphthalene	9.4	4.0	USEPA 610	11/03-11/09/94	4307131
Naphthalene	5.7	4.0	USEPA 610	11/03-11/09/94	4307131
Phenanthrene	ND	4.0	USEPA 610	11/03-11/09/94	4307131
Pyrene	ND	0.40	USEPA 610	11/03-11/09/94	4307131
Dibenzo(a,h)anthracene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
1-Methylnaphthalene	8.2	4.0	USEPA 610	11/03-11/09/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	96	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW-7 (ME)

WO #: A12DM
LAB #: B4J280019-009
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	28.1	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW28

WO #: A12DP103
LAB #: B4J280019-010
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	49	5.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
Ethylbenzene	270	5.0	USEPA 602	11/02/94	4306038
Toluene	7.2	5.0	USEPA 602	11/02/94	4306038
Xylenes, Total	46	5.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	ND	5.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	100	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW28

WO #: A12DP102
LAB #: B4J280019-010
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Acenaphthylene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Anthracene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Benzo(a)anthracene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/03-11/09/94	4307131
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Benzo(a)pyrene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Chrysene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Fluoranthene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Fluorene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
2-Methylnaphthalene	**29**	**2.0**	**USEPA 610**	**11/03-11/09/94**	**4307131**
Naphthalene	**51**	**2.0**	**USEPA 610**	**11/03-11/09/94**	**4307131**
Phenanthrene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
1-Methylnaphthalene	**27**	**2.0**	**USEPA 610**	**11/03-11/09/94**	**4307131**

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	84	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW28

WO #: A12DP
LAB #: B4J280019-010
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- REQUESTED METALS -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	13.1	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DUP-2

WO #: A12DR103
LAB #: B4J280019-011
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	40	5.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306038
Ethylbenzene	360	5.0	USEPA 602	11/02/94	4306038
Toluene	7.7	5.0	USEPA 602	11/02/94	4306038
Xylenes, Total	230	5.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	ND	5.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	101	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DUP-2

WO #: A12DR102
LAB #: B4J280019-011
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Acenaphthylene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Anthracene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Benzo(a)anthracene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/03-11/09/94	4307131
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Benzo(a)pyrene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Chrysene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
Fluoranthene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Fluorene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/03-11/09/94	430[illegible]1
2-Methylnaphthalene	50	2.0	USEPA 610	11/03-11/09/94	4307131
Naphthalene	52	2.0	USEPA 610	11/03-11/09/94	4307131
Phenanthrene	ND	2.0	USEPA 610	11/03-11/09/94	4307131
Pyrene	ND	0.20	USEPA 610	11/03-11/09/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/03-11/09/94	4307131
1-Methylnaphthalene	35	2.0	USEPA 610	11/03-11/09/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	109	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DUP-2

WO #: A12DR
LAB #: B4J280019-011
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	168	5.0	ug/L	MCAWW 239.2	11/07-11/08/94	4311032

NOTE: AS RECEIVED

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

TRIP BLANK

WO #: A12DT101
LAB #: B4J280019-012
MATRIX: WATER

DATE SAMPLED: 10/27/94
DATE RECEIVED: 10/28/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/02/94	4306038
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306038
Ethylbenzene	ND	1.0	USEPA 602	11/02/94	4306038
Toluene	ND	1.0	USEPA 602	11/02/94	4306038
Xylenes, Total	ND	1.0	USEPA 602	11/02/94	4306038
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/02/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	95	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation

Quanterra
Environmental
Services

QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY

Quanterra Environmental Services considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles	Semi-volatiles	Metals
Methylene chloride	Dimethyl phthalate	Calcium
Toluene	Diethly phthalate	Magnesium
2-Butanone	Di-n-butyl phthalate	Sodium
Acetone	Butyl benzyl phthalate	
	Bis (2-ethylhexyl) phthalate	

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.

QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY
(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

**********EXAMPLE**********

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC LIMITS RPD	QC LIMITS RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.	accep. method perform range	

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.

Quanterra
Environmental Services

INTRA-LAB BLANK REPORT

LAB #: B4K020000-038

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	PREPARATION - ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	11/01/94	4306038
Chlorobenzene	ND	1.0	11/01/94	4306038
1,2-Dichlorobenzene	ND	1.0	11/01/94	4306038
1,3-Dichlorobenzene	ND	1.0	11/01/94	4306038
1,4-Dichlorobenzene	ND	1.0	11/01/94	4306038
Ethylbenzene	ND	1.0	11/01/94	4306038
Toluene	ND	1.0	11/01/94	4306038
Xylenes, Total	ND	1.0	11/01/94	4306038
Methyl tert-butyl ether	ND	1.0	11/01/94	4306038

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	98	(73 - 131)

NOTE:

ND (NONE DETECTED)

Quanterra
Environmental Services

INTRA-LAB BLANK REPORT

LAB #: B4K030000-131

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	PREPARATION - ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	11/03-11/08/94	4307131
Acenaphthylene	ND	2.0	11/03-11/08/94	4307131
Anthracene	ND	2.0	11/03-11/08/94	4307131
Benzo(a)anthracene	ND	0.10	11/03-11/08/94	4307131
Benzo(b)fluoranthene	ND	0.10	11/03-11/08/94	4307131
Benzo(k)fluoranthene	ND	0.15	11/03-11/08/94	4307131
Benzo(ghi)perylene	ND	0.10	11/03-11/08/94	4307131
Benzo(a)pyrene	ND	0.10	11/03-11/08/94	4307131
Chrysene	ND	0.10	11/03-11/08/94	4307131
Fluoranthene	ND	0.20	11/03-11/08/94	4307131
Fluorene	ND	2.0	11/03-11/08/94	4307131
Indeno(1,2,3-cd)pyrene	ND	0.10	11/03-11/08/94	4307131
2-Methylnaphthalene	ND	2.0	11/03-11/08/94	4307131
Naphthalene	ND	2.0	11/03-11/08/94	4307131
Phenanthrene	ND	2.0	11/03-11/08/94	4307131
Pyrene	ND	0.20	11/03-11/08/94	4307131
Dibenzo(a,h)anthracene	ND	0.10	11/03-11/08/94	4307131
1-Methylnaphthalene	ND	2.0	11/03-11/08/94	4307131

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	84	(30 - 130)

NOTE:

ND (NONE DETECTED)

Quanterra
Environmental Services

INTRA-LAB BLANK REPORT

LAB #: B4J280019

METALS

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE
		BATCH:4311032			
Lead	ND	5.0	ug/L	MCAWW 239.2	11/07-11/08/94

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

CHECK SAMPLE REPORT

QC BATCH: 4306038
LAB #: B4K020000-038 C

PREPARATION DATE: 11/01/94
DATE ANALYZED: 11/01/94

- GC Volatiles -

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Benzene	98	(81-122)
Toluene	101	(81-123)
Chlorobenzene	107	(75-121)

Quanterra

CHECK SAMPLE REPORT

QC BATCH: 4307131
LAB #: B4K030000-131 C

PREPARATION DATE: 11/03/94
DATE ANALYZED: 11/08/94

- - - - - - - - - - - - - - - - - - - GC Semi-Volatiles - - - - - - - - - - - - - - - - - - -

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Naphthalene	88	(10-122)
1-Methylnaphthalene	75	(30-130)
Acenaphthene	81	(10-124)
Fluorene	73	(10-142)
Pyrene	77	(10-140)
Chrysene	88	(10-199)

Quanterra
Environmental Services

CHECK SAMPLE REPORT

LAB #: B4J280019

- METALS -

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
	BATCH:4311032		
Lead	102	(83-119)	11/07-11/08/94

Quanterra
Environmental Services

MATRIX SPIKE REPORT

QC BATCH: 4306038
LAB #: B4J280019-003 S
MATRIX: WATER

WO #: A12D6
PREPARATION DATE: 11/01/94
DATE ANALYZED: 11/01/94

GC Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Benzene	104	100	(70-117)	3.6	(0-15)
Toluene	108	106	(70-117)	1.7	(0-16)
Chlorobenzene	111	110	(58-133)	0.64	(0-24)

Calculations are performed before rounding to avoid round-off errors in calculated results

Quanterra
Environmental Services

MATRIX SPIKE REPORT

QC BATCH: 4307131
LAB #: B4J280019-009 S
MATRIX: WATER

WO #: A12DM
PREPARATION DATE: 11/03/94
DATE ANALYZED: 11/09/94

GC Semi-Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Naphthalene	152	134	(10-122)	12	(0-50)
1-Methylnaphthalene	205	225	(30-130)	9.4	(0-30)
Acenaphthene	149	160	(10-124)	6.9	(0-50)
Fluorene	152	166	(10-142)	8.3	(0-50)
Pyrene	211	186	(10-140)	13	(0-50)
Chrysene	168	167	(10-199)	0.47	(0-50)

alculations are performed before rounding to avoid round-off errors in calculated results

Quanterra
Environmental Services

MATRIX SPIKE REPORT

LAB #: B4J280019-003

- METALS -

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION - ANALYSIS DATE
BATCH:4311032 MATRIX: WATER						
Lead	96	96	(55-137)	0.26	(0-11)	11/07-11/08/94

NOTE:

Calculations are performed before rounding to avoid round-off errors in calculated results

26325
4289
ms/msD per 15 samp.

ENSECO-WADSWORTH/ALERT LABORATORIES
SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Client: ABB-ES Project Name/Number: DFSP Hanahan

Samples Received By: Earl A. Echols (Signature) Date Received: 10/28/94

Sample Evaluation Form By: Earl A Echols (Signature) LAB No: B4J280019

Type of shipping container samples received in? WAL Cooler ✓

Client Cooler ____ WAL Shipper ____ Box ____ Other ____

Any "NO" responses or discrepancies should be explained in comments section.

		YES	NO
1.	Were custody seals on shipping container(s) intact?	✓	
2.	Were custody papers properly included with samples?	✓	
3.	Were custody papers properly filled out (ink, signed, match labels)?	✓	
4.	Did all bottles arrive in good condition (unbroken)?	✓	
5.	Were all bottle labels complete (Sample No., date, signed, analysis preservatives)?	✓	
6.	Were correct bottles used for the tests indicated?	✓	
7.	Were proper sample preservation techniques indicated?	✓	
8.	Were samples received within adequate holding time?	✓	
9.	Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section)	✓	
10.	Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW)	✓	
11.	Were samples accepted into the laboratory? (If no see comments)	✓	

Cooler # ____ Temp 6 °C Cooler # ____ Temp 6 °C

Cooler # ____ Temp 6 °C Cooler # ____ Temp ____ °C

Comments: Trip Blk - One Bubble (≈ 10 ml - appears insignificant)

WADSWORTH/ALERT LABORATORIES
Sampling, testing, mobile labs
5910 Breckenridge Pkwy.
Suite H
Tampa, FL 33610
(813) 621-0784
Fax (813) 623-6021

Record _____ of _____

3462

Client: ABB-ES

Project Name / Location: DFSP · Hanahan

Sampler(s): Mark Joop / Blake Svendsen

Project #: 07508.40

Item #	Date	Time	MATRIX	Sample Location	No. Of CONTAINERS	VOC-602	PAH-610	METALS-Total Lead	TRPH-	EDB-						Remarks
						Parameter										
1	10-27-94	08:30	water	Field Blank	6	3	2	1								pH
2	"	09:50	"	Equipment Blank	6	3	2	1								
3	"	11:00	"	DFSP · MW15	6	3	2	1								4.91
4	"	11:50	"	DFSP · MW14	6	3	2	1								5.68
5	"	12:45	"	DFSP MW13	6	3	2	1								5.22
6	"	13:10	"	DFSP · MW7	6	3	2	1								5.58
7	"	15:25	"	EW-1	6	3	2	1								5.87
8	"	15:20	"	EW-2	6	3	2	1								6.00
9	"	16:26	"	MW-7 (ME)	6	3	2	1								5.68
10	"	17:00	"	DFSP · MW28	6	3	2	1								6.08
11	"	—	"	Dup-2	6	3	2	1								

Total Containers: 66

Number of Coolers in Shipment: [redacted]

Bailers: [redacted]

Report To: Mark Joop, Jacksonville office

Additional Comments: please record pH on report

Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
1	1-11	Mark Joop / ABB-ES	Fed Exp.	10 27-94	19 00
2			[illegible]	10/28/94	11:00
3					
4					
5					
6					

Original Accompanies Shipment

Quanterra Environmental Services

Quanterra Incorporated
5910 Breckenridge Parkway, Suite H
Tampa, Florida 33610

813 621-0784 Telephone
813 623-6021 Fax

ANALYTICAL REPORT

PROJECT NO. 07508.40

DFSP-HANAHAN

KAREN HARTNETT

ABB ENVIRONMENTAL SERVICES

QUANTERRA INCORPORATED
Certification Numbers: E84059,HRS84297
FDEP CompQAP: 870270G

Joanne Anderson
Joanne Anderson
Project Manager

November 11, 1994

Quanterra Environmental Services

EXECUTIVE SUMMARY - Detection Highlights

B4J270038

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD
W-003				
Benzene	0.97 J	1.0	ug/L	USEPA 602
Lead	6.3	5.0	ug/L	MCAWW 239.2
DFSP-MW-24				
Benzene	2.1	1.0	ug/L	USEPA 602
Ethylbenzene	1.5	1.0	ug/L	USEPA 602
Acenaphthene	2.6	2.0	ug/L	USEPA 610
2-Methylnaphthalene	1.0 J	2.0	ug/L	USEPA 610
Naphthalene	4.0	2.0	ug/L	USEPA 610
1-Methylnaphthalene	7.3	2.0	ug/L	USEPA 610
Lead	1.4 J	5.0	ug/L	MCAWW 239.2
MW19 (RMT)				
Lead	20.4	5.0	ug/L	MCAWW 239.2
DFSP-MW-23				
Lead	1.1 J	5.0	ug/L	MCAWW 239.2
DFSP-MW-21				
Benzene	14	2.0	ug/L	USEPA 602
Ethylbenzene	78	2.0	ug/L	USEPA 602
2-Methylnaphthalene	6.0	2.0	ug/L	USEPA 610
Naphthalene	12	2.0	ug/L	USEPA 610
1-Methylnaphthalene	6.0	2.0	ug/L	USEPA 610
Lead	7.8	5.0	ug/L	MCAWW 239.2
DFSP-MW-22				
Benzene	53	5.0	ug/L	USEPA 602
Ethylbenzene	100	5.0	ug/L	USEPA 602
Toluene	35	5.0	ug/L	USEPA 602
Xylenes, Total	350	5.0	ug/L	USEPA 602
2-Methylnaphthalene	58	4.0	ug/L	USEPA 610
Naphthalene	54	4.0	ug/L	USEPA 610
1-Methylnaphthalene	52	4.0	ug/L	USEPA 610
Lead	1.9 J	5.0	ug/L	MCAWW 239.2
MW18 (RMT)				
Benzene	160	1.0	ug/L	USEPA 602

Quanterra Environmental Services

EXECUTIVE SUMMARY - Detection Highlights

B4J270038

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD
Ethylbenzene	93	1.0	ug/L	USEPA 602
Toluene	1.7	1.0	ug/L	USEPA 602
Xylenes, Total	7.8	1.0	ug/L	USEPA 602
Methyl tert-butyl ether	43	1.0	ug/L	USEPA 602
2-Methylnaphthalene	2.1	2.0	ug/L	USEPA 610
Naphthalene	3.6	2.0	ug/L	USEPA 610
1-Methylnaphthalene	1.8 J	2.0	ug/L	USEPA 610
Lead	8.7	5.0	ug/L	MCAWW 239.2
DUP1				
Benzene	47	5.0	ug/L	USEPA 602
Ethylbenzene	92	5.0	ug/L	USEPA 602
Toluene	30	5.0	ug/L	USEPA 602
Xylenes, Total	320	5.0	ug/L	USEPA 602
2-Methylnaphthalene	55	4.0	ug/L	USEPA 610
Naphthalene	50	4.0	ug/L	USEPA 610
1-Methylnaphthalene	49	4.0	ug/L	USEPA 610
Lead	2.4 J	5.0	ug/L	MCAWW 239.2
DFSP-MW-27				
Benzene	17	1.0	ug/L	USEPA 602
Ethylbenzene	6.4	1.0	ug/L	USEPA 602
Xylenes, Total	12	1.0	ug/L	USEPA 602
2-Methylnaphthalene	22	2.0	ug/L	USEPA 610
Naphthalene	34	2.0	ug/L	USEPA 610
1-Methylnaphthalene	18	2.0	ug/L	USEPA 610
Lead	48.0	5.0	ug/L	MCAWW 239.2
MW-9				
Xylenes, Total	5.0	1.0	ug/L	USEPA 602
Lead	10.4	5.0	ug/L	MCAWW 239.2
DFSP-MW-26				
Lead	3.0 J	5.0	ug/L	MCAWW 239.2

Quanterra
Environmental Services

ANALYTICAL METHODS SUMMARY

Parameters	Methods
Volatile Organics	USEPA 602
Polynuclear Aromatic Hydrocarbons	USEPA 610
Lead	MCAWW 239.2

References:

MCAWW Methods for Chemical Analysis of Water and Wastes, EMSL: Cincinnati, OH: March 1983 and subsequent revisions

USEPA Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, 40CFR, Part 136, Appendix A, October 26,1984 and subsequent revisions

Quanterra
Environmental Services

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

WO #	LABORATORY ID	SAMPLE IDENTIFICATION
A11P3	B4J270038-001	W-003
A11P7	B4J270038-002	DFSP-MW-24
A11P8	B4J270038-003	MW19(RMT)
A11PA	B4J270038-004	DFSP-MW-23
A11PD	B4J270038-005	DFSP-MW-21
A11PG	B4J270038-006	DFSP-MW-22
A11PJ	B4J270038-007	MW18(RMT)
A11PK	B4J270038-008	DUP1
A11PL	B4J270038-009	DFSP-MW-27
A11PN	B4J270038-010	MW-9
A11PP	B4J270038-011	DFSP-MW-26
A1299	B4J270038-012	TRIP BLANK

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

W-003

WO #: A11P3103
LAB #: B4J270038-001
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	0.97 J	1.0	USEPA 602	11/01/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
Ethylbenzene	ND	1.0	USEPA 602	11/01/94	4306056
Toluene	ND	1.0	USEPA 602	11/01/94	4306056
Xylenes, Total	ND	1.0	USEPA 602	11/01/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/01/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

W-003

WO #: A11P3102
LAB #: B4J270038-001
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	430[illegible]8
2-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	88	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

W-003

WO #: A11P3
LAB #: B4J270038-001
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	6.3	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-24

WO #: A11P7103
LAB #: B4J270038-002
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	2.1	1.0	USEPA 602	11/01/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
Ethylbenzene	1.5	1.0	USEPA 602	11/01/94	4306056
Toluene	ND	1.0	USEPA 602	11/01/94	4306056
Xylenes, Total	ND	1.0	USEPA 602	11/01/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/01/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	101	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-24

WO #: A11P7102
LAB #: B4J270038-002
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	2.6	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
2-Methylnaphthalene	1.0 J	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	4.0	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	7.3	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	105	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-24

WO #: A11P7
LAB #: B4J270038-002
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	1.4 J	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW19 (RMT)

WO #: A11P8103
LAB #: B4J270038-003
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/01/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
Ethylbenzene	ND	1.0	USEPA 602	11/01/94	4306056
Toluene	ND	1.0	USEPA 602	11/01/94	4306056
Xylenes, Total	ND	1.0	USEPA 602	11/01/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/01/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	97	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW19 (RMT)

WO #: A11P8102
LAB #: B4J270038-003
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	430[illegible]
2-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	71	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

MW19 (RMT)

WO #: A11P8
LAB #: B4J270038-003
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	20.4	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-23

WO #: A11PA103
LAB #: B4J270038-004
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/01/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/01/94	4306056
Ethylbenzene	ND	1.0	USEPA 602	11/01/94	4306056
Toluene	ND	1.0	USEPA 602	11/01/94	4306056
Xylenes, Total	ND	1.0	USEPA 602	11/01/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/01/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	97	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-23

WO #: A11PA102
LAB #: B4J270038-004
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
2-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	97	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-23

WO #: A11PA
LAB #: B4J270038-004
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	1.1 J	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-21

WO #: A11PD103
LAB #: B4J270038-005
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	14	2.0	USEPA 602	11/01/94	4306056
Chlorobenzene	ND	2.0	USEPA 602	11/01/94	4306056
1,2-Dichlorobenzene	ND	2.0	USEPA 602	11/01/94	4306056
1,3-Dichlorobenzene	ND	2.0	USEPA 602	11/01/94	4306056
1,4-Dichlorobenzene	ND	2.0	USEPA 602	11/01/94	4306056
Ethylbenzene	78	2.0	USEPA 602	11/01/94	4306056
Toluene	ND	2.0	USEPA 602	11/01/94	4306056
Xylenes, Total	ND	2.0	USEPA 602	11/01/94	4306056
Methyl tert-butyl ether	ND	2.0	USEPA 602	11/01/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	107	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-21

WO #: A11PD102
LAB #: B4J270038-005
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
2-Methylnaphthalene	6.0	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	12	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	6.0	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	73	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-21

WO #: A11PD
LAB #: B4J270038-005
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	7.8	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-22

WO #: A11PG103
LAB #: B4J270038-006
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

GC Volatiles

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	53	5.0	USEPA 602	11/01-11/02/94	4306056
Chlorobenzene	ND	5.0	USEPA 602	11/01-11/02/94	4306056
1,2-Dichlorobenzene	ND	5.0	USEPA 602	11/01-11/02/94	4306056
1,3-Dichlorobenzene	ND	5.0	USEPA 602	11/01-11/02/94	4306056
1,4-Dichlorobenzene	ND	5.0	USEPA 602	11/01-11/02/94	4306056
Ethylbenzene	100	5.0	USEPA 602	11/01-11/02/94	4306056
Toluene	35	5.0	USEPA 602	11/01-11/02/94	4306056
Xylenes, Total	350	5.0	USEPA 602	11/01-11/02/94	4306056
Methyl tert-butyl ether	ND	5.0	USEPA 602	11/01-11/02/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-22

WO #: A11PG102
LAB #: B4J270038-006
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Acenaphthylene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Anthracene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Benzo(a)anthracene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Benzo(b)fluoranthene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Benzo(k)fluoranthene	ND	0.30	USEPA 610	11/02-11/07/94	4306068
Benzo(ghi)perylene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Benzo(a)pyrene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Chrysene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Fluoranthene	ND	0.40	USEPA 610	11/02-11/07/94	4306068
Fluorene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
2-Methylnaphthalene	**58**	**4.0**	**USEPA 610**	**11/02-11/07/94**	**4306068**
Naphthalene	**54**	**4.0**	**USEPA 610**	**11/02-11/07/94**	**4306068**
Phenanthrene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Pyrene	ND	0.40	USEPA 610	11/02-11/07/94	4306068
Dibenzo(a,h)anthracene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
1-Methylnaphthalene	**52**	**4.0**	**USEPA 610**	**11/02-11/07/94**	**4306068**

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	106	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-22

WO #: A11PG
LAB #: B4J270038-006
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	1.9 J	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED

J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW18 (RMT)

WO #: A11PJ103
LAB #: B4J270038-007
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	160	1.0	USEPA 602	11/02/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
Ethylbenzene	93	1.0	USEPA 602	11/02/94	4306056
Toluene	1.7	1.0	USEPA 602	11/02/94	4306056
Xylenes, Total	7.8	1.0	USEPA 602	11/02/94	4306056
Methyl tert-butyl ether	43	1.0	USEPA 602	11/02/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	114	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW18 (RMT)

WO #: A11PJ102
LAB #: B4J270038-007
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	430[illegible]68
2-Methylnaphthalene	2.1	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	3.6	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	1.8 J	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	104	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW18 (RMT)

WO #: A11PJ
LAB #: B4J270038-007
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	8.7	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DUP1

WO #: A11PK103
LAB #: B4J270038-008
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	47	5.0	USEPA 602	11/02/94	4306056
Chlorobenzene	ND	5.0	USEPA 602	11/02/94	4306056
1,2-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306056
1,3-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306056
1,4-Dichlorobenzene	ND	5.0	USEPA 602	11/02/94	4306056
Ethylbenzene	92	5.0	USEPA 602	11/02/94	4306056
Toluene	30	5.0	USEPA 602	11/02/94	4306056
Xylenes, Total	320	5.0	USEPA 602	11/02/94	4306056
Methyl tert-butyl ether	ND	5.0	USEPA 602	11/02/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	97	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DUP1

WO #: A11PK102
LAB #: B4J270038-008
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Acenaphthylene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Anthracene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Benzo(a)anthracene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Benzo(b)fluoranthene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Benzo(k)fluoranthene	ND	0.30	USEPA 610	11/02-11/07/94	4306068
Benzo(ghi)perylene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Benzo(a)pyrene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Chrysene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
Fluoranthene	ND	0.40	USEPA 610	11/02-11/07/94	4306068
Fluorene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
2-Methylnaphthalene	55	4.0	USEPA 610	11/02-11/07/94	4306068
Naphthalene	50	4.0	USEPA 610	11/02-11/07/94	4306068
Phenanthrene	ND	4.0	USEPA 610	11/02-11/07/94	4306068
Pyrene	ND	0.40	USEPA 610	11/02-11/07/94	4306068
Dibenzo(a,h)anthracene	ND	0.20	USEPA 610	11/02-11/07/94	4306068
1-Methylnaphthalene	49	4.0	USEPA 610	11/02-11/07/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	98	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DUP1

WO #: A11PK
LAB #: B4J270038-008
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	2.4 J	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-27

WO #: A11PL103
LAB #: B4J270038-009
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	17	1.0	USEPA 602	11/02/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
Ethylbenzene	6.4	1.0	USEPA 602	11/02/94	4306056
Toluene	ND	1.0	USEPA 602	11/02/94	4306056
Xylenes, Total	12	1.0	USEPA 602	11/02/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/02/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	108	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-27

WO #: A11PL102
LAB #: B4J270038-009
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	430[illegible]
2-Methylnaphthalene	22	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	34	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	18	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	88	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-27

WO #: A11PL
LAB #: B4J270038-009
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- REQUESTED METALS -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	48.0	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW-9

WO #: A11PN103
LAB #: B4J270038-010
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/02/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
Ethylbenzene	ND	1.0	USEPA 602	11/02/94	4306056
Toluene	ND	1.0	USEPA 602	11/02/94	4306056
Xylenes, Total	5.0	1.0	USEPA 602	11/02/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/02/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	96	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

MW-9

WO #: A11PN102
LAB #: B4J270038-010
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
2-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	73	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

MW-9

WO #: A11PN
LAB #: B4J270038-010
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	10.4	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-26

WO #: A11PP103
LAB #: B4J270038-011
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/02/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
Ethylbenzene	ND	1.0	USEPA 602	11/02/94	4306056
Toluene	ND	1.0	USEPA 602	11/02/94	4306056
Xylenes, Total	ND	1.0	USEPA 602	11/02/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/02/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	95	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-26

WO #: A11PP102
LAB #: B4J270038-011
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Anthracene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	USEPA 610	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Chrysene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Fluorene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
2-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Naphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	USEPA 610	11/02-11/04/94	4306068
Pyrene	ND	0.20	USEPA 610	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	USEPA 610	11/02-11/04/94	4306068
1-Methylnaphthalene	ND	2.0	USEPA 610	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	85	(30 - 130)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

ABB ENVIRONMENTAL SERVICES

DFSP-MW-26

WO #: A11PP
LAB #: B4J270038-011
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- - - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - - -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Lead	3.0 J	5.0	ug/L	MCAWW 239.2	10/30-11/01/94	4304063

NOTE: AS RECEIVED
J ESTIMATED VALUE. (DETECTED), BUT BELOW QUANTITATION LIMIT.

Quanterra Environmental Services

ABB ENVIRONMENTAL SERVICES

TRIP BLANK

WO #: A1299101
LAB #: B4J270038-012
MATRIX: WATER

DATE SAMPLED: 10/26/94
DATE RECEIVED: 10/27/94

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	USEPA 602	11/02/94	4306056
Chlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,2-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,3-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
1,4-Dichlorobenzene	ND	1.0	USEPA 602	11/02/94	4306056
Ethylbenzene	ND	1.0	USEPA 602	11/02/94	4306056
Toluene	ND	1.0	USEPA 602	11/02/94	4306056
Xylenes, Total	ND	1.0	USEPA 602	11/02/94	4306056
Methyl tert-butyl ether	ND	1.0	USEPA 602	11/02/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	97	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental
Services

QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation

Quanterra Environmental Services

QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

Quanterra Environmental Services considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles	Semi-volatiles	Metals
Methylene chloride	Dimethyl phthalate	Calcium
Toluene	Diethly phthalate	Magnesium
2-Butanone	Di-n-butyl phthalate	Sodium
Acetone	Butyl benzyl phthalate	
	Bis (2-ethylhexyl) phthalate	

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.

QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY
(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

**********EXAMPLE**********

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC LIMITS RPD	QC LIMITS RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.	accep. method perform range	

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.

Quanterra Environmental Services

INTRA-LAB BLANK REPORT

LAB #: B4K020000-056

- GC Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	PREPARATION - ANALYSIS DATE	QC BATCH
Benzene	ND	1.0	11/01/94	4306056
Chlorobenzene	ND	1.0	11/01/94	4306056
1,2-Dichlorobenzene	ND	1.0	11/01/94	4306056
1,3-Dichlorobenzene	ND	1.0	11/01/94	4306056
1,4-Dichlorobenzene	ND	1.0	11/01/94	4306056
Ethylbenzene	ND	1.0	11/01/94	4306056
Toluene	ND	1.0	11/01/94	4306056
Xylenes, Total	ND	1.0	11/01/94	4306056
Methyl tert-butyl ether	ND	1.0	11/01/94	4306056

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Trifluorotoluene	95	(73 - 131)

NOTE:

ND (NONE DETECTED)

Quanterra Environmental Services

INTRA-LAB BLANK REPORT

LAB #: B4K020000-068

- GC Semi-Volatiles -

PARAMETER	RESULT (ug/L)	REPORTING LIMIT	PREPARATION - ANALYSIS DATE	QC BATCH
Acenaphthene	ND	2.0	11/02-11/04/94	4306068
Acenaphthylene	ND	2.0	11/02-11/04/94	4306068
Anthracene	ND	2.0	11/02-11/04/94	4306068
Benzo(a)anthracene	ND	0.10	11/02-11/04/94	4306068
Benzo(b)fluoranthene	ND	0.10	11/02-11/04/94	4306068
Benzo(k)fluoranthene	ND	0.15	11/02-11/04/94	4306068
Benzo(ghi)perylene	ND	0.10	11/02-11/04/94	4306068
Benzo(a)pyrene	ND	0.10	11/02-11/04/94	4306068
Chrysene	ND	0.10	11/02-11/04/94	4306068
Fluoranthene	ND	0.20	11/02-11/04/94	4306068
Fluorene	ND	2.0	11/02-11/04/94	4306068
Indeno(1,2,3-cd)pyrene	ND	0.10	11/02-11/04/94	4306068
2-Methylnaphthalene	ND	2.0	11/02-11/04/94	4306068
Naphthalene	ND	2.0	11/02-11/04/94	4306068
Phenanthrene	ND	2.0	11/02-11/04/94	4306068
Pyrene	ND	0.20	11/02-11/04/94	4306068
Dibenzo(a,h)anthracene	ND	0.10	11/02-11/04/94	4306068
1-Methylnaphthalene	ND	2.0	11/02-11/04/94	4306068

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Carbazole	78	(30 - 130)

NOTE:

ND (NONE DETECTED)

Quanterra
Environmental Services

INTRA-LAB BLANK REPORT

LAB #: B4J270038

- METALS -

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE
		BATCH:4304063			
Lead	ND	5.0	ug/L	MCAWW 239.2	10/30-11/01/94

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT

Quanterra
Environmental Services

CHECK SAMPLE REPORT

QC BATCH: 4306056
LAB #: B4K020000-056 C

PREPARATION DATE: 11/01/94
DATE ANALYZED: 11/01/94

GC Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Benzene	105	(81-122)
Toluene	105	(81-123)
Chlorobenzene	104	(75-121)

Quanterra
Environmental Services

CHECK SAMPLE REPORT

QC BATCH: 4306068
LAB #: B4K020000-068 C

PREPARATION DATE: 11/02/94
DATE ANALYZED: 11/04/94

GC Semi-Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Naphthalene	31	(10-122)
1-Methylnaphthalene	31	(30-130)
Acenaphthene	31	(10-124)
Fluorene	50	(10-142)
Pyrene	100	(10-140)
Chrysene	146	(10-199)

Quanterra
Environmental Services

CHECK SAMPLE REPORT

LAB #: B4J270038

- METALS -

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
	BATCH:4304063		
Lead	100	(83-119)	10/30-11/01/94

Quanterra Environmental Services

MATRIX SPIKE REPORT

QC BATCH: 4306056
LAB #: B4J270038-006 S
MATRIX: WATER

WO #: A11PG
PREPARATION DATE: 11/02/94
DATE ANALYZED: 11/02/94

GC Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Benzene	100	101	(70-117)	1.6	(0-15)
Toluene	100	102	(70-117)	1.6	(0-16)
Chlorobenzene	102	103	(58-133)	1.2	(0-24)

Calculations are performed before rounding to avoid round-off errors in calculated results

Quanterra
Environmental Services

MATRIX SPIKE REPORT

QC BATCH: 4306068
LAB #: B4J270038-002 S
MATRIX: WATER

WO #: A11P7
PREPARATION DATE: 11/02/94
DATE ANALYZED: 11/08/94

GC Semi-Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Naphthalene	57	58	(10-122)	2.3	(0-50)
1-Methylnaphthalene	48	57	(30-130)	17	(0-30)
Acenaphthene	62	67	(10-124)	7.3	(0-50)
Fluorene	71	65	(10-142)	8.9	(0-50)
Pyrene	91	81	(10-140)	11	(0-50)
Chrysene	89	82	(10-199)	7.8	(0-50)

Calculations are performed before rounding to avoid round-off errors in calculated results

Quanterra Environmental Services

MATRIX SPIKE REPORT

LAB #: B4J270038-001

- METALS -

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION - ANALYSIS DATE
	BATCH:4304063 MATRIX: WATER					
Lead	90	91	(55-137)	1.7	(0-11)	10/30-11/01/94

NOTE:

Calculations are performed before rounding to avoid round-off errors in calculated results

ENSECO-WADSWORTH/ALERT LABORATORIES
SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Client: ABB ENV. SERVICES Project Name/Number: DFSP-HANAHAN

Samples Received By: Carol McNulty (Signature) Date Received: 10/27/94

Sample Evaluation Form By: Vince Ferraro (Signature) LAB No: _____

Type of shipping container samples received in? WAL Cooler ✓

Client Cooler ____ WAL Shipper ____ Box ____ Other _____

Any "NO" responses or discrepancies should be explained in comments section.

		YES	NO
1.	Were custody seals on shipping container(s) intact?	✓	
2.	Were custody papers properly included with samples?	✓	
3.	Were custody papers properly filled out (ink, signed, match labels)?	✓	
4.	Did all bottles arrive in good condition (unbroken)?	✓	
5.	Were all bottle labels complete (Sample No., date, signed, analysis preservatives)?	✓	
6.	Were correct bottles used for the tests indicated?	✓	
7.	Were proper sample preservation techniques indicated?	✓	
8.	Were samples received within adequate holding time?	✓	
9.	Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section)	✓	
10.	Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW)	✓	
11.	Were samples accepted into the laboratory? (If no see comments)	✓	

Cooler # _____ Temp 4 °C Cooler # _____ Temp _____ °C

Cooler # _____ Temp 6 °C Cooler # 6 Temp _____ °C

Comments: trip blank rec'd - not on COC

WADSWORTH/ALERT LABORATORIES
Sampling, testing, mobile labs

5910 Breckenridge Pkwy.
Suite H
Tampa, FL 33610

(813) 621-0784
Fax (813) 623-6021

Chain of Custody Record

Record 1 of 1

5586

Client: ABB-ES

Project Name / Location: DFSP Hawthorn

Sampler(s): Mark Jaap / Blake Swenson

Project #: 07508.40

Item #	Date	Time	MATRIX	Sample Location	No. Of CONTAINERS	VOC-602	PAH-610	METALS-Total Lead	TRPH-	EDB-						Remarks
1	10/26/94	0830	Water	W-003	6	3	2	1								pH 5.16
2	"	"	"	DFSP-MW-24	6	3	2	1								5.66
3	10/26/94	1140	Water	MW 19 (RMT)	6	3	2	1								6.45
4	10/26/94	11:30	Water	DFSP-MW-23	6	3	2	1								5.71
5	10/26/94	12:10	Water	DFSP MW-21	6	3	2	1								6.06
6	10/26/94	1755	Water	DFSP-MW-22	6	3	2	1								5.86
7	10/26/94	1455	Water	MW 19 (RMT)	6	3	2	1								5.56
8	10/26/94	—	Water	Dup 1	6	3	2	1								—
9	10/26/94	16:00	Water	DFSP-MW-27	6	3	2	1								6.06
10	10/26/94	16:20	Water	MW-4	6	3	2	1								6.40
11	10/26/94	17:35	Water	DFSP-MW-26	6	3	2	1								6.50

Total Containers: 66

Number of Coolers in Shipment: 2

Bailers:

Report To: Mark Jaap / Kevin Hartnett

Additional Comments: Please show field pH on reports

Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
1	1-11	Mark Jaap / ABB-ES	Fed Exp	10 26 94	19:00
2			[illegible]	[illegible]	[illegible]
3					
4					
5					
6					

Original Accompanies Shipment

Engineers
Planners
CH2M HILL Economists
Scientists

June 15, 1993

LMG35218.XY.DF

Mr. Eddie Watson
ABB Environmental Services, Inc.
2590 Executive Center Circle East
Tallahassee, Florida 32301-5001

RE: Analytical Data for ABB/DFSP Hanahan
LMG Laboratory Reference No. 92001

Dear Mr. Watson:

On April 22, 1993, the CH2M HILL Montgomery Laboratory (LMG) received seventeen samples with a request for analysis of selected organic and inorganic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analysis of your samples are discussed in the case narratives.

Under CH2M HILL policy, your samples will be stored for up to 30 days after reporting. If you have not given us prior instructions for disposal, we will contact you if any samples require disposal as hazardous waste.

CH2M HILL Laboratories appreciate your business and look forward to serving your analytical needs again. If you should have any questions concerning the data, or if you need additional information, please call.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Mark Joop/Jacksonville
Ms. Mary Wisdom/LMG

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

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ORGANIC DATA QUALIFIERS

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the reporting limit for that compound. The reporting limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. It is used when the data indicates the presence of a compound below the stated reporting limit.

C -- This flag applies to GC pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis. (This definition is still being reviewed and discussed).

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This qualifier indicates that the value reported exceeds the linear calibration range for that compound. Therefore, the sample should be reanalyzed at an appropriate dilution. The "E" qualified amount is an estimated concentration, and the results of the dilution will be reported on a separate Form I.

D -- This qualifier indicates compounds which have been identified during a diluted reanalysis. "D" qualifiers are used for samples that have been analyzed initially at a lesser dilution than required for accurate quantitation.

* -- This qualifier indicates that the response for the compound exceeded the linear range of the instrument. Therefore, this is an estimated concentration.

P -- This qualifier is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a "P".

N -- This qualifier indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the "N" qualifier is not used.

A -- This qualifier indicates that a TIC is a suspected aldol-condensation product.

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ORGANIC LAB SAMPLE ID QUALIFIERS

The qualifiers that may be appended to the Lab Sample ID for organic analyses are defined below:

DL -- Dilution Run. Indicates the sample contained compounds exceeding the calibration range. The sample was diluted and reanalyzed. Both results are reported.

R -- Rerun. The sample was reanalyzed. The "R" is not used if the sample was also re-extracted.

RE -- Re-extraction Analysis. The sample was re-extracted and reanalyzed.

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

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CLIENT SAMPLE CROSS-REFERENCE

CH2M HILL Laboratory Ref. No. 92001

CH2M HILL Sample ID	Client Sample ID
92001001	DFSP-EB2
92001002	DFSP-DUP1
92001003	DFSP-DUP2
92001004	DFSP-DUP3
92001005	DFSP-MW10
92001006	DFSP-MW8
92001007	DFSP-MW11
92001008	DFSP-MW9
92001009	DFSP-MW15
92001010	DFSP-MW14
92001011	DFSP-MW13
92001012	DFSP-MW7
92001013	DFSP-MW17
92001014	DFSP-MW18
92001015	DFSP-MW19
92001016	TRIP BLANK
92001017	MW7(MCE)

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CASE NARRATIVE
Cations

Lab Ref. No: 92001

Client/Project: ABB ENVIRONMENTAL SERVICES

I. Holding Time:
All holding times were met.

II. Digestion Exceptions:
None.

III. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. ICP Interference Check Sample:
All acceptance criteria were met.

D. Spike Sample(s):
All acceptance criteria were met.

E. Duplicate Sample(s):
All acceptance criteria were met.

F. Laboratory Control Sample(s):
All acceptance criteria were met.

G. ICP Serial Dilution:
Not required for this level QC.

H. Other:
None.

IV. Documentation Exceptions:
None.

V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

SIGNED: Joe Basile for Kaye Walker DATE: 6/15/93
Cations Supervisor

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CASE NARRATIVE
General Chemistry

Lab Ref. No: 92001

Client/Project: ABB ENVIRONMENTAL SERVICES

I. Holding Time:
All holding times were met.

II. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
Not applicable.

C. Matrix Spike Sample(s):
Not applicable.

D. Duplicate Sample(s):
Not applicable.

E. Lab Control Sample(s):
Not applicable.

F. Other:
None.

III. Documentation Exceptions:
None.

IV. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verfied by the following signature.

SIGNED: Joe Basile DATE: 6/15/93
Joe Basile
General Organic/Inorganic Supervisor

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-EB2 GRAB
Laboratory Sample Number: 92001001 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	<3	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

000003

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Atten: MR. EDDIE WATSON

Sample Description: DFSP-DUP1 GRAB
Laboratory Sample Number: 92001002 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	33.6	ug/L	05/03/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: _____

INRPRPT(v910124)

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REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-DUP2 GRAB
Laboratory Sample Number: 92001003 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	43.1	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: _____

INRPRPT(v910124)

000005

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-DUP3 GRAB
Laboratory Sample Number: 92001004 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	6	61.6	ug/L	05/05/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: _____

INRPRPT(v910124)

000006

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW10 0935 GRAB
Laboratory Sample Number: 92001005 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	25.9	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

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REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW8 1010 GRAB
Laboratory Sample Number: 92001006 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	43.0	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: _____

INRPRPT(v910124)

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Quality Analytical Laboratories
2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116
205.271.1444

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW11 1030 GRAB
Laboratory Sample Number: 92001007 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	6.0	77.8	ug/L	04/29/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

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REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW9 1140 GRAB
Laboratory Sample Number: 92001008 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	27.1	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

000010

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW15 1210 GRAB
Laboratory Sample Number: 92001009 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	39.8	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

000011

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW14 1440 GRAB
Laboratory Sample Number: 92001010 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	40.0	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

000012

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW13 1415 GRAB
Laboratory Sample Number: 92001011 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	49.1	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: _____

INRPRPT(v910124)

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REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW7 1550 GRAB
Laboratory Sample Number: 92001012 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	28	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	12.0	136	ug/L	04/29/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: 913

INRPRPT(v910124)

000014

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW17 1705 GRAB
Laboratory Sample Number: 92001013 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	20.9	ug/L	05/05/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW18 1640 GRAB
Laboratory Sample Number: 92001014 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3.0	28.2	ug/L	04/29/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

000016

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: DFSP-MW19 1745 GRAB
Laboratory Sample Number: 92001015 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	<10	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3.0	39.7	ug/L	04/29/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JB

INRPRPT(v910124)

000017

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: MW7(MCE)
Laboratory Sample Number: 92001017 Date Collected: 04/21/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	10	27	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3.0	16.6	ug/L	04/29/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: gB

INRPRPT(v910124)

000018

REPORT OF ANALYTICAL RESULTS

Date: 05/13/93

Client: ABB ENVIRONMENTAL/TALLAHASSEE
2590 EXECUTIVE CENTER CIRCLE EAST
TALLAHASSEE, FL 32301

Atten: MR. EDDIE WATSON

Project Number: LMG35218.XY.DF
DFSP HANAHAN PO# 7508-40
Laboratory Number: 92001
Date Received: 04/22/93

Sample Description: METHOD BLANK
Laboratory Sample Number: 92001ZW1 Date Collected: 04/22/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
BOD, 5 Day	EPA405.1	2	<2	mg/L	04/23/93
BOD 5, Date In	EPA405.1	----	04/23/93	----	----
BOD 5, Date Out	EPA405.1	----	04/28/93	----	----
Lead	EPA239.2/SW7421	3	<3	ug/L	04/28/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

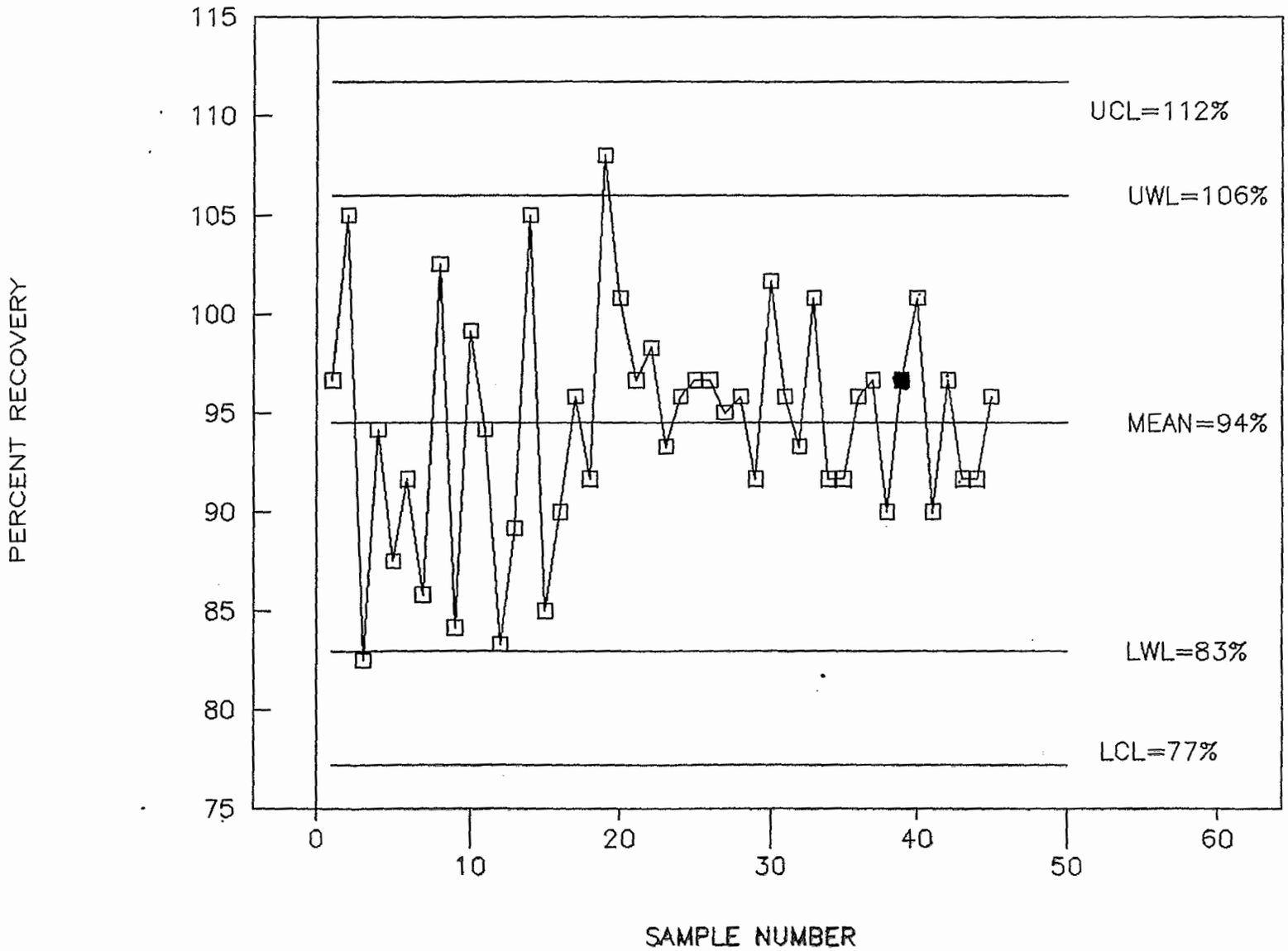
Reviewed by: _____

INRPRPT(v910124)

000019

LAB CONTROL SAMPLE – BOD

05/13/93



000020

SHORT-TERM DATA SUMMARY
BOD
05/13/93

LABORATORY CONTROL SAMPLE
WATER MATRIX

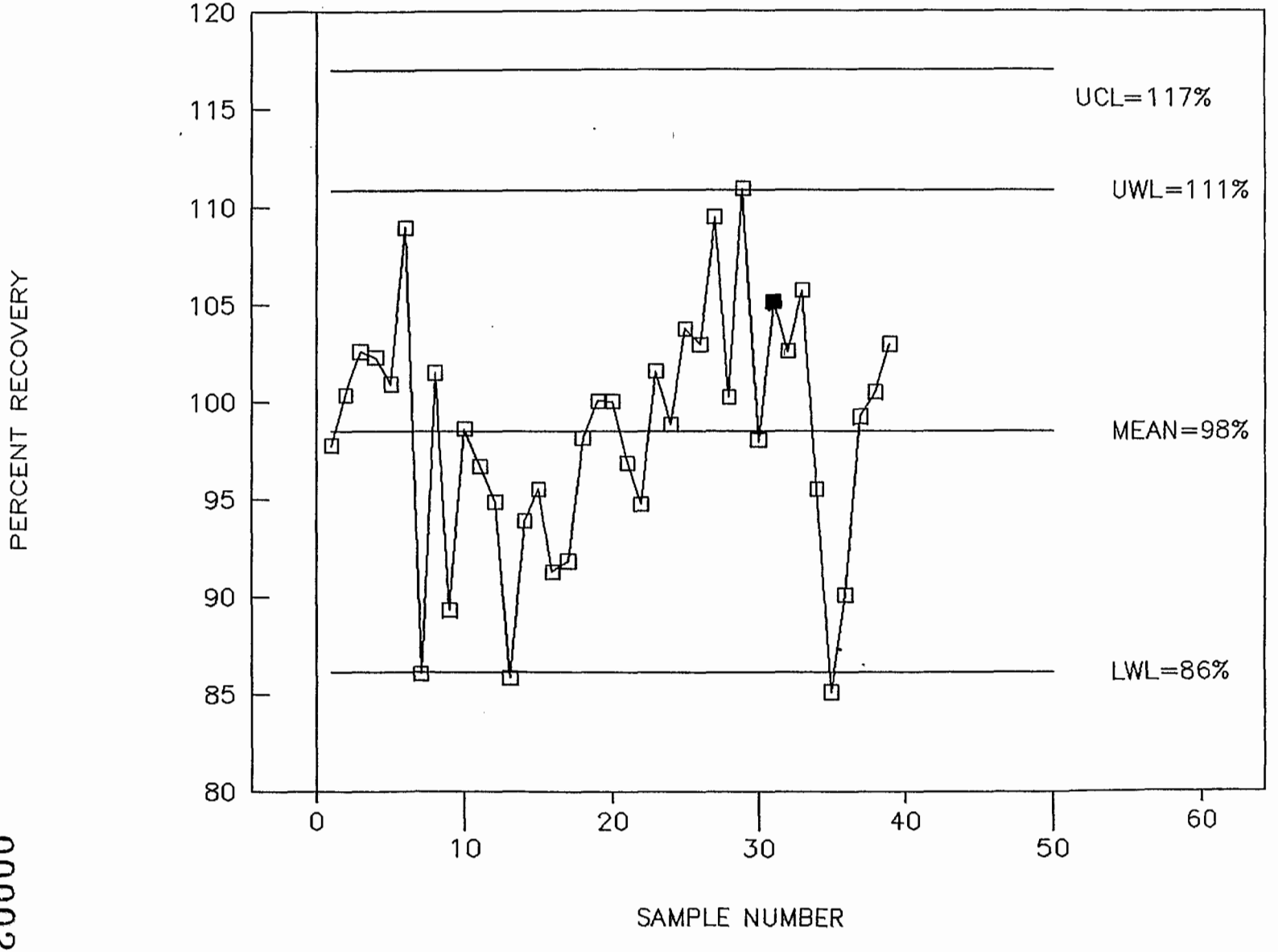
	LAB #	DATE	NATIVE CONC	CONC of SP ADDED	SPIKED SAM CONC.	% REC
1	SUGAR ST.	02/12/93	XXXXXXX	200.00	193.300	96.7
2	SUGAR ST.	02/13/93	XXXXXXX	200.00	210.000	105.0
3	SUGAR ST.	02/15/93	XXXXXXX	200.00	165.000	82.5
4	SUGAR ST.	02/17/93	XXXXXXX	200.00	188.300	94.2
5	SUGAR ST.	02/18/93	XXXXXXX	200.00	175.000	87.5
6	SUGAR ST.	02/19/93	XXXXXXX	200.00	183.300	91.7
7	SUGAR ST.	02/20/93	XXXXXXX	200.00	171.600	85.8
8	SUGAR ST.	02/24/93	XXXXXXX	200.00	205.000	102.5
9	SUGAR ST.	02/26/93	XXXXXXX	200.00	168.300	84.2
10	SUGAR ST.	02/27/93	XXXXXXX	200.00	198.300	99.2
11	SUGAR ST.	03/02/93	XXXXXXX	200.00	188.300	94.2
12	SUGAR ST.	03/03/93	XXXXXXX	200.00	166.600	83.3
13	SUGAR ST.	03/05/93	XXXXXXX	200.00	178.300	89.2
14	SUGAR ST.	03/14/93	XXXXXXX	200.00	210.000	105.0
15	SUGAR ST.	03/10/93	XXXXXXX	200.00	170.000	85.0
16	SUGAR ST.	03/17/93	XXXXXXX	200.00	180.000	90.0
17	SUGAR ST.	03/17/93	XXXXXXX	200.00	191.600	95.8
18	SUGAR ST.	03/19/93	XXXXXXX	200.00	183.300	91.7
19	SUGAR ST.	03/20/93	XXXXXXX	200.00	216.000	108.0
20	SUGAR ST.	03/24/93	XXXXXXX	200.00	201.600	100.8
21	SUGAR ST.	03/25/93	XXXXXXX	200.00	193.300	96.7
22	SUGAR ST.	03/27/93	XXXXXXX	200.00	196.600	98.3
23	SUGAR ST.	04/01/93	XXXXXXX	200.00	186.600	93.3
24	SUGAR ST.	04/02/93	XXXXXXX	200.00	191.600	95.8
25	SUGAR ST.	04/03/93	XXXXXXX	200.00	193.300	96.7
26	SUGAR ST.	04/05/93	XXXXXXX	200.00	193.300	96.7
27	SUGAR ST.	04/07/93	XXXXXXX	200.00	190.000	95.0
28	SUGAR ST.	04/08/93	XXXXXXX	200.00	191.600	95.8
29	SUGAR ST.	04/09/93	XXXXXXX	200.00	183.300	91.7
30	SUGAR ST.	04/10/93	XXXXXXX	200.00	203.300	101.7
31	SUGAR ST.	04/13/93	XXXXXXX	200.00	191.600	95.8
32	SUGAR ST.	04/14/93	XXXXXXX	200.00	186.600	93.3
33	SUGAR ST.	04/15/93	XXXXXXX	200.00	201.600	100.8
34	SUGAR ST.	04/16/93	XXXXXXX	200.00	183.300	91.7
35	SUGAR ST.	04/17/93	XXXXXXX	200.00	183.300	91.7
36	SUGAR ST.	04/19/93	XXXXXXX	200.00	191.600	95.8
37	SUGAR ST.	04/21/93	XXXXXXX	200.00	193.300	96.7
38	SUGAR ST.	04/22/93	XXXXXXX	200.00	180.000	90.0
39	SUGAR ST.	04/23/93	XXXXXXX	200.00	193.300	96.7 ←
40	SUGAR ST.	04/24/93	XXXXXXX	200.00	201.600	100.8
41	SUGAR ST.	04/26/93	XXXXXXX	200.00	180.000	90.0
42	SUGAR ST.	04/28/93	XXXXXXX	200.00	193.300	96.7
43	SUGAR ST.	04/29/93	XXXXXXX	200.00	183.300	91.7
44	SUGAR ST.	04/30/93	XXXXXXX	200.00	183.300	91.7
45	SUGAR ST.	05/01/93	XXXXXXX	200.00	191.600	95.8
46						
47						
48						
49						
50						

MEAN RECOVERY =	94.49
STD(N-1) =	5.75
2 STD(N-1) =	11.51
3 STD(N-1) =	17.26

X	X+2S	X+3S	X-2S	X-3S
94.5	106.0	111.8	83.0	77.2
MEAN	UWL	UCL	LWL	LCL

FURNACE LAB. CONTROL SAMPLE (H2O)—LEAD

05/13/93



000022

SHORT-TERM DATA SUMMARY
LEAD LABORATORY CONTROL SAMPLE
05/13/93 WATER MATRIX - FURNACE

	LAB #	DATE	NATIVE CONC	CONC of SP ADDED	SPIKED SAMP CONC.	% REC
1	ICV4-0209	02/10/93	XXXXXXXXX	39.36	38.470	97.7
2	ICV4-0210	02/11/93	XXXXXXXXX	39.36	39.500	100.4
3	ICV4-0211	02/15/93	XXXXXXXXX	39.36	40.370	102.6
4	ICV4-0215	02/15/93	XXXXXXXXX	39.36	40.250	102.3
5	ICV4-0216	02/16/93	XXXXXXXXX	39.36	39.710	100.9
6	ICV4-0215	02/17/93	XXXXXXXXX	39.36	42.880	108.9
7	ICV4-0217	02/18/93	XXXXXXXXX	39.36	33.880	86.1
8	ICV4-0222	02/22/93	XXXXXXXXX	39.36	39.950	101.5
9	ICV4-0222	02/25/93	XXXXXXXXX	39.36	35.160	89.3
10	ICV4-0224	03/01/93	XXXXXXXXX	39.36	38.810	98.6
11	ICV4-0226	03/01/93	XXXXXXXXX	39.36	38.060	96.7
12	ICV4-0226	03/02/93	XXXXXXXXX	39.36	37.340	94.9
13	ICV4-0302	03/03/93	XXXXXXXXX	39.36	33.790	85.8
14	ICV4-0301	03/04/93	XXXXXXXXX	39.36	36.950	93.9
15	ICV4-0303	03/04/93	XXXXXXXXX	39.36	37.600	95.5
16	ICV4-0309	03/09/93	XXXXXXXXX	39.36	35.930	91.3
17	ICV4-0310	03/10/93	XXXXXXXXX	39.36	36.140	91.8
18	ICV4-0318	03/22/93	XXXXXXXXX	39.36	38.630	98.1
19	ICV4-0322	03/24/93	XXXXXXXXX	39.36	39.370	100.0
20	ICV4-0323	03/24/93	XXXXXXXXX	39.36	39.360	100.0
21	ICV4-0326	03/29/93	XXXXXXXXX	39.36	38.120	96.8
22	ICV4-0329	03/30/93	XXXXXXXXX	39.36	37.300	94.8
23	ICV4-0402	04/05/93	XXXXXXXXX	39.36	39.980	101.6
24	ICV4-0331	04/06/93	XXXXXXXXX	39.36	38.900	98.8
25	ICV4-0407	04/08/93	XXXXXXXXX	39.36	40.820	103.7
26	ICV4-0409	04/12/93	XXXXXXXXX	39.36	40.510	102.9
27	ICV4-0412	04/14/93	XXXXXXXXX	39.36	43.080	109.5
28	ICV4-0413	04/14/93	XXXXXXXXX	39.36	39.450	100.2
29	ICV4-0423	04/26/93	XXXXXXXXX	39.36	43.650	110.9
30	ICV4-0426	04/26/93	XXXXXXXXX	39.36	38.580	98.0
31	ICV4-0426	04/28/93	XXXXXXXXX	39.36	41.370	105.1 ←
32	ICV4-0428	04/29/93	XXXXXXXXX	39.36	40.380	102.6
33	ICV4-0429	05/05/93	XXXXXXXXX	39.36	41.600	105.7
34	ICV4-0429	05/05/93	XXXXXXXXX	39.36	37.600	95.5
35	ICV4-0429	05/05/93	XXXXXXXXX	39.36	33.500	85.1
36	ICV4-0501	05/07/93	XXXXXXXXX	39.36	35.460	90.1
37	ICV4-0503	05/10/93	XXXXXXXXX	39.36	39.060	99.2
38	ICV4-0501	05/10/93	XXXXXXXXX	39.36	39.560	100.5
39	ICV4-0502	05/10/93	XXXXXXXXX	39.36	40.520	102.9
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						

MEAN RECOVERY = 98.47235
STD(N-1) = 6.177219
2 STD(N-1) = 12.35443
3 STD(N-1) = 18.53165

X	X+2S	X+3S	X-2S	X-3S
98.5	110.8	117.0	86.1	79.9
MEAN	UWL	UCL	LWL	LCL

CASE NARRATIVE
GC/MS VOLATILE SAMPLES

LABORATORY : CH2M HILL LABORATORIES CLIENT: ABB ENVIRONMENTAL

CASE NO. : N/A CONTRACT NO.: N/A

LAB REF. NO.: 92001 SDG NO.: N/A

I. RECEIPT

A. Date: April 22, 1993

B. Sample Information

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
92001001	DFSP-EB2	WATER	04/21/93	N/A	04/30/93
92001002	DFSP-DUP1	WATER	04/21/93	N/A	04/30/93
92001003	DFSP-DUP2	WATER	04/21/93	N/A	04/30/93
92001004	DFSP-DUP3	WATER	04/21/93	N/A	04/30/93
92001005	DFSP-MW10	WATER	04/21/93	N/A	05/05/93
92001006	DFSP-MW8	WATER	04/21/93	N/A	05/03/93
92001007	DFSP-MW11	WATER	04/21/93	N/A	04/30/93
92001008	DFSP-MW9	WATER	04/21/93	N/A	04/30/93
92001009	DFSP-MW15	WATER	04/21/93	N/A	04/30/93
92001010	DFSP-MW14	WATER	04/21/93	N/A	05/03/93
92001011	DFSP-MW13	WATER	04/21/93	N/A	05/03/93
92001012	DFSP-MW7	WATER	04/21/93	N/A	05/05/93
92001013	DFSP-MW17	WATER	04/21/93	N/A	05/04/93
92001014	DFSP-MW18	WATER	04/21/93	N/A	05/04/93
92001015	DFSP-MW19	WATER	04/21/93	N/A	04/30/93
92001017	MW7(MCE)	WATER	04/21/93	N/A	04/30/93
X04303B1	VBLKW	WATER	N/A	N/A	04/30/93
X05033B3	VBLKW 2	WATER	N/A	N/A	05/03/93
X05043B1	VBLKW 3	WATER	N/A	N/A	05/04/93
X05053B2	VBLKW 3	WATER	N/A	N/A	05/05/93

C. Documentation
Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms will not be included.

No other exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

II. EXTRACTION

A. Holding Times: Not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : All water volatile samples were analyzed using the HCl-preserved vial.

No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

V. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Wanda S. Hall 6/15/93
for Fred Ordway Date
Operations Manager

CH2M HILL . Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-EB2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0201002.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	11	B
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-EB2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0201002.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-DUP1

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001002

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0301003.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	8	BJ
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-DUP1

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001002

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0301003.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-DUP2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001003

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0401004.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	16	
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-DUP2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001003

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0401004.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-DUP3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001004

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0501005.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	B
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	10	
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	47	
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-DUP3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001004

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0501005.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001005

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 92001-5.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	14	B
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001005

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 92001-5.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW8

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001006

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0901009.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	5	BJ
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW8

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001006

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0901009.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0801008.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	8	BJ
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0801008.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	14	
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW9

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0901009.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	83	
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW9

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0901009.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	60	
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	120	
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	69	J
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW15

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001009

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1601016.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 10.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	100	U
74-83-9	Bromomethane	100	U
75-01-4	Vinyl Chloride	100	U
75-00-3	Chloroethane	100	U
75-09-2	Methylene Chloride	50	U
67-64-1	Acetone	100	U
75-15-0	Carbon Disulfide	50	U
75-69-4	Trichlorofluoromethane	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
540-59-0	1,2-Dichloroethene (total)	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon Tetrachloride	50	U
108-05-4	Vinyl Acetate	100	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	200	
10061-02-6	trans-1,3-Dichloropropene	50	U
110-75-8	2-Chloroethylvinylether	100	U

1X

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW15

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001009

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1601016.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 10.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	50	U
591-78-6	2-Hexanone	100	U
108-10-1	4-Methyl-2-Pentanone	100	U
127-18-4	Tetrachloroethene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	500	
100-42-5	Styrene	50	U
1330-20-7	Xylene (total)	1300	
75-71-8	Dichlorodifluoromethane	100	U
107-02-8	Acrolein	1000	U
74-88-4	Iodomethane	100	U
107-13-1	Acrylonitrile	1000	U
74-95-3	Dibromomethane	50	U
97-63-2	Ethyl Methacrylate	50	U
96-18-4	1,2,3-Trichloropropane	50	U
110-57-6	trans-1,4-Dichloro-2-Butene	50	U
1634-04-4	tert-Butyl Methyl Ether	100	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001010

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1001010.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 10.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	100	U
74-83-9	Bromomethane	100	U
75-01-4	Vinyl Chloride	100	U
75-00-3	Chloroethane	100	U
75-09-2	Methylene Chloride	50	U
67-64-1	Acetone	70	BJ
75-15-0	Carbon Disulfide	50	U
75-69-4	Trichlorofluoromethane	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
540-59-0	1,2-Dichloroethene (total)	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon Tetrachloride	50	U
108-05-4	Vinyl Acetate	100	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
110-75-8	2-Chloroethylvinylether	100	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001010

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1001010.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 10.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	50	U
591-78-6	2-Hexanone	100	U
108-10-1	4-Methyl-2-Pentanone	100	U
127-18-4	Tetrachloroethene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	350	
100-42-5	Styrene	50	U
1330-20-7	Xylene (total)	2500	
75-71-8	Dichlorodifluoromethane	100	U
107-02-8	Acrolein	1000	U
74-88-4	Iodomethane	100	U
107-13-1	Acrylonitrile	1000	U
74-95-3	Dibromomethane	50	U
97-63-2	Ethyl Methacrylate	50	U
96-18-4	1,2,3-Trichloropropane	50	U
110-57-6	trans-1,4-Dichloro-2-Butene	50	U
1634-04-4	tert-Butyl Methyl Ether	100	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001011

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1101011.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 3.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	30	U
74-83-9	Bromomethane	30	U
75-01-4	Vinyl Chloride	30	U
75-00-3	Chloroethane	30	U
75-09-2	Methylene Chloride	15	U
67-64-1	Acetone	53	B
75-15-0	Carbon Disulfide	15	U
75-69-4	Trichlorofluoromethane	15	U
75-35-4	1,1-Dichloroethene	15	U
75-34-3	1,1-Dichloroethane	15	U
540-59-0	1,2-Dichloroethene (total)	15	U
67-66-3	Chloroform	15	U
107-06-2	1,2-Dichloroethane	15	U
78-93-3	2-Butanone	30	U
71-55-6	1,1,1-Trichloroethane	15	U
56-23-5	Carbon Tetrachloride	15	U
108-05-4	Vinyl Acetate	30	U
75-27-4	Bromodichloromethane	15	U
78-87-5	1,2-Dichloropropane	15	U
10061-01-5	cis-1,3-Dichloropropene	15	U
79-01-6	Trichloroethene	15	U
124-48-1	Dibromochloromethane	15	U
79-00-5	1,1,2-Trichloroethane	15	U
71-43-2	Benzene	570	
10061-02-6	trans-1,3-Dichloropropene	15	U
110-75-8	2-Chloroethylvinylether	30	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001011

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1101011.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 3.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	15	U
591-78-6	2-Hexanone	30	U
108-10-1	4-Methyl-2-Pentanone	30	U
127-18-4	Tetrachloroethene	15	U
79-34-5	1,1,2,2-Tetrachloroethane	15	U
108-88-3	Toluene	15	U
108-90-7	Chlorobenzene	15	U
100-41-4	Ethylbenzene	61	
100-42-5	Styrene	15	U
1330-20-7	Xylene (total)	31	
75-71-8	Dichlorodifluoromethane	30	U
107-02-8	Acrolein	300	U
74-88-4	Iodomethane	30	U
107-13-1	Acrylonitrile	300	U
74-95-3	Dibromomethane	15	U
97-63-2	Ethyl Methacrylate	15	U
96-18-4	1,2,3-Trichloropropane	15	U
110-57-6	trans-1,4-Dichloro-2-Butene	15	U
1634-04-4	tert-Butyl Methyl Ether	30	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW7

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001012

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0901009.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 05/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl Chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene Chloride	120	
67-64-1	Acetone	200	B
75-15-0	Carbon Disulfide	25	U
75-69-4	Trichlorofluoromethane	280	
75-35-4	1,1-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
540-59-0	1,2-Dichloroethene (total)	25	U
67-66-3	Chloroform	61	B
107-06-2	1,2-Dichloroethane	25	U
78-93-3	2-Butanone	50	U
71-55-6	1,1,1-Trichloroethane	25	U
56-23-5	Carbon Tetrachloride	25	U
108-05-4	Vinyl Acetate	50	U
75-27-4	Bromodichloromethane	25	U
78-87-5	1,2-Dichloropropane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
79-01-6	Trichloroethene	36	
124-48-1	Dibromochloromethane	18	J
79-00-5	1,1,2-Trichloroethane	25	U
71-43-2	Benzene	125	
10061-02-6	trans-1,3-Dichloropropene	25	U
110-75-8	2-Chloroethylvinylether	50	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW7

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001012

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0901009.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	25	U
591-78-6	2-Hexanone	50	U
108-10-1	4-Methyl-2-Pentanone	50	U
127-18-4	Tetrachloroethene	17	J
79-34-5	1,1,2,2-Tetrachloroethane	25	U
108-88-3	Toluene	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	400	
100-42-5	Styrene	25	U
1330-20-7	Xylene (total)	220	
75-71-8	Dichlorodifluoromethane	33	
107-02-8	Acrolein	500	U
74-88-4	Iodomethane	50	U
107-13-1	Acrylonitrile	500	U
74-95-3	Dibromomethane	25	U
97-63-2	Ethyl Methacrylate	10	J
96-18-4	1,2,3-Trichloropropane	25	U
110-57-6	trans-1,4-Dichloro-2-Butene	25	U
1634-04-4	tert-Butyl Methyl Ether	50	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001013

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1301013.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 05/04/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 3.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	30	U
74-83-9	Bromomethane	30	U
75-01-4	Vinyl Chloride	30	U
75-00-3	Chloroethane	30	U
75-09-2	Methylene Chloride	14	
67-64-1	Acetone	30	U
75-15-0	Carbon Disulfide	15	U
75-69-4	Trichlorofluoromethane	15	U
75-35-4	1,1-Dichloroethene	15	U
75-34-3	1,1-Dichloroethane	15	U
540-59-0	1,2-Dichloroethene (total)	15	U
67-66-3	Chloroform	15	U
107-06-2	1,2-Dichloroethane	15	U
78-93-3	2-Butanone	30	U
71-55-6	1,1,1-Trichloroethane	15	U
56-23-5	Carbon Tetrachloride	15	U
108-05-4	Vinyl Acetate	30	U
75-27-4	Bromodichloromethane	15	U
78-87-5	1,2-Dichloropropane	15	U
10061-01-5	cis-1,3-Dichloropropene	15	U
79-01-6	Trichloroethene	15	U
124-48-1	Dibromochloromethane	15	U
79-00-5	1,1,2-Trichloroethane	15	U
71-43-2	Benzene	15	U
10061-02-6	trans-1,3-Dichloropropene	15	U
110-75-8	2-Chloroethylvinylether	30	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001013

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1301013.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/04/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 3.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	15	U
591-78-6	2-Hexanone	30	U
108-10-1	4-Methyl-2-Pentanone	30	U
127-18-4	Tetrachloroethene	15	U
79-34-5	1,1,2,2-Tetrachloroethane	15	U
108-88-3	Toluene	210	
108-90-7	Chlorobenzene	15	U
100-41-4	Ethylbenzene	240	
100-42-5	Styrene	15	U
1330-20-7	Xylene (total)	860	
75-71-8	Dichlorodifluoromethane	30	U
107-02-8	Acrolein	300	U
74-88-4	Iodomethane	30	U
107-13-1	Acrylonitrile	300	U
74-95-3	Dibromomethane	15	U
97-63-2	Ethyl Methacrylate	15	U
96-18-4	1,2,3-Trichloropropane	15	U
110-57-6	trans-1,4-Dichloro-2-Butene	15	U
1634-04-4	tert-Butyl Methyl Ether	30	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW18

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001014

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1501015.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/04/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 3.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	30	U
74-83-9	Bromomethane	30	U
75-01-4	Vinyl Chloride	30	U
75-00-3	Chloroethane	30	U
75-09-2	Methylene Chloride	15	U
67-64-1	Acetone	30	U
75-15-0	Carbon Disulfide	15	U
75-69-4	Trichlorofluoromethane	15	U
75-35-4	1,1-Dichloroethene	15	U
75-34-3	1,1-Dichloroethane	15	U
540-59-0	1,2-Dichloroethene (total)	15	U
67-66-3	Chloroform	15	U
107-06-2	1,2-Dichloroethane	15	U
78-93-3	2-Butanone	30	U
71-55-6	1,1,1-Trichloroethane	15	U
56-23-5	Carbon Tetrachloride	15	U
108-05-4	Vinyl Acetate	30	U
75-27-4	Bromodichloromethane	15	U
78-87-5	1,2-Dichloropropane	15	U
10061-01-5	cis-1,3-Dichloropropene	15	U
79-01-6	Trichloroethene	15	U
124-48-1	Dibromochloromethane	15	U
79-00-5	1,1,2-Trichloroethane	15	U
71-43-2	Benzene	47	
10061-02-6	trans-1,3-Dichloropropene	15	U
110-75-8	2-Chloroethylvinylether	30	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW18

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001014

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1501015.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/04/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 3.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	15	U
591-78-6	2-Hexanone	30	U
108-10-1	4-Methyl-2-Pentanone	30	U
127-18-4	Tetrachloroethene	15	U
79-34-5	1,1,2,2-Tetrachloroethane	15	U
108-88-3	Toluene	320	
108-90-7	Chlorobenzene	15	U
100-41-4	Ethylbenzene	140	
100-42-5	Styrene	15	U
1330-20-7	Xylene (total)	530	
75-71-8	Dichlorodifluoromethane	30	U
107-02-8	Acrolein	300	U
74-88-4	Iodomethane	30	U
107-13-1	Acrylonitrile	300	U
74-95-3	Dibromomethane	15	U
97-63-2	Ethyl Methacrylate	15	U
96-18-4	1,2,3-Trichloropropane	15	U
110-57-6	trans-1,4-Dichloro-2-Butene	15	U
1634-04-4	tert-Butyl Methyl Ether	30	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW19

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001015

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1001010.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSP-MW19

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001015

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1001010.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BLANK

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001016

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0601006.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	J
67-64-1	Acetone	6	BJ
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BLANK

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001016

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0601006.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7(MCE)

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001017

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1101011.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	190	B
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	53	
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7(MCE)

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001017

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1101011.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	20	
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	67	
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	60	J
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X04303B1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0101001.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X04303B1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0101001.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 04/30/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW 2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X05033B3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0201002.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. _____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	9	J
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW 2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X05033B3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0201002.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW 3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X05043B1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: X05043B1.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/04/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	3	J
75-15-0	Carbon Disulfide	1	J
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	3	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW 3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X05043B1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: X05043B1.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/04/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	4	J
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW 4

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X05053B2

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: X05053B2.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	9	J
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U

1X
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW 4

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: X05053B2

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: X05053B2.D

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: not dec. ____ Date Analyzed: 05/05/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-71-8	Dichlorodifluoromethane	10	U
107-02-8	Acrolein	100	U
74-88-4	Iodomethane	10	U
107-13-1	Acrylonitrile	100	U
74-95-3	Dibromomethane	5	U
97-63-2	Ethyl Methacrylate	5	U
96-18-4	1,2,3-Trichloropropane	5	U
110-57-6	trans-1,4-Dichloro-2-Butene	5	U
1634-04-4	tert-Butyl Methyl Ether	10	U

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: V92001 SAS No.: _____ SDG No.: GC-MS

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	DFSP-EB2	97	93	92	0	0
02	DFSP-DUP1	99	94	93	0	0
03	DFSP-DUP2	96	92	91	0	0
04	DFSP-DUP3	96	95	92	0	0
05	DFSP-MW10	98	98	97	0	0
06	DFSP-MW8	102	93	102	0	0
07	DFSP-MW11	95	93	93	0	0
08	DFSP-MW9	96	92	95	0	0
09	DFSP-MW15	96	93	91	0	0
10	DFSP-MW14	103	96	103	0	0
11	DFSP-MW13	99	98	108	0	0
12	DFSP-MW7	102	100	107	0	0
13	DFSP-MW17	99	97	110	0	0
14	DFSP-MW18	102	95	104	0	0
15	DFSP-MW19	97	92	92	0	0
16	TRIP BLANK	96	91	91	0	0
17	MW7(MCE)	99	93	97	0	0
18	VBLKW	97	92	97	0	0
19	VBLKW 2	101	96	101	0	0
20	VBLKW 3	100	91	93	0	0
21	VBLKW 4	99	89	97	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(88-110)
SMC2 (BFB)	= Bromofluorobenzene	(86-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

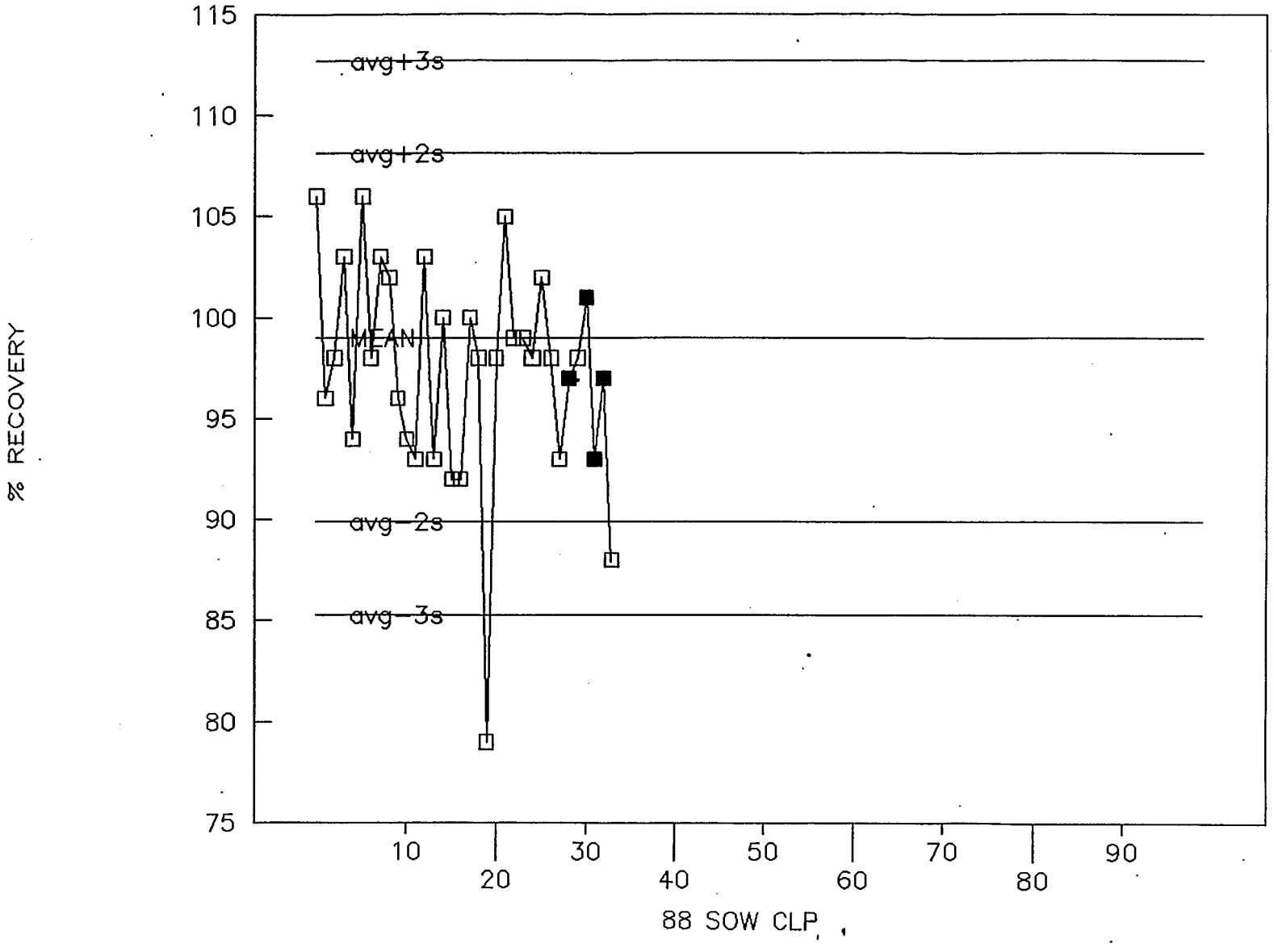
Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

SURROGATE RECOVERY — WATER VOLATILES

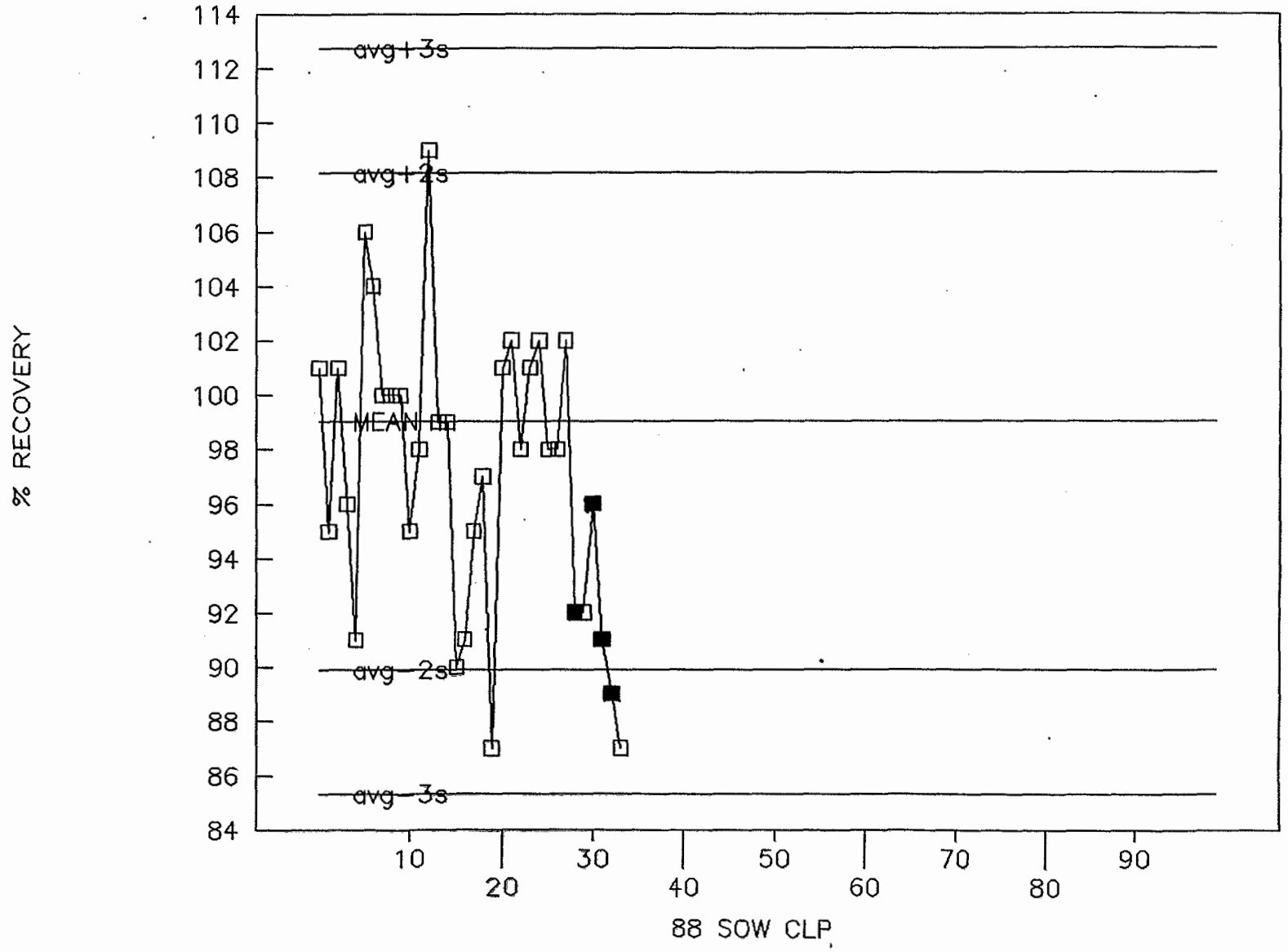
1,2-DICHLOROETHANE-d4



000069

SURROGATE RECOVERY – WATER VOLATILES

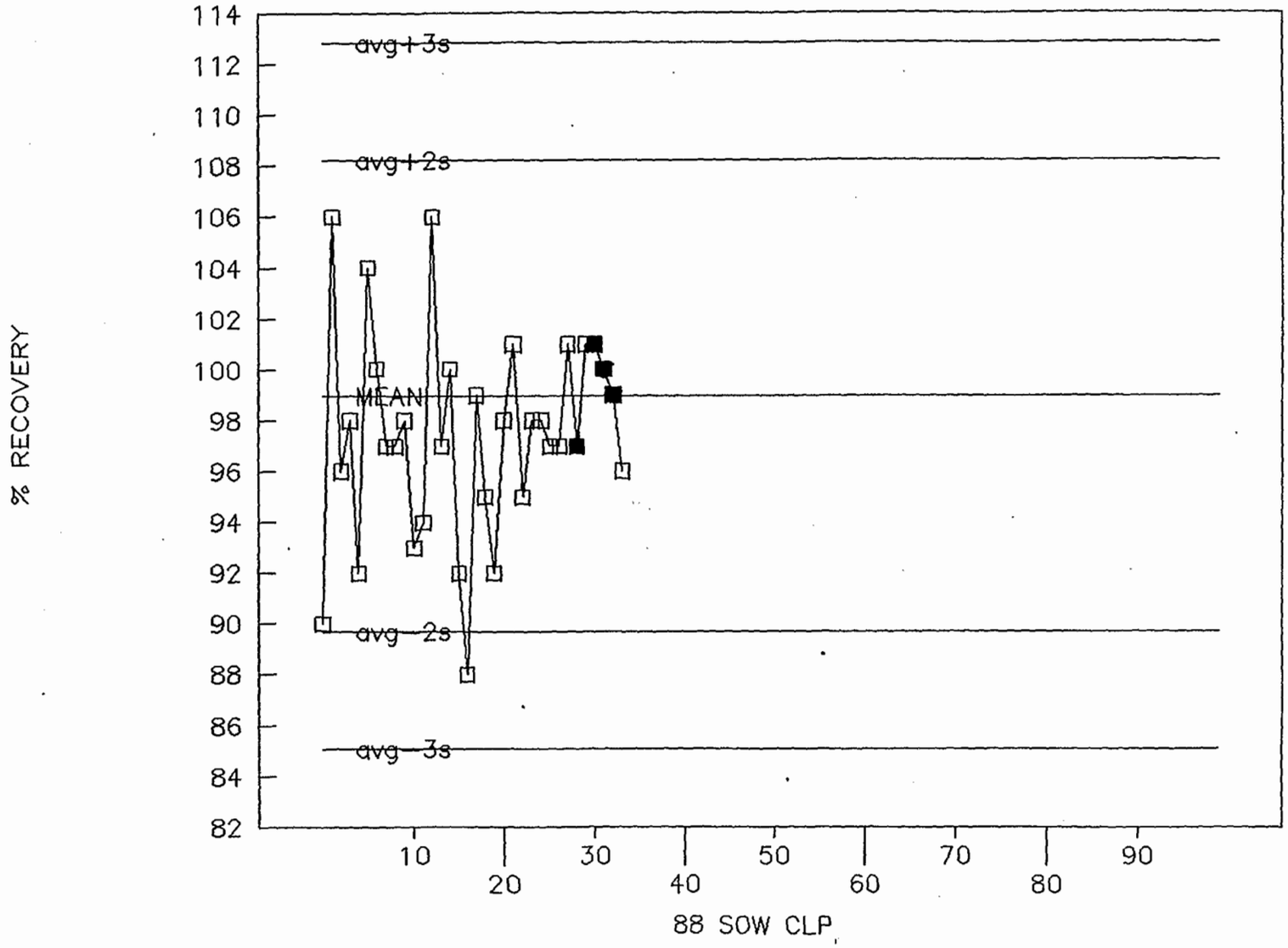
BROMOFLUOROBENZENE



000070

SURROGATE RECOVERY – WATER VOLATILES

TOLUENE–D8



000071

WATER 88 SOW CLP VOLATILES

	SAMPLE #	DATE	D8-T SURROGATE % REC.	1,4-BFB SURROGATE % REC.	D4-1,2-DCE SURROGATE % REC.	D8-T ACCEPT. ?	D8-T OUTLIER ?	D5P ACCEPT. ?	D5P OUTLIER ?	246TBP ACCEPT. ?	246TBP OUTLIER ?	COMMENTS
1	X09182B1	09/18/92	90.0	101.0	106.0	NO	NO	YES	NO	YES	NO	
2	X09232B4	09/23/92	106.0	95.0	96.0	YES	NO	YES	NO	YES	NO	
3	X09242B1	09/24/92	96.0	101.0	98.0	YES	NO	YES	NO	YES	NO	
4	X09302B2	09/30/92	98.0	96.0	103.0	YES	NO	YES	NO	YES	NO	
5	X01123B1	01/12/93	92.0	91.0	94.0	YES	NO	NO	NO	YES	NO	
6	X01213B1	01/21/93	104.0	106.0	106.0	YES	NO	YES	NO	YES	NO	
7	X01293B1	01/29/93	100.0	104.0	98.0	YES	NO	YES	NO	YES	NO	
8	X02013B1	02/01/93	97.0	100.0	103.0	YES	NO	YES	NO	YES	NO	
9	X02013B2	02/01/93	97.0	100.0	102.0	YES	NO	YES	NO	YES	NO	
10	X02023B2	02/02/93	98.0	100.0	96.0	YES	NO	YES	NO	YES	NO	
11	X02033B1	02/03/93	93.0	95.0	94.0	YES	NO	YES	NO	YES	NO	
12	X02043B3	02/04/93	94.0	98.0	93.0	YES	NO	YES	NO	YES	NO	
13	X02053B2	02/05/93	106.0	109.0	103.0	YES	NO	YES	NO	YES	NO	
14	X02083B1	02/08/93	97.0	99.0	93.0	YES	NO	YES	NO	YES	NO	
15	X02093B1	02/09/93	100.0	99.0	100.0	YES	NO	YES	NO	YES	NO	
16	X02113B1	02/11/93	92.0	90.0	92.0	YES	NO	NO	NO	YES	NO	
17	X02153B1	02/15/93	88.0	91.0	92.0	NO	NO	YES	NO	YES	NO	
18	X02183B1	02/18/93	99.0	95.0	100.0	YES	NO	YES	NO	YES	NO	
19	X02193B1	02/19/93	95.0	97.0	98.0	YES	NO	YES	NO	YES	NO	
20	X02233B2	02/23/93	92.0	87.0	79.0	YES	NO	NO	NO	NO	YES	
21	X03033B1	03/03/93	98.0	101.0	98.0	YES	NO	YES	NO	YES	NO	
22	X03303B2	03/30/93	101.0	102.0	105.0	YES	NO	YES	NO	YES	NO	
23	X03313B2	03/31/93	95.0	98.0	99.0	YES	NO	YES	NO	YES	NO	
24	X04013B1	04/01/93	98.0	101.0	99.0	YES	NO	YES	NO	YES	NO	
25	X04083B1	04/08/93	98.0	102.0	98.0	YES	NO	YES	NO	YES	NO	
26	X04093B2	04/09/93	97.0	98.0	102.0	YES	NO	YES	NO	YES	NO	
27	X04193B1	04/19/93	97.0	98.0	98.0	YES	NO	YES	NO	YES	NO	
28	X04283B1	04/28/93	101.0	102.0	93.0	YES	NO	YES	NO	YES	NO	
29	X04303B1	4/30/93	97.0	92.0	97.0	YES	NO	YES	NO	YES	NO	
30	X05033B1	05/03/93	101.0	92.0	98.0	YES	NO	YES	NO	YES	NO	
31	X05033B3	05/03/93	101.0	96.0	101.0	YES	NO	YES	NO	YES	NO	
32	X05043B1	05/04/93	100.0	91.0	93.0	YES	NO	YES	NO	YES	NO	
33	X05053B2	05/05/93	99.0	89.0	97.0	YES	NO	YES	NO	YES	NO	
34	X05083B2	05/08/93	96.0	87.0	88.0	YES	NO	NO	NO	YES	NO	
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CASE NARRATIVE
GC/MS SEMIVOLATILE SAMPLES

LABORATORY : CH2M HILL LABORATORIES CLIENT: ABB ENVIRONMENTAL

CASE NO. : N/A CONTRACT NO.: N/A

LAB REF. NO.: 92001 SDG NO.: N/A

I. RECEIPT

A. Date: April 22, 1993

B. Sample Information

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
92001001	DFSP-EB2	WATER	04/21/93	04/26/93	05/01/93
92001002	DFSP-DUP1	WATER	04/21/93	04/26/93	05/01/93
92001003	DFSP-DUP2	WATER	04/21/93	04/26/93	05/01/93
92001004	DFSP-DUP3	WATER	04/21/93	04/26/93	05/01/93
92001005	DFSP-MW10	WATER	04/21/93	04/26/93	05/01/93
92001006	DFSP-MW8	WATER	04/21/93	04/26/93	05/01/93
92001007	DFSP-MW11	WATER	04/21/93	04/26/93	05/01/93
92001008	DFSP-MW9	WATER	04/21/93	04/26/93	05/01/93
92001009	DFSP-MW15	WATER	04/21/93	04/26/93	05/01/93
92001010	DFSP-MW14	WATER	04/21/93	04/26/93	05/03/93
92001011	DFSP-MW13	WATER	04/21/93	04/26/93	05/01/93
92001012	DFSP-MW7	WATER	04/21/93	04/26/93	05/03/93
92001013	DFSP-MW17	WATER	04/21/93	04/26/93	05/03/93
92001014	DFSP-MW18	WATER	04/21/93	04/26/93	05/03/93
92001015	DFSP-MW19	WATER	04/21/93	04/26/93	05/03/93
92001017	MW7(MCE)	WATER	04/21/93	04/26/93	05/03/93
C04263B3	QC BLANK W	WATER	N/A	04/26/93	05/01/93
C04263B3	QC BLANK W 2	WATER	N/A	04/26/93	05/03/93

C. Documentation
Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms will not be included.

No other exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : For sample DFSP-MW15, 2,4,6-Tribromophenol had a recovery of 165% which is above the QC limit of 123%. As this surrogate was out high, indicating the possibility of a false positive value and the sample did not contain any compounds associated with this surrogate, the data associated with this sample is valid.

V. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Wanda L. Hall 6/15/93
for Fred Ordway Date
Operations Manager

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-EB2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018875

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-EB2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018875

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	3	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-EB2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018875

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP1

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001002

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018876

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP1

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001002

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018876

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	4	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP1

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001002

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018876

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001003

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018877

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001003

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018877

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	5	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001003

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018877

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001004

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018880

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	3	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001004

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018880

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	4	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-DUP3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001004

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018880

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001005

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018881

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001005

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018881

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001005

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018881

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW8

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001006

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018882

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW8

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001006

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018882

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW8

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001006

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018882

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018883

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	3	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018883

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	4	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018883

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW9

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A2BA018896

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW9

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A2BA018896

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW9

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A2BA018896

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW15

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001009

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018885

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	160	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	78	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW15

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001009

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018885

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	4	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW15

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001009

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018885

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001010

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018891

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	150	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	120	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001010

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018891

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	4	BJ
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001010

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018891

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001011

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018886

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	9	J
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	150	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	69	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001011

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018886

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	3	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001011

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018886

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW7

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001012

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018897

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	20	U
108-95-2	Phenol	20	U
62-53-3	Aniline	20	U
111-44-4	bis(2-Chloroethyl)Ether	20	U
95-57-8	2-Chlorophenol	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
100-51-6	Benzyl Alcohol	20	U
95-50-1	1,2-Dichlorobenzene	20	U
95-48-7	2-Methylphenol	20	U
108-60-1	bis(2-Chloroisopropyl)Ether	20	U
106-44-5	4-Methylphenol	20	U
621-64-7	N-Nitroso-Di-n-Propylamine	20	U
67-72-1	Hexachloroethane	20	U
98-95-3	Nitrobenzene	20	U
78-59-1	Isophorone	20	U
88-75-5	2-Nitrophenol	20	U
105-67-9	2,4-Dimethylphenol	20	U
65-85-0	Benzoic Acid	100	U
111-91-1	bis(2-Chloroethoxy)Methane	20	U
120-83-2	2,4-Dichlorophenol	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
91-20-3	Naphthalene	66	
106-47-8	4-Chloroaniline	20	U
87-68-3	Hexachlorobutadiene	20	U
59-50-7	4-Chloro-3-Methylphenol	20	U
91-57-6	2-Methylnaphthalene	54	
77-47-4	Hexachlorocyclopentadiene	20	U
88-06-2	2,4,6-Trichlorophenol	20	U
95-95-4	2,4,5-Trichlorophenol	100	U
91-58-7	2-Chloronaphthalene	20	U
88-74-4	2-Nitroaniline	100	U
131-11-3	Dimethylphthalate	20	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW7

Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001012

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018897

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	20	U
606-20-2	2,6-Dinitrotoluene	20	U
99-09-2	3-Nitroaniline	100	U
83-32-9	Acenaphthene	20	U
51-28-5	2,4-Dinitrophenol	100	U
100-02-7	4-Nitrophenol	100	U
132-64-9	Dibenzofuran	20	U
121-14-2	2,4-Dinitrotoluene	20	U
84-66-2	Diethylphthalate	20	U
7005-72-3	4-Chlorophenyl-phenylether	20	U
86-73-7	Fluorene	20	U
100-01-6	4-Nitroaniline	100	U
534-52-1	4,6-Dinitro-2-Methylphenol	100	U
86-30-6	N-Nitrosodiphenylamine (1)	20	U
122-66-7	1,2-Diphenylhydrazine	20	U
101-55-3	4-Bromophenyl-phenylether	20	U
118-74-1	Hexachlorobenzene	20	U
87-86-5	Pentachlorophenol	100	U
85-01-8	Phenanthrene	20	U
120-12-7	Anthracene	20	U
84-74-2	Di-n-Butylphthalate	5	BJ
206-44-0	Fluoranthene	20	U
92-87-5	Benzidine	100	U
129-00-0	Pyrene	20	U
85-68-7	Butylbenzylphthalate	20	U
91-94-1	3,3'-Dichlorobenzidine	40	U
56-55-3	Benzo(a)Anthracene	20	U
218-01-9	Chrysene	20	U
117-81-7	bis(2-Ethylhexyl)Phthalate	20	U
117-84-0	Di-n-Octyl Phthalate	20	U
205-99-2	Benzo(b)Fluoranthene	20	U
207-08-9	Benzo(k)Fluoranthene	20	U
50-32-8	Benzo(a)Pyrene	20	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW7

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001012

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018897

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	20	U
53-70-3	Dibenz(a,h)Anthracene	20	U
191-24-2	Benzo(g,h,i)Perylene	20	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001013

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018892

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	16	
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	51	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	20	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001013

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018892

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	6	BJ
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001013

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018892

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW18

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001014

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018893

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	51	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	16	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW18

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001014

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018893

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	5	BJ
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW18

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001014

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018893

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW19

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001015

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018894

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW19

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001015

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018894

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	6	BJ
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

DFSP-MW19

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001015

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018894

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MW7(MCE)

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001017

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018895

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	15	
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	12	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	26	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MW7(MCE)

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001017

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018895

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	8	BJ
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MW7(MCE)

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: 92001017

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A1BA018895

Level: (low/med) LOW Date Received: 04/22/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

QC_BLANK_W

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: C04263B3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ABBA018874

Level: (low/med) LOW Date Received: 04/26/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

QC_BLANK_W

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: C04263B3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ABBA018874

Level: (low/med) LOW Date Received: 04/26/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

QC_BLANK_W

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: C04263B3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ABBA018874

Level: (low/med) LOW Date Received: 04/26/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/01/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

QC_BLANK_W_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: C04263B3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ABBA018890

Level: (low/med) LOW Date Received: 04/26/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

QC_BLANK_W_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: C04263B3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ABBA018890

Level: (low/med) LOW Date Received: 04/26/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	4	J
206-44-0	Fluoranthene	10	U
92-87-5	Benzidine	50	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

QC_BLANK_W_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

Matrix: (soil/water) WATER Lab Sample ID: C04263B3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ABBA018890

Level: (low/med) LOW Date Received: 04/26/93

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/26/93

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/03/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: S92001 SAS No.: _____ SDG No.: GC-MS

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	DFSP-DUP1	80	79	90	87	82	91	0	0
02	DFSP-DUP2	81	81	90	85	80	91	0	0
03	DFSP-DUP3	79	79	87	67	51	69	0	0
04	DFSP-EB2	73	72	84	86	85	91	0	0
05	DFSP-MW10	78	77	88	84	79	87	0	0
06	DFSP-MW11	73	73	83	62	50	68	0	0
07	DFSP-MW13	76	69	79	72	61	78	0	0
08	DFSP-MW14	90	83	88	66	57	65	0	0
09	DFSP-MW15	92	82	86	73	51	165 *	0	1
10	DFSP-MW17	86	73	83	72	57	72	0	0
11	DFSP-MW18	76	66	78	64	49	63	0	0
12	DFSP-MW19	70	69	85	73	72	69	0	0
13	DFSP-MW7	71	67	86	77	75	78	0	0
14	DFSP-MW8	82	81	91	87	84	94	0	0
15	DFSP-MW9	69	65	70	66	56	55	0	0
16	MW7(MCE)	80	66	80	73	70	72	0	0
17	DFSP-DUP2MS	77	68	82	88	84	86	0	0
18	DFSP-DUP2MSD	85	78	101	96 *	91	93	0	1
19	QC_BLANK_W	85	82	100	93	87	98	0	0
20	QC_BLANK_W_2	87	81	95	83	82	82	0	0

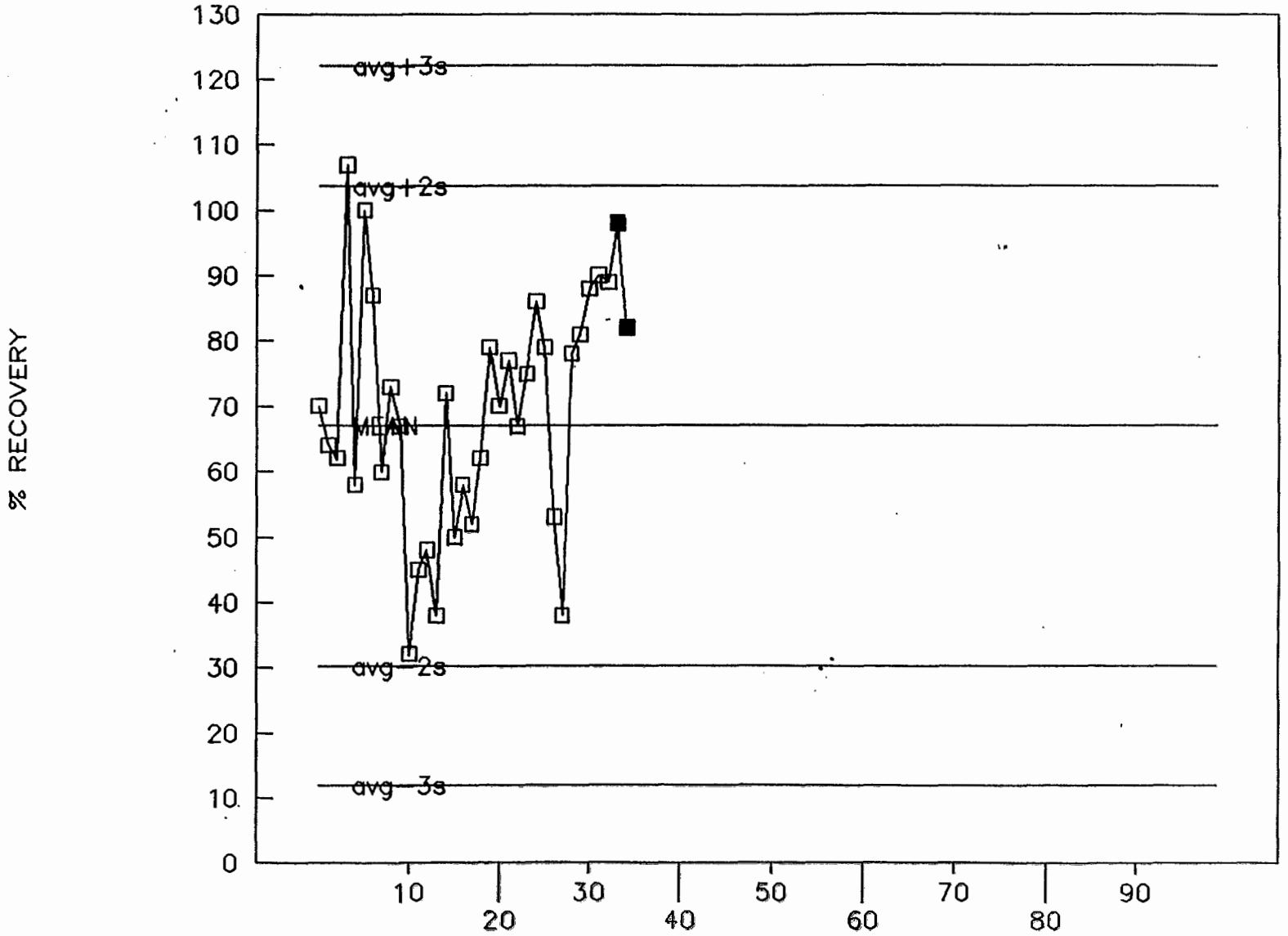
		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

FORM II SV-1 1/87 Rev.

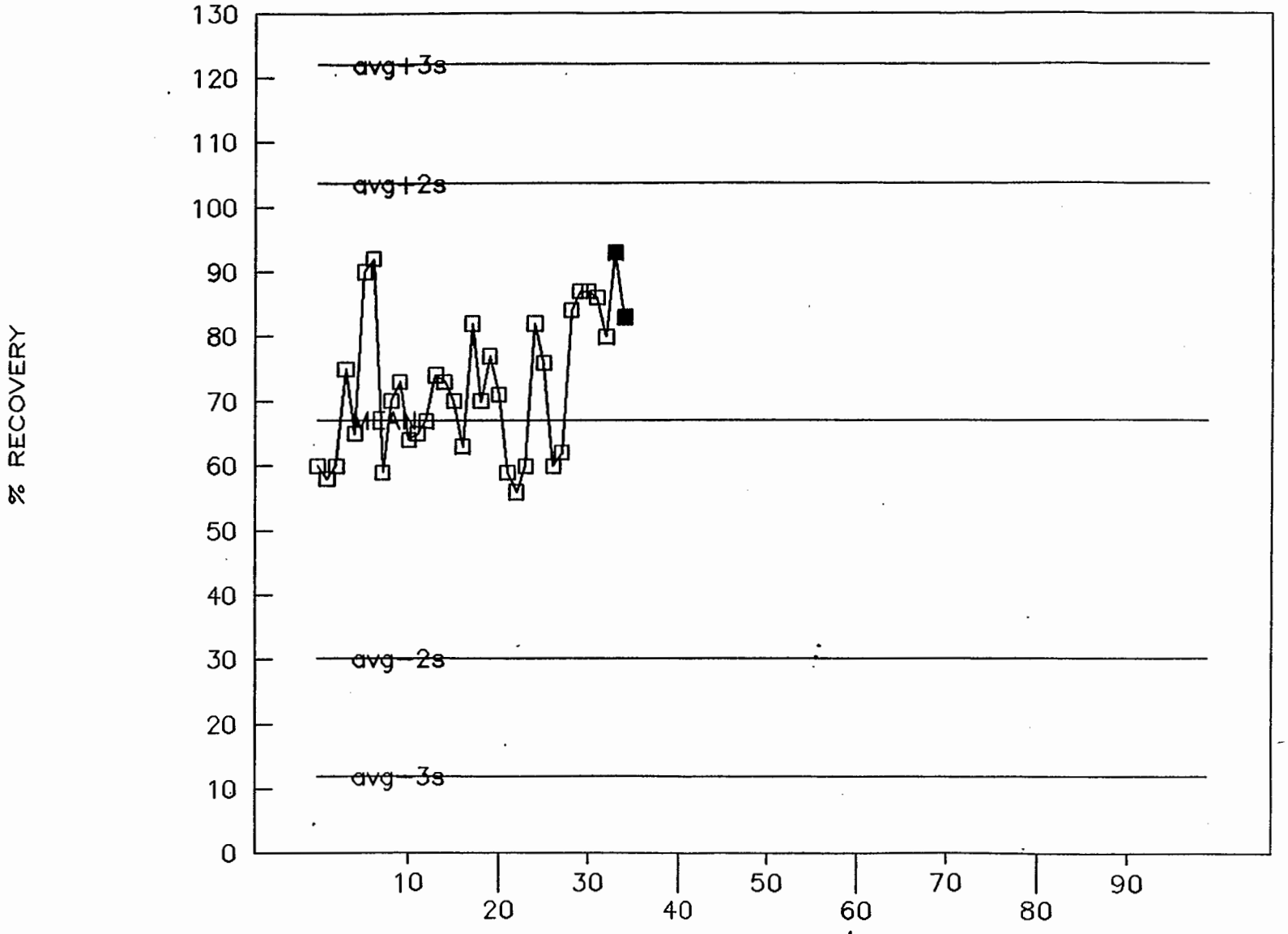
SURROGATE RECOVERY (ACID EXTRACTABLES)

2,4,6TBP – WATER (CONT. EXT.)



SURROGATE RECOVERY (ACID EXTRACTABLES)

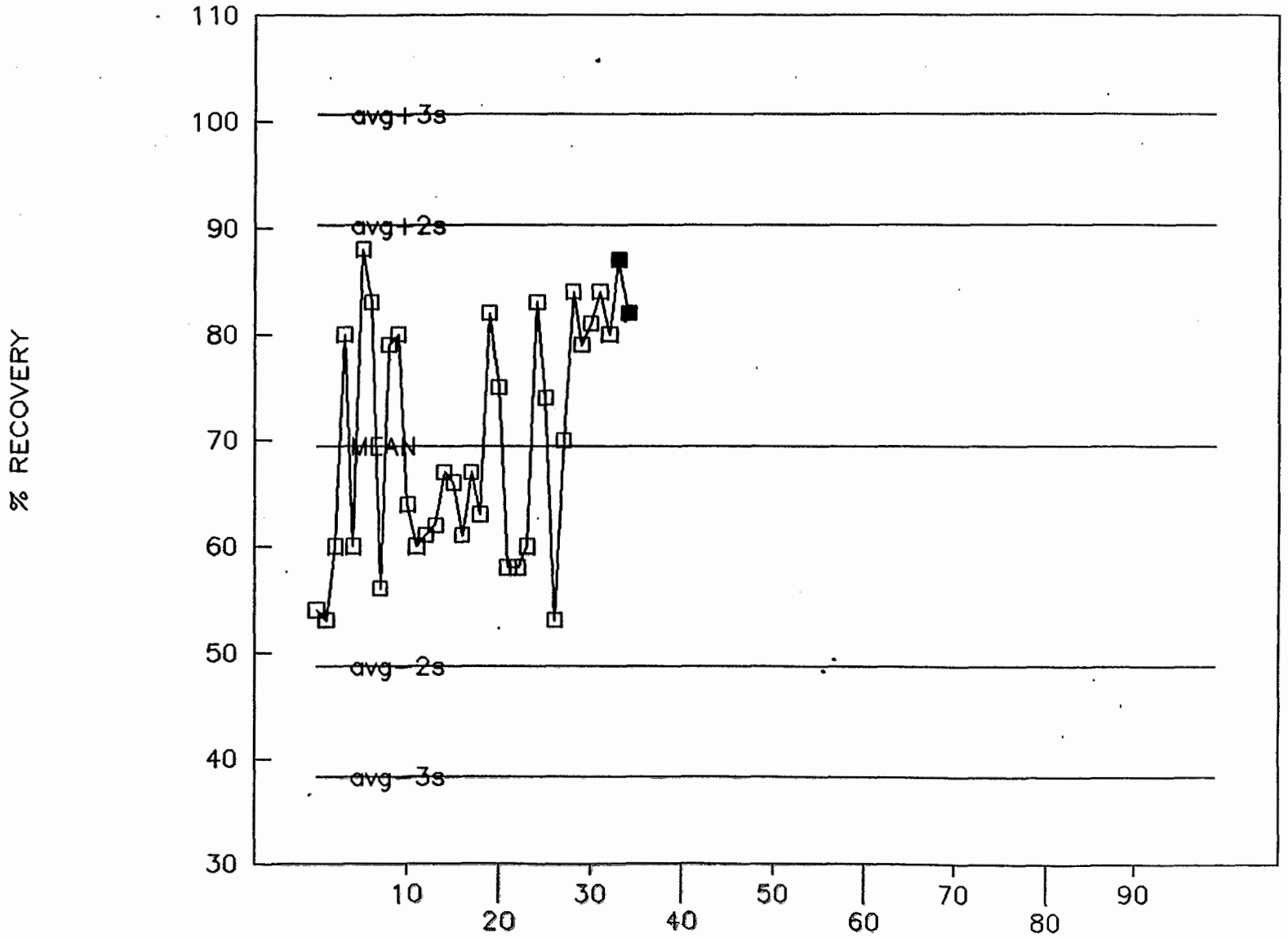
D5P – WATER (CONT. EXT.)



0001131

SURROGATE RECOVERY (ACID EXTRACTABLES)

2FP – WATER (CONT. EXT.)



WATER (Continuous) ACID EXTRACTABLES

	SAMPLE #	DATE	2FP SURROGATE % REC.	D5P SURROGATE % REC.	246TBP SURROGATE % REC.	2FP ACCEPT. ?	2FP OUTLIER ?	D5P ACCEPT. ?	D5P OUTLIER ?	246TBP ACCEPT. ?	246TBP OUTLIER ?	COMMENTS
1	W03232B1	03/26/92	54.0	60.0	70.0	YES	NO	YES	NO	YES	NO	
2	C03162B1	03/26/92	53.0	58.0	64.0	YES	NO	YES	NO	YES	NO	
3	C03172B2	03/26/92	60.0	60.0	62.0	YES	NO	YES	NO	YES	NO	
4	C04132B1	04/15/92	80.0	75.0	107.0	YES	NO	YES	NO	NO	NO	
5	C04202B1	04/24/92	60.0	65.0	58.0	YES	NO	YES	NO	YES	NO	
6	C04132B2	04/28/92	88.0	90.0	100.0	NO	NO	NO	NO	NO	NO	
7	C04132B2	04/29/92	83.0	92.0	87.0	YES	NO	NO	NO	YES	NO	
8	C04202B3	05/01/92	56.0	59.0	60.0	YES	NO	YES	NO	YES	NO	
9	C04222B1	05/08/92	79.0	70.0	73.0	YES	NO	YES	NO	YES	NO	
10	C04272B1	05/08/92	80.0	73.0	67.0	YES	NO	YES	NO	YES	NO	
11	C04282B1	05/08/92	64.0	64.0	32.0	YES	NO	YES	NO	NO	NO	
12	C04282B2	05/12/92	60.0	65.0	45.0	YES	NO	YES	NO	YES	NO	
13	C04282B2	05/13/92	61.0	67.0	48.0	YES	NO	YES	NO	YES	NO	
14	C04282B1	05/15/92	62.0	74.0	38.0	YES	NO	YES	NO	YES	NO	
15	C05062B1	05/19/92	67.0	73.0	72.0	YES	NO	YES	NO	YES	NO	
16	C05052B2	05/20/92	66.0	70.0	50.0	YES	NO	YES	NO	YES	NO	
17	C05112B1	05/20/92	61.0	63.0	58.0	YES	NO	YES	NO	YES	NO	
18	C05122B1	05/20/92	67.0	82.0	52.0	YES	NO	YES	NO	YES	NO	
19	C05112B2	05/21/92	63.0	70.0	62.0	YES	NO	YES	NO	YES	NO	
20	C05112B2	05/22/92	82.0	77.0	79.0	YES	NO	YES	NO	YES	NO	
21	C05112B3	05/22/92	75.0	71.0	70.0	YES	NO	YES	NO	YES	NO	
22	C05112B4	05/26/92	58.0	59.0	77.0	YES	NO	YES	NO	YES	NO	
23	C06012B1	06/05/92	58.0	56.0	67.0	YES	NO	YES	NO	YES	NO	
24	C06022B3	06/08/92	60.0	60.0	75.0	YES	NO	YES	NO	YES	NO	
25	C06032B1	06/09/92	83.0	82.0	86.0	YES	NO	YES	NO	YES	NO	
26	C06032B1	06/11/92	74.0	76.0	79.0	YES	NO	YES	NO	YES	NO	
27	C06032B3	06/11/92	53.0	60.0	53.0	YES	NO	YES	NO	YES	NO	
28	C06092B1	06/12/92	70.0	62.0	38.0	YES	NO	YES	NO	YES	NO	
29	C11042B1	11/07/92	84.0	84.0	78.0	YES	NO	YES	NO	YES	NO	
30	C02013B3	02/28/93	79.0	87.0	81.0	YES	NO	YES	NO	YES	NO	
31	C02013B3	03/01/93	81.0	87.0	88.0	YES	NO	YES	NO	YES	NO	
32	C04263B1	04/30/93	84.0	86.0	90.0	YES	NO	YES	NO	YES	NO	
33	C04263B1	04/30/93	80.0	80.0	89.0	YES	NO	YES	NO	YES	NO	
34	C04263B3	05/01/93	87.0	93.0	98.0	YES	NO	YES	NO	YES	NO	
35	C04263B3	05/03/93	82.0	83.0	82.0	YES	NO	YES	NO	YES	NO	
36												
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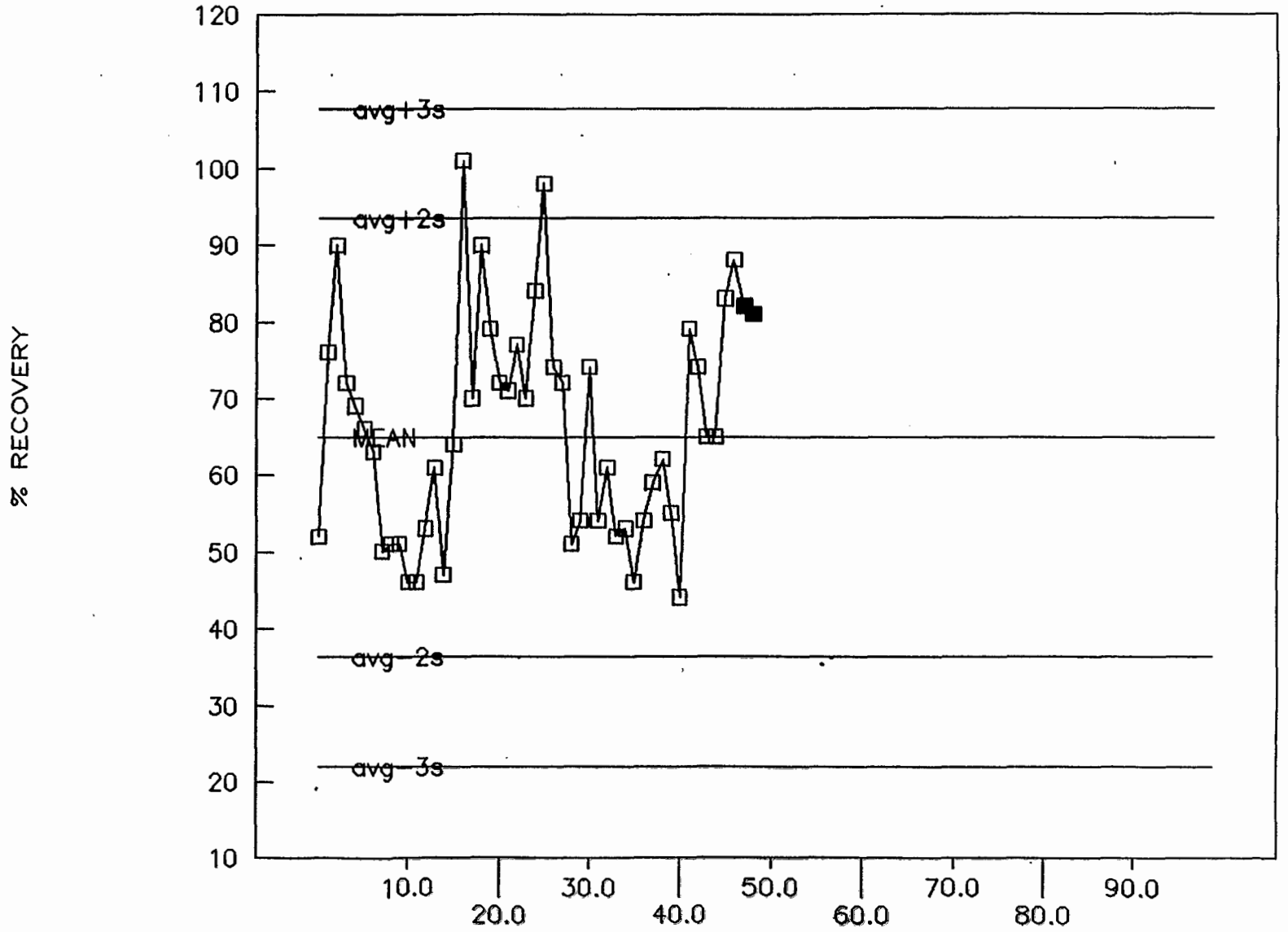
SURROGATE RECOVERY (BASE/NEUTRALS)

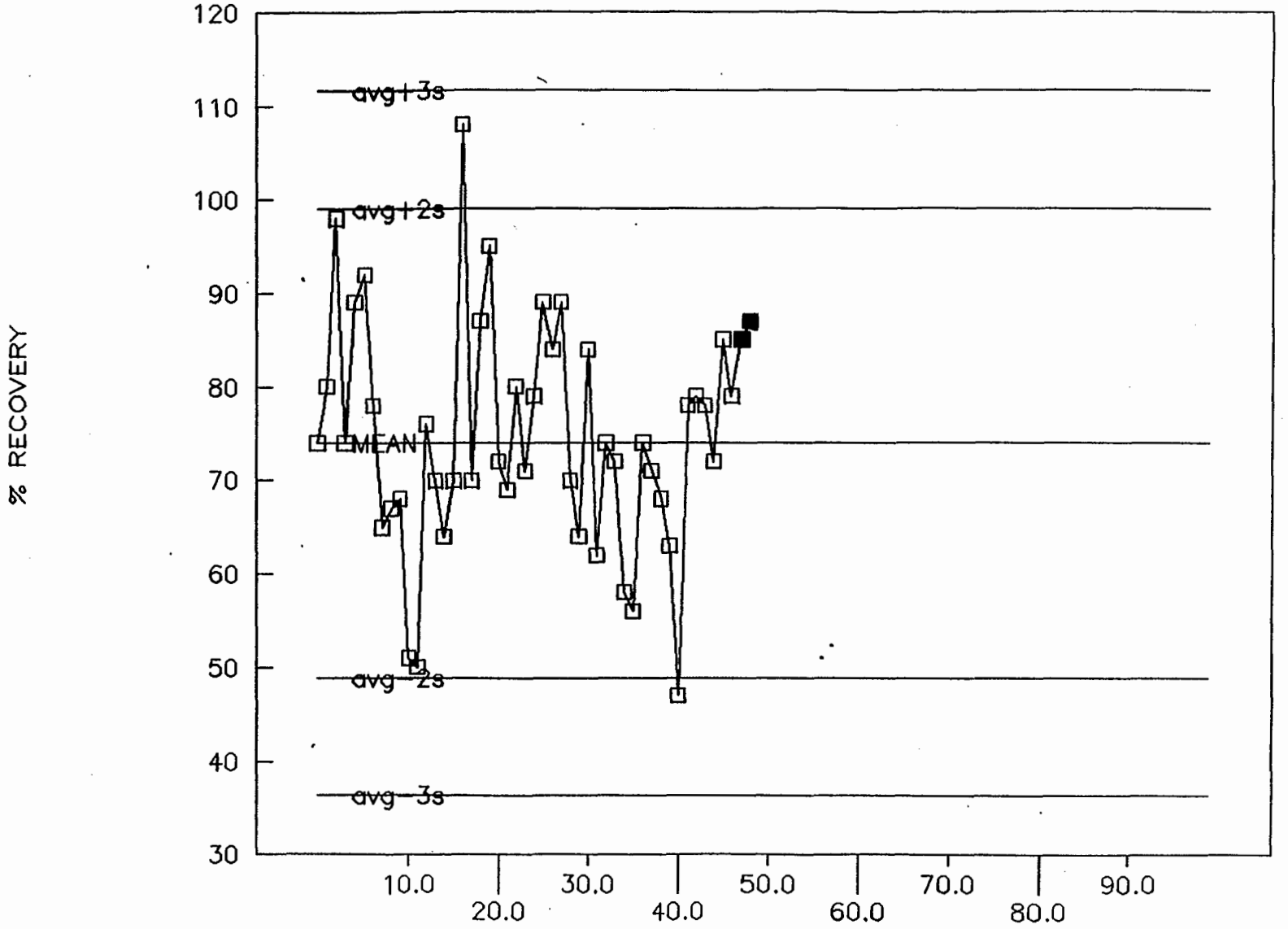
2FBP – WATER (CONT. EXT.)



0001134

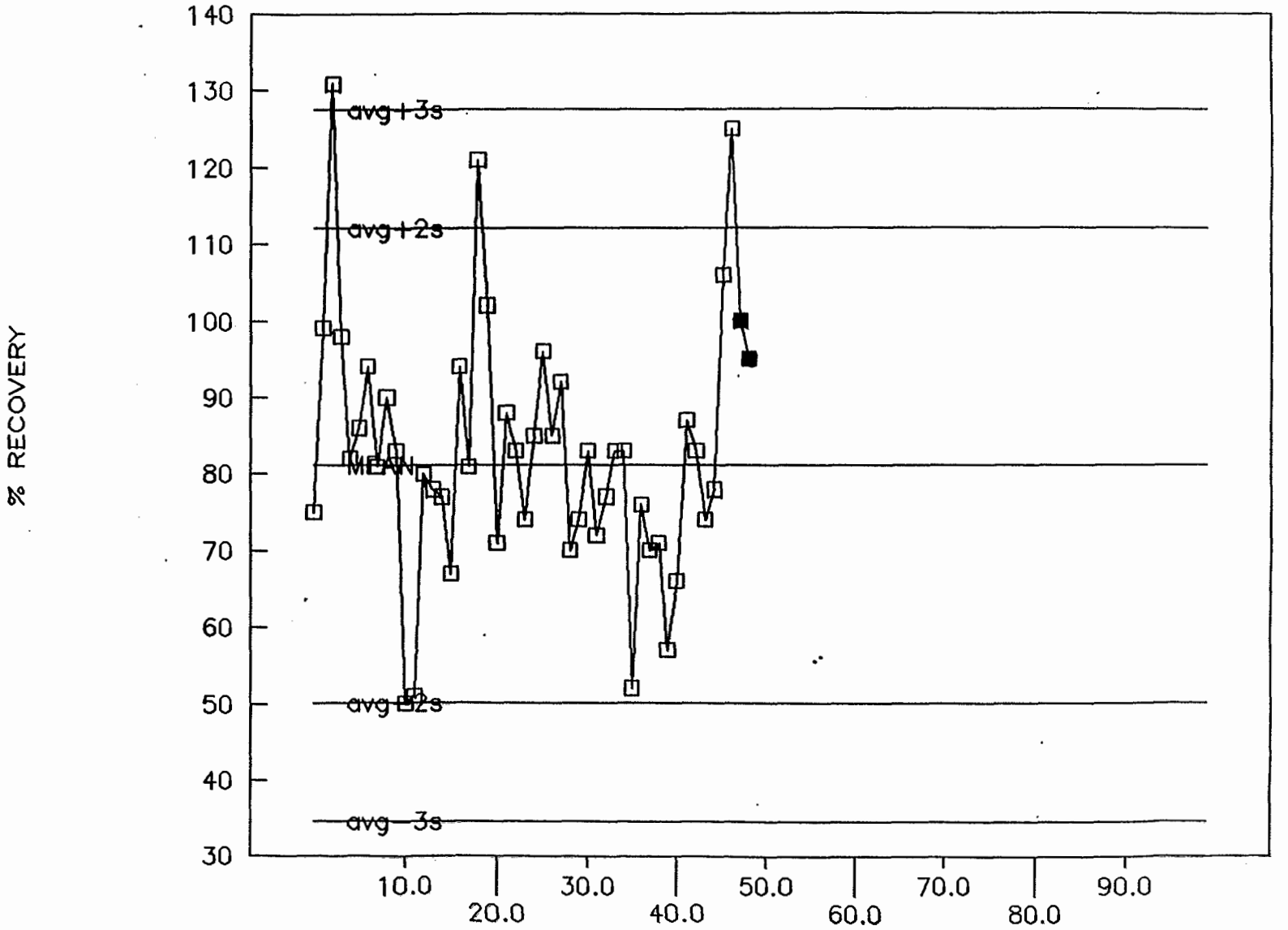
SURROGATE RECOVERY (BASE/NEUTRALS)

D5NB – WATER (CONT. EXT.)



SURROGATE RECOVERY (BASE/NEUTRALS)

D14-TP - WATER (CONT. EXT.)



WATER (CONTINUOUS) BASE/NEUTRALS

	SAMPLE #	DATE	D5NB SURROGATE % REC.	2FBP SURROGATE % REC.	D14TP SURROGATE % REC.	D5NB ACCEPT. ?	D5NB OUTLIER ?	2FBP ACCEPT. ?	2FBP OUTLIER ?	D14TP ACCEPT. ?	D14TP OUTLIER ?	COMMENTS
1	C02132B3	03/02/92	74.0	52.0	75.0	YES	NO	YES	NO	YES	NO	
2	C02132B1	03/03/92	80.0	76.0	99.0	YES	NO	YES	NO	YES	NO	
3	C02172B2	03/03/92	98.0	90.0	131.0	NO	NO	NO	NO	NO	YES	
4	C02132B1	03/04/92	74.0	72.0	98.0	YES	NO	YES	NO	YES	NO	
5	C02192B1	03/12/92	89.0	69.0	82.0	YES	NO	YES	NO	YES	NO	
6	C02252B3	03/12/92	92.0	66.0	86.0	YES	NO	YES	NO	YES	NO	
7	C02242B1	03/12/92	78.0	63.0	94.0	YES	NO	YES	NO	YES	NO	
8	C02242B1	03/17/92	65.0	50.0	81.0	YES	NO	YES	NO	YES	NO	
9	C02242B2	03/16/92	67.0	51.0	90.0	YES	NO	YES	NO	YES	NO	
10	C02242B2	03/17/92	68.0	51.0	83.0	YES	NO	YES	NO	YES	NO	
11	C02262B2	03/17/92	51.0	46.0	50.0	YES	NO	YES	NO	NO	NO	
12	C02262B2	03/17/92	50.0	46.0	51.0	YES	NO	YES	NO	NO	NO	
13	C03092B1	03/18/92	76.0	53.0	80.0	YES	NO	YES	NO	YES	NO	
14	W03232B1	03/26/92	70.0	61.0	78.0	YES	NO	YES	NO	YES	NO	
15	C03162B1	03/26/92	64.0	47.0	77.0	YES	NO	YES	NO	YES	NO	
16	C03172B2	03/26/92	70.0	64.0	67.0	YES	NO	YES	NO	YES	NO	
17	C04132B1	04/15/92	108.0	101.0	94.0	NO	NO	NO	YES	YES	NO	
18	C04202B1	04/24/92	70.0	70.0	81.0	YES	NO	YES	NO	YES	NO	
19	C04132B2	04/28/92	87.0	90.0	121.0	YES	NO	NO	NO	NO	NO	
20	C04132B2	04/29/92	95.0	79.0	102.0	YES	NO	YES	NO	YES	NO	
21	C04202B3	05/01/92	72.0	72.0	71.0	YES	NO	YES	NO	YES	NO	
22	C04222B1	05/08/92	69.0	71.0	88.0	YES	NO	YES	NO	YES	NO	
23	C04272B1	05/08/92	80.0	77.0	83.0	YES	NO	YES	NO	YES	NO	
24	C04282B1	05/08/92	71.0	70.0	74.0	YES	NO	YES	NO	YES	NO	
25	C04282B2	05/12/92	79.0	84.0	85.0	YES	NO	YES	NO	YES	NO	
26	C04282B2	05/13/92	89.0	98.0	96.0	YES	NO	NO	NO	YES	NO	
27	C04282B1	05/15/92	84.0	74.0	85.0	YES	NO	YES	NO	YES	NO	
28	C05062B1	05/19/92	89.0	72.0	92.0	YES	NO	YES	NO	YES	NO	
29	C05052B2	05/20/92	70.0	51.0	70.0	YES	NO	YES	NO	YES	NO	
30	C05112B1	05/20/92	64.0	54.0	74.0	YES	NO	YES	NO	YES	NO	
31	C05122B1	05/20/92	84.0	74.0	83.0	YES	NO	YES	NO	YES	NO	
32	C05112B2	05/21/92	62.0	54.0	72.0	YES	NO	YES	NO	YES	NO	
33	C05112B2	05/22/92	74.0	61.0	77.0	YES	NO	YES	NO	YES	NO	
34	C05112B3	05/22/92	72.0	52.0	83.0	YES	NO	YES	NO	YES	NO	
35	C05112B4	05/26/92	58.0	53.0	83.0	YES	NO	YES	NO	YES	NO	
36	C06012B1	06/05/92	56.0	46.0	52.0	YES	NO	YES	NO	YES	NO	
37	C06022B3	06/08/92	74.0	54.0	76.0	YES	NO	YES	NO	YES	NO	
38	C06032B1	06/09/92	71.0	59.0	70.0	YES	NO	YES	NO	YES	NO	
39	C06032B1	06/11/92	68.0	62.0	71.0	YES	NO	YES	NO	YES	NO	
40	C06032B3	06/11/92	63.0	55.0	57.0	YES	NO	YES	NO	YES	NO	
41	C06092B1	06/12/92	47.0	44.0	66.0	NO	NO	YES	NO	YES	NO	
42	C11042B1	11/07/92	78.0	79.0	87.0	YES	NO	YES	NO	YES	NO	
43	C11172B1	12/22/92	79.0	74.0	83.0	YES	NO	YES	NO	YES	NO	
44	C02013B3	02/28/93	78.0	65.0	74.0	YES	NO	YES	NO	YES	NO	
45	C02013B3	03/01/93	72.0	65.0	78.0	YES	NO	YES	NO	YES	NO	
46	C04263B1	04/30/93	85.0	83.0	106.0	YES	NO	YES	NO	YES	NO	
47	C04263B1	04/30/93	79.0	88.0	125.0	YES	NO	YES	NO	NO	NO	
48	C04263B3	05/01/93	85.0	82.0	100.0	YES	NO	YES	NO	YES	NO	
49	C04263B3	05/03/93	87.0	81.0	95.0	YES	NO	YES	NO	YES	NO	
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LMG Batch Number 92001

Project/Client ABB DFSP Hanahan

By [illegible] Date 4/26/93

pH

LMG Sample No.	Unpreserved	HNO3	H2SO4	ZnAc/NaOH	NaOH		
-001	2 @ 7	<2					
-002	2 @ 7	<2					
-003	2 @ 7	<2					
-004	2 @ 7	<2					
-005	2 @ 7	<2					
-006	2 @ 7	<2					
-007	2 @ 7	<2					
-008	2 @ 7	7					
-009	2 @ 7	7					
-010	2 @ 7	7					
-011	2 @ 7	7					
-012	2 @ 7	<2					
-013	2 @ 7	<2					
-014	2 @ 7	<2					
-015	2 @ 7	<2					
-016							
-017	2 @ 7	<2					
-018							
-019							
-020							

CH2M HILL
Engineers
Planners
Economists
Scientists

December 29, 1993

Jack Pittman
ABB Environmental Services
2590 Executive Center Circle East
Tallahassee, FL 32301

RE: Analytical Data for ABB/Hanahan
LGN Lab Ref. No. 90212

Dear Mr. Pittman:

On November 11, 1993, the CH2M HILL Gainesville Laboratory(LGN) received eleven samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. The samples for volatile analyses were to the CH2M HILL Montgomery Laboratory(LMG).

Under CH2M HILL policy, your samples will be stored for up to 30 days after reporting. If you have not given us prior instructions for disposal, we will contact you if any samples require disposal as hazardous waste.

CH2M HILL Laboratories appreciate your business and look forward to serving your analytical needs again. If you should have any questions concerning the data, or if you need additional information, please call me or Tom Emenhiser, Client Services Manager, at 904-462-3050.

Sincerely,

Karen Daniels
Client Services Coordinator

Enclosures

xc: Mark Joop/ABB(Orange Park)

State Certifications:

Florida No. 82112, E82124 Alabama No. 40080 California No. I-1014

CH2M HILL Quality
Analytical Laboratory

One Innovation Drive, Suite C, Alachua, FL 32615-9586
P.O. Box 370, Alachua, FL 32615-0370

904 462-3050
Fax No. 904 462-1670

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Semivolatile Data

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ORGANIC DATA QUALIFIERS

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the reporting limit for that compound. The reporting limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. It is used when the data indicates the presence of a compound below the stated reporting limit.

C -- This flag applies to GC analytes only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This qualifier indicates that the value reported exceeds the linear calibration range for that compound. Therefore, the sample should be reanalyzed at an appropriate dilution. The "E" qualified amount is an estimated concentration, and the results of the dilution will be reported on a separate Form I.

D -- This qualifier indicates compounds which have been identified during a diluted reanalysis. "D" qualifiers are used for samples that have been analyzed initially at a lesser dilution than required for accurate quantitation.

P -- This qualifier is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a "P".

N -- This qualifier indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the "N" qualifier is not used.

A -- This qualifier indicates that a TIC is a suspected aldol-condensation product.

ORGANIC LAB SAMPLE ID QUALIFIERS

The qualifiers that may be appended to the Lab Sample ID for organic analyses are defined below:

DL -- Dilution Run. Indicates the sample contained compounds exceeding the calibration range. The sample was diluted and reanalyzed. Both results are reported.

R -- Rerun. The sample was reanalyzed. The "R" is not used if the sample was also re-extracted.

RE -- Re-extraction Analysis. The sample was re-extracted and reanalyzed.

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

CLIENT SAMPLE CROSS-REFERENCE

CH2M HILL Lab Ref. No. 90212

LGN Sample ID.	Client Sample ID.
90212001	MW18
90212002	DFSPMW21D
90212003	DFSPMW21
90212004	DFSPMW22
90212005	DFSPMW23
90212006	DFSPMW24
90212007	DFSPMW25
90212008	DFSPMW13
90212009	DFSPMW20
90212010	DFSPDUP
90212011	DFSPEB

VOLATILE DATA

CASE NARRATIVE
GC/MS VOLATILE SAMPLES

LABORATORY : CH2M HILL LABORATORIES CLIENT: ABB - HANAHAN

CASE NO. : N/A CONTRACT NO.: N/A

LAB REF. NO.: 90212 SDG NO.: N/A

I. RECEIPT

A. Date: November 23, 1993

B. Sample Information

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
90212001	MW18	WATER	11/10/93	N/A	11/23/93
90212002	DFSPMW21D	WATER	11/10/93	N/A	11/23/93
90212003	DFSPMW21	WATER	11/10/93	N/A	11/24/93
90212004	DFSPMW22	WATER	11/10/93	N/A	11/24/93
90212005	DFSPMW23	WATER	11/10/93	N/A	11/24/93
90212006	DFSPMW24	WATER	11/10/93	N/A	11/24/93
90212007	DFSPMW25	WATER	11/10/93	N/A	11/24/93
90212008	DFSPMW13	WATER	11/10/93	N/A	11/24/93
90212009	DFSPMW20	WATER	11/10/93	N/A	11/24/93
90212009R	DFSPMW20R	WATER	11/10/93	N/A	12/02/93
90212010	DFSPDUP	WATER	11/10/93	N/A	11/24/93
90212011	DFSPEB	WATER	11/10/93	N/A	11/24/93
X11233B4	VBLKW	WATER	N/A	N/A	11/23/93
X11243B1	VBLKW 2	WATER	N/A	N/A	11/24/93
X12023B1	VBLKW 3	WATER	N/A	N/A	12/02/93

C. Documentation
Exceptions : No exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

II. EXTRACTION

A. Holding Times: Not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : All water volatile samples were analyzed using the HCl-preserved vial.

The original analysis of sample 90212009 contained carryover TICs. The sample was reanalyzed outisde of holding time, and no TICs were found. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : Matrix spiking was performed using a sample from our laboratory contract number 90210 (90210M01 and 90210D01). A Form III summary of those results has been added to this report.

V. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Michael E. Keller 12/27/89

Michael E. Keller
GC/MS Supervisor

Date

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

PH RESULTS

CH2M HILL Laboratory Ref. No. 90212

LMG Sample ID	Client Sample ID	pH Result
90212001	MW18	1.0
90212002	DFSPMW21D	1.0
90212003	DFSPMW21	1.0
90212004	DFSPMW22	1.0
90212005	DFSPMW23	1.0
90212006	DFSPMW24	1.0
90212007	DFSPMW25	1.0
90212008	DFSPMW13	1.0
90212009	DFSPMW20	1.0
90212010	DFSPDUP	1.0
90212011	DFSPEB	1.0

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW18

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030410

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	84	B
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	36	
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	3	J

NOK 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW18

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212001

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030410

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

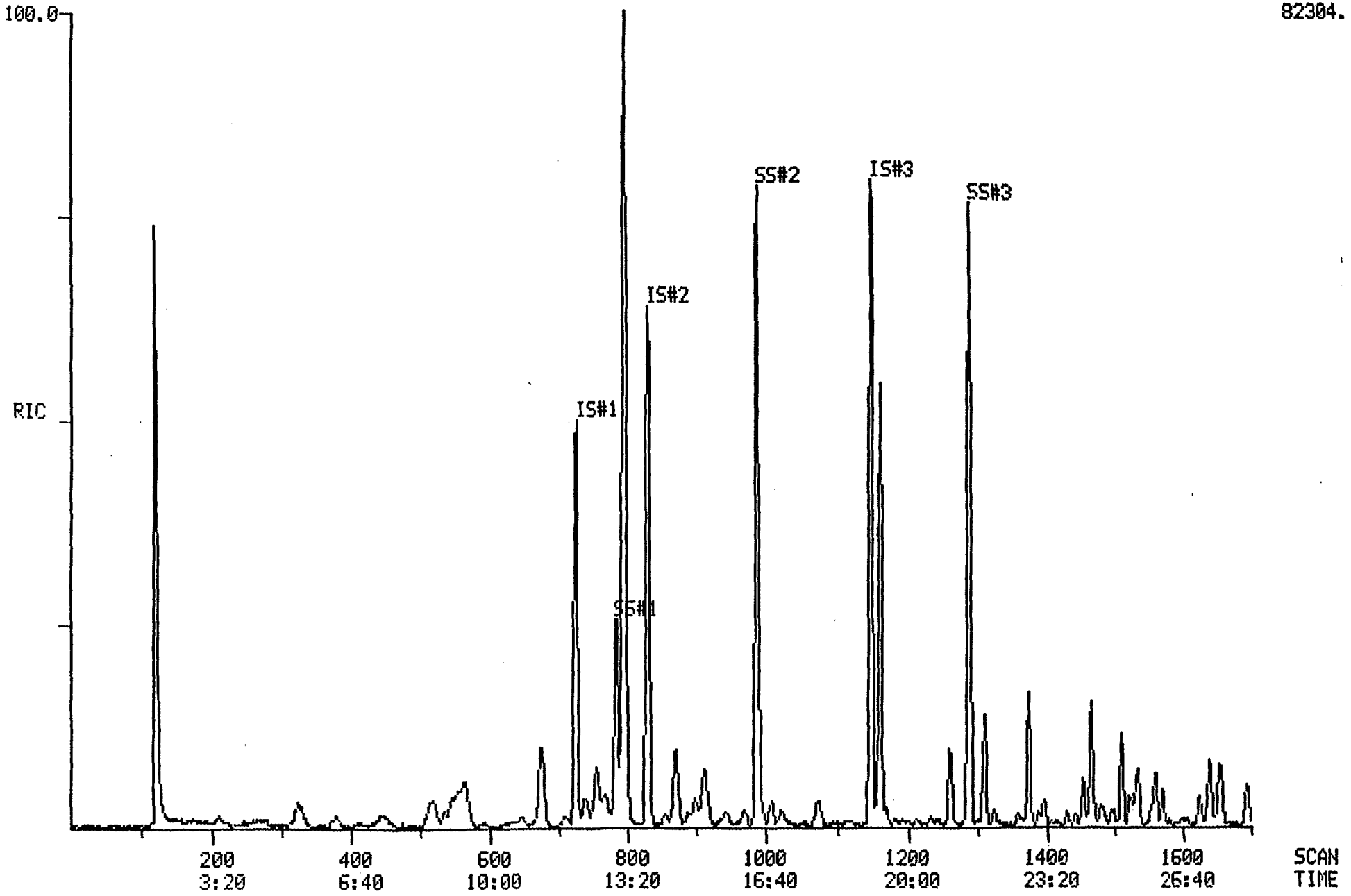
Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1634-04-4	PROPANE, 2-METHOXY-2-METHYL-	9.42	11	J
2. 96-37-7	CYCLOPENTANE, METHYL-	11.27	15	J
3. 110-82-7	CYCLOHEXANE(DOT	12.59	9	J
4. 108-87-2	CYCLOHEXANE, METHYL-	14.50	9	J
5. 560-21-4	PENTANE, 2,3,3-TRIMETHYL-	15.19	8	J
6. 98-82-8	BENZENE, (1-METHYLETHYL)-	21.05	7	J
7. 103-65-1	BENZENE, PROPYL-	21.84	9	J
8. 95-63-6	BENZENE, 1,2,4-TRIMETHYL-	22.92	10	J
9. 611-15-4	BENZENE, 1-ETHENYL-2-METHYL-	24.44	10	J
10. 934-80-5	BENZENE, 4-ETHYL-1,2-DIMETHY	25.19	7	J

MQK 12/9/93

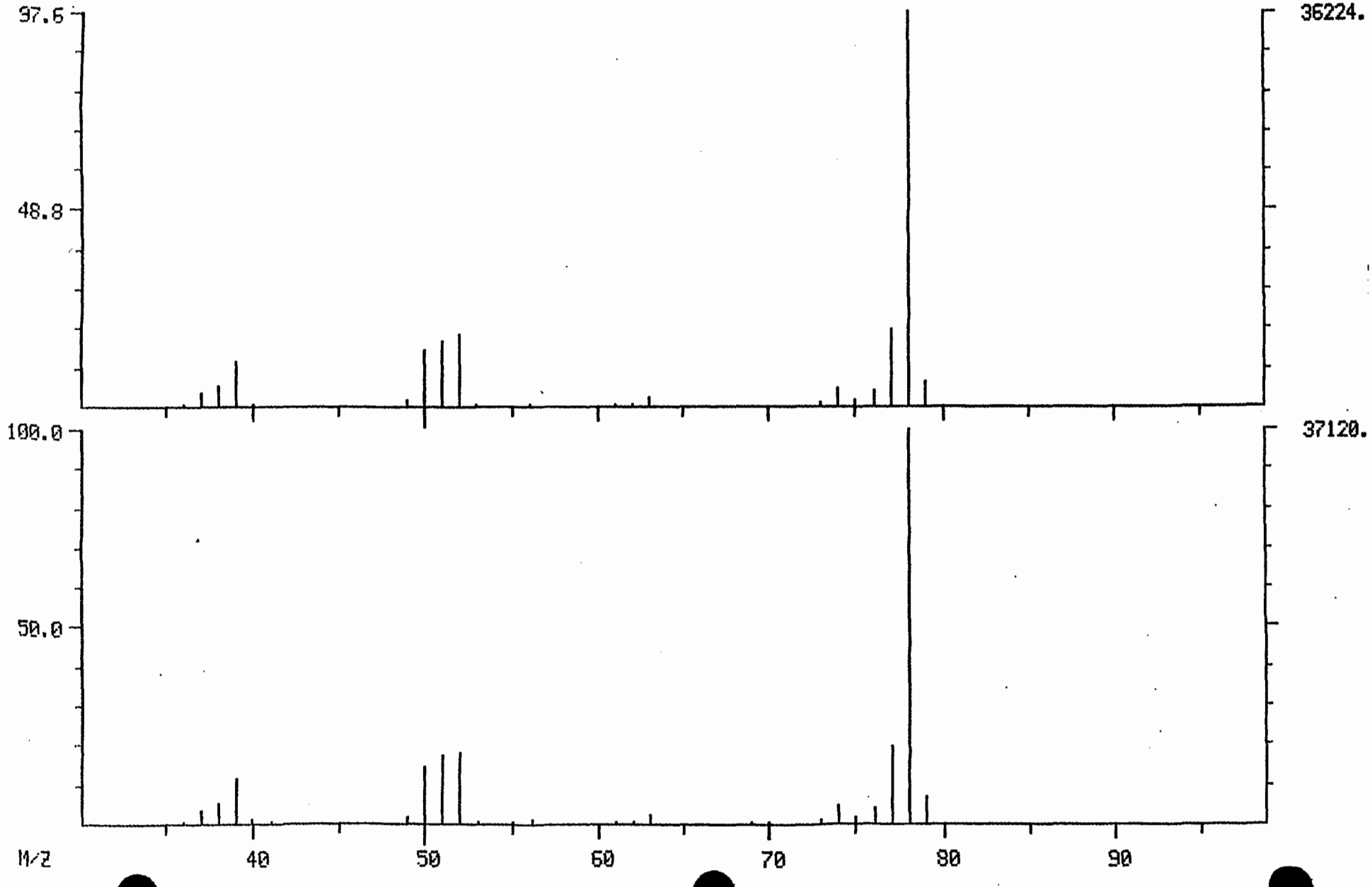
RIC DATA: C1V0030410 #1 SCANS 1 TO 1700
11/23/93 23:20:00 CALI: C1V0030410 #2
SAMPLE: CLP,V90212,,MW18,LOW,WATER,90212001,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



000006

DUAL MASS SPECTRUM
11/23/93 23:20:00 + 13:15
SAMPLE: CLP,V90212,,MW18,LOW,WATER,90212001,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

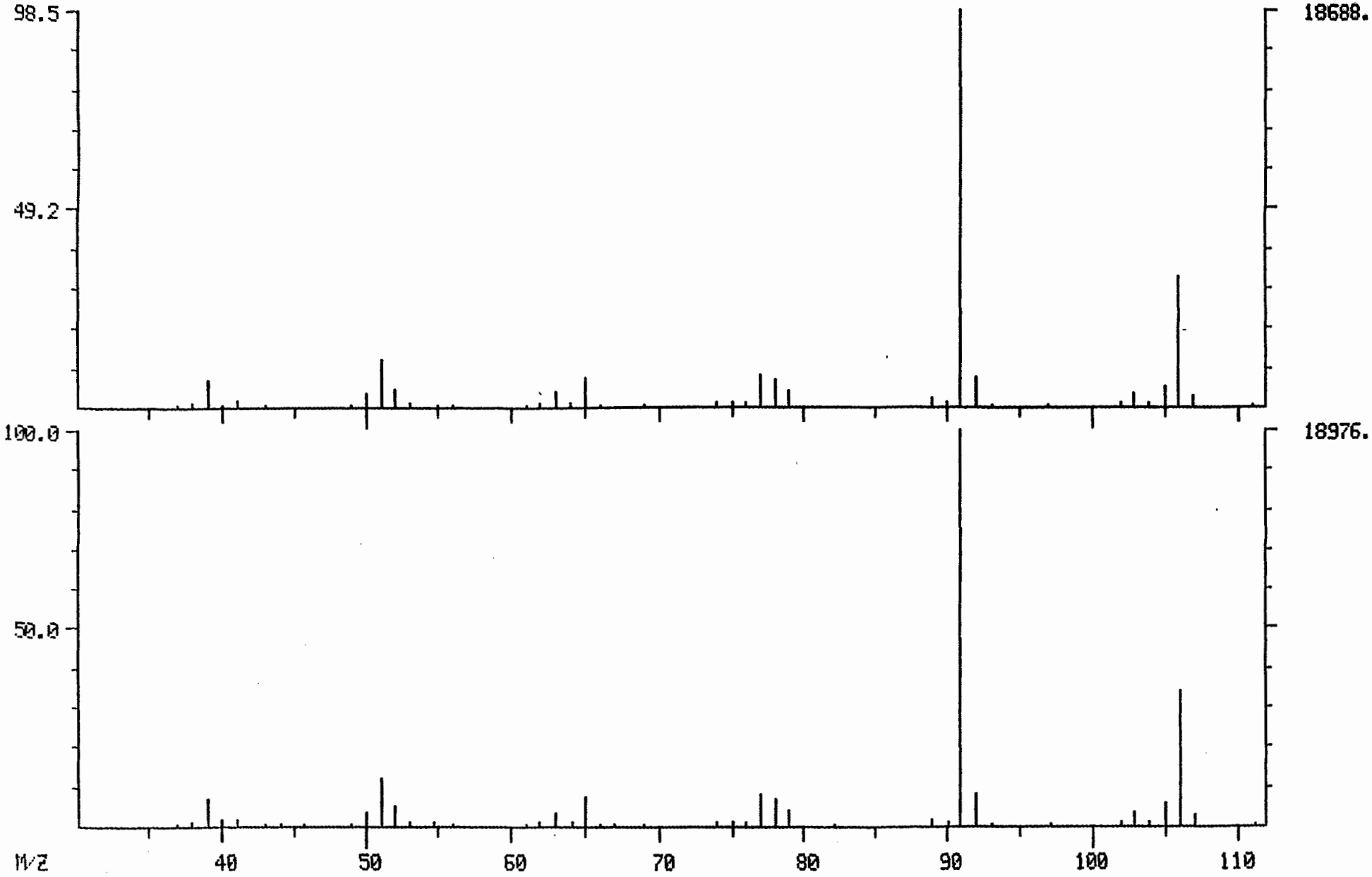
DATA: C1V0030410 #795 BASE M/Z: 78/ 78
CALI: C1V0030410 #2 RIC: 78207./ 82431.



000007

DUAL MASS SPECTRUM
11/23/93 23:20:00 + 19:22
SAMPLE: CLP,V90212,,MW18,LOW,WATER,90212001,V,E,
CONDS.: CAP/0.53,C5V0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C240 ETHYL BENZENE CCC

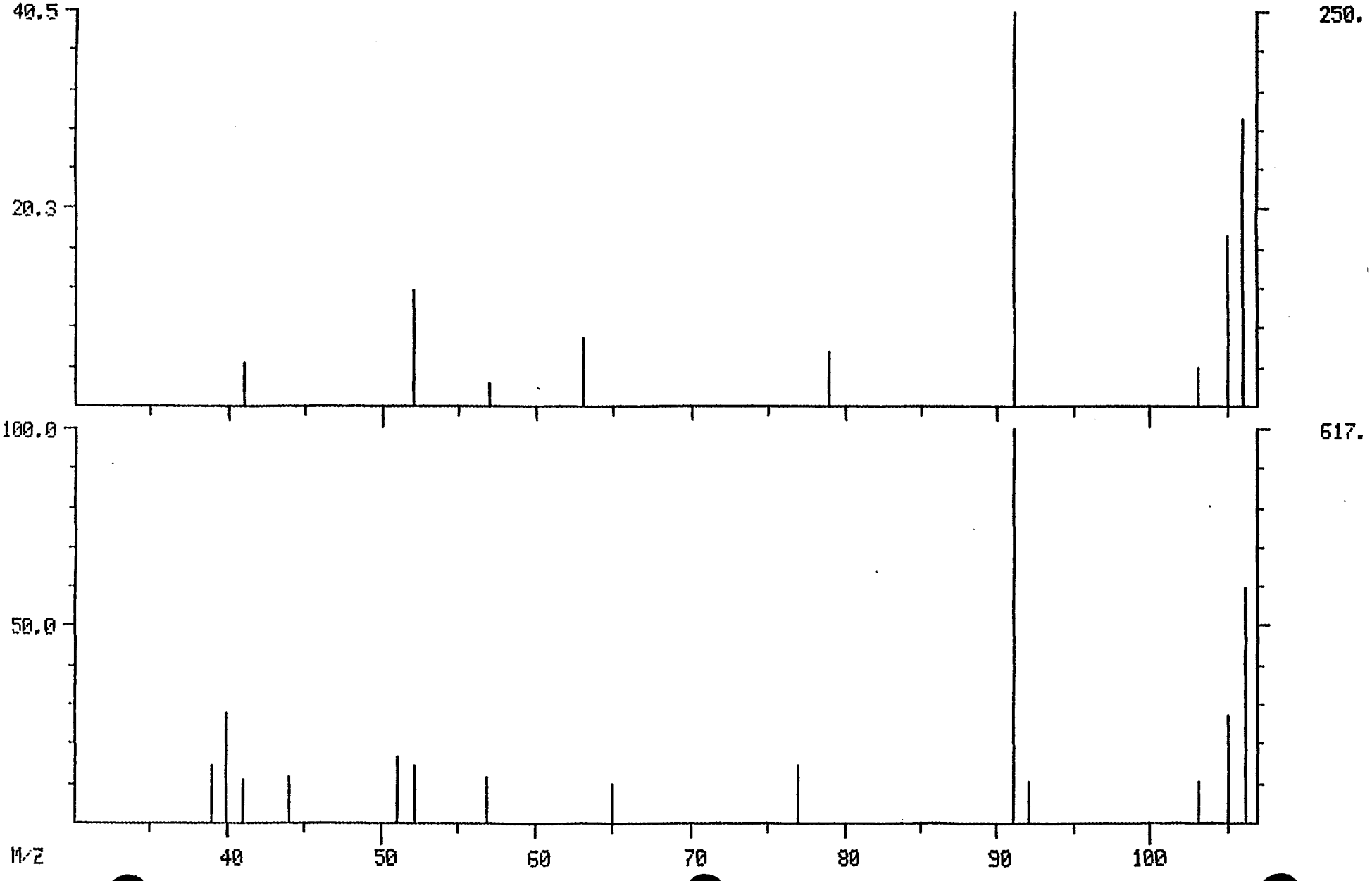
DATA: C1V0030410 #1162 BASE M/Z: 91/ 91
CALI: C1V0030410 #2 RIC: 43391./ 44799.



000008

DUAL MASS SPECTRUM
11/23/93 23:20:00 + 19:31
SAMPLE: CLP,V90212,,MW18,LOW,WATER,90212001,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C250 XYLENES (TOTAL)

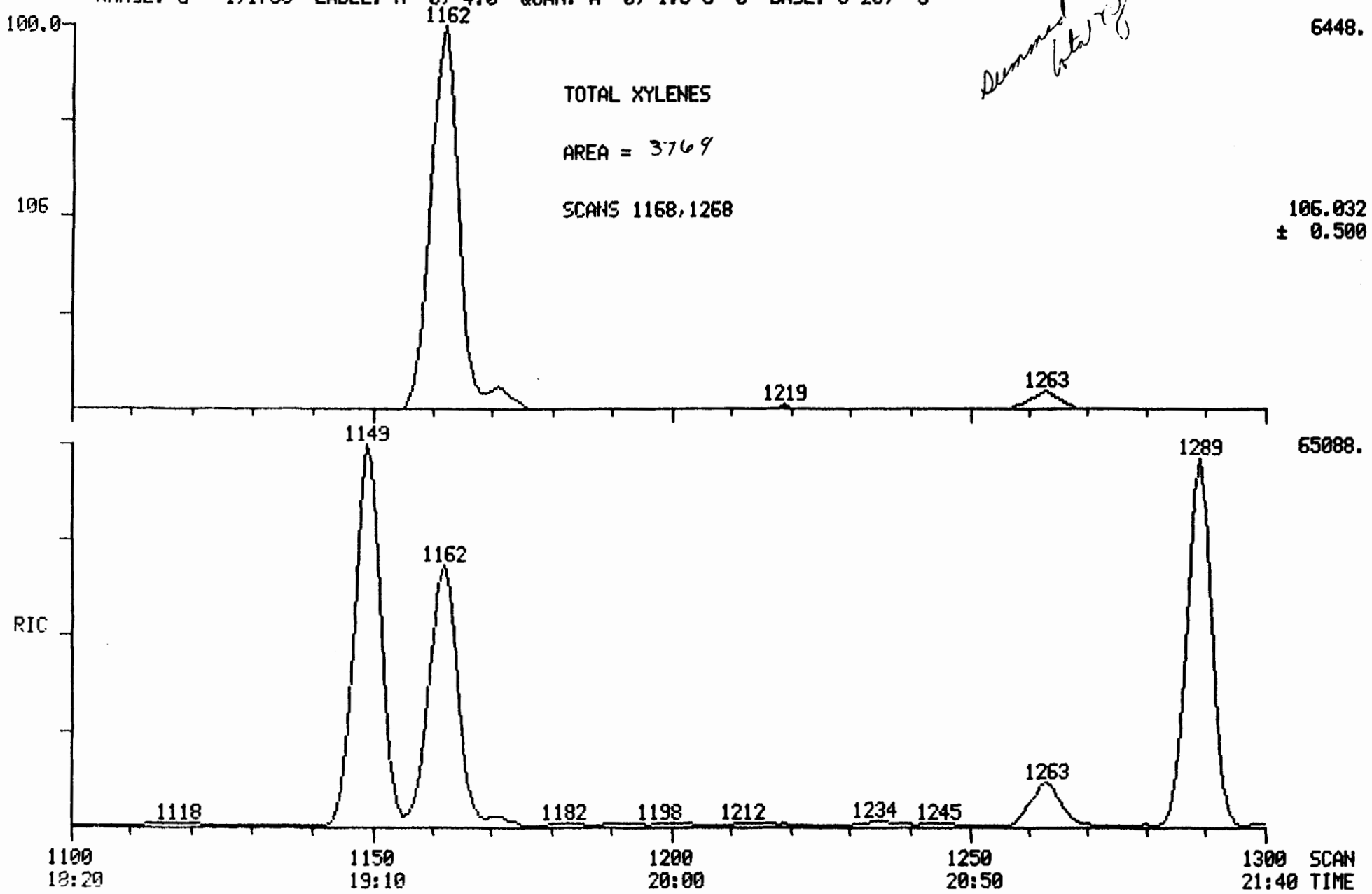
DATA: C1V0030410 #1171 BASE M/Z: 91/ 91
CALI: C1V0030410 #2 RIC: 757./ 2087.



000009

RIC+MASS CHROMATOGRAM DATA: C1V0030410 #1 SCANS 1100 TO 1300
11/23/93 23:20:00 CALI: C1V0030410 #2
SAMPLE: CLP,V90212,,MW18,LOW,WATER,90212001,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
C250 XYLENES (TOTAL)
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

000010



Summed total xylenes

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW21D

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212002

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030411

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	13	B
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	27	
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

mck 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW21D

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212002

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1V0030411

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

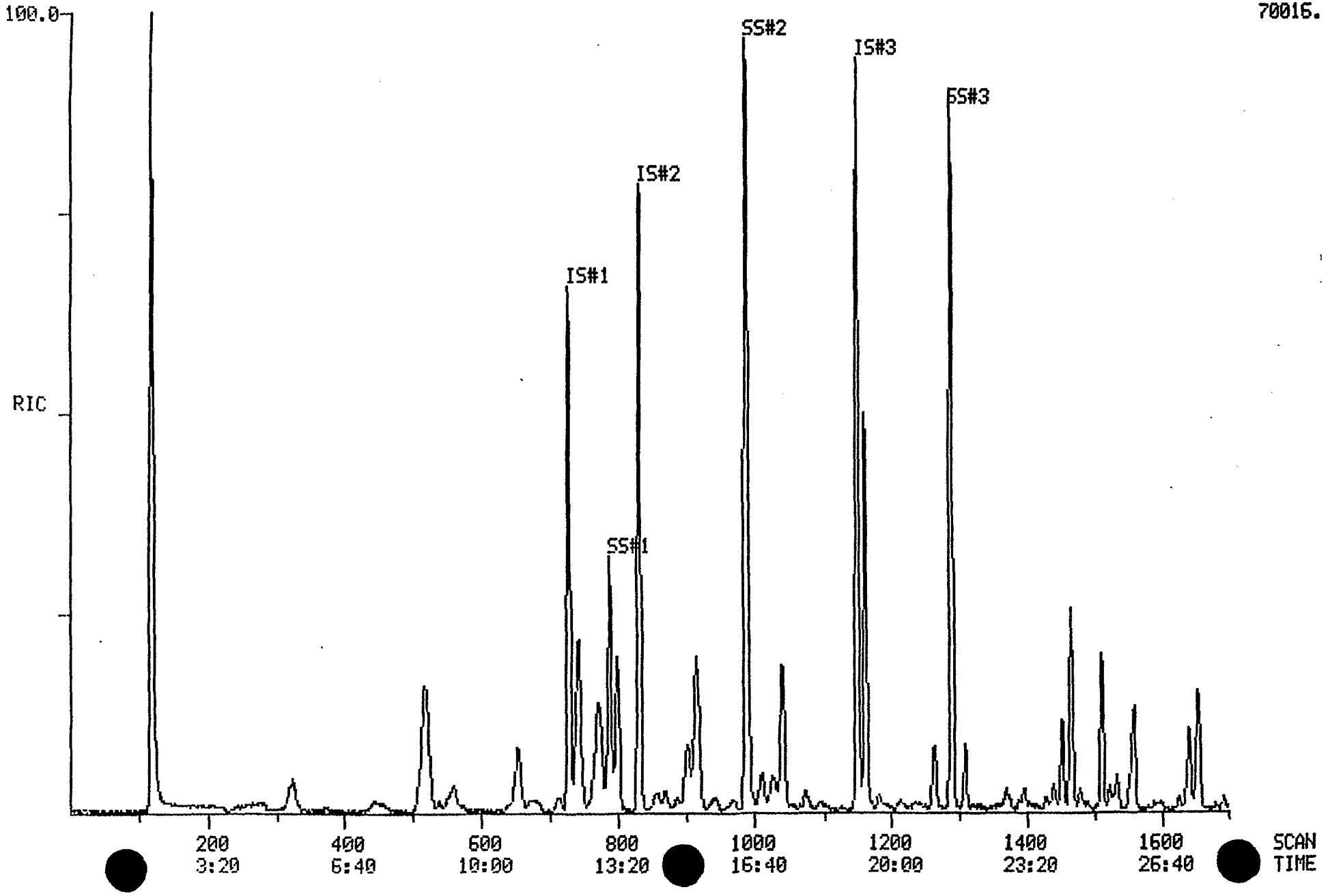
Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 79-29-8	BUTANE, 2,3-DIMETHYL-	8.62	30	J
2. 108-08-7	PENTANE, 2,4-DIMETHYL-	10.89	11	J
3. 0-00-0	NOT IDENTIFIED	12.39	31	J
4. 51677-41-9	BUTANE, 2-AZIDO-2,3,3-TRIMET	12.85	17	J
5. 560-21-4	PENTANE, 2,3,3-TRIMETHYL-	15.24	18	J
6. 0-00-0	NOT IDENTIFIED	17.32	20	J
7. 496-11-7	1H-INDENE, 2,3-DIHYDRO-	24.45	14	J
8. 934-80-5	BENZENE, 4-ETHYL-1,2-DIMETHY	25.19	10	J
9. 95-93-2	BENZENE, 1,2,4,5-TETRAMETHYL	26.01	10	J
10. 874-35-1	1H-INDENE, 2,3-DIHYDRO-5-MET	27.57	9	J

VMC 12/9/93

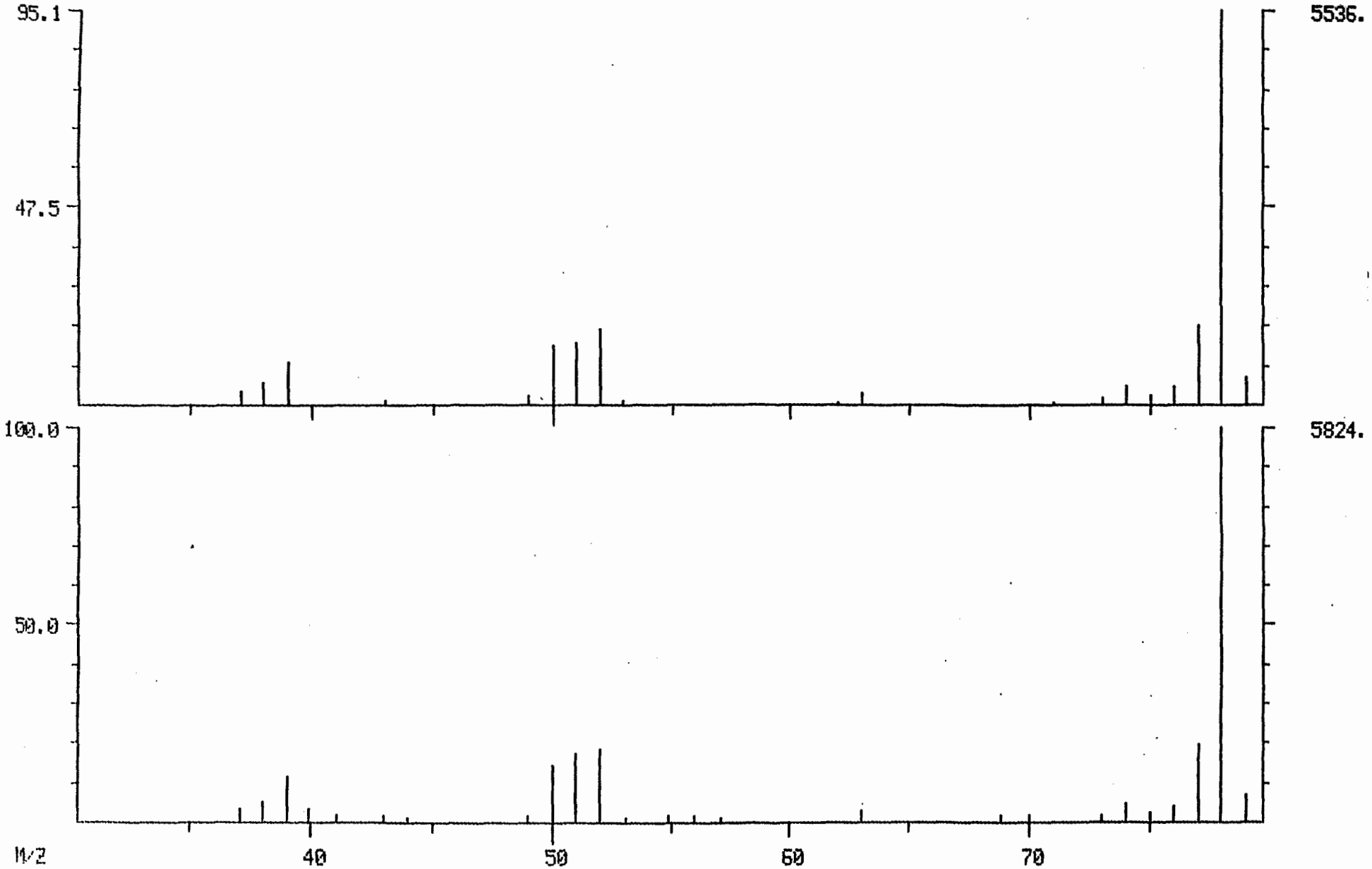
RIC DATA: C1V0030411 #1 SCANS 1 TO 1700
11/23/93 23:56:00 CALI: C1V0030411 #2
SAMPLE: CLP,V90212,,DFSPMW21D,LOW,WATER,90212002,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



000013

DUAL MASS SPECTRUM
11/23/93 23:56:00 + 13:19
SAMPLE: CLP,V90212,,DFSPMW21D,LOW,WATER,90212002,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

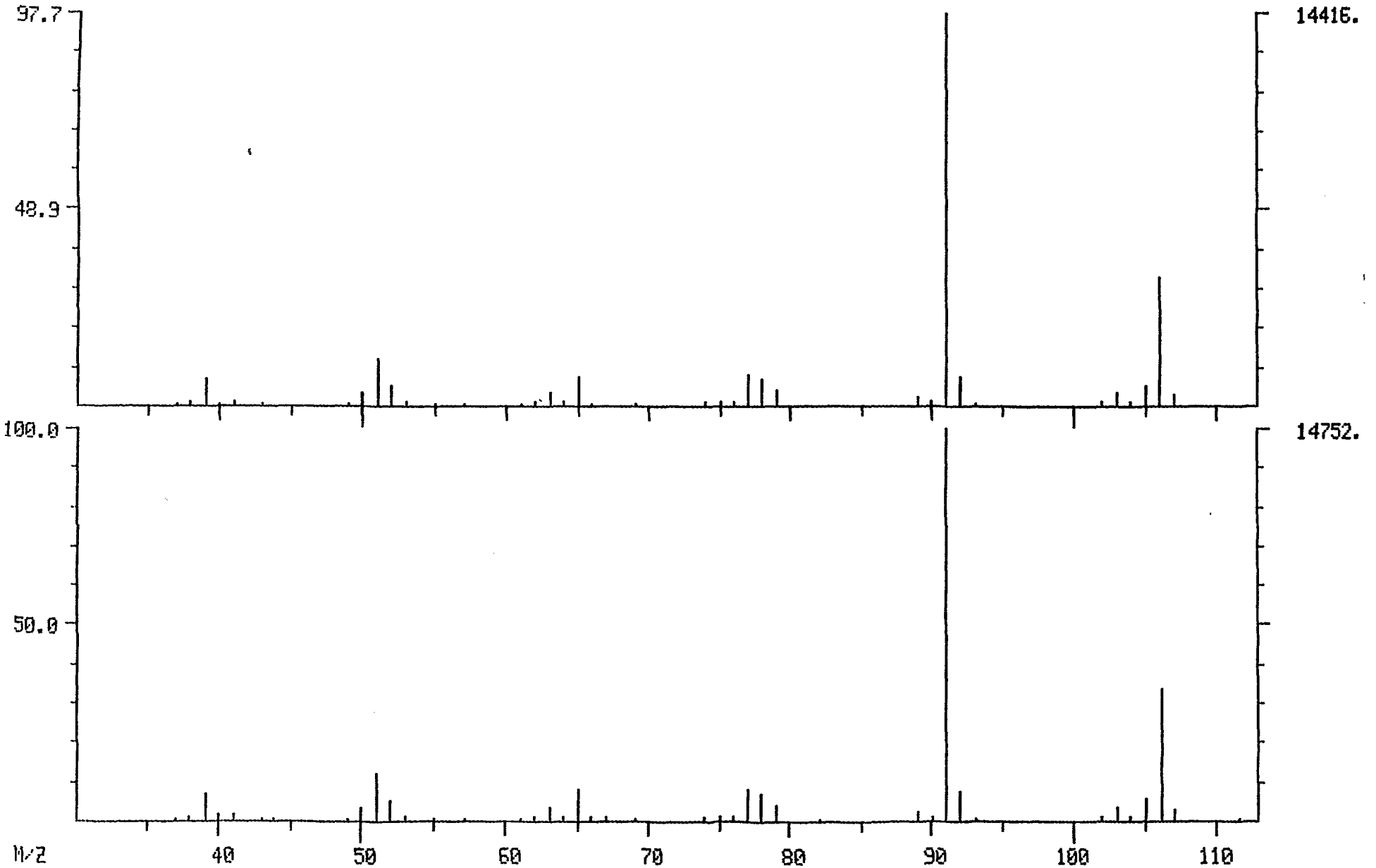
DATA: C1V0030411 #799 BASE M/Z: 78/ 78
CALI: C1V0030411 #2 RIC: 12127./ 13599.



00001

DUAL MASS SPECTRUM
11/23/93 23:56:00 + 19:23
SAMPLE: CLP,V90212,,DFSPMW21D,LOW,WATER,90212002,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C240 ETHYL BENZENE CCC

DATA: C1V0030411 #1163 BASE M/Z: 91/ 91
CALI: C1V0030411 #2 RIC: 33471./ 35007.



000016

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW21

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212003

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C2VO030426

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	BJ
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	5	BJ
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	21	
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MGK 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW21

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212003

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C2VO030426

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 10

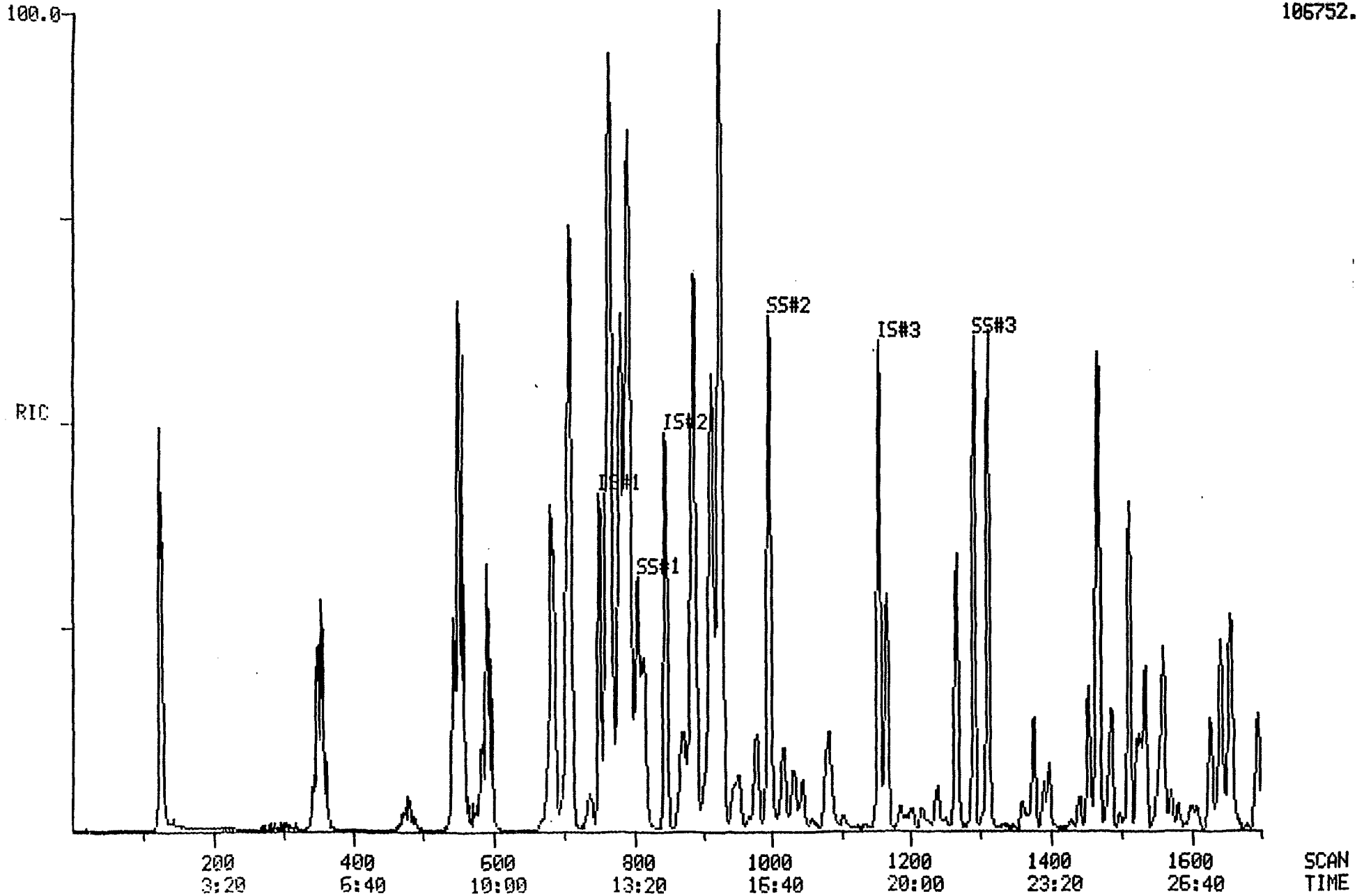
CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 79-29-8	BUTANE, 2,3-DIMETHYL-	9.14	110	J
2. 108-08-7	PENTANE, 2,4-DIMETHYL-	11.34	100	J
3. 96-37-7	CYCLOPENTANE, METHYL-	11.79	180	J
4.	NOT IDENTIFIED	12.72	220	J
5. 110-82-7	CYCLOHEXANE(DOT	12.99	110	J
6. 51677-41-9	BUTANE, 2-AZIDO-2,3,3-TRIMET	13.17	190	J
7. 108-87-2	CYCLOHEXANE, METHYL-	14.75	96	J
8.	NOT IDENTIFIED	15.19	60	J
9. 560-21-4	PENTANE, 2,3,3-TRIMETHYL-	15.42	150	J
10. 119-64-2	NAPHTHALENE, 1,2,3,4-TETRAHY	28.26	11	J

hgk 12/9/93

0000

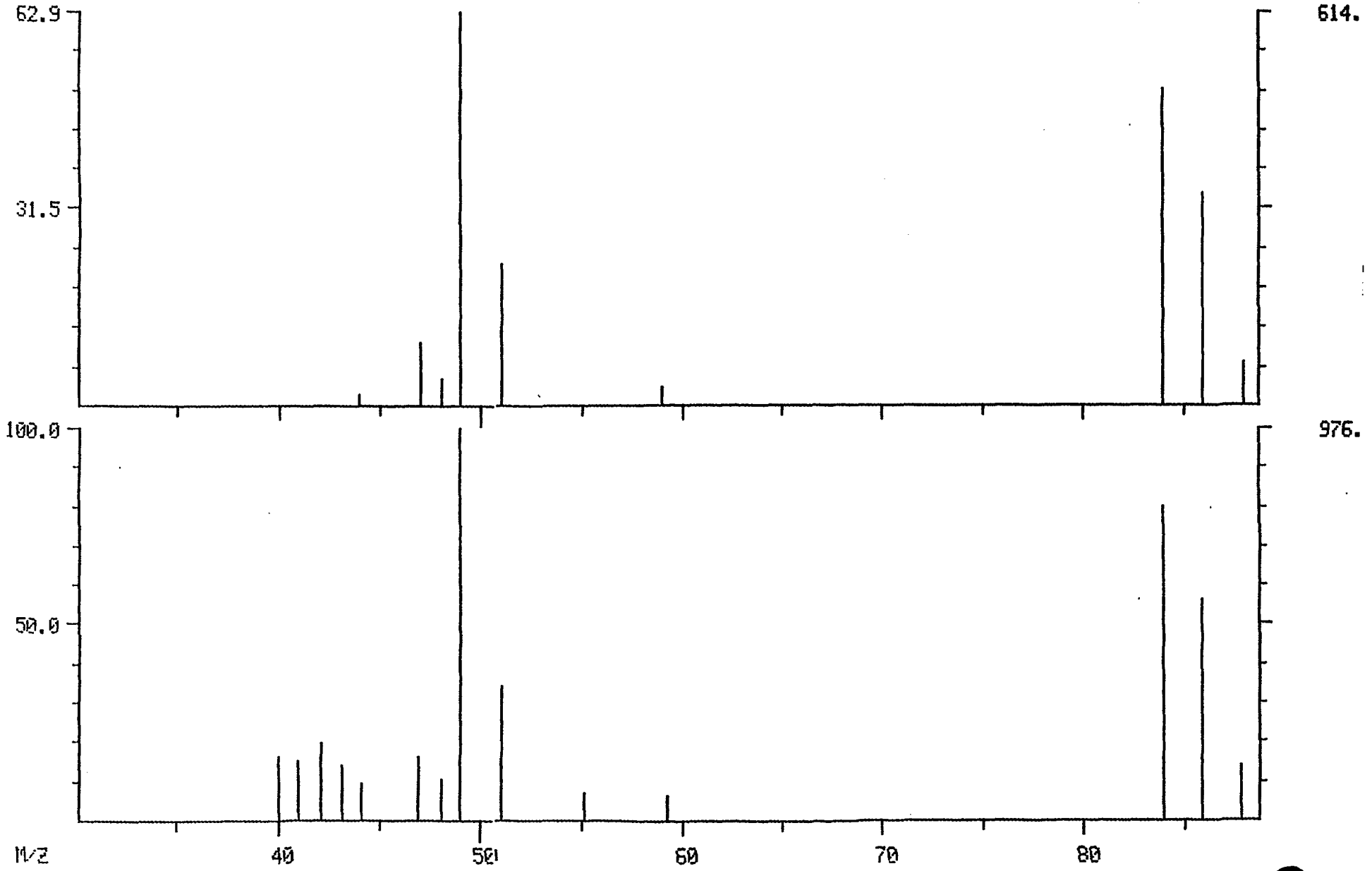
RIC DATA: C2V0030426 #1 SCANS 1 TO 1700
11/24/93 8:41:00 CALI: C2V0030426 #2
SAMPLE: CLP,V90212,,DFSPMW21,LOW,WATER,90212003,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



000018

DUAL MASS SPECTRUM
11/24/93 8:41:00 + 9:32
SAMPLE: CLP,V90212,,DFSPMW2:1,LOW,WATER,90212003,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C030 METHYLENE CHLORIDE

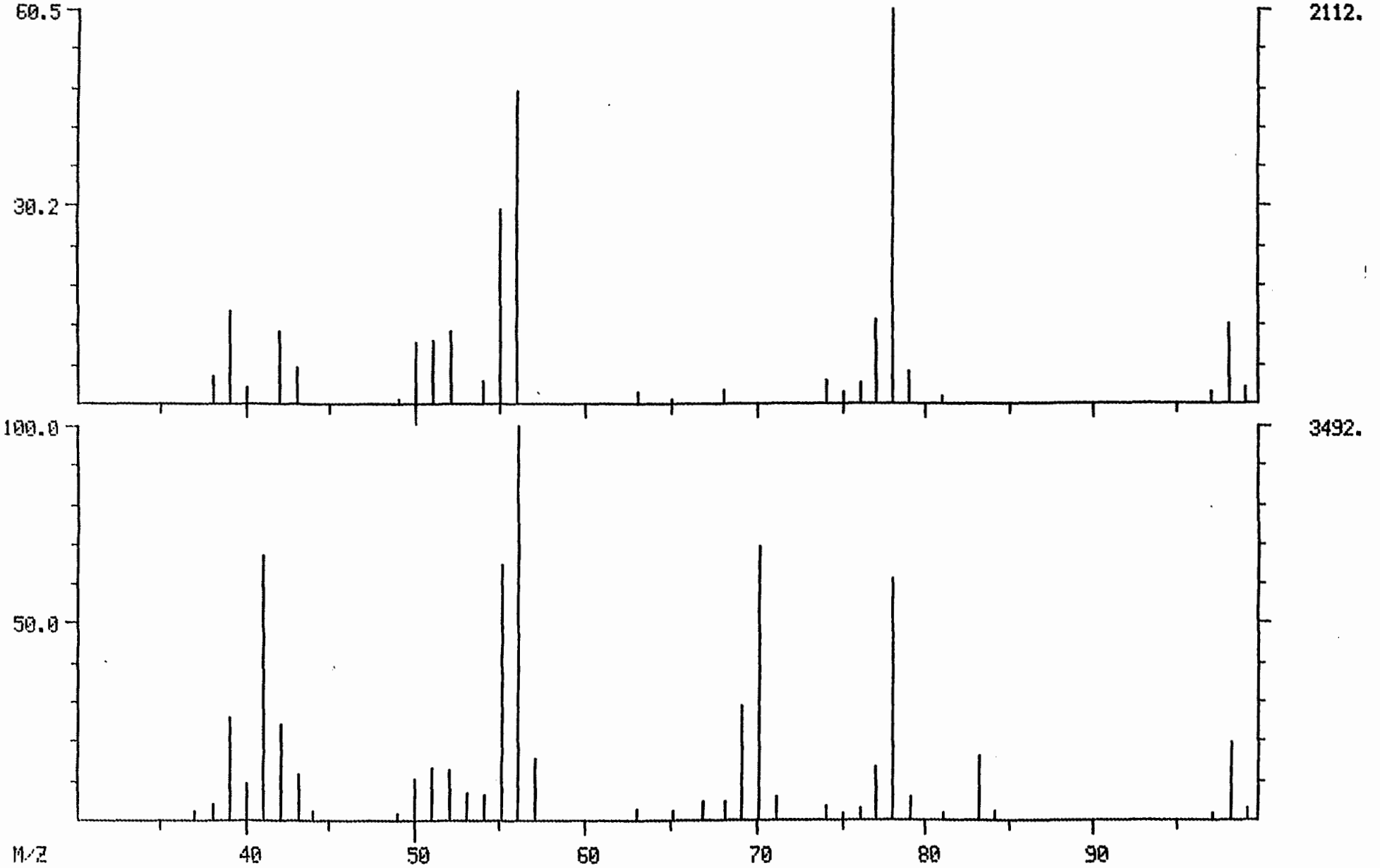
DATA: C2V0030426 #572 BASE M/Z: 49/ 49
CALI: C2V0030426 #2 RIC: 1911./ 3875.



000013

DUAL MASS SPECTRUM
11/24/93 8:41:00 + 13:35
SAMPLE: CLP,V90212,,DFSPMW21,LOW,WATER,90212003,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

DATA: C2V0030426 #815 BASE M/Z: 78/ 56
CALI: C2V0030426 #2 RIC: 9055./ 21983.

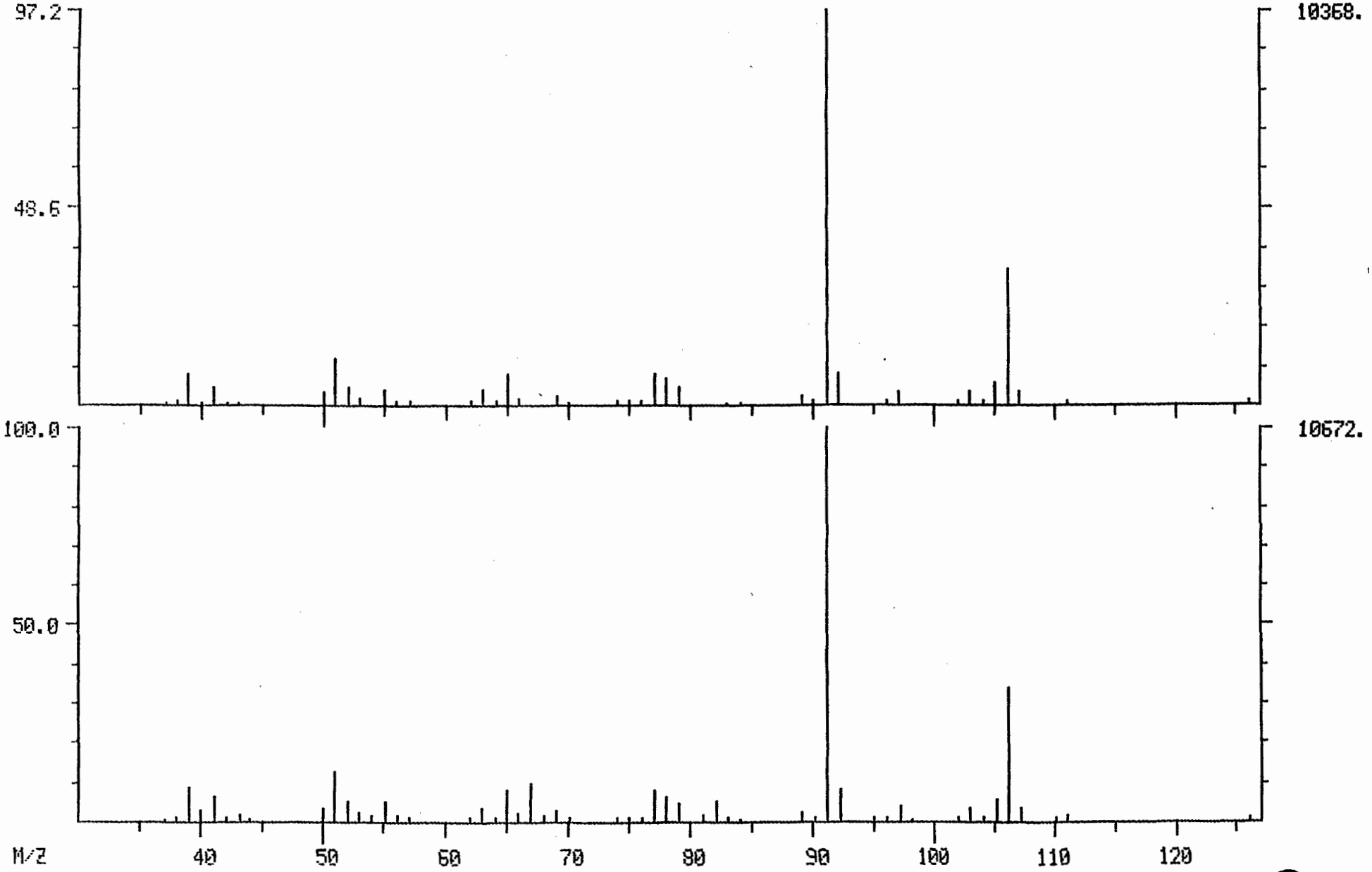


000021

DUAL MASS SPECTRUM
11/24/93 8:41:00 + 19:27
SAMPLE: CLP,V90212,,DFSPMW21,LOW,WATER,90212003,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C240 ETHYL BENZENE CCC

DATA: C2V0030426 #1167 BASE M/Z: 91/ 91
CALI: C2V0030426 #2 RIC: 26527./ 30847.

00002



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW22

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212004

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030413

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	37	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	51	B
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	42	
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	86	
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	140	

mak 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW22

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212004

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030413

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

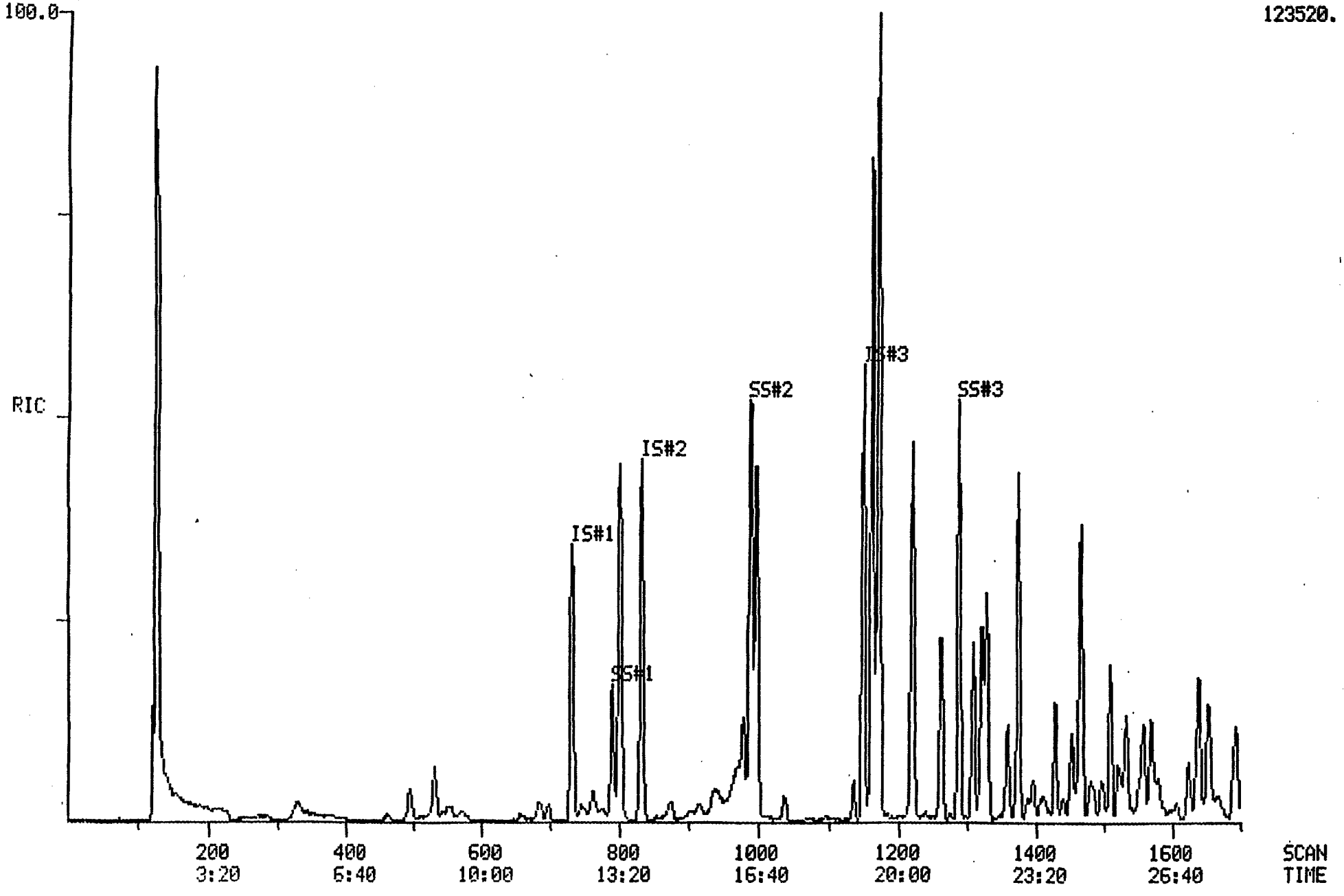
Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, -METHYLETHYL- ISOME	21.05	24	J
2. 103-65-1	BENZENE, PROPYL-	21.84	20	J
3.	BENZENE, -ETHYL- -METHYL- IS	22.04	28	J
4.	BENZENE, -TRIMETHYL- ISOMER	22.15	26	J
5.	BENZENE, -TRIMETHYL- ISOMER	22.92	43	J
6. 611-15-4	BENZENE, 1-ETHENYL-2-METHYL-	24.44	40	J
7.	BENZENE, -ETHYL- -DIMETHYL-	25.19	18	J
8.	BENZENE, -TETRAMETHYL- ISOME	27.34	19	J
9.	1H-INDENE, -DIHYDRO- -METHYL	27.57	15	J
10. 119-64-2	NAPTHALENE, 1,2,3,4-TETRAHYD	28.24	13	J

hak 12/10/93

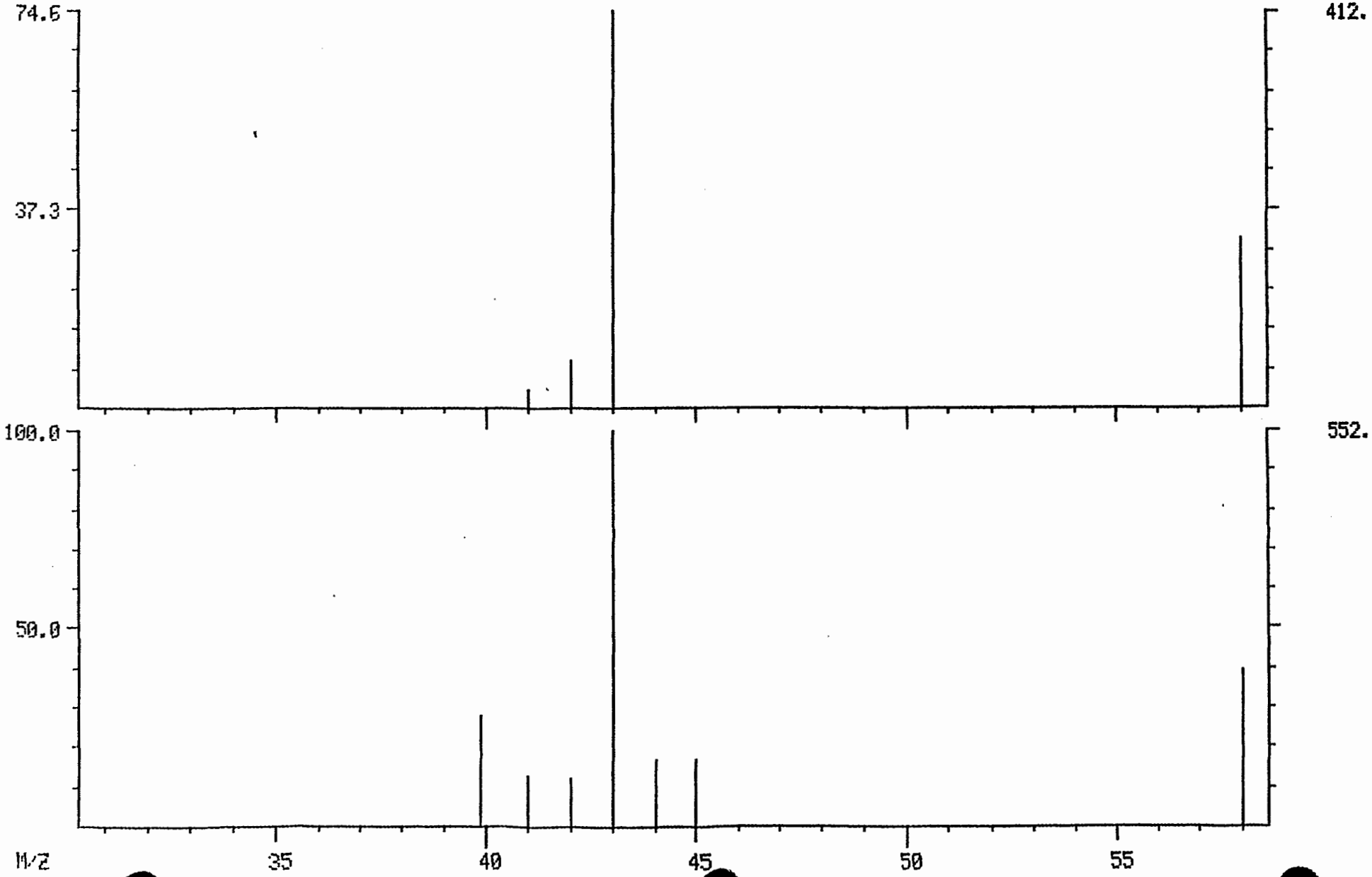
RIC DATA: C1V0030413 #1 SCANS 1 TO 1700
11/24/93 1:07:00 CALI: C1V0030413 #2
SAMPLE: CLP,V90212,,DFSPMW22,LOW,WATER,90212004,V,E,
CONDS.: CAP/0.53,C5V0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



000024

DUAL MASS SPECTRUM
11/24/93 1:07:00 + 7:44
SAMPLE: CLP,V90212,,DFSPMW22,LOW,WATER,90212004,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C035 ACETONE

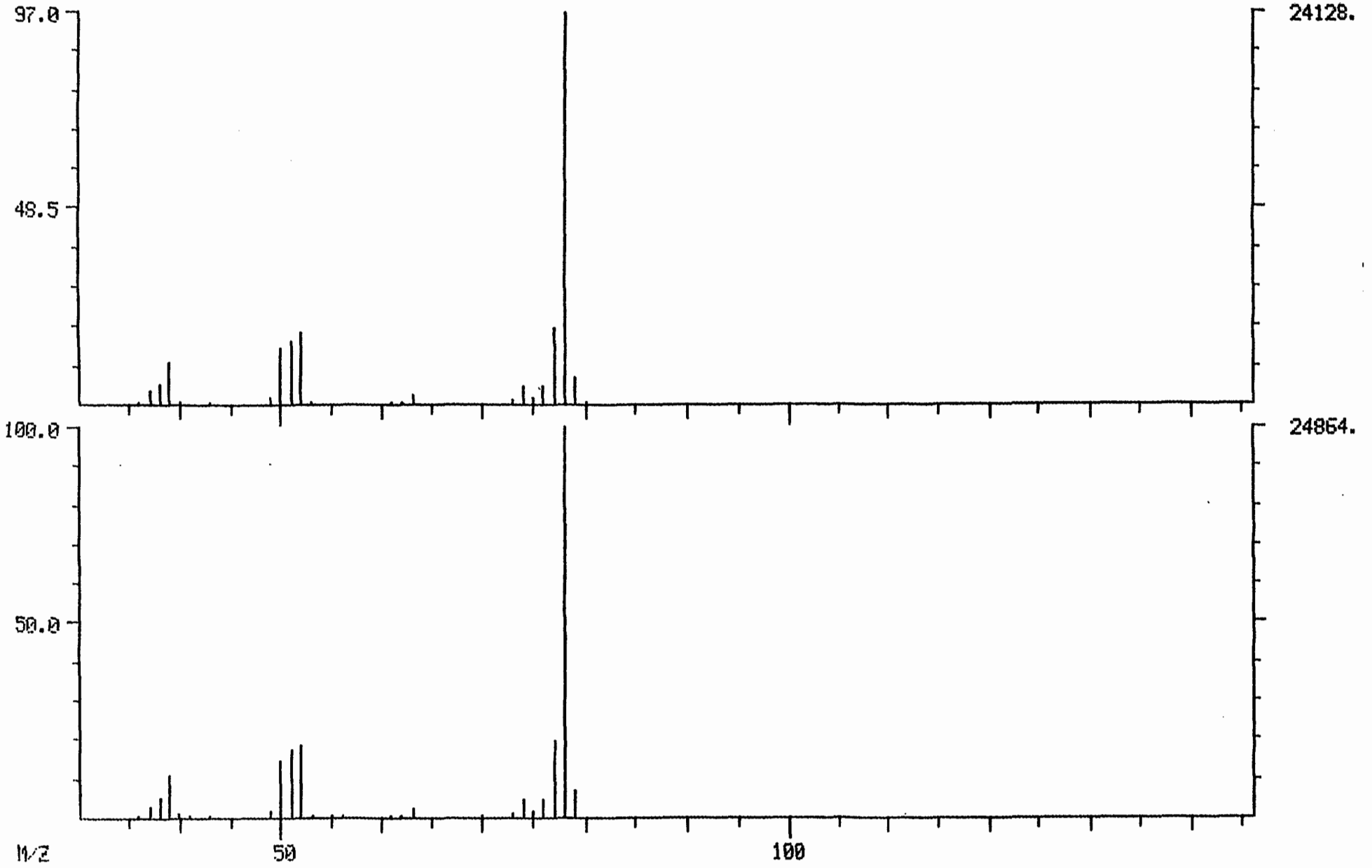
DATA: C1V0030413 #464 BASE M/Z: 43/ 43
CALI: C1V0030413 #2 RIC: 656./ 1243.



000025

DUAL MASS SPECTRUM
11/24/93 1:07:00 + 13:20
SAMPLE: CLP,V90212,,DFSPMW22,LOW,WATER,90212004,V,E,
CONDS.: CAP/0.53,CSV0030408,CIBF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

DATA: CIV0030413 #800 BASE M/Z: 78/ 78
CALI: CIV0030413 #2 RIC: 51967./ 54655.

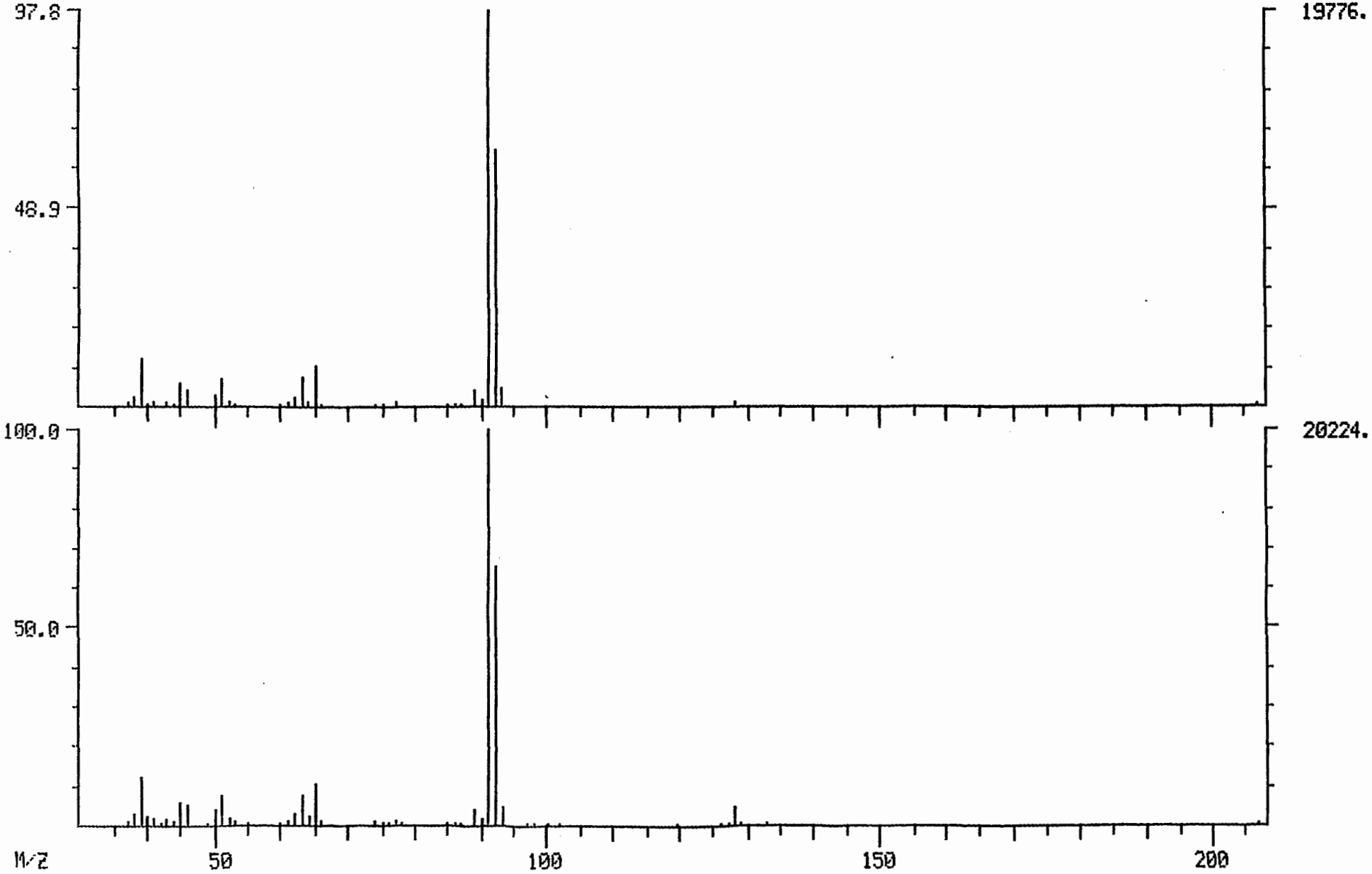


000026

00002

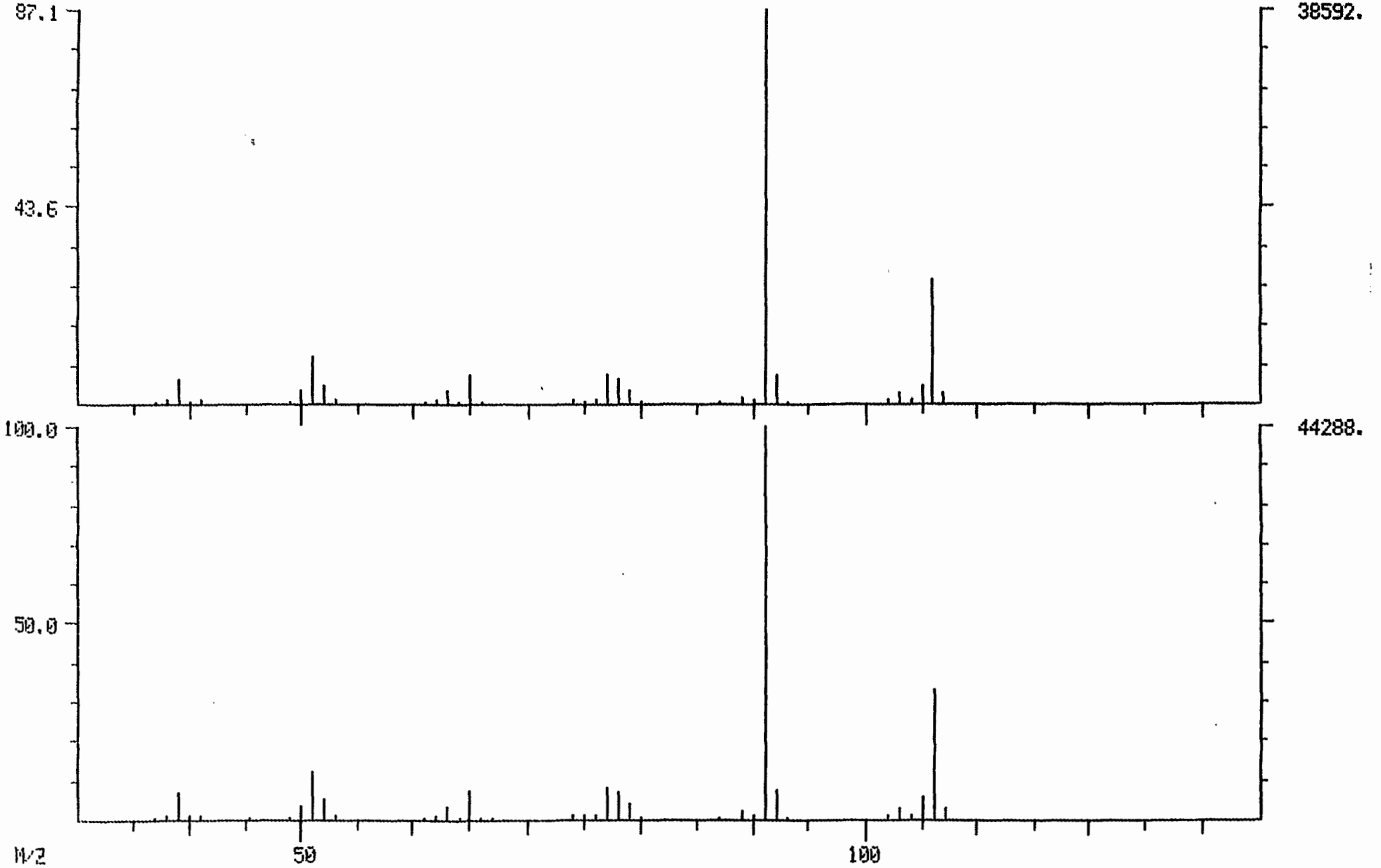
DUAL MASS SPECTRUM
11/24/93 1:07:00 + 16:36
SAMPLE: CLP,V90212,,DFSPMW22,LOW,WATER,90212004,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C230 TOLUENE CCC

DATA: C1V0030413 #996 BASE M/Z: 91/ 91
CALI: C1V0030413 #2 RIC: 49151./ 54271.



DUAL MASS SPECTRUM
11/24/93 1:07:00 + 19:23
SAMPLE: CLP,V90212,,DFSPMW22,LOW,WATER,90212004,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C240 ETHYL BENZENE CCC

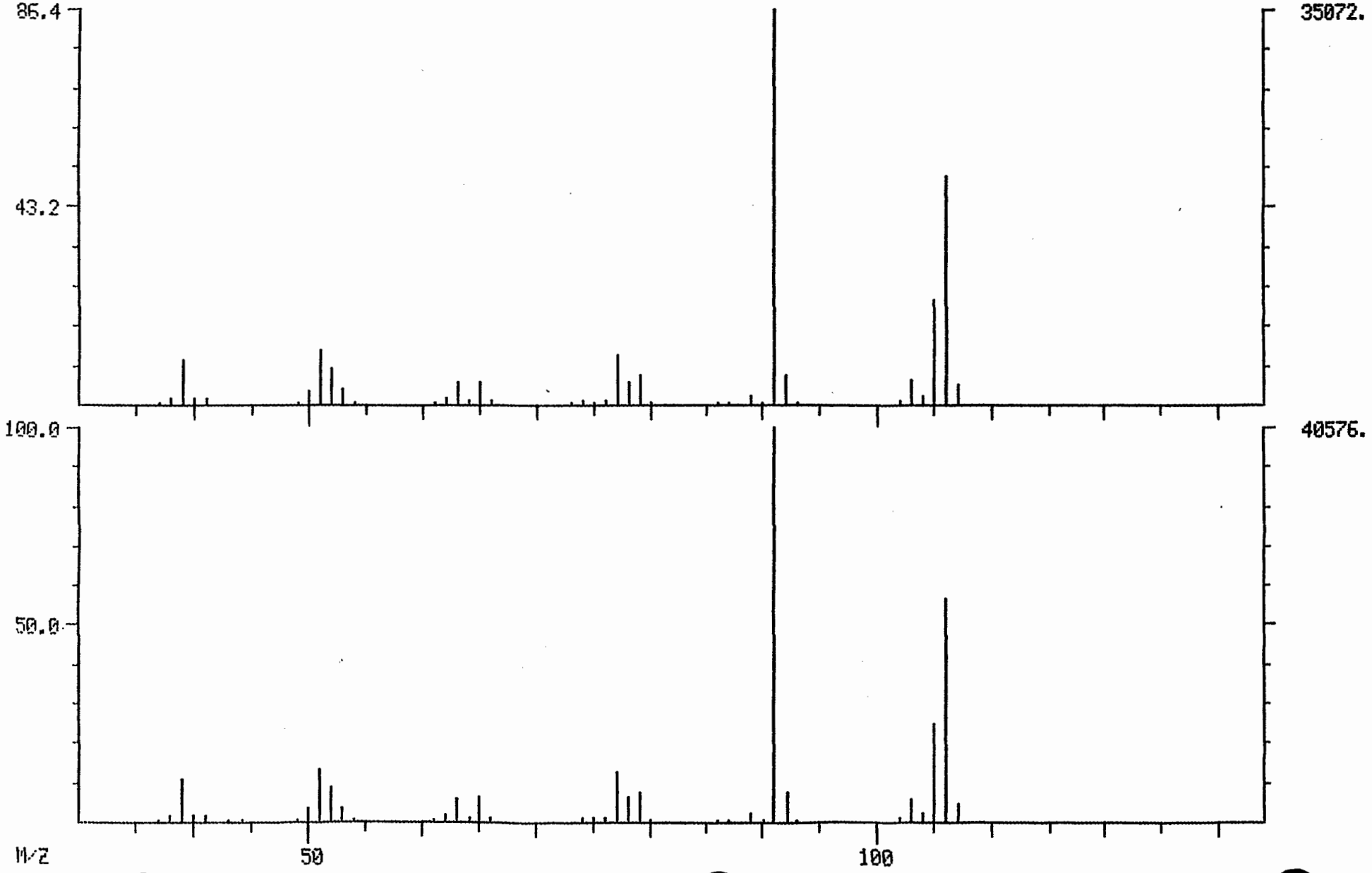
DATA: C1V0030413 #1163 BASE M/Z: 91/ 91
CALI: C1V0030413 #2 RIC: 86655./ 101631.



000025

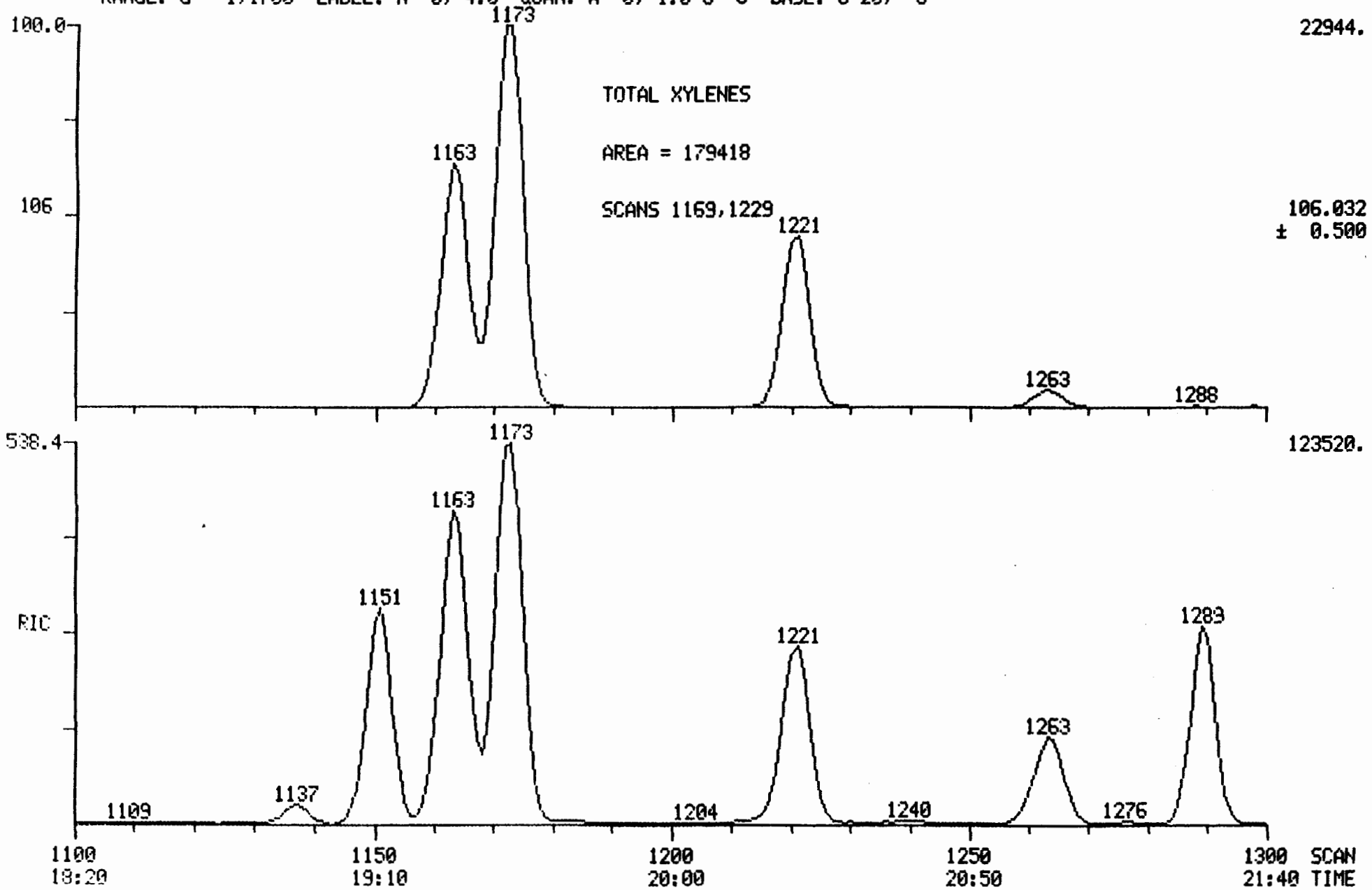
DUAL MASS SPECTRUM
11/24/93 1:07:00 + 19:33
SAMPLE: CLP,V90212,,DFSPMW22,LOW,WATER,90212004,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C250 XYLENES (TOTAL)

DATA: C1V0030413 #1173 BASE M/Z: 91/ 91
CALI: C1V0030413 #2 RIC: 108287./ 123647.



00003

RIC+MASS CHROMATOGRAM DATA: C1V0030413 #1 SCANS 1100 TO 1300
11/24/93 1:07:00 CALI: C1V0030413 #2
SAMPLE: CLP,V90212,,DFSPMW22,LOW,WATER,90212004,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
C250 XYLENES (TOTAL)
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW23

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212005

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030414

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	3	BJ
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

mgk 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW23

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212005

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030414

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	15.34	13	J
2. 611-15-4	BENZENE, 1-ETHENYL-2-METHYL-	24.47	8	J
3. 824-22-6	1H-INDENE, 2,3-DIHYDRO-4-MET	27.62	9	J

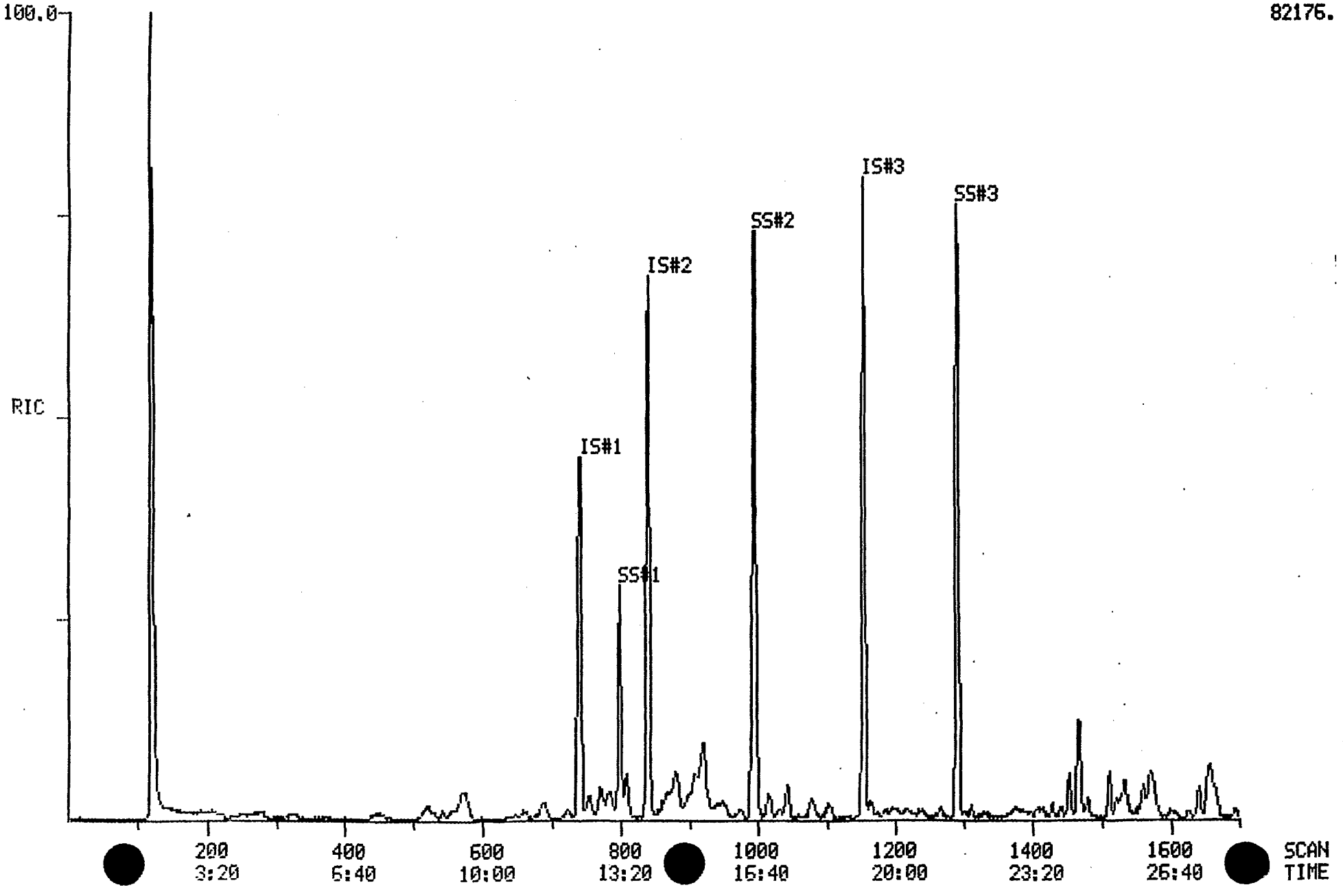
FORM I VOA-TIC

MRK 12/9/93

3/90

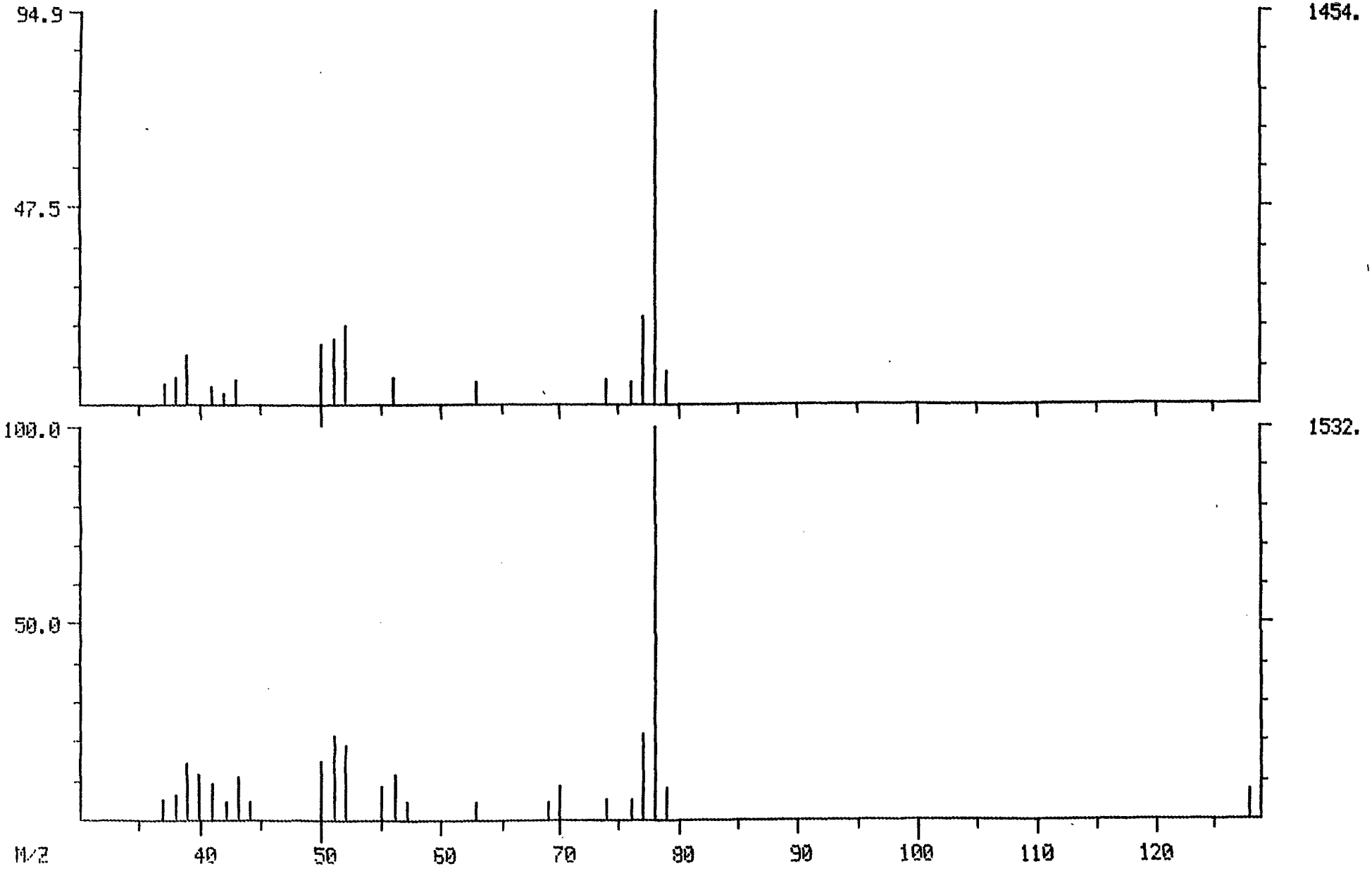
RIC DATA: C1V0030414 #1 SCANS 1 TO 1700
11/24/93 1:42:00 CALI: C1V0030414 #2
SAMPLE: CLP,V90212,,DFSPMW23,LOW,WATER,90212005,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

000033



DUAL MASS SPECTRUM
11/24/93 1:42:00 + 13:29
SAMPLE: CLP,V90212,,DFSPMW23,LOW,WATER,90212005,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

DATA: C1V0030414 #809 BASE M/Z: 78/ 78
CALI: C1V0030414 #2 RIC: 3599./ 4807.



000031

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW24

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212006

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030415

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	3	BJ
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	2	J
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

000035 12/22/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW24

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212006

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030415

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 10

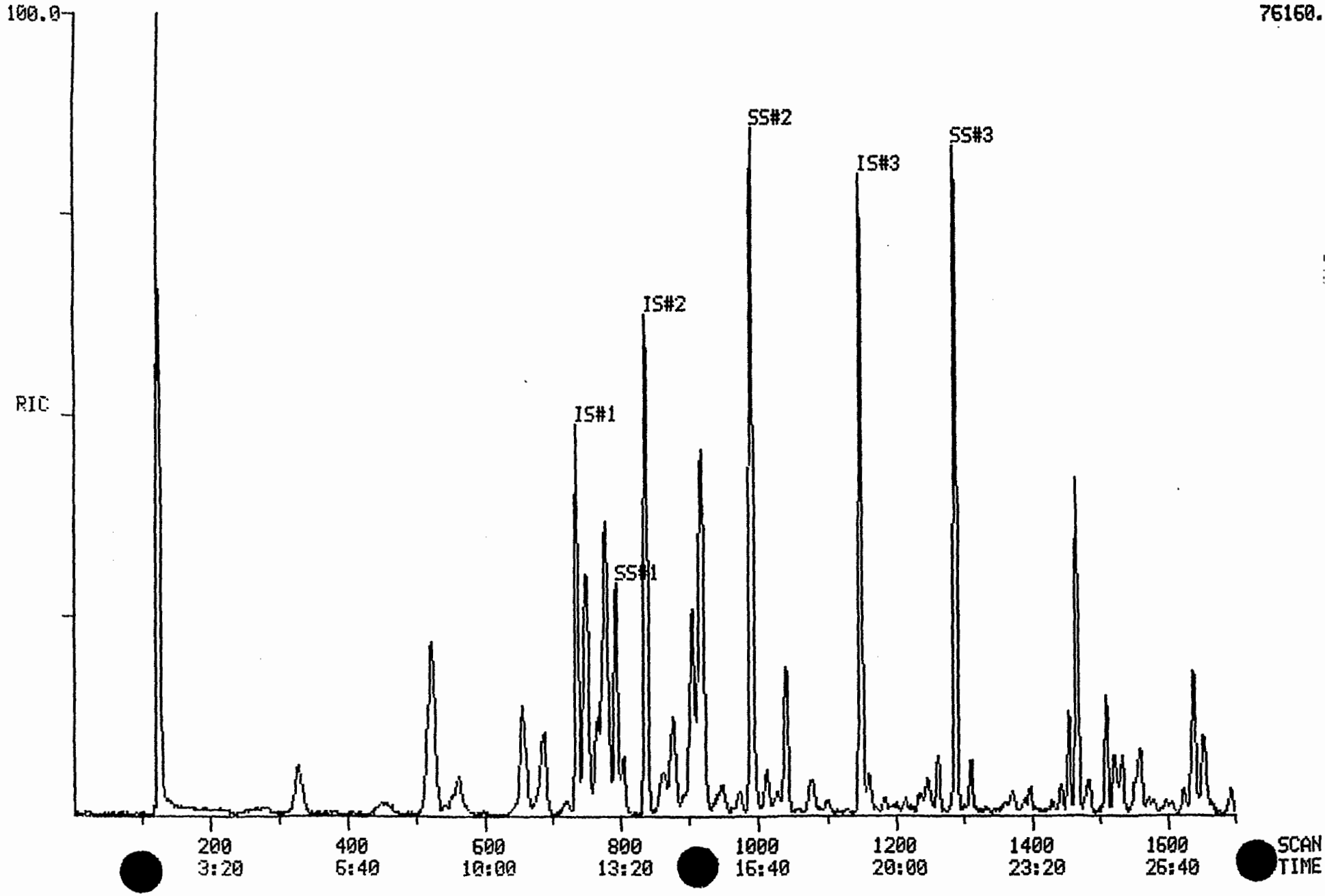
CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 78-78-4	BUTANE, 2-METHYL-	5.48	14	J
2. 79-29-8	BUTANE, 2,3-DIMETHYL-	8.70	50	J
3. 108-08-7	PENTANE, 2,4-DIMETHYL-	10.97	25	J
4. 96-37-7	CYCLOPENTANE, METHYL-	11.49	20	J
5. 560-21-4	PENTANE, 2,3,3-TRIMETHYL-	12.50	49	J
6. 51677-41-9	BUTANE, 2-AZIDO-2,3,3-TRIMET	12.97	60	J
7. 19411-65-5	HYDROXYLAMINE, O-(3-METHYLBU	15.09	23	J
8. 560-21-4	PENTANE, 2,3,3-TRIMETHYL-	15.30	52	J
9. 927-83-3	DIAZENE, BIS(1,1-DIMETHYLETH	17.35	14	J
10. 611-15-4	BENZENE, 1-ETHENYL-2-METHYL-	24.45	27	J

MRK 12/9/93

00003

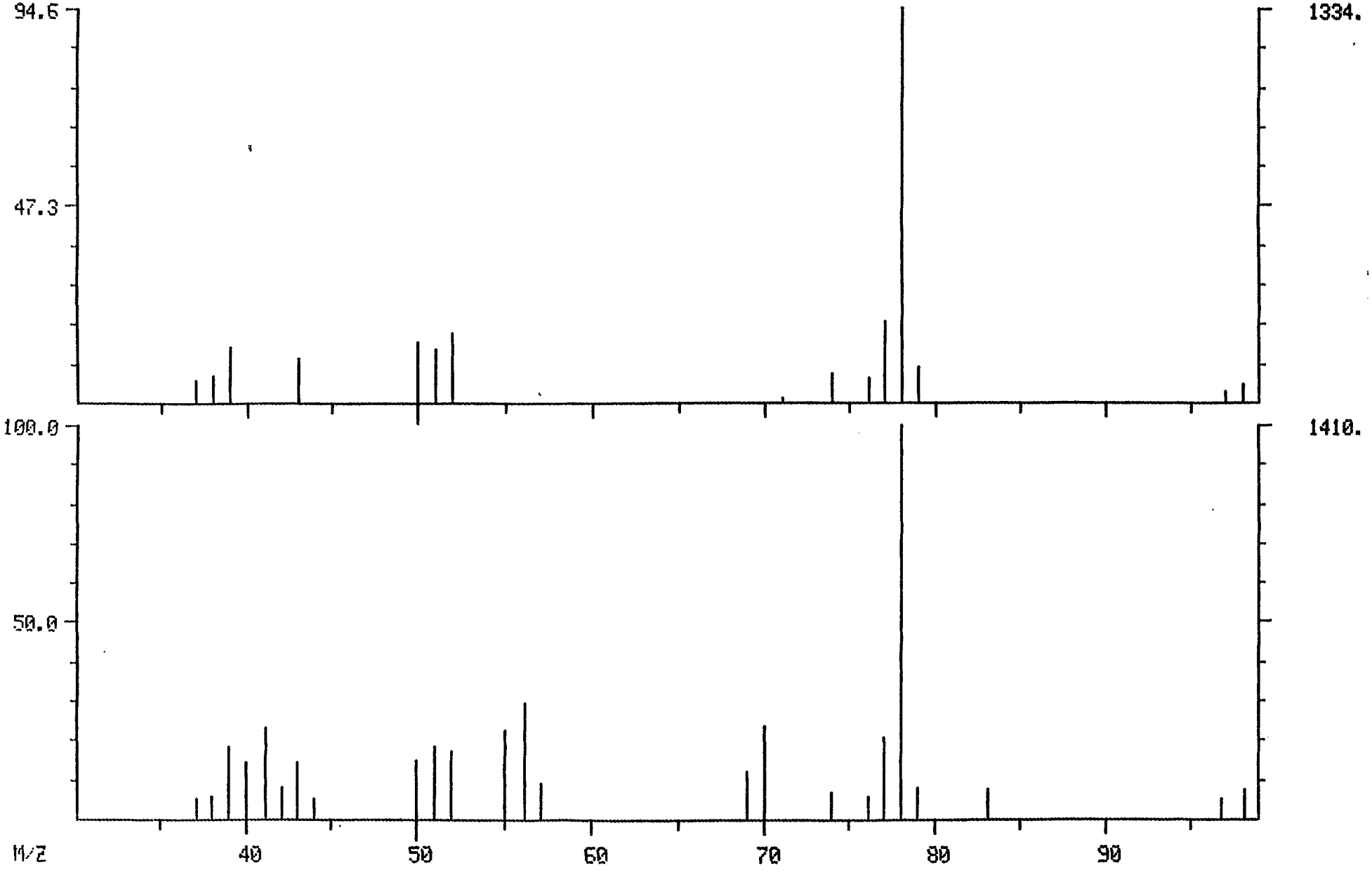
RIC DATA: C1V0030415 #1 SCANS 1 TO 1700
11/24/93 2:17:00 CALI: C1V0030415 #2
SAMPLE: CLP,V90212,,DFSPMW24,LOW,WATER,90212006,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



DUAL MASS SPECTRUM
11/24/93 2:17:00 + 13:25
SAMPLE: CLP,V90212,,DFSPMW24,LOW,WATER,90212006,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

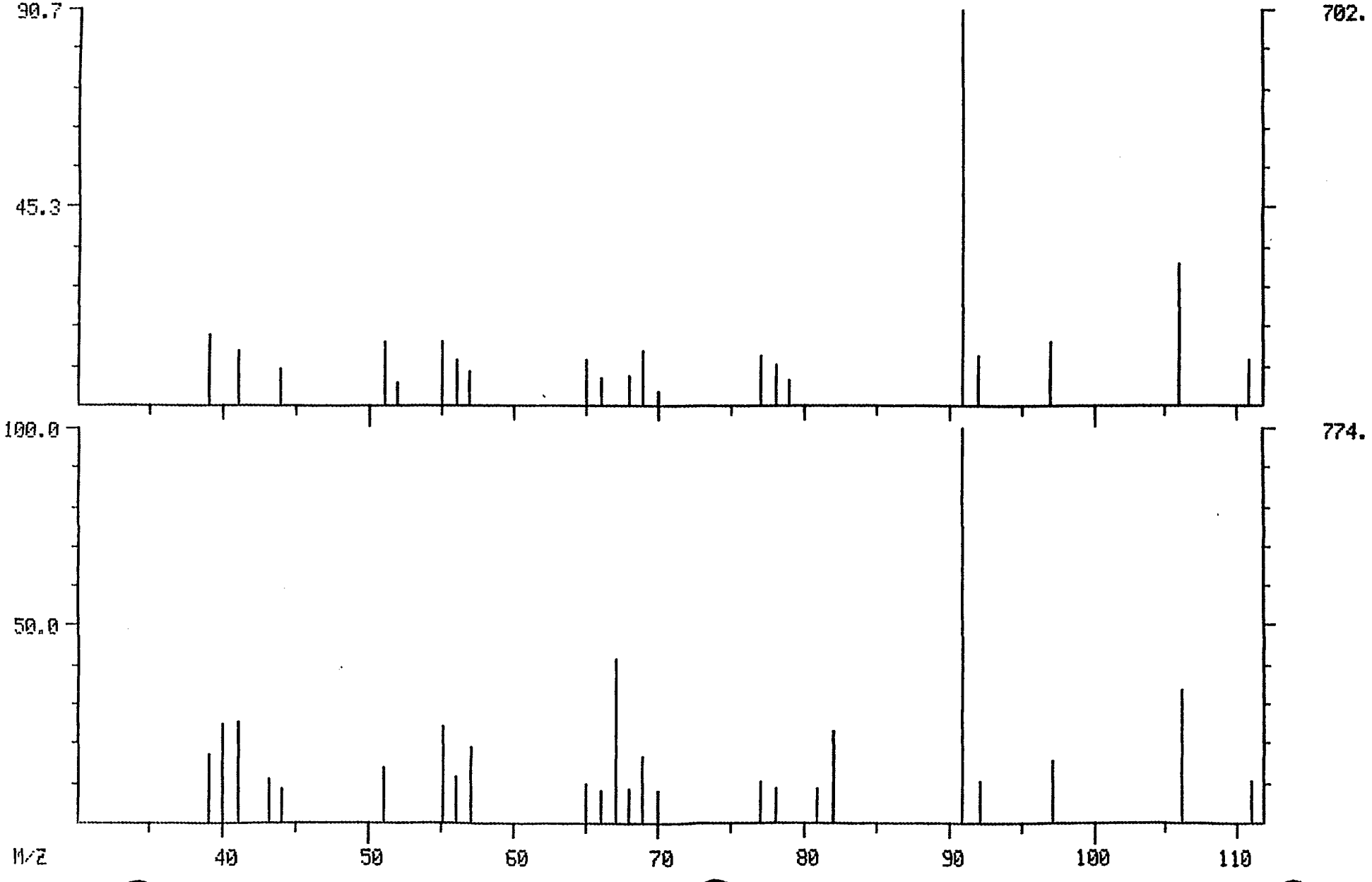
DATA: C1V0030415 #805 BASE M/Z: 78/ 78
CALI: C1V0030415 #2 RIC: 3183./ 5719.

00003



DUAL MASS SPECTRUM
11/24/93 2:17:00 + 19:24
SAMPLE: CLP,V90212,,DFSPMW24,LOW,WATER,90212006,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C240 ETHYL BENZENE CCC

DATA: C1V0030415 #1164 BASE M/Z: 91/ 91
CALI: C1V0030415 #2 RIC: 2439./ 3647.



00003

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW25

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030416

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MGK 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW25

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030416

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

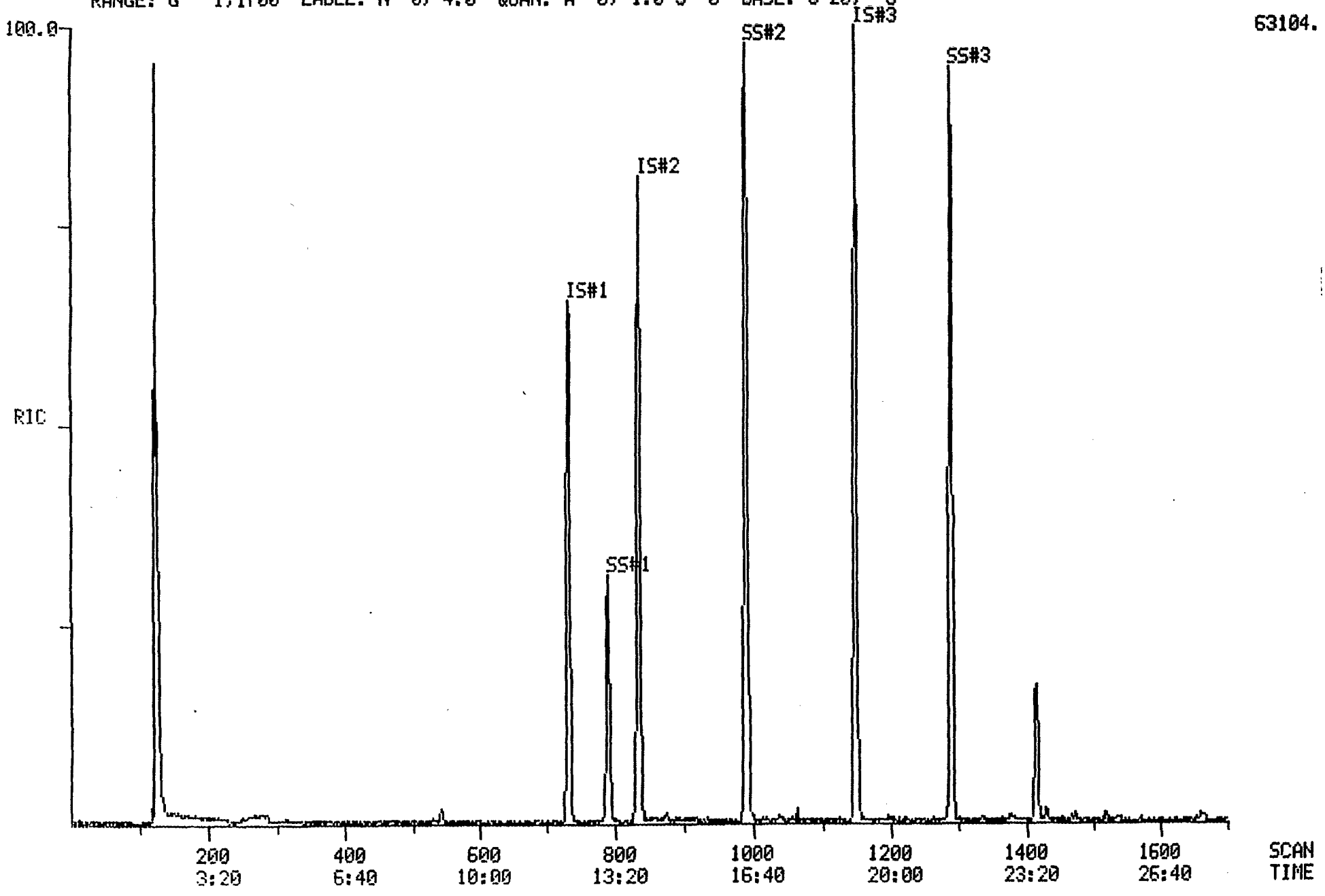
CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 535-77-3	BENZENE, 1-METHYL-3-(1-METHY	23.59	9	J

FORM I VOA-TIC 3/90

mak 12/9/93

RIC DATA: C1V0030416 #1 SCANS 1 TO 1700
11/24/93 2:52:00 CALI: C1V0030416 #2
SAMPLE: CLP,V90212,,DFSPMW25,LOW,WATER,90212007,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



000041

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030417

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	5	BJ
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	37	
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MAK 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030417

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

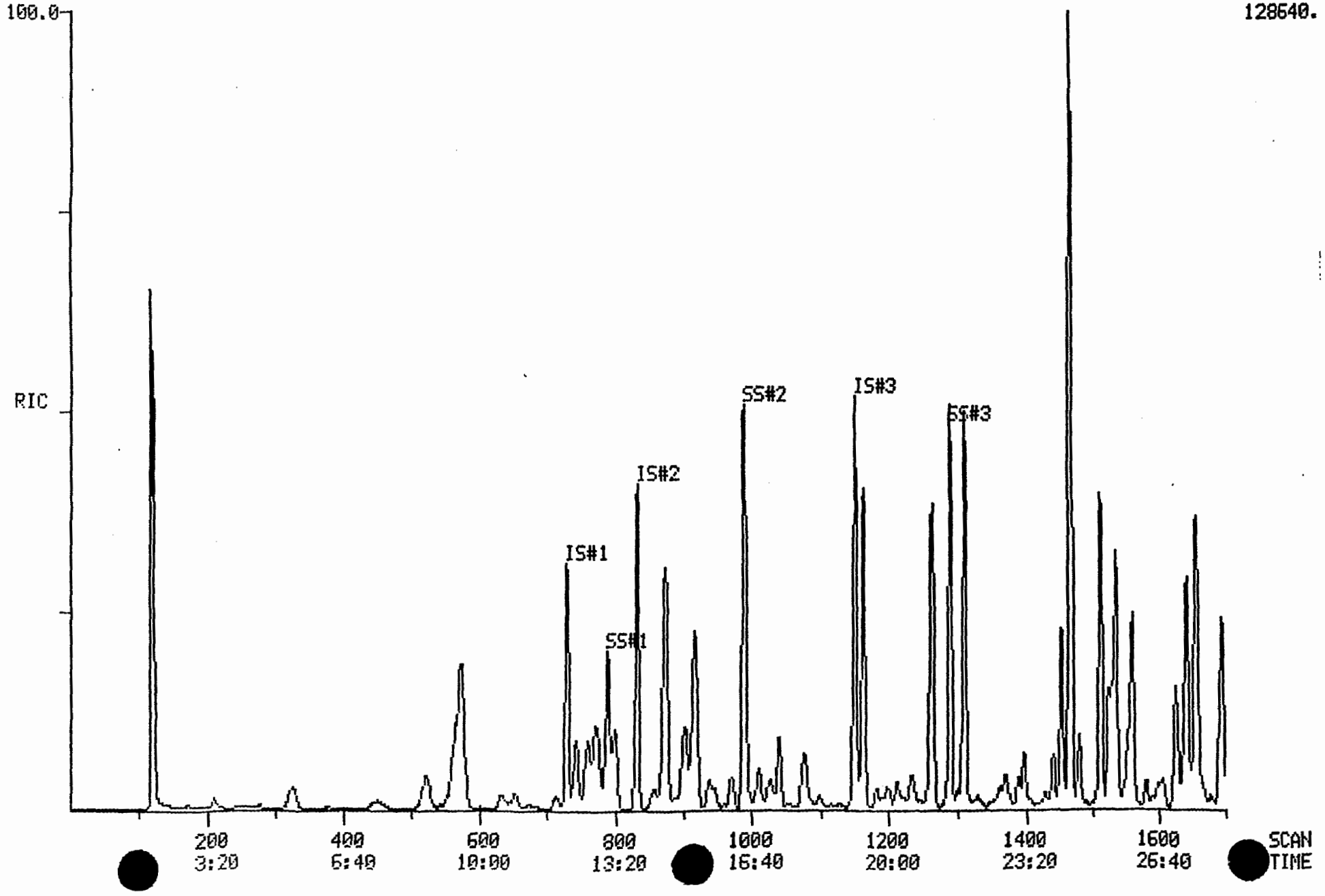
Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1634-04-4	PROPANE, 2-METHOXY-2-METHYL-	9.54	72	J
2. 108-87-2	CYCLOHEXANE, METHYL-	14.55	50	J
3. 560-21-4	PENTANE, 2,3,3-TRIMETHYL-	15.25	40	J
4. 98-82-8	BENZENE, (1-METHYLETHYL)-	21.07	42	J
5. 103-65-1	BENZENE, PROPYL-	21.85	50	J
6. 611-15-4	BENZENE, 1-ETHENYL-2-METHYL-	24.45	100	J
7. 934-80-5	BENZENE, 4-ETHYL-1,2-DIMETHY	25.19	37	J
8. 767-58-8	1H-INDENE, 2,3-DIHYDRO-1-MET	25.59	45	J
9.	BENZENE, -TETRAMETHYL- ISOME	26.01	36	J
10.	1H-INDENE, -DIHYDRO- -METHYL	27.59	45	J

MGK 12/9/93

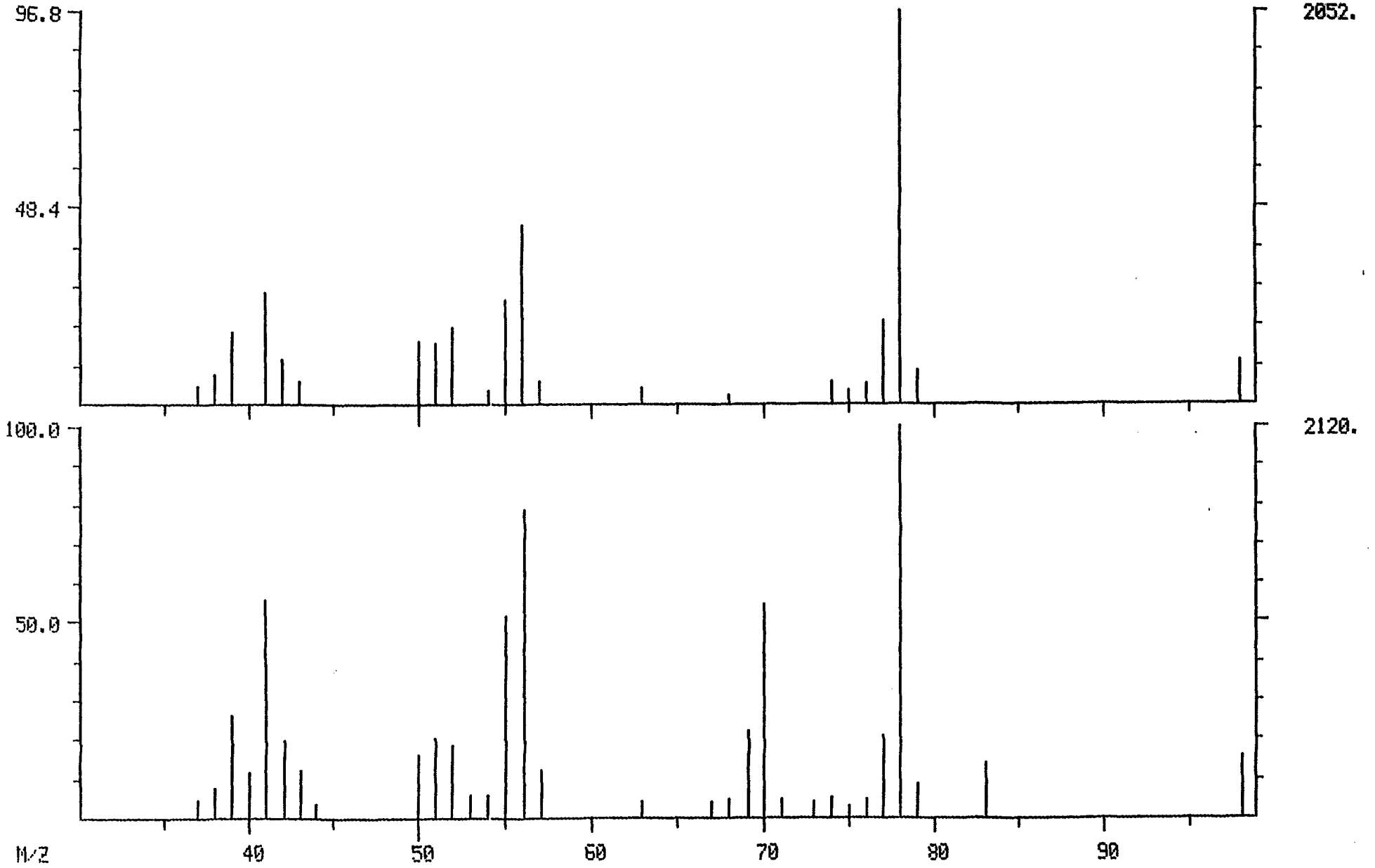
RIC DATA: C1V0030417 #1 SCANS 1 TO 1700
11/24/93 3:27:00 CALI: C1V0030417 #2
SAMPLE: CLP,V90212,,DFSPMW13,LOW,WATER,90212008,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



000045

DUAL MASS SPECTRUM
11/24/93 3:27:00 + 13:19
SAMPLE: CLP,V90212,,DFSPMW13,LOW,WATER,90212008,V,E,
CONDS.: CAP/0.53,CSV0030408,CIBF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

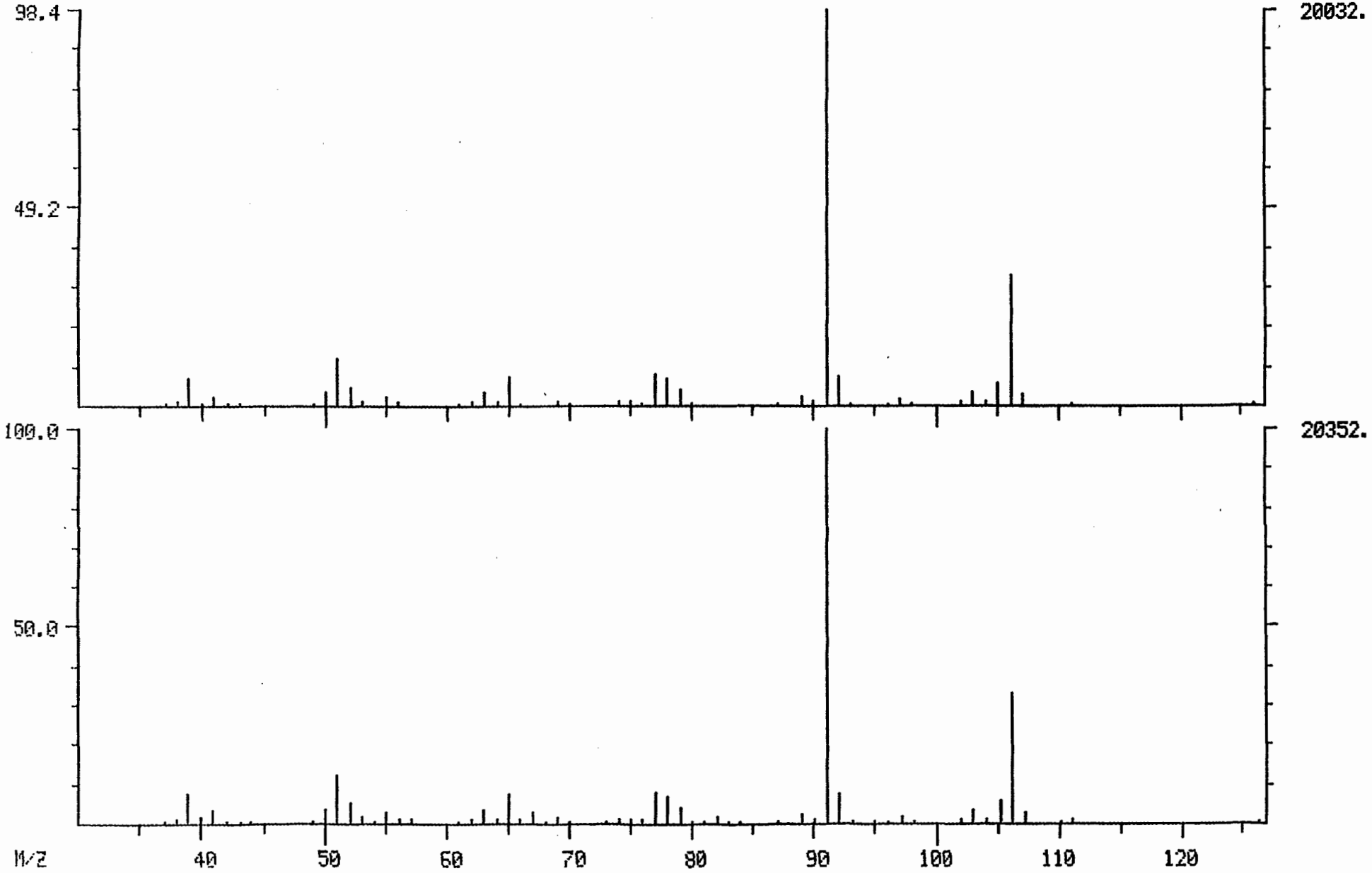
DATA: CIV0030417 #799 BASE M/Z: 78/ 78
CALI: CIV0030417 #2 RIC: 7631./ 13151.



000016

DUAL MASS SPECTRUM
11/24/93 3:27:00 + 19:24
SAMPLE: CLP,V90212,,DFSPMW13,LOW,WATER,90212008,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C240 ETHYL BENZENE CCC

DATA: C1V0030417 #1164 BASE M/Z: 91/ 91
CALI: C1V0030417 #2 RIC: 48127./ 51775.



000047

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW20

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212009

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030418

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	BJ
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

nak 12/9/93

000018

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW20

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212009

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030418

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

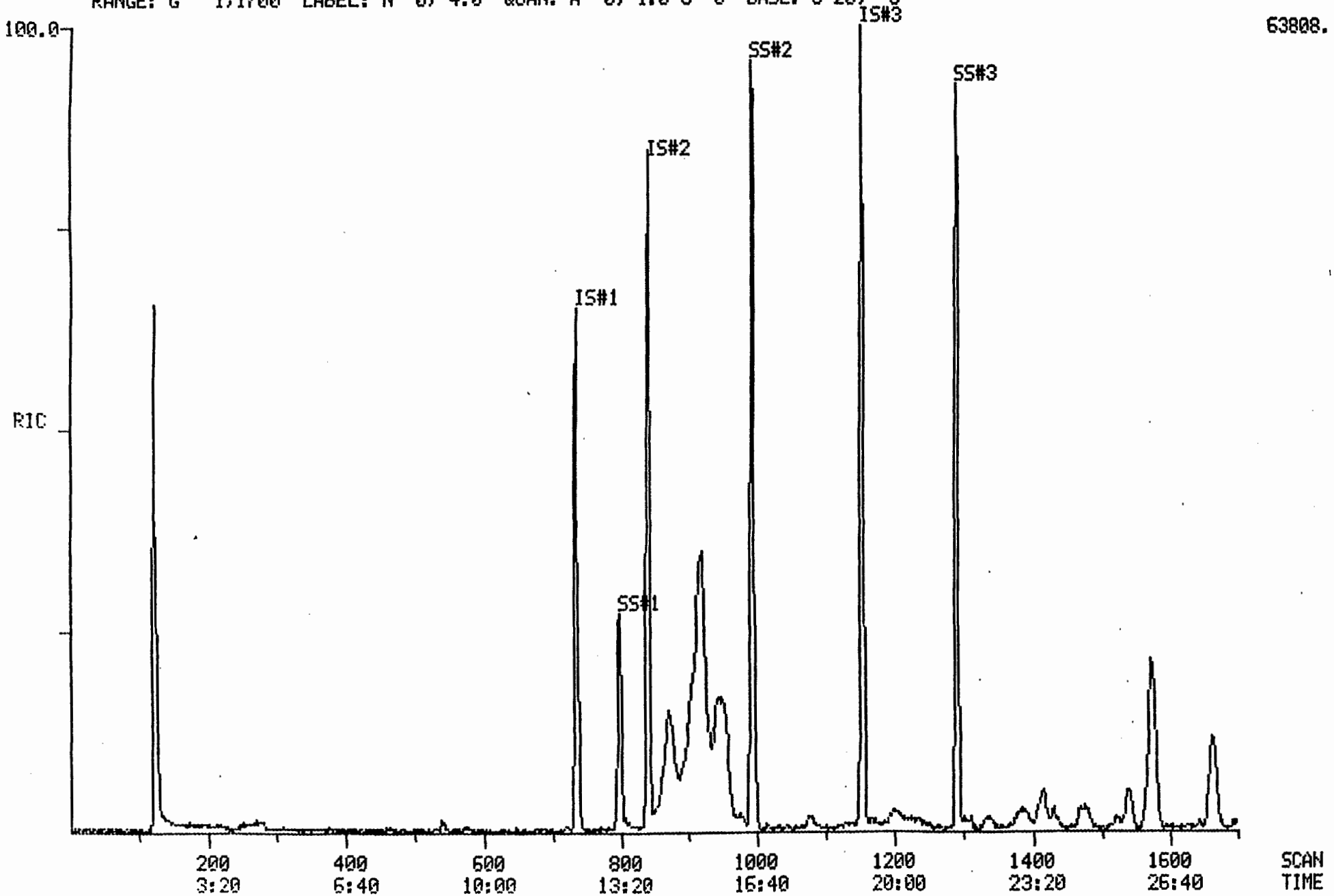
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

MAK 12/9/93

3/90

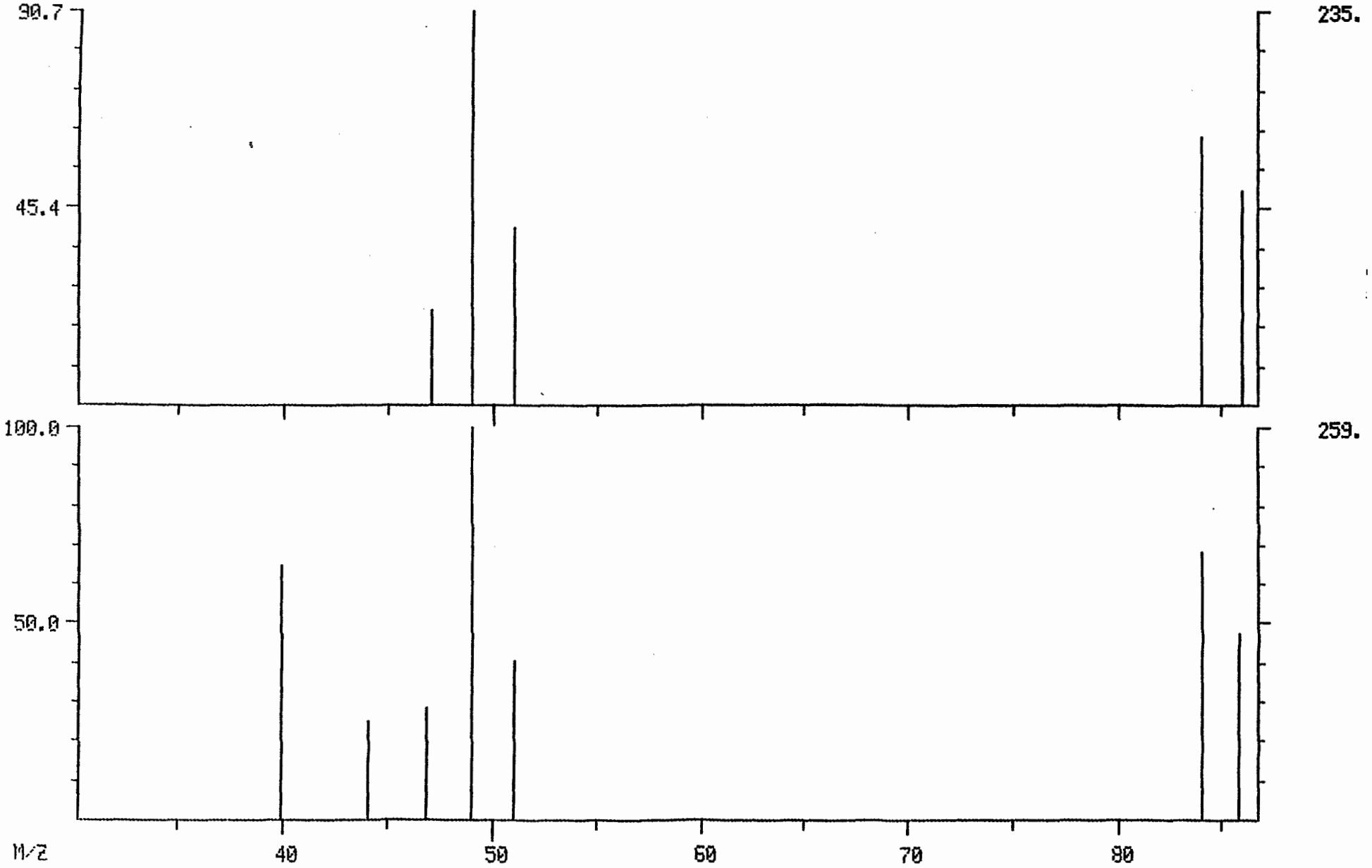
RIC DATA: C1V0030418 #1 SCANS 1 TO 1700
11/24/93 4:02:00 CALI: C1V0030418 #2
SAMPLE: CLP,V90212,,DFSPMW20,LOW,WATER,90212009,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



000050

DUAL MASS SPECTRUM
11/24/93 4:02:00 + 9:00
SAMPLE: CLP,V90212,,DFSPMW20,LOW,WATER,90212009,V,E,
CONDS.: CAP/0.53,C5V0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C030 METHYLENE CHLORIDE

DATA: C1V0030418 #540 BASE M/Z: 49/ 49
CALI: C1V0030418 #2 RIC: 685./ 968.



000051

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW20R

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212009R

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1901019.D

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Date Analyzed: 12/02/93

GC Column:Rtx-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

mak 12/14/93

00005

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPMW20R

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212009R

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1901019.D

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. _____ Data Analyzed: 12/02/93

GC Column:Rtx-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

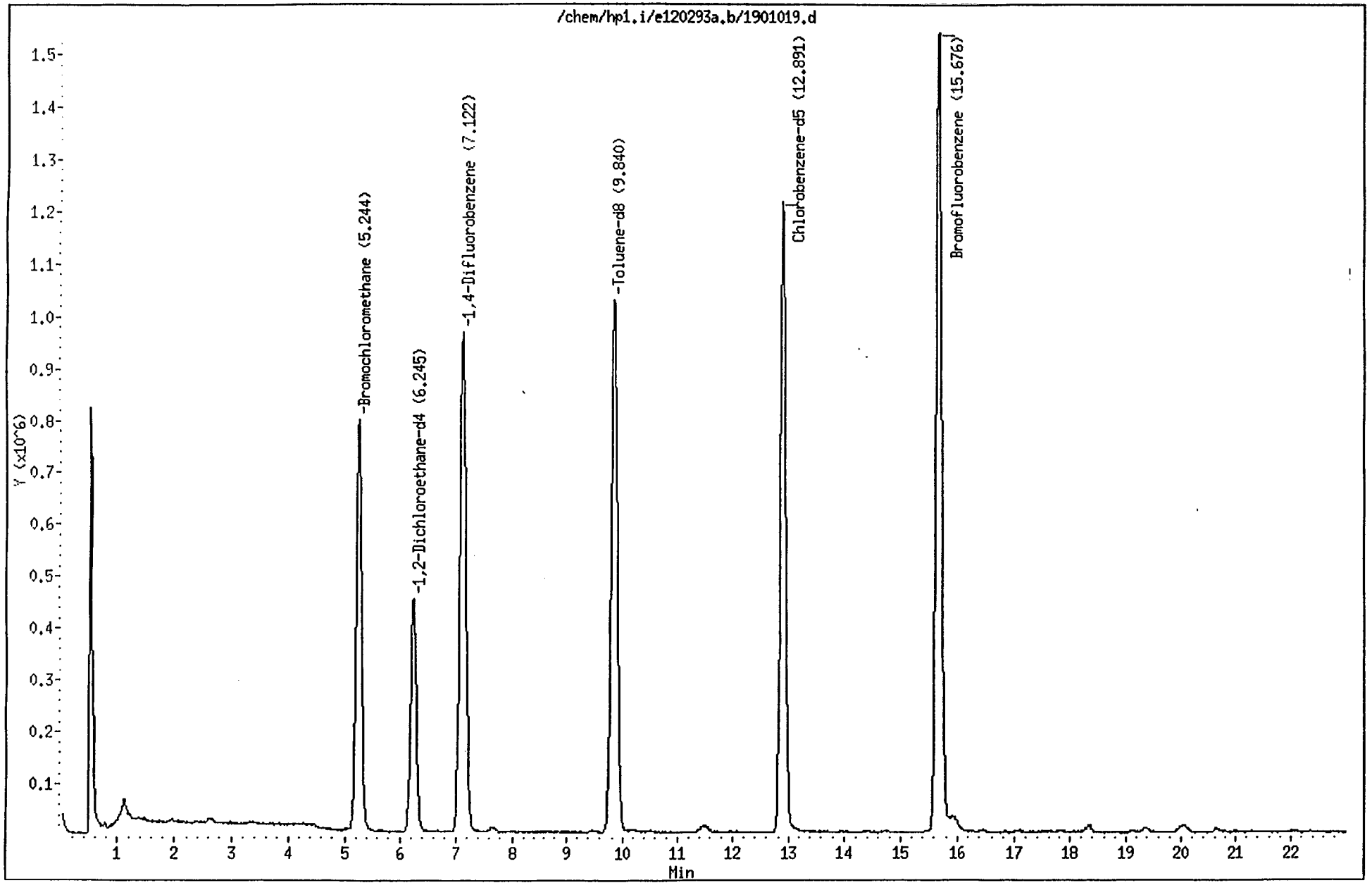
CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

MGK 12/14/93

Data File: /chem/hp1.i/e120293a.b/1901019.d
Date : 02-DEC-1993 21:29
Instrument : hp1.i
Sample ID : DFSP-MW20
Column phase : Rtx-502.2
Volume Injected (uL) : 0.0

Column diameter : 0.53



Data File: /chem/hp1.i/e120293a.b/1901019.d

Date : 02-DEC-1993 21:29

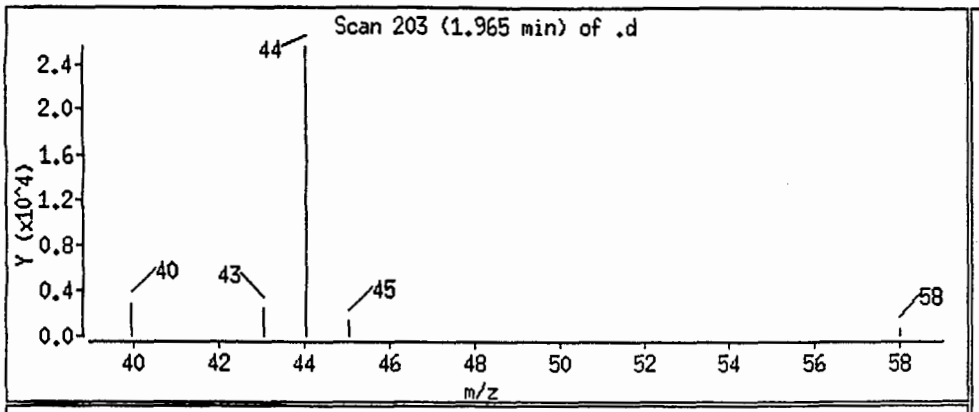
Instrument : hp1.i

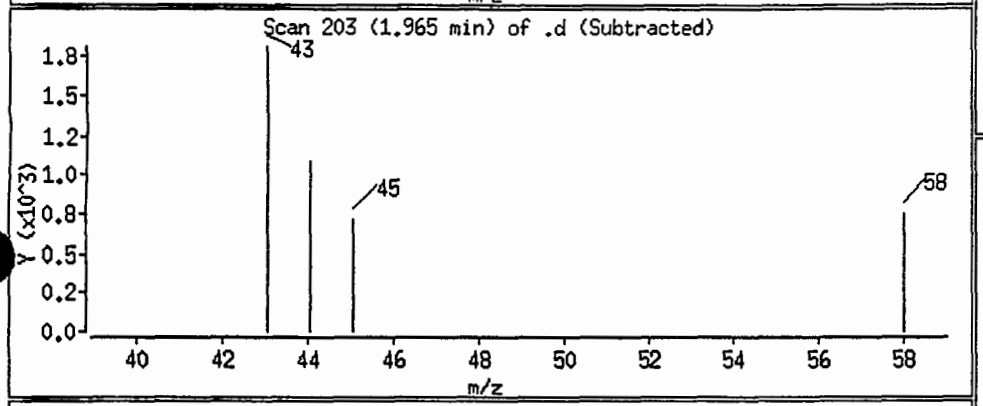
Sample ID : DFSP-MW20

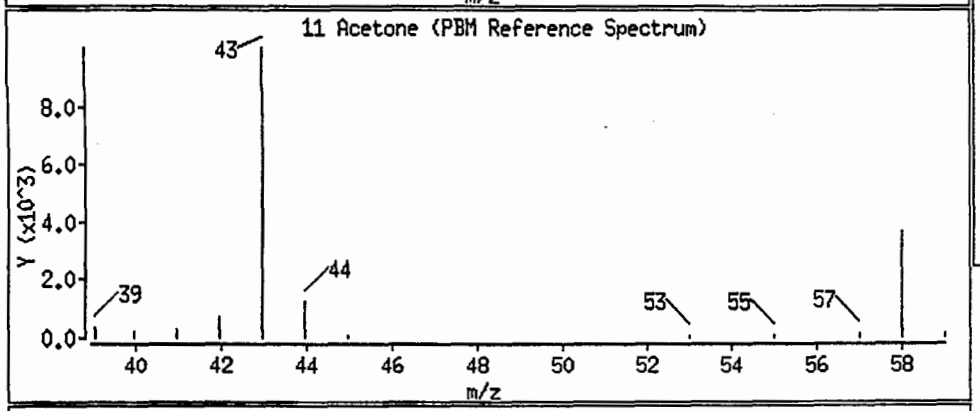
Column phase : Rtx-502.2 Column diameter : 0.53

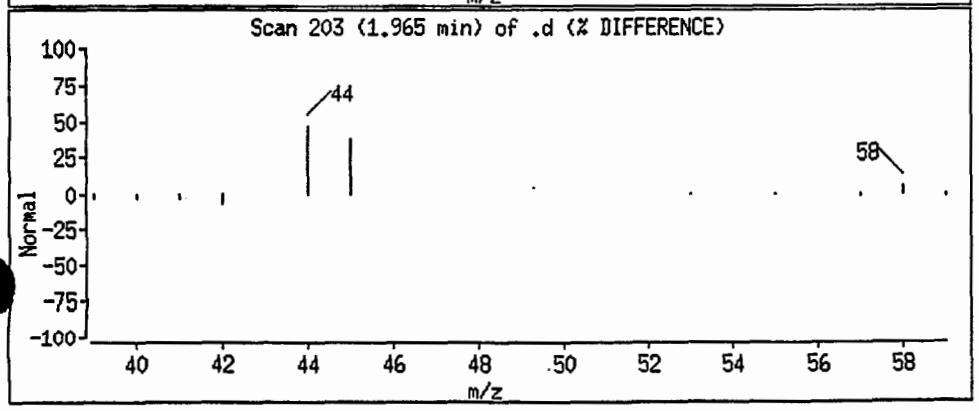
Volume Injected (uL) : 0.0

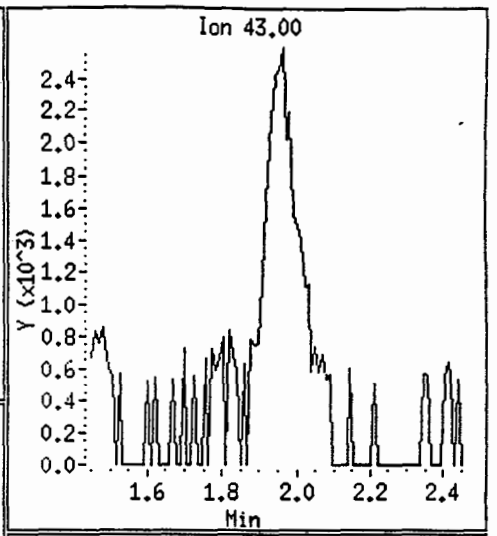
11 Acetone

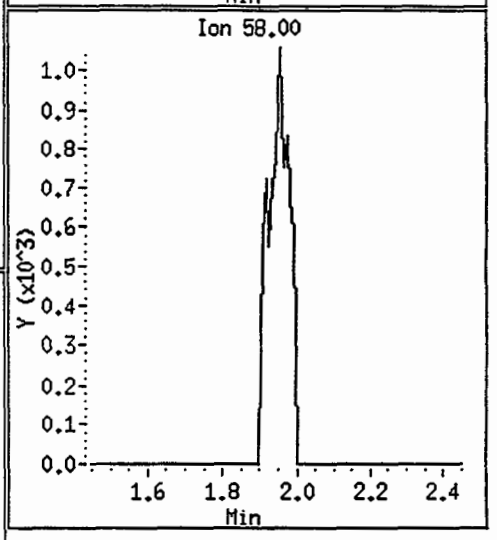












1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPDUP

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212010

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030419

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	5	BJ
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MPK 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPDUP

ab Name: CH2M HILL/MGM Contract: _____

ab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

atrix: (soil/water) WATER Lab Sample ID: 90212010

ample wt/vol: 5.0 (g/mL) ML Lab File ID: C1VO030419

evel: (low/med) LOW Date Received: 11/23/93

Moisture: not dec. ____ Date Analyzed: 11/24/93

C Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

oil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

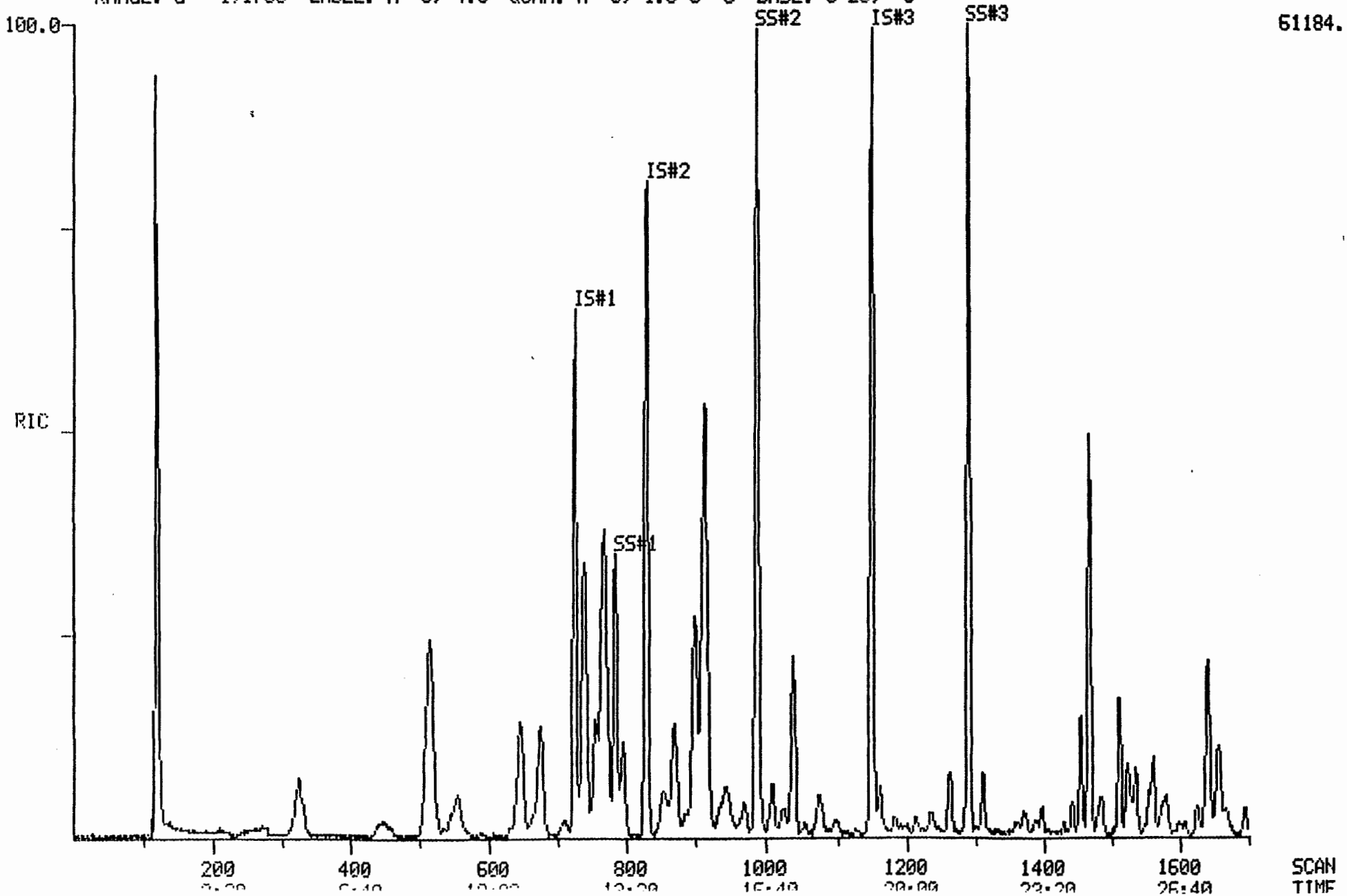
Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 79-29-8	BUTANE, 2,3-DIMETHYL-	8.60	45	J
2. 108-08-7	PENTANE, 2,4-DIMETHYL-	10.79	20	J
3. 96-37-7	CYCLOPENTANE, METHYL-	11.27	18	J
4.	NOT IDENTIFIED	12.32	44	J
5. 51677-41-9	BUTANE, 2-AZIDO-2,3,3-TRIMET	12.80	52	J
	NOT IDENTIFIED	14.97	14	J
7. 560-21-4	PENTANE, 2,3,3-TRIMETHYL-	15.20	46	J
8. 927-83-3	DIAZENE, BIS(1,1-DIMETHYLETH	17.30	14	J
9. 611-15-4	BENZENE, 1-ETHENYL-2-METHYL-	24.47	25	J
10.	BENZENE, -TETRAMETHYL- ISOME	27.36	12	J

MAK 12/9/93

RIC DATA: C1V0030419 #1 SCANS 1 TO 1700
11/24/93 4:37:00 CALI: C1V0030419 #2
SAMPLE: CLP,V90212,,DFSPDUP,LOW,WATER,90212010,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

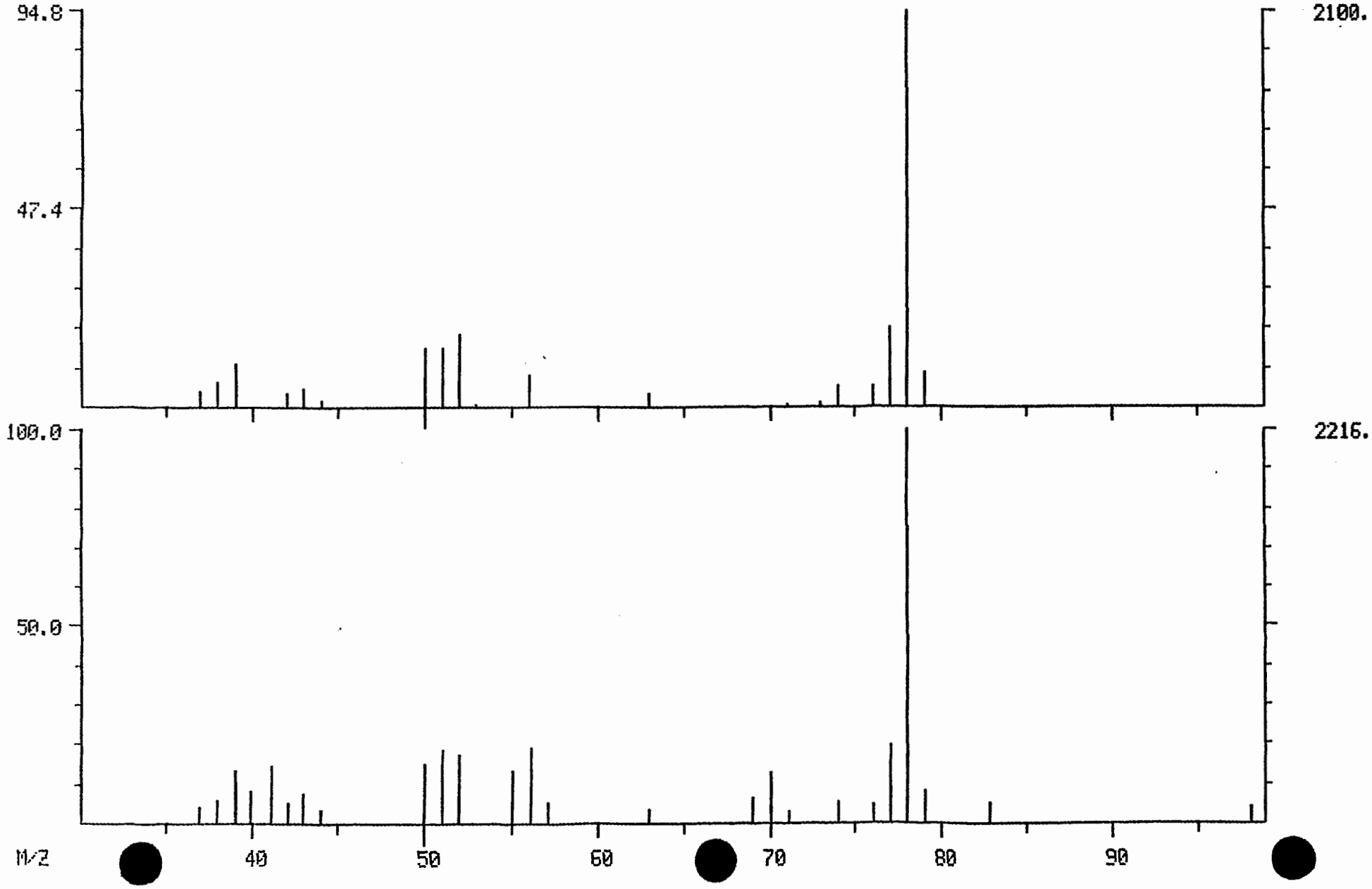


000058

000059

DUAL MASS SPECTRUM
11/24/93 4:37:00 + 13:15
SAMPLE: CLP,V90212,,DFSPDUP,LOW,WATER,90212010,V,E,
CONDS.: CAP/0.53,CSV0030408,C1BF030407,CBV0030409,,,,10DF TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

DATA: C1V0030419 #795 BASE M/Z: 78/ 78
CALI: C1V0030419 #2 RIC: 4919./ 7191.



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPEB

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212011

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C2VO030430

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	3	BJ
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MJC 12/9/93

00006

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DFSPEB

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 90212011

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C2V0030430

Level: (low/med) LOW Date Received: 11/23/93

% Moisture: not dec. ____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

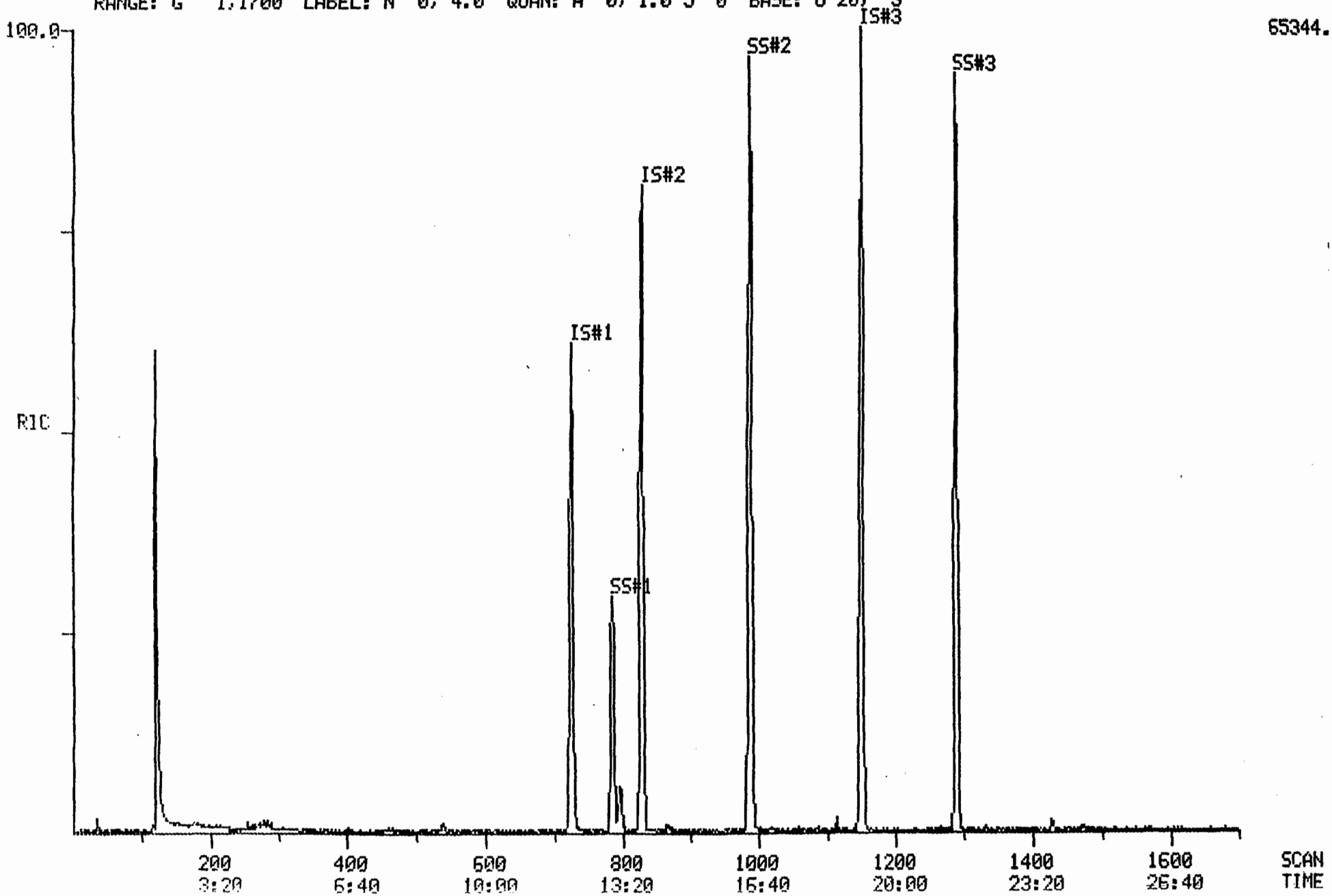
Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

hgk
12/9/93

RIC DATA: C2V0030430 #1 SCANS 1 TO 1700
11/24/93 12:14:00 CALI: C2V0030430 #2
SAMPLE: CLP,90212,,DFSPEB,LOW,WATER,90212011,V,E,
CONDS.: CAP/0.53,CSV0030428,C1BF030427,CBV0030429,,,,10DG TO 160DG @ 7DG
RANGE: G 1,1700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

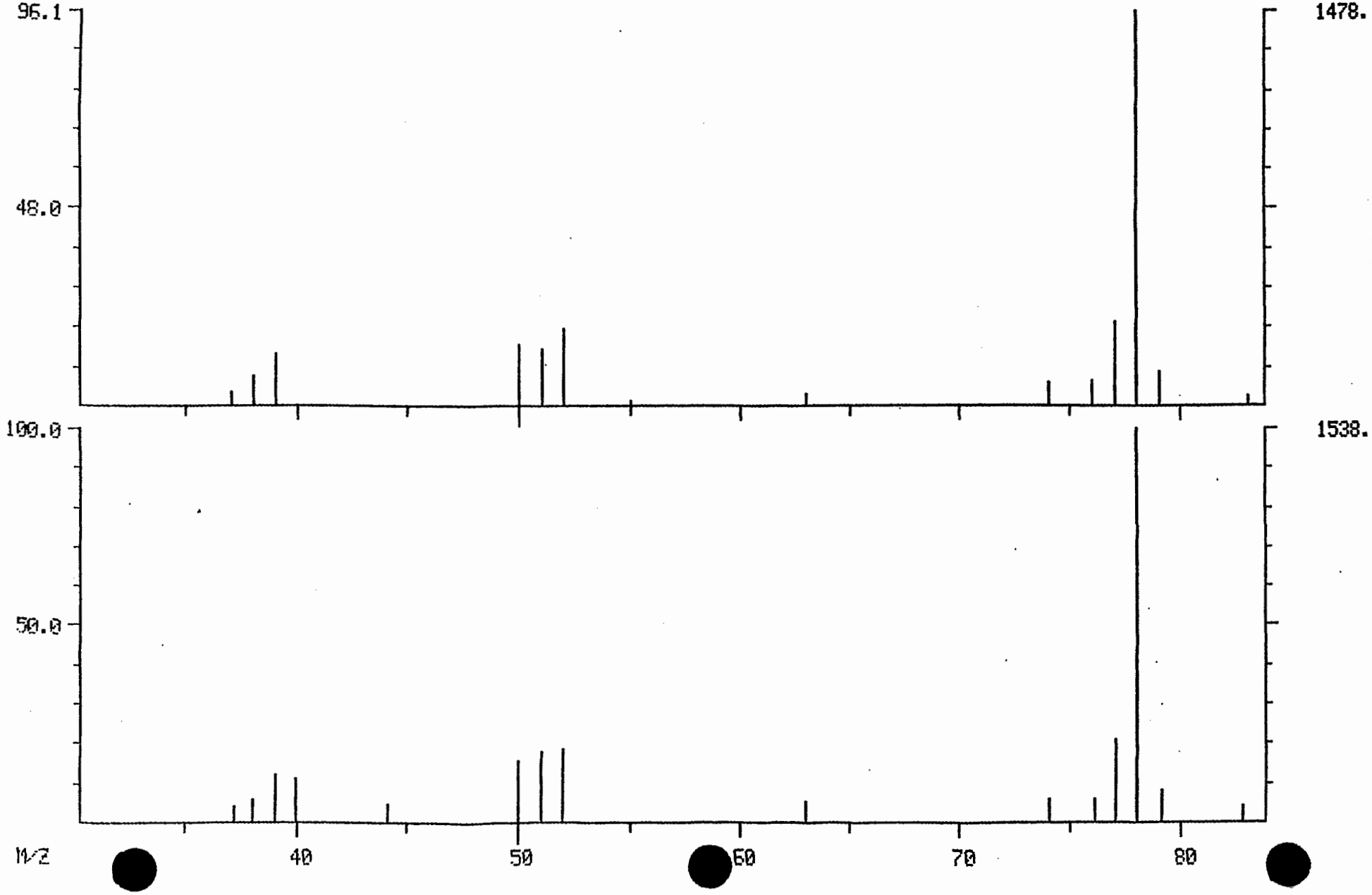


000062

000063

DUAL MASS SPECTRUM
11/24/93 12:14:00 + 13:16
SAMPLE: CLP,90212,,DFSPEB,LOW,WATER,90212011,V,E,
CONDS.: CAP/0.53,CSV0030428,C1BF030427,CBV0030429,,,,10DG TO 160DG @ 7DG
ENHANCED (S 15B 2N 0T) C165 BENZENE

DATA: C2V0030430 #796 BASE M/Z: 78/ 78
CALI: C2V0030430 #2 RIC: 3295./ 3687.



1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: X11233B4

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CBV0030409

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	2	J
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	2	J
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MEK 12/1/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKW

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: X11233B4

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CBV0030409

Level: (low/med) LOW Date Received: _____

Moisture: not dec. ____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC 3/90

hrk 12/9/93

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW_2

ab Name: CH2M HILL/MGM Contract: _____

ab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

atrix: (soil/water) WATER Lab Sample ID: X11243B1

ample wt/vol: 5.0 (g/mL) ML Lab File ID: CBVO030429

evel: (low/med) LOW Date Received: _____

Moisture: not dec. ____ Date Analyzed: 11/24/93

C Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

oil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	2	J
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

hgk 12/9/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKW_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: X11243B1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CBVO030429

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/24/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

mgc 1-21-93

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKW3

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: X12023B1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0301003.D

Level: (low/med) LOW Date Received: / /

% Moisture: not dec. _____ Date Analyzed: 12/02/93

GC Column:Rtx-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MAK 12/14/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKW3

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: X12023B1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 0301003.D

Level: (low/med) LOW Date Received: / /

% Moisture: not dec. _____ Data Analyzed: 12/02/93

GC Column:Rtx-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

hgk 12/14/93

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

.b Name: CH2M HILL/MGM Contract: _____

.b Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	DFSPDUP	103	104	98	0	0
02	DFSPEB	103	98	98	0	0
03	DFSPMW13	101	100	95	0	0
04	DFSPMW20	98	101	98	0	0
05	DFSPMW21	103	106	100	0	0
06	DFSPMW21D	107	105	97	0	0
07	DFSPMW22	98	98	94	0	0
08	DFSPMW23	98	102	95	0	0
09	DFSPMW24	110	113	105	0	0
10	DFSPMW25	105	102	98	0	0
11	MW18	105	105	97	0	0
12	VBLKW	101	101	100	0	0
13	VBLKW_2	104	99	99	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(88-110)
SMC2 (BFB)	= Bromofluorobenzene	(86-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM II VOA-1 3/90

hgk 12/9/93

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 (DCE) #	OTHER	TOT OUT
01	VBLKW3	94	88	86		0
02	DFSPMW20R	92	89	89		0
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(88-110)
SMC2 (BFB)	= Bromofluorobenzene	(86-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM II VOA-1 3/90

mgk 12/14/93

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90210 SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: WHF15-2D

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0	59.60	119	61-145
Trichloroethene	50.00	0	51.80	104	71-120
Benzene	50.00	0	48.80	98	76-127
Toluene	50.00	0	48.80	98	76-125
Chlorobenzene	50.00	0	51.00	102	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	57.50	115	3	14	61-145
Trichloroethene	50.00	52.70	105	1	14	71-120
Benzene	50.00	49.10	98	0	11	76-127
Toluene	50.00	49.20	98	0	13	76-125
Chlorobenzene	50.00	51.50	103	1	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: CLP,90210,,WHF15-2D,L,W,90210001,V,E,
CAP/.53,,,,,,,,10DG TO 160DG @7DG/MIN IH=4MIN

MPK 12/8/93

4A

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKW

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO030409 Lab Sample ID: X11233B4

Date Analyzed: 11/23/93 Time Analyzed: 2245

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	DFSPDUP	90212010	C1VO030419	0437
02	DFSPMW13	90212008	C1VO030417	0327
03	DFSPMW20	90212009	C1VO030418	0402
04	DFSPMW21	90212003	C2VO030426	0841
05	DFSPMW21D	90212002	C1VO030411	2356
06	DFSPMW22	90212004	C1VO030413	0107
07	DFSPMW23	90212005	C1VO030414	0142
08	DFSPMW24	90212006	C1VO030415	0217
09	DFSPMW25	90212007	C1VO030416	0252
10	MW18	90212001	C1VO030410	2356

COMMENTS: CLP,90212,,VBLKW,LOW,WATER,X11233B4,V,B
CAP/0.53,CSVO030408,C1BF030407,CBVO030409,,,,10DF TO 160DG @ 7D

FORM IV VOA 3/90

DGK 12/9/93

000073

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKW_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO030429 Lab Sample ID: X11243B1

Date Analyzed: 11/24/93 Time Analyzed: 1139

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	DFSPEB	90212011	C2VO030430	1214

COMMENTS: CLP,90212,,VBLKW,L,W,X11243B1,V,B,
CAP/0.53,CSVO030428,C1BF030427,CBVO030429,,,,10DG TO 160DG @ 7D

FORM IV VOA 3/90

mak 12/9/93

000074

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKW3

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Lab File ID: 0301003.D Lab Sample ID: X12023B1

Date Analyzed: 12/02/93 Time Analyzed: 1112

GC Column:Rtx-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: HP1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	DFSPMW20R	90212009	1901019.D	2129
02				
03				
04				
05				
06				
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COMMENTS:

FORM IV VOA

MGK 12/14/93

3/90

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

ab Name: CH2M HILL/MGM Contract: _____

ab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

ab File ID: C1BF030270 BFB Injection Date: 11/16/93

nstrument ID: 4500 BFB Injection Time: 0913

C Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	22.0
75	30.0 - 66.0% of mass 95	36.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	80.4
175	4.0 - 9.0% of mass 174	6.4 (8.0)1
176	93.0 - 101.0% of mass 174	76.7 (95.4)1
177	5.0 - 9.0% of mass 176	6.0 (7.8)2

1-Value is % mass 174 2-Value is % mass 176

HIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	VOA_010_STND	CSVO030276	11/16/93	1558
02	VSTD020	VOA_020_STND	CSVO030277	11/16/93	1632
03	VSTD050	VOA_050_STND	CSVO030278	11/16/93	1706
04	VSTD100	VOA_100_STND	CSVO030279	11/16/93	1739
05	VSTD200	VOA_200_STND	CSVO030280	11/16/93	1813

FORM V VOA 3/90

MGK 12/9/93

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

ab Name: CH2M HILL/MGM Contract: _____

a ode: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

ab File ID: C1BF030407 BFB Injection Date: 11/23/93

nstrument ID: 4500 BFB Injection Time: 2141

C Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.2
75	30.0 - 66.0% of mass 95	34.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	73.8
175	4.0 - 9.0% of mass 174	5.8 (7.8)1
176	93.0 - 101.0% of mass 174	70.8 (95.9)1
177	5.0 - 9.0% of mass 176	5.2 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

HIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	VOA_050_STND	CSVO030408	11/23/93	2210
02	VBLKW	X11233B4	CBVO030409	11/23/93	2245
03	DFSPMW21D	90212002	C1VO030411	11/23/93	2356
04	MW18	90212001	C1VO030410	11/23/93	2356
05	DFSPMW22	90212004	C1VO030413	11/24/93	0107
06	DFSPMW23	90212005	C1VO030414	11/24/93	0142
07	DFSPMW24	90212006	C1VO030415	11/24/93	0217
08	DFSPMW25	90212007	C1VO030416	11/24/93	0252
09	DFSPMW13	90212008	C1VO030417	11/24/93	0327
10	DFSPMW20	90212009	C1VO030418	11/24/93	0402
11	DFSPDUP	90212010	C1VO030419	11/24/93	0437
12	DFSPMW21	90212003	C2VO030426	11/24/93	0841

FORM V VOA

mck 12/9/93

3/90

000077

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

ab Name: CH2M HILL/MGM Contract: _____

ab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

ab File ID: C1BF030427 BFB Injection Date: 11/24/93

nstrument ID: 4500 BFB Injection Time: 1029

C Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	19.7
75	30.0 - 66.0% of mass 95	36.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	75.6
175	4.0 - 9.0% of mass 174	5.9 (7.8)1
176	93.0 - 101.0% of mass 174	73.3 (97.0)1
177	5.0 - 9.0% of mass 176	5.6 (7.7)2

1-Value is % mass 174 2-Value is % mass 176

HIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	VOA_050_STND	CSVO030428	11/24/93	1058
02	VBLKW_2	X11243B1	CBVO030429	11/24/93	1139
03	DFSPEB	90212011	C2VO030430	11/24/93	1214

FORM V VOA 3/90

MGK 12/9/93

000078

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Lab File ID: 0101001.D BFB Injection Date: 11/18/93

Instrument ID: HP1 BFB Injection Time: 0711

GC Column: Rtx-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	16.8
75	30.0 - 66.0% of mass 95	39.1
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	72.3
175	4.0 - 9.0% of mass 174	5.5 (7.5)1
176	93.0 - 101.0% of mass 174	71.2 (98.4)1
177	5.0 - 9.0% of mass 176	4.9 (6.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD010	10PPB	0201002.D	11/18/93	0730
02	VSTD200	200PPB	0301003.D	11/18/93	0820
03	VSTD020	20PPB	0401004.D	11/18/93	0858
04	VSTD050	50PPB	0501005.D	11/18/93	0934
05	VSTD100	100PPB	0601006.D	11/18/93	1011
06					
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22					

FORM V VOA 3/90

hgk 12/14/93

000079

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Lab File ID: 0101001.D BFB Injection Date: 12/02/93

Instrument ID: HP1 BFB Injection Time: 1003

GC Column: Rtx-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	16.8
75	30.0 - 66.0% of mass 95	40.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	73.6
175	4.0 - 9.0% of mass 174	5.3 (7.1)1
176	93.0 - 101.0% of mass 174	72.5 (98.6)1
177	5.0 - 9.0% of mass 176	4.6 (6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	50PPB	0201002.D	12/02/93	1019
02	VBLKW3	X12023B1	0301003.D	12/02/93	1112
03	DFSPMW20R	90212009R	1901019.D	12/02/93	2129
04					
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FORM V VOA 3/90

00008

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Instrument ID: 4500 Calibration Date(s): 11/16/93 11/16/93

Heated Purge: (Y/N): N Calibration Times: 1558 1813

GC Column: CAP ID: 0.530 (mm)

LAB FILE ID: RRF10 = CSVO030276 RRF20 = CSVO030277
RRF50= CSVO030278 RRF100= CSVO030279 RRF200= CSVO030280

COMPOUND		RRF10	RRF20	RRF50	RRF100	RRF200	$\overline{RRF}$	% RSD
Chloromethane		2.910	2.586	2.410	2.547	2.572	2.605	7.1
Bromomethane	*	1.242	0.797	0.823	0.791	0.789	0.888	22.3*
Vinyl Chloride	*	2.098	1.930	1.874	2.000	2.077	1.996	4.8*
Chloroethane		0.822	0.600	0.564	0.535	0.531	0.610	19.9
Methylene Chloride		2.659	2.143	1.548	1.583	1.449	1.876	27.4
Acetone		1.113	0.447	0.252	0.197	0.178	0.437	89.8
Carbon Disulfide		5.560	5.642	4.824	5.223	5.095	5.269	6.4
1,1-Dichloroethene	*	1.152	1.115	0.995	1.020	1.030	1.062	6.3*
1,1-Dichloroethane	*	2.612	2.667	2.296	2.570	2.561	2.541	5.6*
1,2-Dichloroethene (total)		1.535	1.536	1.320	1.443	1.414	1.450	6.3
Chloroform	*	2.242	2.352	2.014	2.112	2.188	2.182	5.9*
1,2-Dichloroethane	*	1.099	1.167	0.945	0.997	0.990	1.040	8.7*
2-Butanone		0.188	0.210	0.151	0.102	0.126	0.155	28.4
1,1,1-Trichloroethane	*	0.386	0.387	0.313	0.336	0.351	0.355	9.0*
Carbon Tetrachloride	*	0.344	0.336	0.297	0.303	0.314	0.319	6.4*
Bromodichloromethane	*	0.524	0.546	0.454	0.487	0.464	0.495	7.9*
1,2-Dichloropropane		0.418	0.444	0.375	0.395	0.384	0.403	6.9
cis-1,3-Dichloropropene	*	0.549	0.573	0.488	0.522	0.507	0.528	6.4*
Trichloroethene	*	0.464	0.464	0.386	0.388	0.389	0.418	10.0*
Dibromochloromethane	*	0.527	0.538	0.417	0.447	0.436	0.473	11.7*
1,1,2-Trichloroethane	*	0.343	0.334	0.260	0.282	0.274	0.299	12.5*
Benzene	*	1.147	1.150	0.946	0.970	0.959	1.034	10.1*
trans-1,3-Dichloropropene	*	0.423	0.438	0.351	0.386	0.375	0.395	9.0*
Bromoform	*	0.377	0.374	0.289	0.304	0.303	0.329	12.9*
2-Hexanone		2.316	0.454	0.194	0.179	0.157	0.660	141.5
4-Methyl-2-Pentanone		0.148	0.117	0.093	0.094	0.091	0.109	22.4
Tetrachloroethene	*	0.426	0.408	0.338	0.358	0.335	0.373	11.2*
1,1,2,2-Tetrachloroethane	*	0.508	0.506	0.412	0.416	0.427	0.454	10.8*
Toluene	*	0.890	0.860	0.729	0.767	0.735	0.796	9.3*
Chlorobenzene	*	1.031	1.067	0.871	0.903	0.896	0.954	9.3*
Ethylbenzene	*	0.517	0.536	0.422	0.438	0.447	0.472	10.8*
Styrene	*	1.178	1.203	0.963	0.944	0.929	1.043	13.0*
Xylene (total)	*	0.653	0.673	0.552	0.551	0.540	0.594	10.7*
Toluene-d8 - SS		1.270	1.409	1.144	1.130	1.039	1.198	12.0
Bromofluorobenzene - SS	*	0.530	0.609	0.472	0.441	0.427	0.496	15.0*
1,2-Dichloroethane-d4 - SS		1.048	1.198	0.909	0.886	0.872	0.983	14.2

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI VOA 3/90

MEK 12/9/93

000081

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Instrument ID: HP1 Calibration Date(s): 11/18/93

Heated Purge: (Y/N) N Calibration Times: 0730 1011

GC Column:Rtx-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF10 =0201002.D RRF20 =0401004.D
RRF50 =0501005.D RRF100=0601006.D RRF200=0301003.D

COMPOUND	RRF10	RRF20	RRF50	RRF100	RRF200	$\overline{RRF}$	% RSD
Chloromethane	1.569	1.417	1.338	1.308	1.329	1.392	7.7
Bromomethane *	0.959	1.011	0.909	0.890	0.761	0.906	10.3*
Vinyl Chloride *	1.334	1.346	1.346	1.342	1.264	1.326	2.6*
Chloroethane	0.458	0.458	0.465	0.461	0.445	0.458	1.6
Methylene Chloride	1.495	1.454	1.425	1.395	1.379	1.430	3.2
Acetone	0.260	0.227	0.218	0.171	0.178	0.211	17.5
Carbon Disulfide	4.028	4.199	4.255	4.340	4.166	4.198	2.8
1,1-Dichloroethene *	1.307	1.319	1.310	1.314	0.734	1.197	21.6*<-
1,1-Dichloroethane *	2.626	2.682	2.686	2.696	2.719	2.682	1.3*
1,2-Dichloroethene (total)	1.621	1.660	1.666	1.678	1.656	1.656	1.3
Chloroform *	2.678	2.768	2.757	2.761	2.797	2.752	1.6*
1,2-Dichloroethane *	1.425	1.545	1.580	1.479	1.529	1.512	4.0*
2-Butanone	0.542	0.426	0.467	0.345	0.361	0.428	18.8
1,1,1-Trichloroethane *	0.518	0.520	0.519	0.523	0.519	0.520	0.4*
Carbon Tetrachloride *	0.518	0.525	0.527	0.538	0.532	0.528	1.4*
Bromodichloromethane *	0.615	0.629	0.646	0.630	0.628	0.630	1.7*
1,2-Dichloropropane	0.349	0.354	0.354	0.345	0.344	0.349	1.3
cis-1,3-Dichloropropene *	0.508	0.530	0.536	0.519	0.516	0.522	2.2*
Trichloroethene *	0.434	0.435	0.430	0.432	0.429	0.432	0.7*
Dibromochloromethane *	0.541	0.575	0.622	0.571	0.584	0.579	5.0*
1,1,2-Trichloroethane *	0.295	0.317	0.329	0.291	0.293	0.305	5.5*
Benzene *	0.845	0.848	0.836	0.839	0.821	0.838	1.2*
trans-1,3-Dichloropropene *	0.417	0.433	0.461	0.423	0.427	0.432	3.9*
Bromoform *	0.384	0.443	0.498	0.424	0.432	0.436	9.4*
4-Methyl-2-pentanone	0.106	0.125	0.129	0.104	0.111	0.115	9.8
2-Hexanone	0.152	0.195	0.182	0.145	0.161	0.167	12.5
Tetrachloroethene *	0.453	0.445	0.446	0.450	0.448	0.448	0.7*
1,1,2,2-Tetrachloroethane *	0.549	0.627	0.654	0.528	0.533	0.578	10.0*
Toluene *	1.082	1.106	1.089	1.082	1.071	1.086	1.2*
Chlorobenzene *	0.950	0.958	0.949	0.932	0.927	0.943	1.4*
Ethylbenzene *	0.450	0.458	0.441	0.445	0.455	0.450	1.6*
Styrene *	0.936	0.964	0.961	0.948	0.948	0.951	1.2*
Xylene (total) *	0.577	0.571	0.569	0.567	0.571	0.571	0.6*
Dichlorodifluoromethane	2.379	2.378	2.301	2.241	2.188	2.297	3.7
Trichlorofluoromethane	2.400	2.555	2.430	2.051	1.982	2.284	11.0
Acrolein	0.140	0.170	0.171	0.140	0.065	0.137	31.5

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

mgk 12/14/93

000082

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Instrument ID: HP1 Calibration Date(s): 11/18/93

Heated Purge: (Y/N) N Calibration Times: 0730 1011

GC Column:Rtx-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF10 =0201002.D RRF20 =0401004.D
RRF50 =0501005.D RRF100=0601006.D RRF200=0301003.D

COMPOUND	RRF10	RRF20	RRF50	RRF100	RRF200	$\overline{RRF}$	% RSD
Iodomethane	1.789	2.400	3.053	3.497	3.391	2.826	25.5
Acrylonitrile	0.252	0.296	0.305	0.252	0.261	0.273	9.3
Vinyl_acetate	0.329	0.344	0.393	0.343	0.344	0.351	7.0
Dibromomethane	0.344	0.364	0.376	0.335	0.337	0.351	5.1
2-Chloroethyl_vinyl_ether	0.178	0.189	0.209	0.177	0.182	0.187	7.0
Ethyl_methacrylate	0.426	0.477	0.501	0.417	0.436	0.451	7.9
1,2,3-Trichloropropane	0.353	0.396	0.408	0.329	0.344	0.366	9.3
1,4-Dichloro-2-butene	0.119	0.145	0.150	0.126	0.130	0.134	9.6
1,1,2-trichloro-1,2,2-trifl	3.063	2.996	2.965	2.952	1.589	2.713	23.2
Tetrahydrofuran	0.102	0.084	0.128	0.105	0.116	0.107	15.4
Isobutyl_alcohol	0.060	0.098	0.100	0.075	0.079	0.083	20.4
1-Butanol	0.020	0.031	0.031	0.025	0.031	0.027	19.1
1,4-Dioxane *	0.005	0.004	0.006	0.005	0.005	0.005	13.8*
n-Butyl_acetate	0.453	0.590	0.601	0.463	0.513	0.524	13.2
Cyclohexanone	0.010	0.012	0.011	0.009	0.010	0.011	11.8
1,3-Dichlorobenzene	0.878	0.892	0.873	0.858	0.859	0.872	1.6
1,4-Dichlorobenzene	0.953	0.966	0.938	0.927	0.926	0.942	1.8
1,2-Dichlorobenzene	0.819	0.857	0.842	0.797	0.806	0.824	3.0
Toluene-d8	1.011	1.019	1.061	1.073	1.044	1.042	2.5
Bromofluorobenzene *	0.853	0.871	0.895	0.875	0.852	0.869	2.0*
1,2-Dichloroethane-d4	1.212	1.370	1.448	1.379	1.390	1.360	6.5

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI VOA 3/90

hgk 12/14/93

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Instrument ID: 4500 Calibration date: 11/23/93 Time: 2210

Lab File ID: CSV0030408 Init. Calib. Date(s): 11/16/93 11/16/93

Heated Purge: (Y/N) N Init. Calib. Times: 1558 1813

GC Column: CAP ID: 0.530(mm)

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Chloromethane	2.605	0.159		93.9	
Bromomethane	0.888	0.734	0.100	17.3	25.0
Vinyl Chloride	1.996	1.690	0.100	15.3	25.0
Chloroethane	0.610	0.809		-32.6	
Methylene Chloride	1.876	1.242		33.8	
Acetone	0.437	0.216		50.6	
Carbon Disulfide	5.269	4.294		18.5	
1,1-Dichloroethene	1.062	1.022	0.100	3.8	25.0
1,1-Dichloroethane	2.541	2.222	0.200	12.6	25.0
1,2-Dichloroethene (total)	1.450	1.307		9.9	
Chloroform	2.182	1.934	0.200	11.4	25.0
1,2-Dichloroethane	1.040	0.989	0.100	4.9	25.0
2-Butanone	0.155	0.098		36.8	
1,1,1-Trichloroethane	0.355	0.309	0.100	13.0	25.0
Carbon Tetrachloride	0.319	0.295	0.100	7.5	25.0
Bromodichloromethane	0.495	0.436	0.200	11.9	25.0
1,2-Dichloropropane	0.403	0.356		11.7	
cis-1,3-Dichloropropene	0.528	0.462	0.200	12.5	25.0
Trichloroethene	0.418	0.361	0.300	13.6	25.0
Dibromochloromethane	0.473	0.422	0.100	10.8	25.0
1,1,2-Trichloroethane	0.299	0.253	0.100	15.4	25.0
Benzene	1.034	1.009	0.500	2.4	25.0
trans-1,3-Dichloropropene	0.395	0.350	0.100	11.4	25.0
Bromoform	0.329	0.313	0.100	4.9	25.0
2-Hexanone	0.660	0.163		75.3	
4-Methyl-2-Pentanone	0.109	0.099		9.2	
Tetrachloroethene	0.373	0.334	0.200	10.5	25.0
1,1,2,2-Tetrachloroethane	0.454	0.480	0.500	-5.7	25.0
Toluene	0.796	0.726	0.400	8.8	25.0
Chlorobenzene	0.954	0.842	0.500	11.7	25.0
Ethylbenzene	0.472	0.428	0.100	9.3	25.0
Styrene	1.043	0.974	0.300	6.6	25.0
Xylene (total)	0.594	0.540	0.300	9.1	25.0
Toluene-d8 - SS	1.198	1.001		16.4	
Bromofluorobenzene - SS	0.496	0.462	0.200	6.9	25.0
1,2-Dichloroethane-d4 - SS	0.983	0.845		14.0	

All other compounds must meet a minimum RRF of 0.010.

MPK 12/9/93

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Instrument ID: 4500 Calibration date: 11/24/93 Time: 1058

Lab File ID: CSVO030428 Init. Calib. Date(s): 11/16/93 11/16/93

Heated Purge: (Y/N) N Init. Calib. Times: 1558 1813

GC Column: CAP ID: 0.530(mm)

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Chloromethane	2.605	2.121		18.6	
Bromomethane	0.888	1.232	0.100	-38.7	25.0
Vinyl Chloride	1.996	1.967	0.100	1.5	25.0
Chloroethane	0.610	0.946		-55.1	
Methylene Chloride	1.876	1.389		26.0	
Acetone	0.437	0.235		46.2	
Carbon Disulfide	5.269	4.968		5.7	
1,1-Dichloroethene	1.062	1.168	0.100	-10.0	25.0
1,1-Dichloroethane	2.541	2.563	0.200	-0.9	25.0
1,2-Dichloroethene (total)	1.450	1.520		-4.8	
Chloroform	2.182	2.198	0.200	-0.7	25.0
1,2-Dichloroethane	1.040	1.038	0.100	0.2	25.0
2-Butanone	0.155	0.103		33.6	
1,1,1-Trichloroethane	0.355	0.343	0.100	3.4	25.0
Carbon Tetrachloride	0.319	0.305	0.100	4.4	25.0
Bromodichloromethane	0.495	0.482	0.200	2.6	25.0
1,2-Dichloropropane	0.403	0.390		3.2	
cis-1,3-Dichloropropene	0.528	0.508	0.200	3.8	25.0
Trichloroethene	0.418	0.398	0.300	4.8	25.0
Dibromochloromethane	0.473	0.454	0.100	4.0	25.0
1,1,2-Trichloroethane	0.299	0.262	0.100	12.4	25.0
Benzene	1.034	1.075	0.500	-4.0	25.0
trans-1,3-Dichloropropene	0.395	0.378	0.100	4.3	25.0
Bromoform	0.329	0.319	0.100	3.0	25.0
2-Hexanone	0.660	0.164		75.2	
4-Methyl-2-Pentanone	0.109	0.098		10.1	
Tetrachloroethene	0.373	0.380	0.200	-1.9	25.0
1,1,2,2-Tetrachloroethane	0.454	0.505	0.500	-11.2	25.0
Toluene	0.796	0.835	0.400	-4.9	25.0
Chlorobenzene	0.954	0.924	0.500	3.1	25.0
Ethylbenzene	0.472	0.499	0.100	-5.7	25.0
Styrene	1.043	1.059	0.300	-1.5	25.0
Xylene (total)	0.594	0.622	0.300	-4.7	25.0
Toluene-d8 - SS	1.198	1.029		14.1	
Bromofluorobenzene - SS	0.496	0.474	0.200	4.4	25.0
1,2-Dichloroethane-d4 - SS	0.983	0.816		17.0	

All other compounds must meet a minimum RRF of 0.010.

hgk 12/9/93

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Instrument ID: HP1 Calibration Date: 12/02/93 Time: 1019

Lab File ID: 0201002.D Init. Calibration Date(s): 11/18/93

Heated Purge: (Y/N) N Init. Calibration Times: 0730 1011

GC Column:Rtx-502.2 ID: 0.53 (mm)

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Chloromethane	1.392	1.163		16.4	
Bromomethane	0.906	0.686	0.100	24.3	25.0
Vinyl Chloride	1.326	1.221	0.100	8.0	25.0
Chloroethane	0.458	0.419		8.5	
Methylene Chloride	1.430	1.386		3.0	
Acetone	0.211	0.186		11.9	
Carbon Disulfide	4.198	4.360		-3.9	
1,1-Dichloroethene	1.197	1.303	0.100	-8.9	25.0
1,1-Dichloroethane	2.682	2.657	0.200	0.9	25.0
1,2-Dichloroethene (total)	1.656	1.645		0.6	
Chloroform	2.752	2.761	0.200	-0.3	25.0
1,2-Dichloroethane	1.512	1.474	0.100	2.5	25.0
2-Butanone	0.428	0.336		21.6	
1,1,1-Trichloroethane	0.520	0.528	0.100	-1.6	25.0
Carbon Tetrachloride	0.528	0.545	0.100	-3.3	25.0
Bromodichloromethane	0.630	0.635	0.200	-0.9	25.0
1,2-Dichloropropane	0.349	0.341		2.4	
cis-1,3-Dichloropropene	0.522	0.518	0.200	0.8	25.0
Trichloroethene	0.432	0.441	0.300	-2.1	25.0
Dibromochloromethane	0.579	0.581	0.100	-0.3	25.0
1,1,2-Trichloroethane	0.305	0.290	0.100	4.9	25.0
Benzene	0.838	0.838	0.500	0.0	25.0
trans-1,3-Dichloropropene	0.432	0.423	0.100	2.2	25.0
Bromoform	0.436	0.425	0.100	2.5	25.0
4-Methyl-2-pentanone	0.115	0.099		13.9	
2-Hexanone	0.167	0.139		16.9	
Tetrachloroethene	0.448	0.455	0.200	-1.6	25.0
1,1,2,2-Tetrachloroethane	0.578	0.534	0.500	7.6	25.0
Toluene	1.086	1.081	0.400	0.4	25.0
Chlorobenzene	0.943	0.938	0.500	0.5	25.0
Ethylbenzene	0.450	0.455	0.100	-1.1	25.0
Styrene	0.951	0.994	0.300	-4.5	25.0
Xylene (total)	0.571	0.589	0.300	-3.2	25.0
Dichlorodifluoromethane	2.297	2.062		10.2	
Trichlorofluoromethane	2.284	2.593		-13.6	
Acrolein	0.137	0.128		6.7	

All other compounds must meet a minimum RRF of 0.010.

hgk 12/14/93

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Instrument ID: HP1 Calibration Date: 12/02/93 Time: 1019

Lab File ID: 0201002.D Init. Calibration Date(s): 11/18/93

Heated Purge: (Y/N) N Init. Calibration Times: 0730 1011

GC Column:Rtx-502.2 ID: 0.53 (mm)

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Iodomethane	2.826	3.166		-12.0	
Acrylonitrile	0.273	0.234		14.2	
Vinyl_acetate	0.351	0.323		7.7	
Dibromomethane	0.351	0.341		2.9	
2-Chloroethyl_vinyl_ether	0.187	0.173		7.6	
Ethyl_methacrylate	0.451	0.408		9.6	
1,2,3-Trichloropropane	0.366	0.328		10.4	
1,4-Dichloro-2-butene	0.134	0.118		12.0	
1,1,2-trichloro-1,2,2-trifl	2.713	3.020		-11.3	
Tetrahydrofuran	0.107	0.092		13.4	
Isobutyl_alcohol	0.083	0.069		16.0	
1-Butanol	0.027	0.023		16.6	
1,4-Dioxane	0.005	0.005		4.9	
n-Butyl_acetate	0.524	0.434		17.1	
Cyclohexanone	0.011	0.009		15.3	
1,3-Dichlorobenzene	0.872	0.908		-4.1	
1,4-Dichlorobenzene	0.942	0.978		-3.9	
1,2-Dichlorobenzene	0.824	0.847		-2.8	
Toluene-d8	1.042	1.061		-1.9	
Bromofluorobenzene	0.869	0.884	0.200	-1.7	25.0
1,2-Dichloroethane-d4	1.360	1.341		1.4	

All other compounds must meet a minimum RRF of 0.010.

FORM VII VOA 3/90

NGK 12/14/93

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

ab Name: CH2M HILL/MGM Contract: _____

ab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

ab File ID (Standard): CSVO030408 Date Analyzed: 11/23/93

nstrument ID: 4500 Time Analyzed: 2210

C Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	33617	12.14	142715	13.85	126198	19.17
	UPPER LIMIT	67234	12.64	285430	14.35	252396	19.67
	LOWER LIMIT	16808	11.64	71358	13.35	63099	18.67
	EPA SAMPLE NO.						
01	DFSPDUP	29857	12.07	127328	13.82	106749	19.19
02	DFSPMW13	32109	12.15	130991	13.87	114221	19.19
03	DFSPMW20	30257	12.25	128967	14.00	107944	19.24
04	DFSPMW21	29783	12.50	127877	14.09	106898	19.25
05	DFSPMW21D	31443	12.15	138135	13.85	113906	19.19
06	DFSPMW22	32681	12.19	142956	13.87	120218	19.19
07	DFSPMW23	31555	12.34	131697	14.00	111836	19.24
08	DFSPMW24	29401	12.27	123203	13.95	103565	19.20
09	DFSPMW25	30312	12.19	128294	13.89	107161	19.19
10	MW18	30837	12.07	134983	13.80	111027	19.15
11	VBLKW	30909	12.19	136569	13.87	113786	19.19

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA 3/90

mel 12/9/93

000088

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 90212 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSVO030428 Date Analyzed: 11/24/93

Instrument ID: 4500 Time Analyzed: 1058

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	31604	12.07	139395	13.79	117830	19.15
	UPPER LIMIT	63208	12.57	278790	14.29	235660	19.65
	LOWER LIMIT	15802	11.57	69698	13.29	58915	18.65
	EPA SAMPLE NO.						
01	DFSPEB	30803	12.09	132524	13.82	113006	19.19
02	VBLKW_2	31166	12.05	136767	13.79	113419	19.14

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA 3/90

12/9/93

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/LGM Contract: 90212

Lab Code: Case No.: SAS No.: SDG No.: 90212

Lab File ID (Standard): 0201002.D Date Analyzed: 12/02/93

Instrument ID: HP1 Time Analyzed: 1019

GC Column:Rtx-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	797792	5.19	3807218	7.07	3273626	12.84
	UPPER LIMIT	1595584	5.69	7614436	7.57	6547252	13.34
	LOWER LIMIT	398896	4.69	1903609	6.57	1636813	12.34
	EPA SAMPLE No.						
01	VBLKW3	637296	5.21	2793629	7.09	2417707	12.86
02	DFSPMW20R	812415	5.24	3412541	7.12	2976108	12.89
03							
04							
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

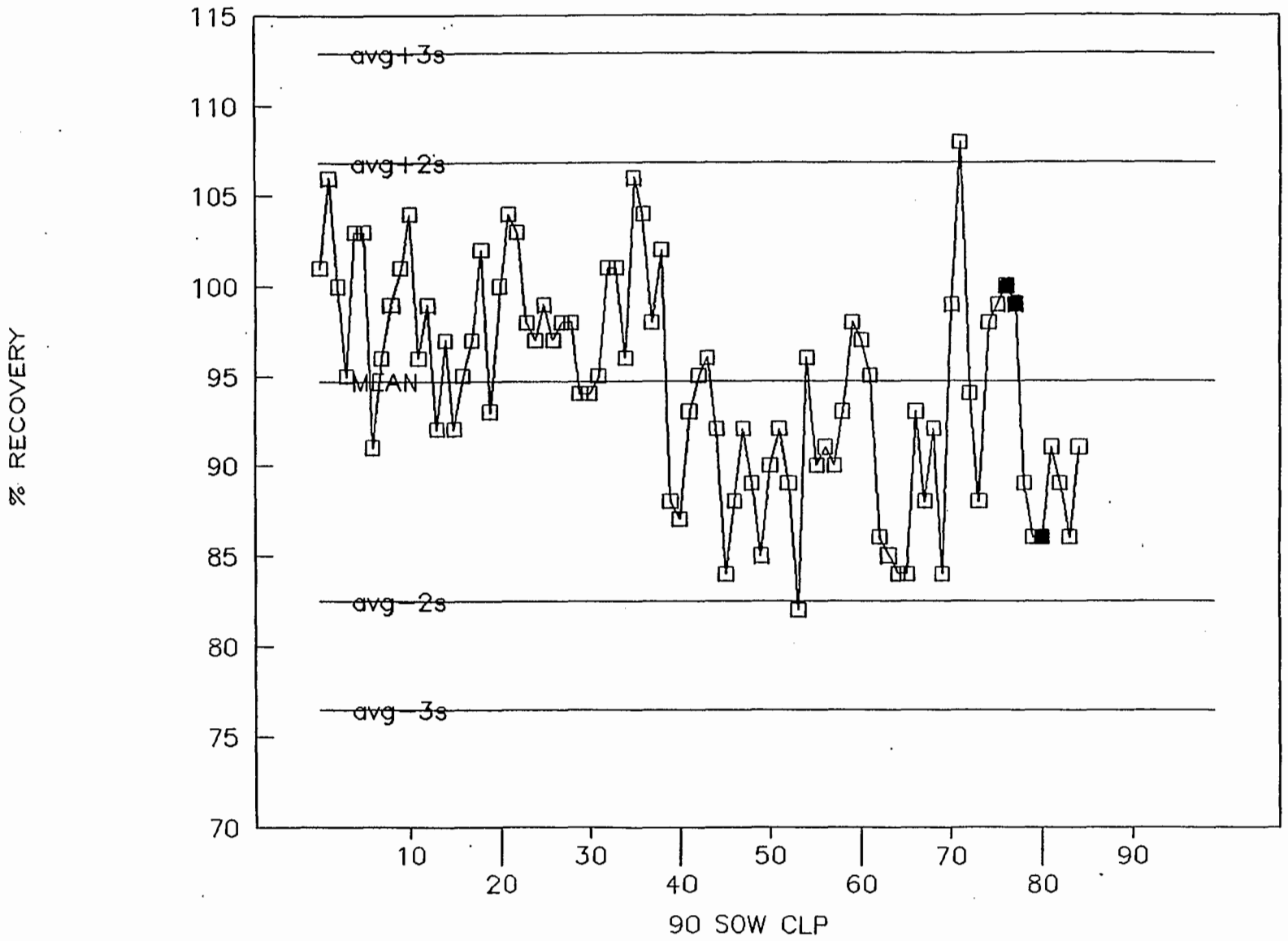
Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA 3/90

WQC 12/14/93

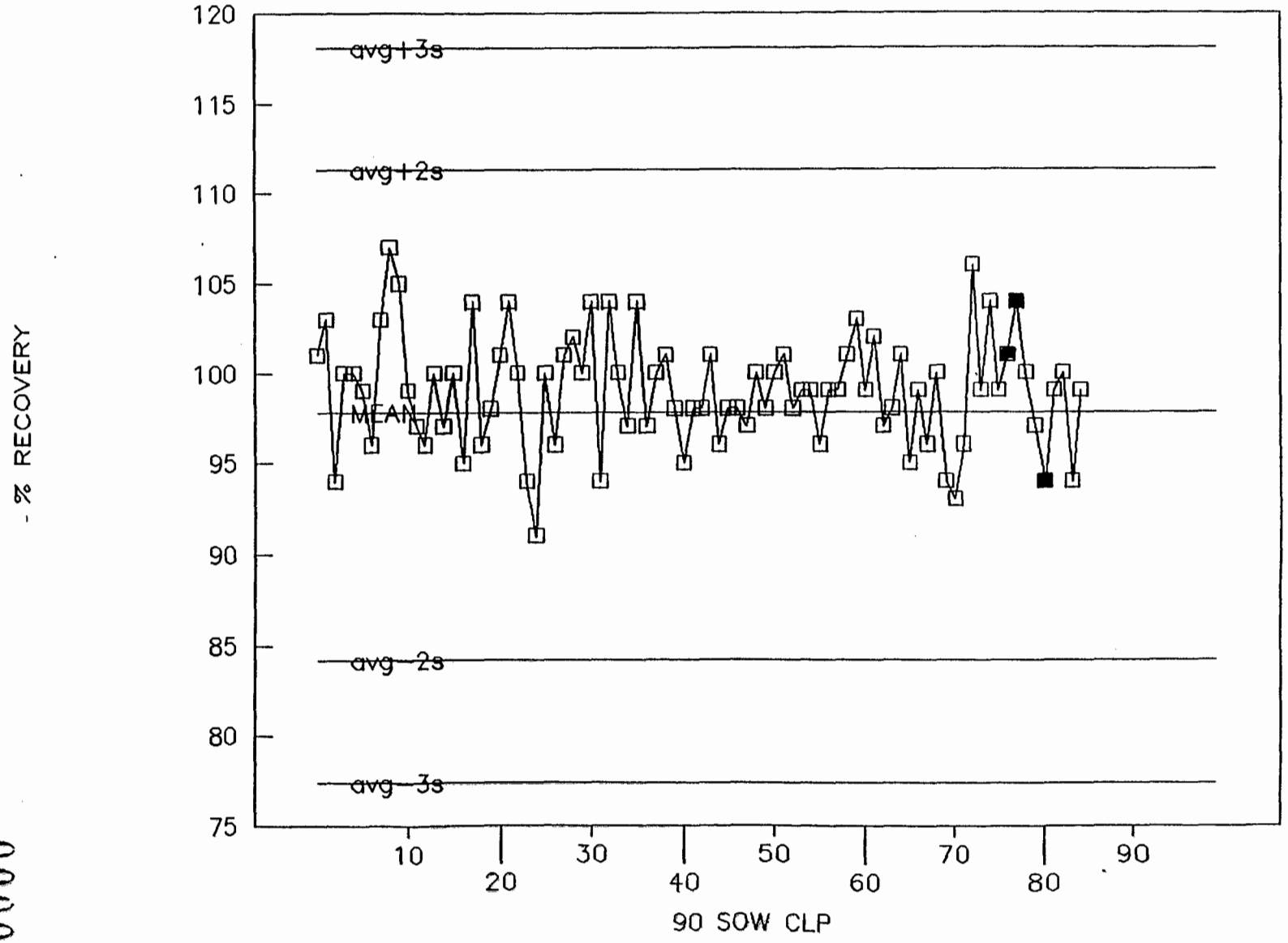
SURROGATE RECOVERY – WATER VOLATILES

1,2-DICHLOROETHANE-d4



SURROGATE RECOVERY – WATER VOLATILES

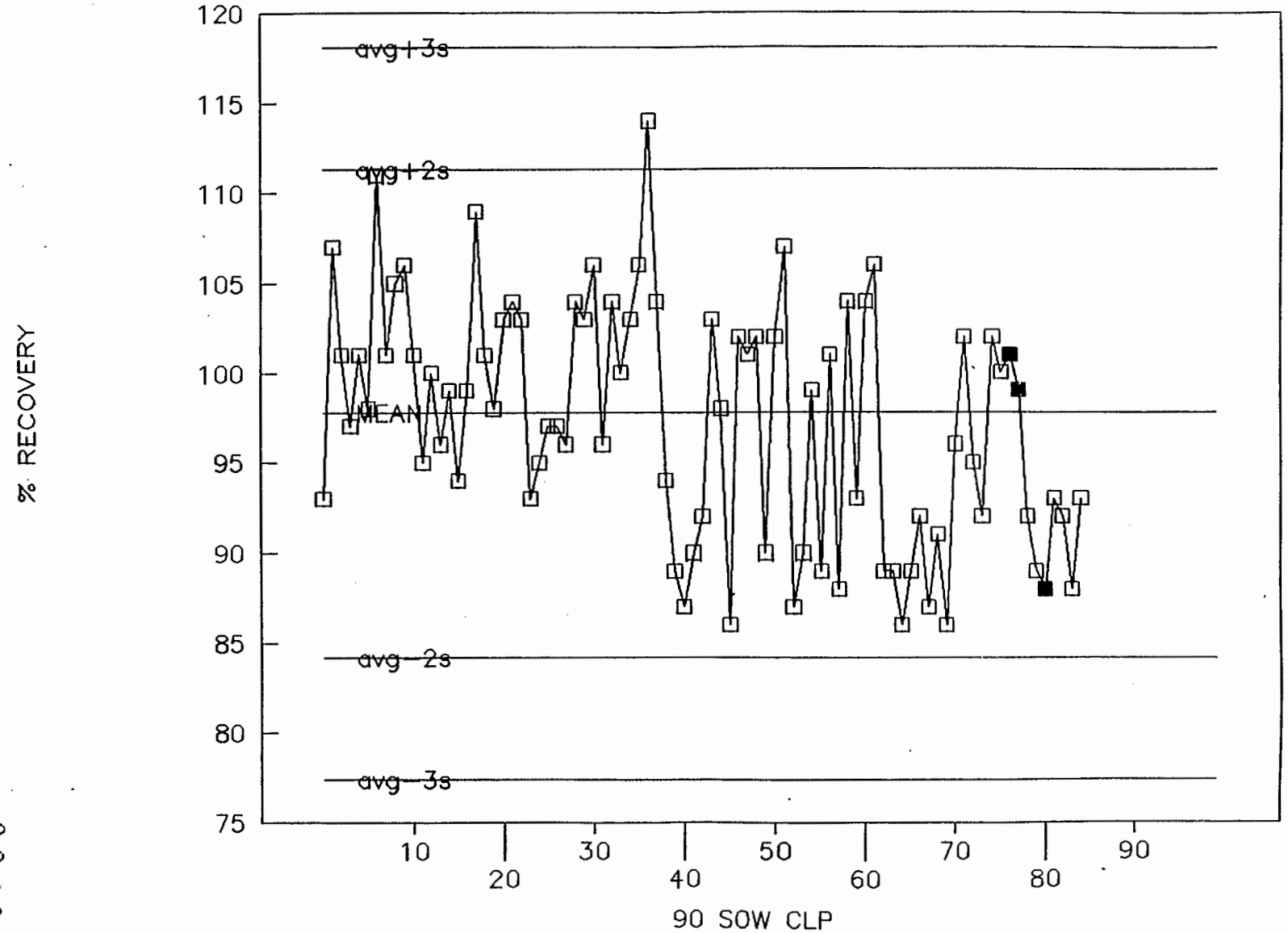
TOLUENE–D8



000092

SURROGATE RECOVERY – WATER VOLATILES

BROMOFLUOROBENZENE



000093

WATER 90 SOW CLP VOLATILES

	SAMPLE #	DATE	DCE SURROGATE % REC.	TOL SURROGATE % REC.	BFB SURROGATE % REC.	DCE ACCEPT. ?	DCE OUTLIER ?	TOL ACCEPT. ?	TOL OUTLIER ?	BFB ACCEPT. ?	BFB OUTLIER ?	COMMENTS
1	X10082B1	10/08/92	101.0	101.0	93.0	YES	ERR	YES	ERR	YES	ERR	
2	X10092B2	10/09/92	106.0	103.0	107.0	YES	ERR	YES	ERR	YES	ERR	
3	X10142B1	10/14/92	100.0	94.0	101.0	YES	NO	YES	NO	YES	NO	
4	X10172B4	10/18/92	95.0	100.0	97.0	YES	NO	YES	NO	YES	NO	
5	K10202B1	10/20/92	103.0	100.0	101.0	YES	NO	YES	NO	YES	NO	
6	L10212B1	10/21/92	103.0	99.0	98.0	YES	NO	YES	NO	YES	NO	
7	X10262B1	10/26/92	91.0	96.0	111.0	YES	NO	YES	NO	YES	NO	
8	X10272B1	10/27/92	96.0	103.0	101.0	YES	NO	YES	NO	YES	NO	
9	X10282B1	10/28/92	99.0	107.0	105.0	YES	NO	NO	NO	YES	NO	
10	X10292B2	10/29/92	101.0	105.0	106.0	YES	NO	NO	NO	YES	NO	
11	K11022B3	11/02/92	104.0	99.0	101.0	YES	NO	YES	NO	YES	NO	
12	K11032B2	11/03/92	96.0	97.0	95.0	YES	NO	YES	NO	YES	NO	
13	K11042B1	11/04/92	99.0	96.0	100.0	YES	NO	YES	NO	YES	NO	
14	X11042B1	11/04/92	92.0	100.0	96.0	YES	NO	YES	NO	YES	NO	
15	K11052B2	11/05/92	97.0	97.0	99.0	YES	NO	YES	NO	YES	NO	
16	X11052B1	11/05/92	92.0	100.0	94.0	YES	NO	YES	NO	YES	NO	
17	X11082B1	11/08/92	95.0	95.0	99.0	YES	NO	YES	NO	YES	NO	
18	X11082B2	11/08/92	97.0	104.0	109.0	YES	NO	NO	NO	NO	NO	
19	X11092B1	11/09/92	102.0	96.0	101.0	YES	NO	YES	NO	YES	NO	
20	X11162B1	11/16/92	93.0	98.0	98.0	YES	NO	YES	NO	YES	NO	
21	X11172B1	11/17/92	100.0	101.0	103.0	YES	NO	YES	NO	YES	NO	
22	X11202B1	11/20/92	104.0	104.0	104.0	YES	NO	YES	NO	YES	NO	
23	X11202B2	11/20/92	103.0	100.0	103.0	YES	NO	YES	NO	YES	NO	
24	X11212B1	11/21/92	98.0	94.0	93.0	YES	NO	YES	NO	YES	NO	
25	X11252B1	11/25/92	97.0	91.0	95.0	YES	NO	NO	NO	YES	NO	
26	X12012B1	12/01/92	99.0	100.0	97.0	YES	NO	YES	NO	YES	NO	
27	X12022B3	12/02/92	97.0	96.0	97.0	YES	NO	YES	NO	YES	NO	
28	X12032B1	12/03/92	98.0	101.0	96.0	YES	NO	YES	NO	YES	NO	
29	X12092B1	12/09/92	98.0	102.0	104.0	YES	NO	YES	NO	YES	NO	
30	X12092B2	12/09/92	94.0	100.0	103.0	YES	NO	YES	NO	YES	NO	
31	X12102B1	12/10/92	94.0	104.0	106.0	YES	NO	YES	NO	YES	NO	
32	X12242B1	12/24/92	95.0	94.0	96.0	YES	NO	YES	NO	YES	NO	
33	X12262B2	12/26/92	101.0	104.0	104.0	YES	NO	YES	NO	YES	NO	
34	X01073B1	01/07/93	101.0	100.0	100.0	YES	NO	YES	NO	YES	NO	
35	X01083B2	01/08/93	96.0	97.0	103.0	YES	NO	YES	NO	YES	NO	
36	X01213B1	01/21/93	106.0	104.0	106.0	NO	NO	YES	NO	YES	NO	
37	X01273B1	01/27/93	104.0	97.0	114.0	YES	NO	YES	NO	NO	NO	
38	X01293B1	01/29/93	98.0	100.0	104.0	YES	NO	YES	NO	YES	NO	
39	X02253B2	02/25/93	102.0	101.0	94.0	YES	NO	YES	NO	YES	NO	
40	X05033B2	05/03/93	88.0	98.0	89.0	NO	NO	YES	NO	NO	NO	
41	X05083B2	05/08/93	87.0	95.0	87.0	NO	NO	YES	NO	NO	NO	
42	X05113B1	05/11/93	93.0	98.0	90.0	YES	NO	YES	NO	YES	NO	
43	X05113B3	05/11/93	95.0	98.0	92.0	YES	NO	YES	NO	YES	NO	
44	X05183B1	05/18/93	96.0	101.0	103.0	YES	NO	YES	NO	YES	NO	
45	X08023B1	08/02/93	92.0	96.0	98.0	YES	NO	YES	NO	YES	NO	
46	X08103B1	08/10/93	84.0	98.0	86.0	NO	NO	YES	NO	NO	NO	
47	X08183B1	08/18/93	88.0	98.0	102.0	YES	NO	YES	NO	YES	NO	
48	X08203B1	08/20/93	92.0	97.0	101.0	YES	NO	YES	NO	YES	NO	
49	X08203B1	08/23/93	89.0	100.0	102.0	YES	NO	YES	NO	YES	NO	
50	X08233B2	08/23/93	85.0	98.0	90.0	NO	NO	YES	NO	YES	NO	
51	X08243B1	08/24/93	90.0	100.0	102.0	YES	NO	YES	NO	YES	NO	
52	X08253B1	08/25/93	92.0	101.0	107.0	YES	NO	YES	NO	YES	NO	
53	X09013B2	09/01/93	89.0	98.0	87.0	YES	NO	YES	NO	NO	NO	
54	X09023B1	09/02/93	82.0	99.0	90.0	NO	NO	YES	NO	YES	NO	
55	X09073B1	09/07/93	96.0	99.0	99.0	YES	NO	YES	NO	YES	NO	
56	X09073B1	09/07/93	90.0	96.0	89.0	YES	NO	YES	NO	YES	NO	
57	X09083B1	09/08/93	91.0	99.0	101.0	YES	NO	YES	NO	YES	NO	
58	X09093B1	09/09/93	90.0	99.0	88.0	YES	NO	YES	NO	YES	NO	
59	X09093B1	09/09/93	93.0	101.0	104.0	YES	NO	YES	NO	YES	NO	
60	X09103B1	09/10/93	98.0	103.0	93.0	YES	NO	YES	NO	YES	NO	
61	X09233B1	09/23/93	97.0	99.0	104.0	YES	NO	YES	NO	YES	NO	
62	X09243B1	09/24/93	95.0	102.0	106.0	YES	NO	YES	NO	YES	NO	
63	X09273B1	09/27/93	86.0	97.0	89.0	YES	NO	YES	NO	YES	NO	

WATER 90 SOW CLP VOLATILES

	SAMPLE #	DATE	DCE SURROGATE % REC.	TOL SURROGATE % REC.	BFB SURROGATE % REC.	DCE ACCEPT. ?	DCE OUTLIER ?	TOL ACCEPT. ?	TOL OUTLIER ?	BFB ACCEPT. ?	BFB OUTLIER ?	COMMENTS
64	X09293B1	09/29/93	85.0	98.0	89.0	YES	NO	YES	NO	YES	NO	
65	VBLKWG	09/29/93	84.0	101.0	86.0	NO	NO	YES	NO	NO	NO	
66	X10043B2	10/05/93	84.0	95.0	89.0	YES	NO	YES	NO	YES	NO	
67	X10213B1	10/22/93	93.0	99.0	92.0	YES	NO	YES	NO	YES	NO	
68	X10283B1	10/28/93	88.0	96.0	87.0	YES	NO	YES	NO	YES	NO	
69	X10283B2	10/28/93	92.0	100.0	91.0	YES	NO	YES	NO	YES	NO	
70	X11083B1	11/08/93	84.0	94.0	86.0	YES	NO	YES	NO	YES	NO	
71	X11103B3	11/10/93	99.0	93.0	96.0	YES	NO	YES	NO	YES	NO	
72	X11113B1	11/11/93	108.0	96.0	102.0	NO	NO	YES	NO	YES	NO	
73	X11163B2	11/16/93	94.0	106.0	95.0	YES	NO	NO	NO	YES	NO	
74	X11163B2	11/16/93	88.0	99.0	92.0	YES	NO	YES	NO	YES	NO	
75	X11223B1	11/22/93	98.0	104.0	102.0	YES	NO	YES	NO	YES	NO	
76	X11233B3	11/23/93	99.0	99.0	100.0	YES	NO	YES	NO	YES	NO	
→ 77	X11233B4	11/23/93	100.0	101.0	101.0	YES	NO	YES	NO	YES	NO	
→ 78	X11243B1	11/24/93	99.0	104.0	99.0	YES	NO	YES	NO	YES	NO	
79	X11293B1	11/29/93	89.0	100.0	92.0	YES	NO	YES	NO	YES	NO	
80	X12013B1	12/01/93	86.0	97.0	89.0	YES	NO	YES	NO	YES	NO	
→ 81	X12023B1	12/02/93	86.0	94.0	88.0	YES	NO	YES	NO	YES	NO	
82	X12033B1	12/03/93	91.0	99.0	93.0	YES	NO	YES	NO	YES	NO	
83	X11293B1	11/29/93	89.0	100.0	92.0	YES	NO	YES	NO	YES	NO	
84	X12023B2	12/2/93	86.0	94.0	88.0	YES	NO	YES	NO	YES	NO	
85	X12033B1	12/3/93	91.0	99.0	93.0	YES	NO	YES	NO	YES	NO	
86												
87												
88												
89												
90												
91												
92												
93												
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96												
97												
98												
99												
100												

CH2M HILL

Case Narrative

000096

CASE NARRATIVE
GC/MS SEMIVOLATILE SAMPLES

LABORATORY : CH2M HILL LABORATORIES

CLIENT: ABB Hanahan Phase II

CASE NO. : ABBES

CONTRACT NO.:

LAB REF. NO.: 90212001-90212011

SDG NO.: 90212

I. RECEIPT

A. Date: November 11, 1993

B. SAMPLE INFORMATION

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
90212001	MW18	WATER	11/10/93	11/15/93	11/16/93
90212002	DFSPMW21D	WATER	11/10/93	11/15/93	11/17/93
90212003	DFSPMW21	WATER	11/10/93	11/15/93	11/17/93
90212004	DFSPMW22	WATER	11/10/93	11/15/93	11/17/93
90212005	DFSPMW23	WATER	11/10/93	11/15/93	11/17/93
90212006	DFSPMW24	WATER	11/10/93	11/15/93	11/17/93
90212007	DFSPMW25	WATER	11/10/93	11/15/93	11/17/93
90212008	DFSPMW13	WATER	11/10/93	11/15/93	11/17/93
90212008DL	DFSPMW13DL	WATER	11/10/93	11/15/93	11/17/93
90212009	DFSPMW20	WATER	11/10/93	11/15/93	11/17/93
90212010	DFSPDUP	WATER	11/10/93	11/15/93	11/17/93
90212011	DFSPEB	WATER	11/10/93	11/15/93	11/17/93
BKL15CLPA	SBLK7R	WATER	11/15/93	11/15/93	11/16/93
BKL15CLPA_2	SBLK7V	WATER	11/15/93	11/15/93	11/17/93

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms will not be included.

No other exceptions were encountered.

II. Extraction

A. Holding Times : All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times : All holding times were met.

B. Analytical Exceptions : Please note that sample DFSPMW13 was analyzed at a dilution due to the level of target compounds present. The results of both analyses have been included.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC Limits.

C. Matrix Spike Results : Matrix spike and matrix spike duplicate results have not been supplied with this contract.

V. Please note Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Judith S. Warren 11/24/93

Judith S. Warren Date
Senior Chemist

CH2M HILL

Sample Results

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW18

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y15

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/16/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	6	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	3	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW18

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y15

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/16/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

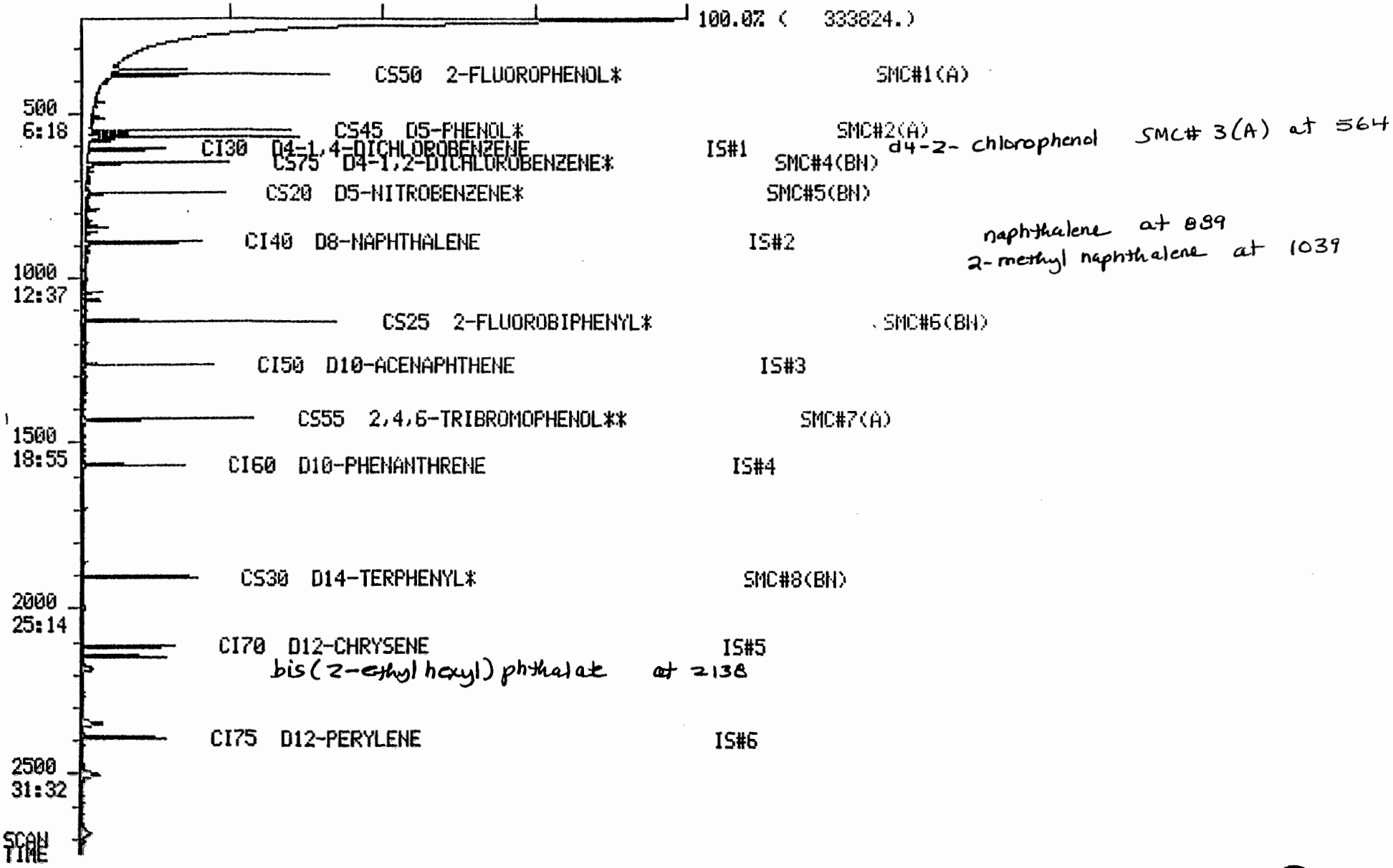
GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	15	
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

JW

DATA FROM FILE: 93L16Y15 SCANS 210 TO 2743 ACQUIRED: 11/16/93 23:47:00
CALI: 93L16Y15 #3
SAMPLE: CLP,ABBES,90212,MW18,LOW,WATER,90212001,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



001102

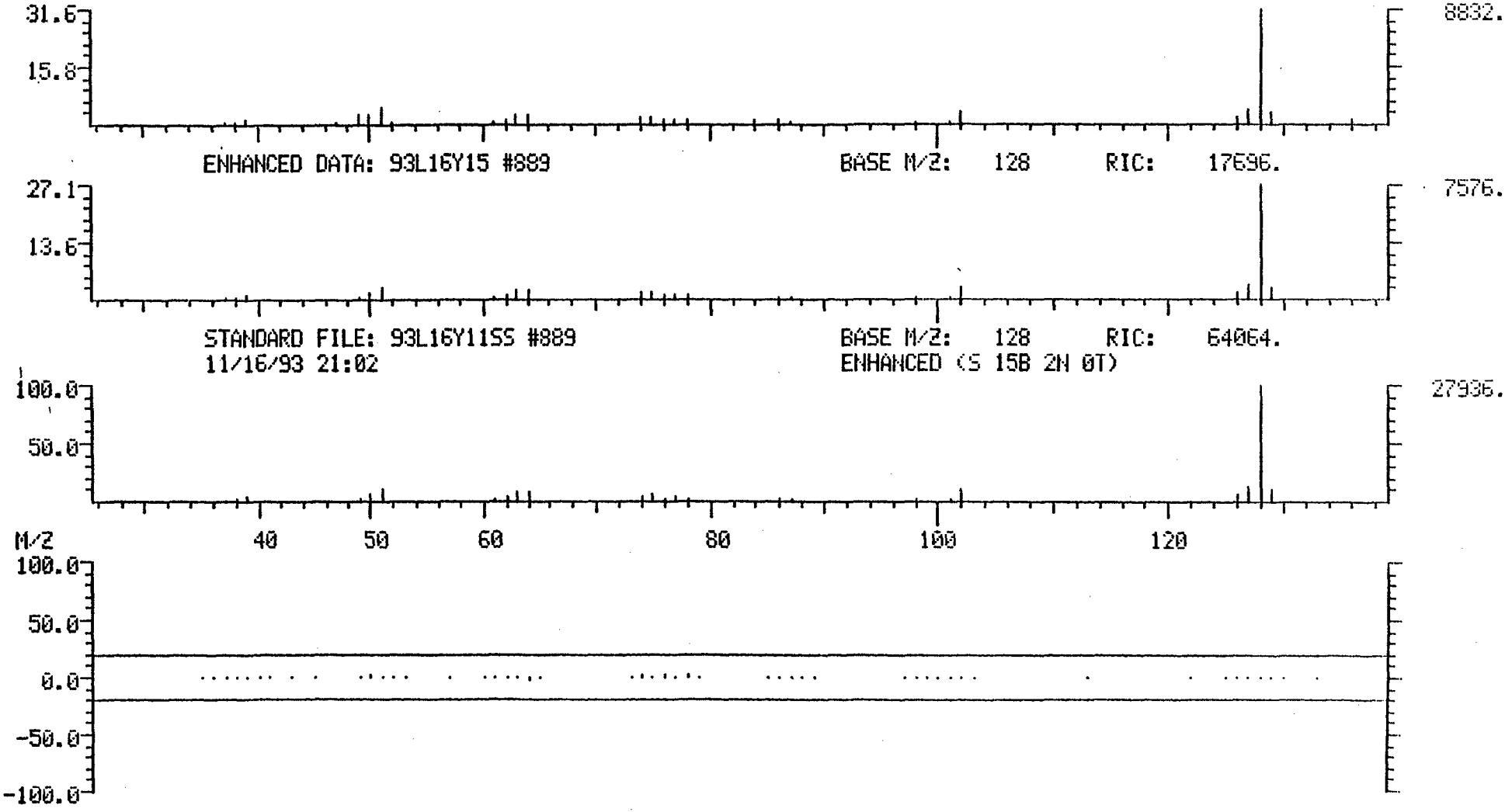
TARGET COMPOUND COMPARISON

ok JW 11/17/93

ok CJ 11/17/93

COMPOUND: C450 NAPHTHALENE*

RAW DATA: 93L16Y15 #889 BASE M/Z: 128 RIC: 23264.
11/16/93 23:47
SAMPLE: CLP,ABBES,90212,MW18,LOW,WATER,90212001,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



000103

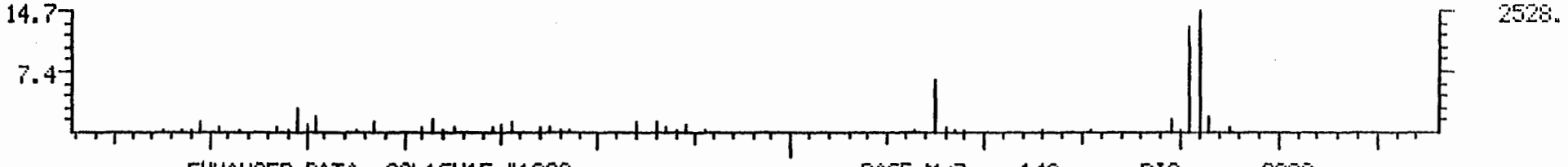
TARGET COMPOUND COMPARISON

ok JRW 11/17/93

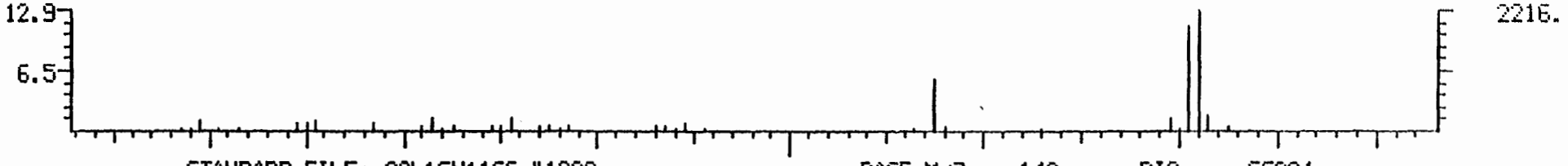
ok cg 11/17/93

COMPOUND: C470 2-METHYLNAPHTHALENE*

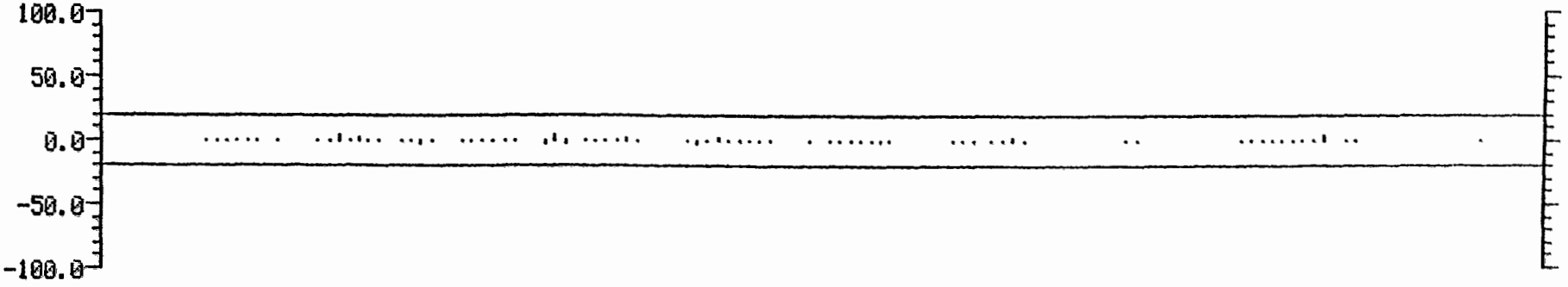
RAW DATA: 93L16Y15 #1039 BASE M/Z: 142 RIC: 11520.
11/16/93 23:47
SAMPLE: CLP,ABBES,90212,MW18,LOW,WATER,90212001,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



ENHANCED DATA: 93L16Y15 #1039 BASE M/Z: 142 RIC: 8800.



STANDARD FILE: 93L16Y11SS #1039 BASE M/Z: 142 RIC: 66304.
11/16/93 21:02 ENHANCED (S 15B 2N 0T)



000101

ok JW 11/17/93

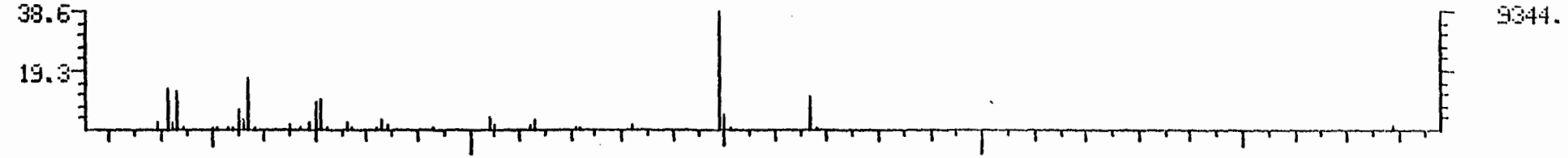
ok. cg 11/18/93

TARGET COMPOUND COMPARISON

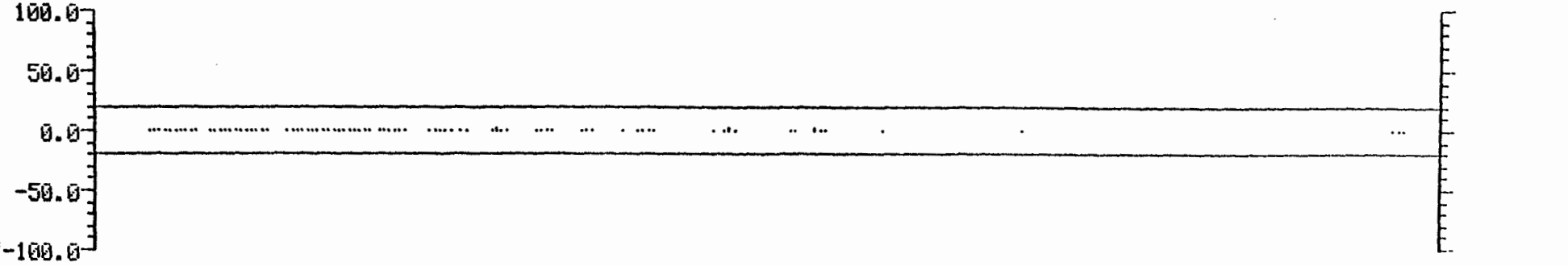
COMPOUND: C745 BIS(2-ETHYLHEXYL)PHTHALATE**

RAW DATA: 93L16Y15 #2138 BASE M/Z: 149 RIC: 47552.
11/16/93 23:47
SAMPLE: CLP,ABBES,90212,MW18,LOW,WATER,90212001,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,

ENHANCED DATA: 93L16Y15 #2138 BASE M/Z: 149 RIC: 41600.



STANDARD FILE: 93L16Y11SS #2138 BASE M/Z: 149 RIC: 103168.
11/16/93 21:02 ENHANCED (S 15B 2N 0T)



000103

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW21D

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212002

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y16

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	3	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW21D

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212002

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y16

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

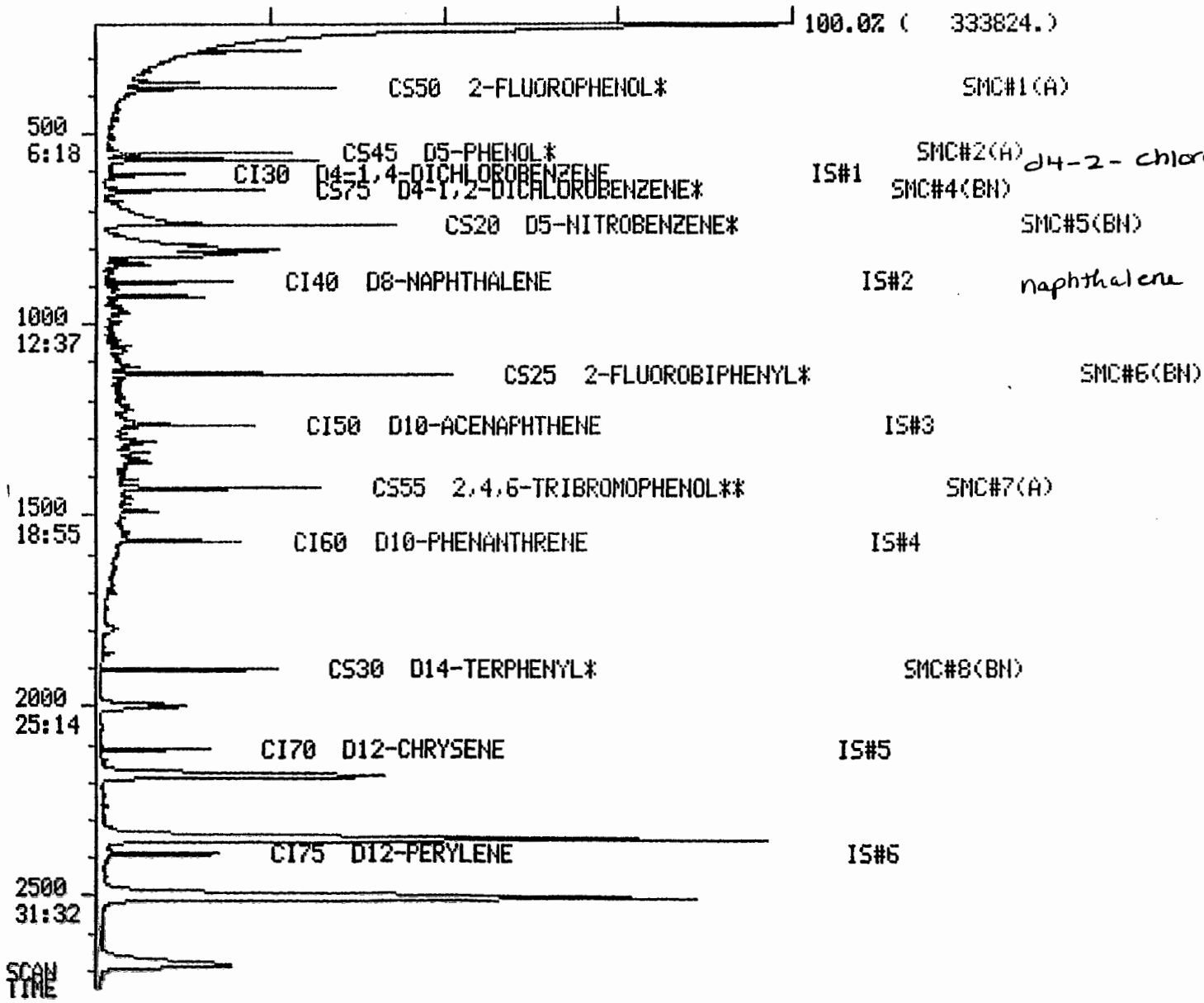
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y16 SCANS 210 TO 2743 ACQUIRED: 11/17/93 0:32:00
CALI: 93L16Y16 #3
SAMPLE: CLP,ABBES,90212,DFSPMW21D,LOW,WATER,90212002,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



d4-2-chloro phenol SMC# 3(A) at 563

naphthalene at 889

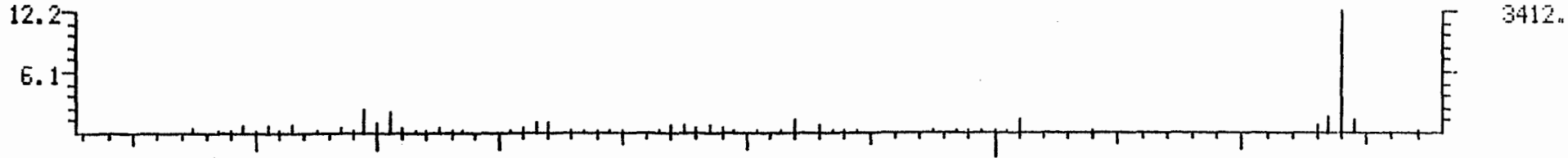
OK 19
11/17/93

TARGET COMPOUND COMPARISON

dc
JKW
11/17/93

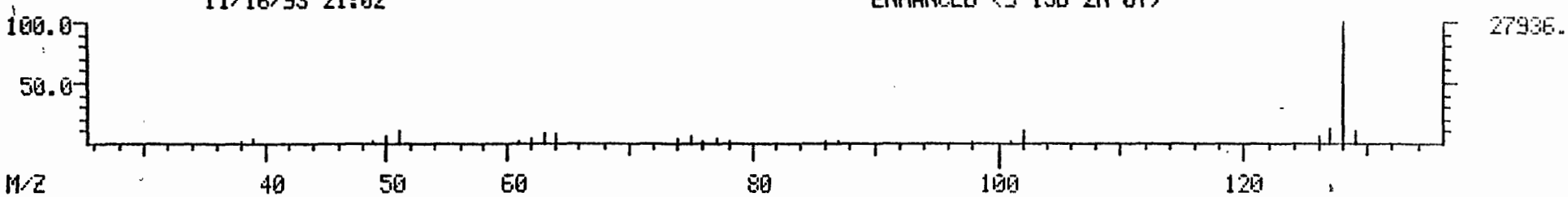
COMPOUND: C450 NAPHTHALENE*

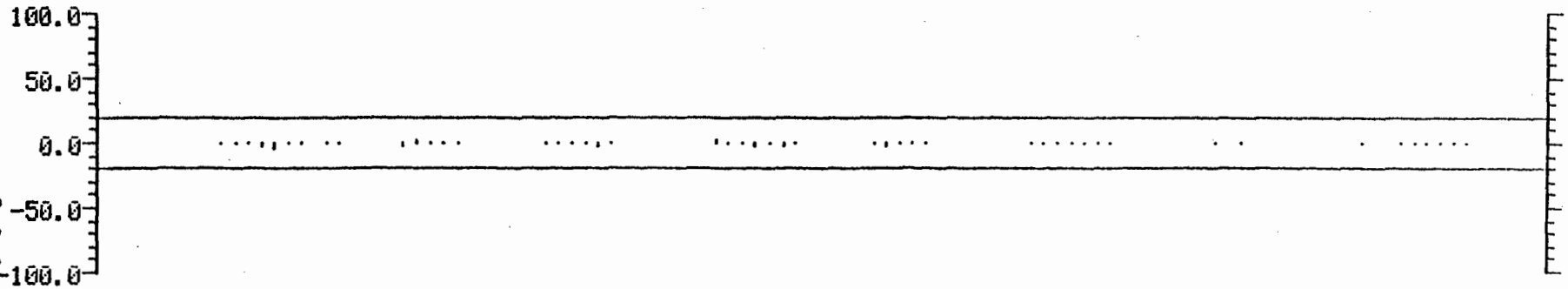
RAW DATA: 93L16Y16 #888 BASE M/Z: 128 RIC: 12848.
11/17/93 0:32
SAMPLE: CLP,ABBES,90212,DFSPMW21D,LOW,WATER,90212002,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



ENHANCED DATA: 93L16Y16 #888 BASE M/Z: 128 RIC: 6296.

STANDARD FILE: 93L16Y11SS #889 BASE M/Z: 128 RIC: 64064.
11/16/93 21:02 ENHANCED (S 15B 2N 0T)





000109

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW21

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212003

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y17

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	68	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	45	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW21

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212003

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y17

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

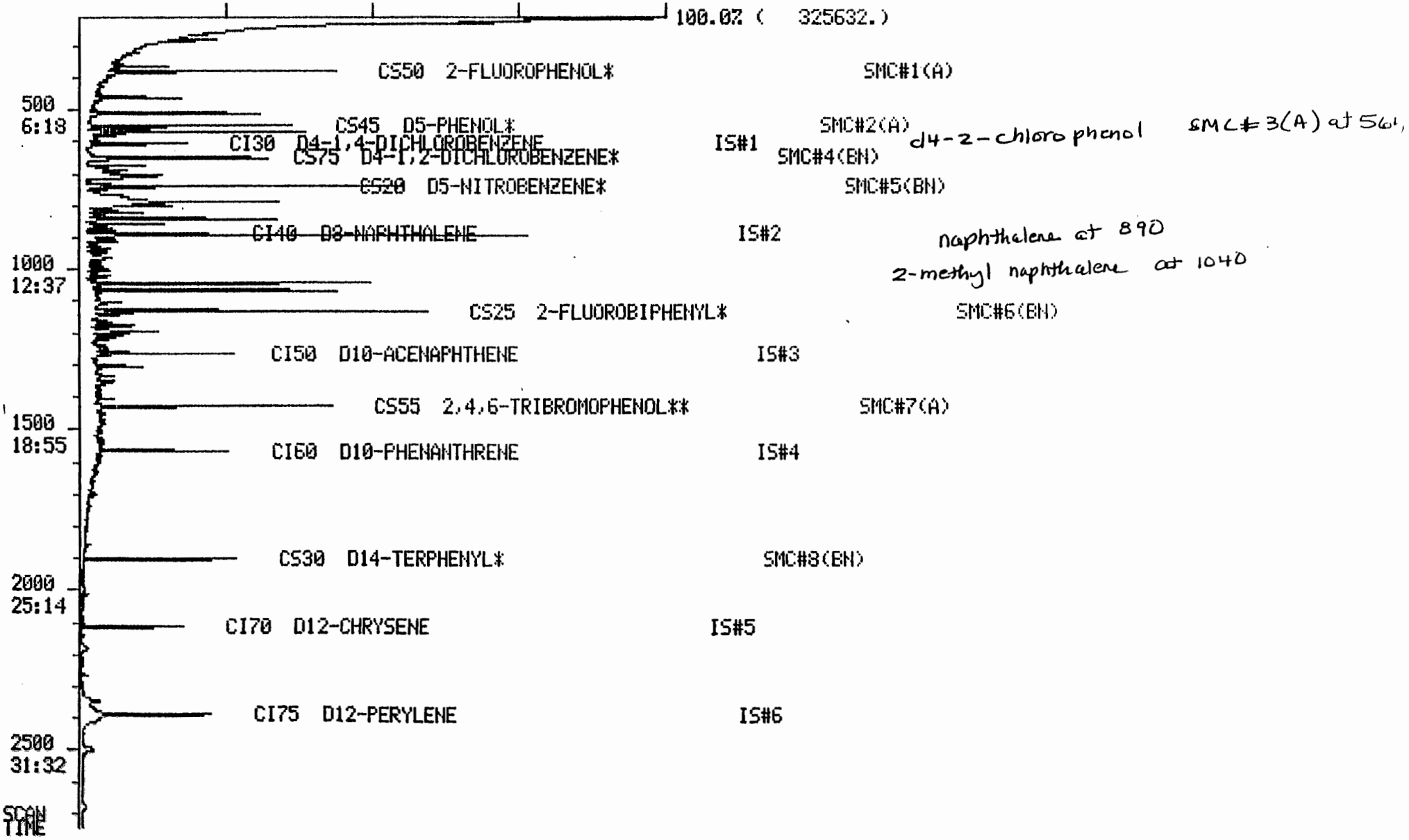
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y17 SCANS 210 TO 2743 ACQUIRED: 11/17/93 1:14:00
CALI: 93L16Y17 #3
SAMPLE: CLP,ABBES,90212,DFSPMW21,LOW,WATER,90212003,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



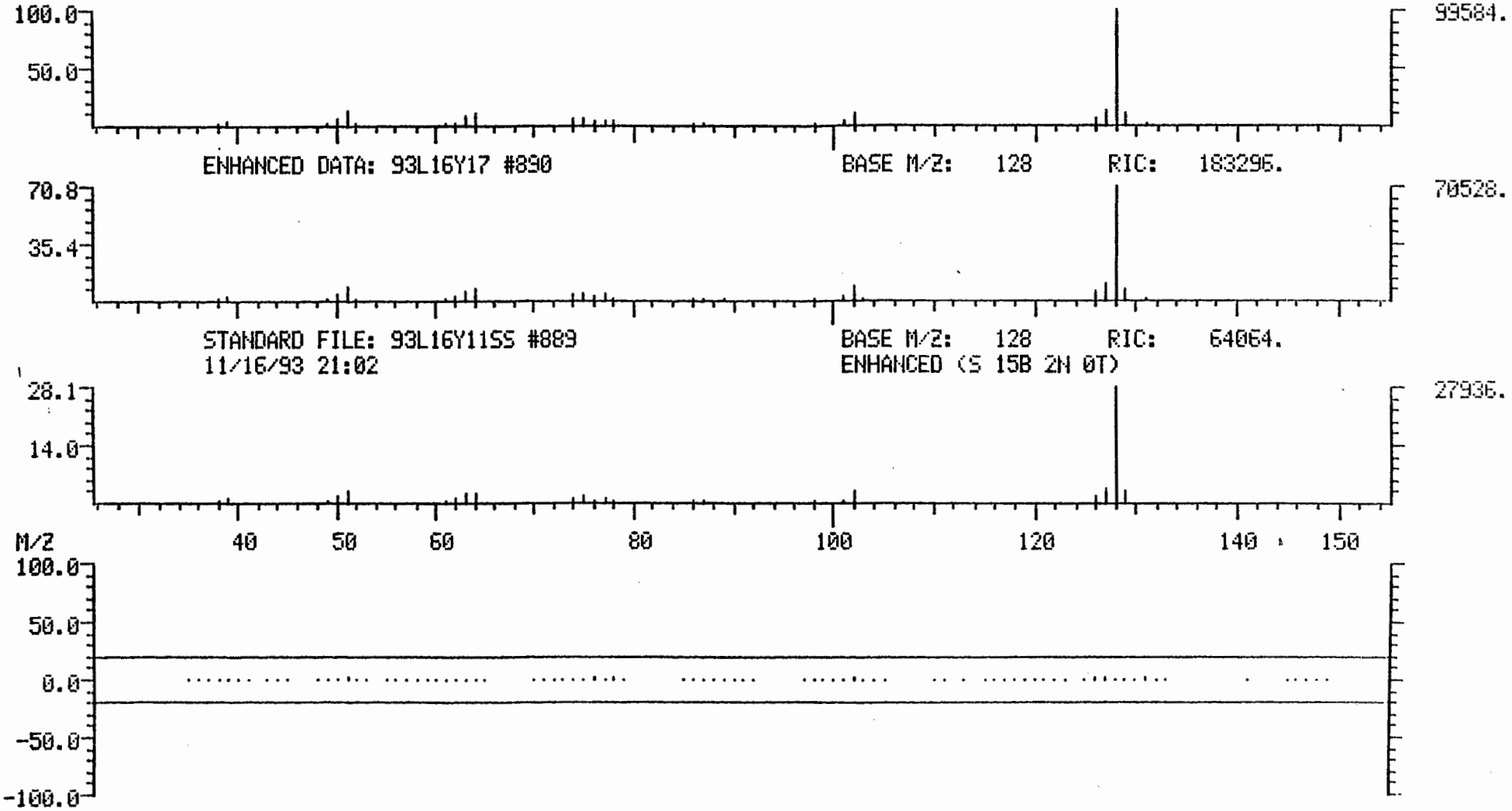
OF 10
11/17/93

TARGET COMPOUND COMPARISON

COMPOUND: C450 NAPHTHALENE*

ok JW 11/17/93

RAW DATA: 93L16Y17 #890 BASE M/Z: 128 RIC: 249344.
11/17/93 1:14
SAMPLE: CLP,ABBES,90212,DFSPMW21,LOW,WATER,90212003,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



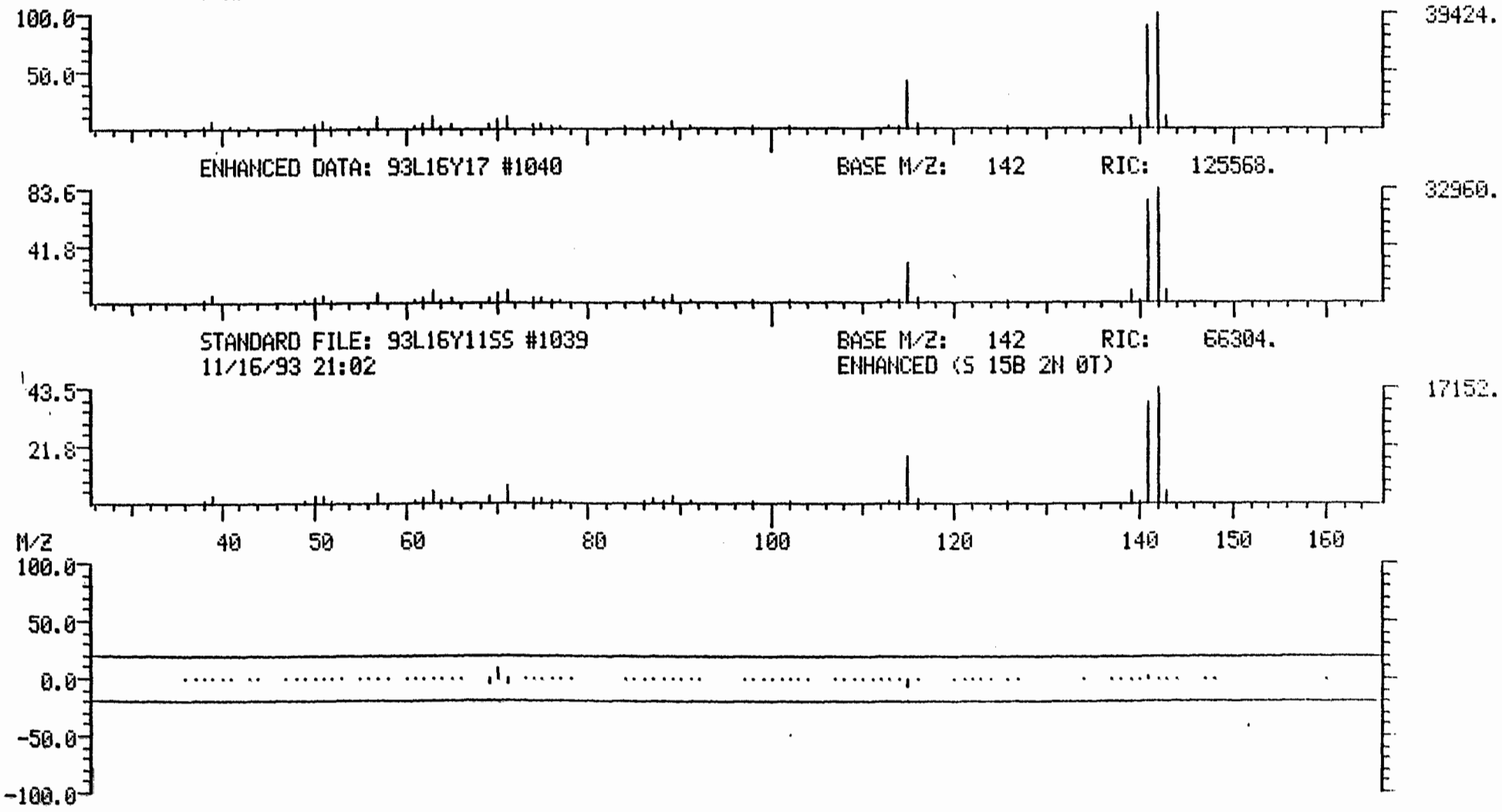
OK cg
11/17/93

TARGET COMPOUND COMPARISON

dc
JKW
11/17/93

COMPOUND: C470 2-METHYLNAPHTHALENE*

RAW DATA: 93L16Y17 #1040 BASE M/Z: 142 RIC: 161280.
11/17/93 1:14
SAMPLE: CLP,ABBES,90212,DFSPMW21,LOW,WATER,90212003,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW22

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212004

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y18

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	4	J
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	5	J
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	36	
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	25	
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

JMW

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW22

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212004

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y18

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

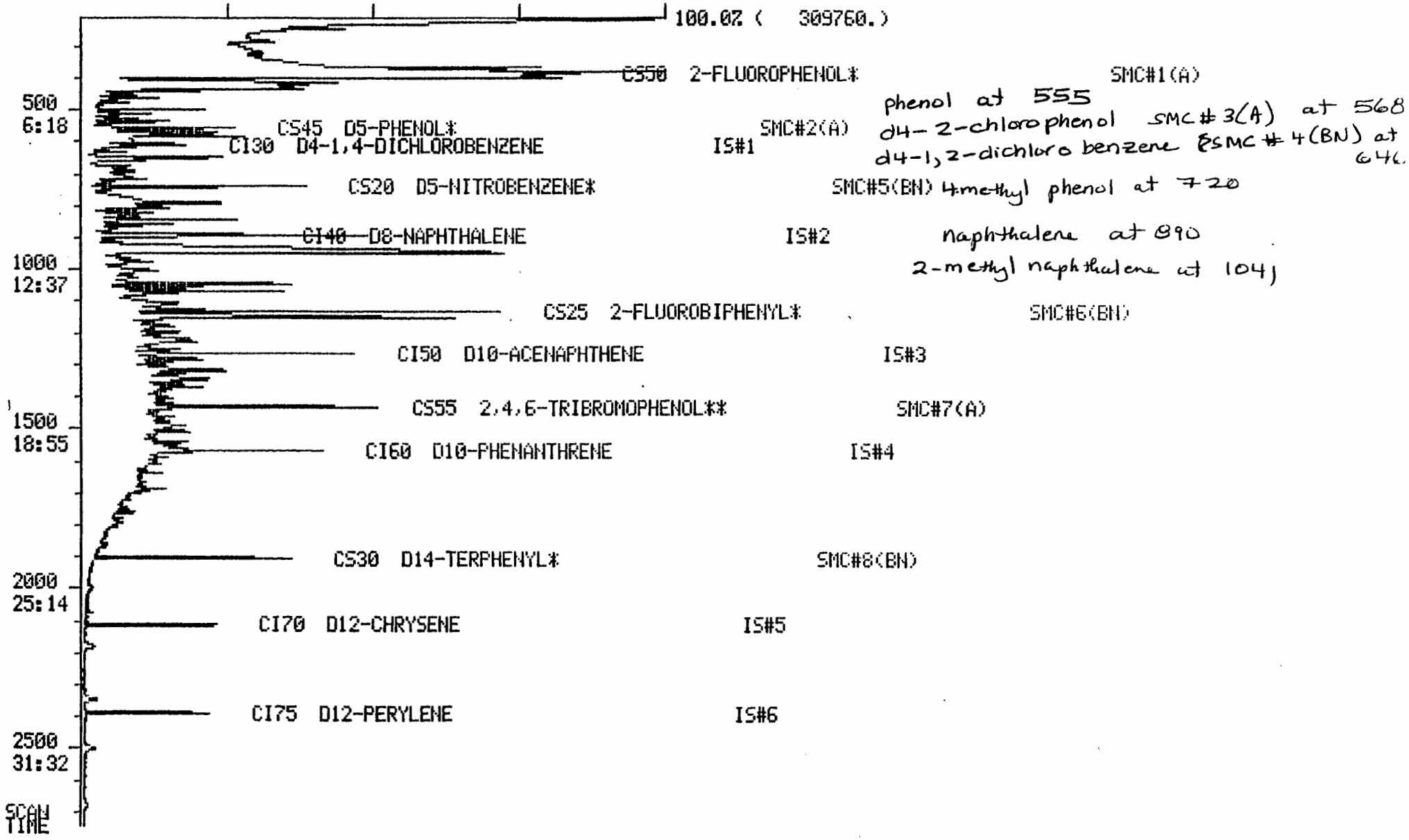
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y18 SCANS 210 TO 2743 ACQUIRED: 11/17/93 1:58:00
CALI: 93L16Y18 #3
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



phenol at 555
d4-2-chlorophenol SMC#3(A) at 568
d4-1,2-dichloro benzene & SMC#4(BN) at 646.
4methyl phenol at 720
naphthalene at 890
2-methyl naphthalene at 1041

000117

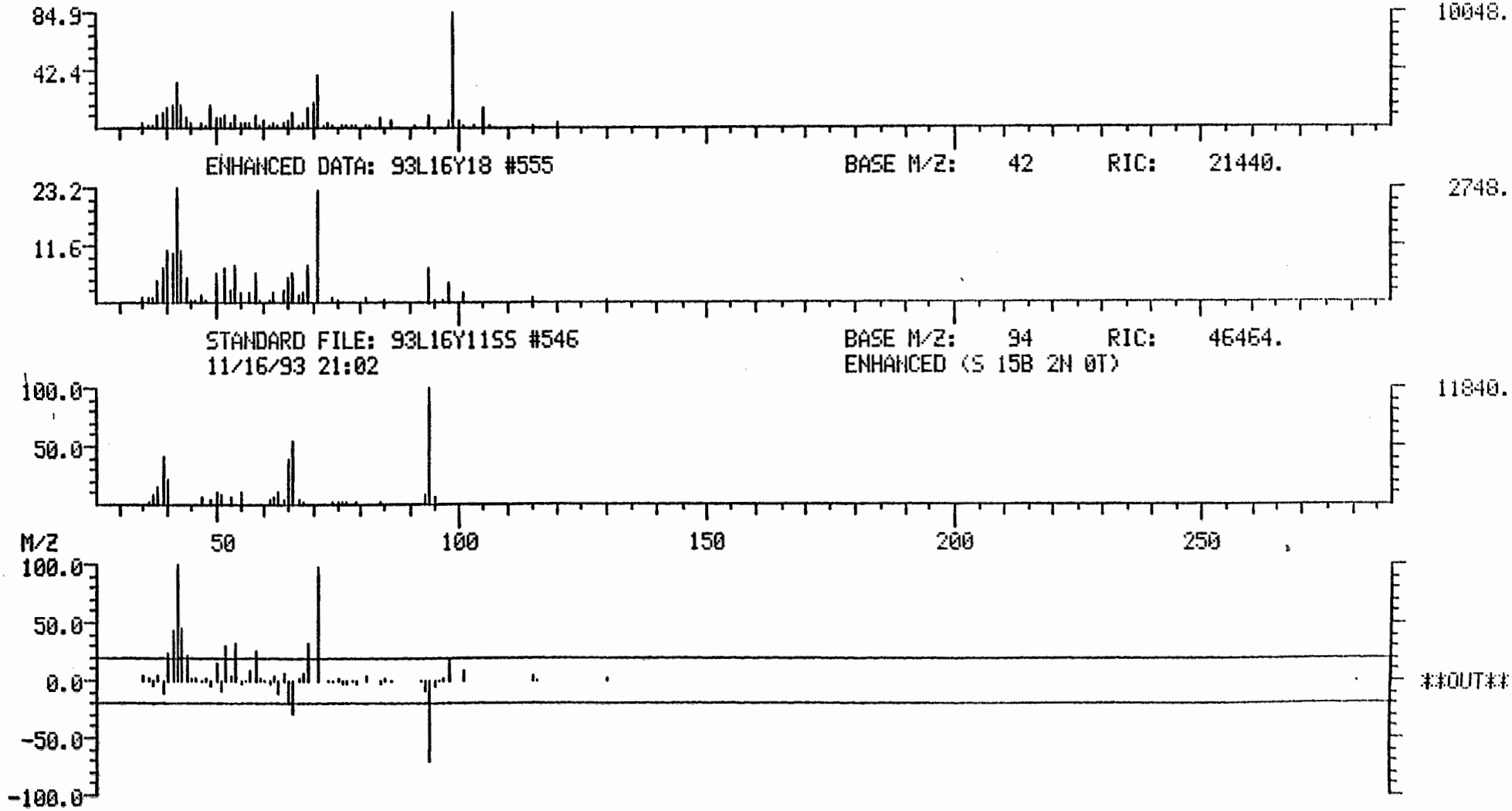
OK 11/17/93

TARGET COMPOUND COMPARISON

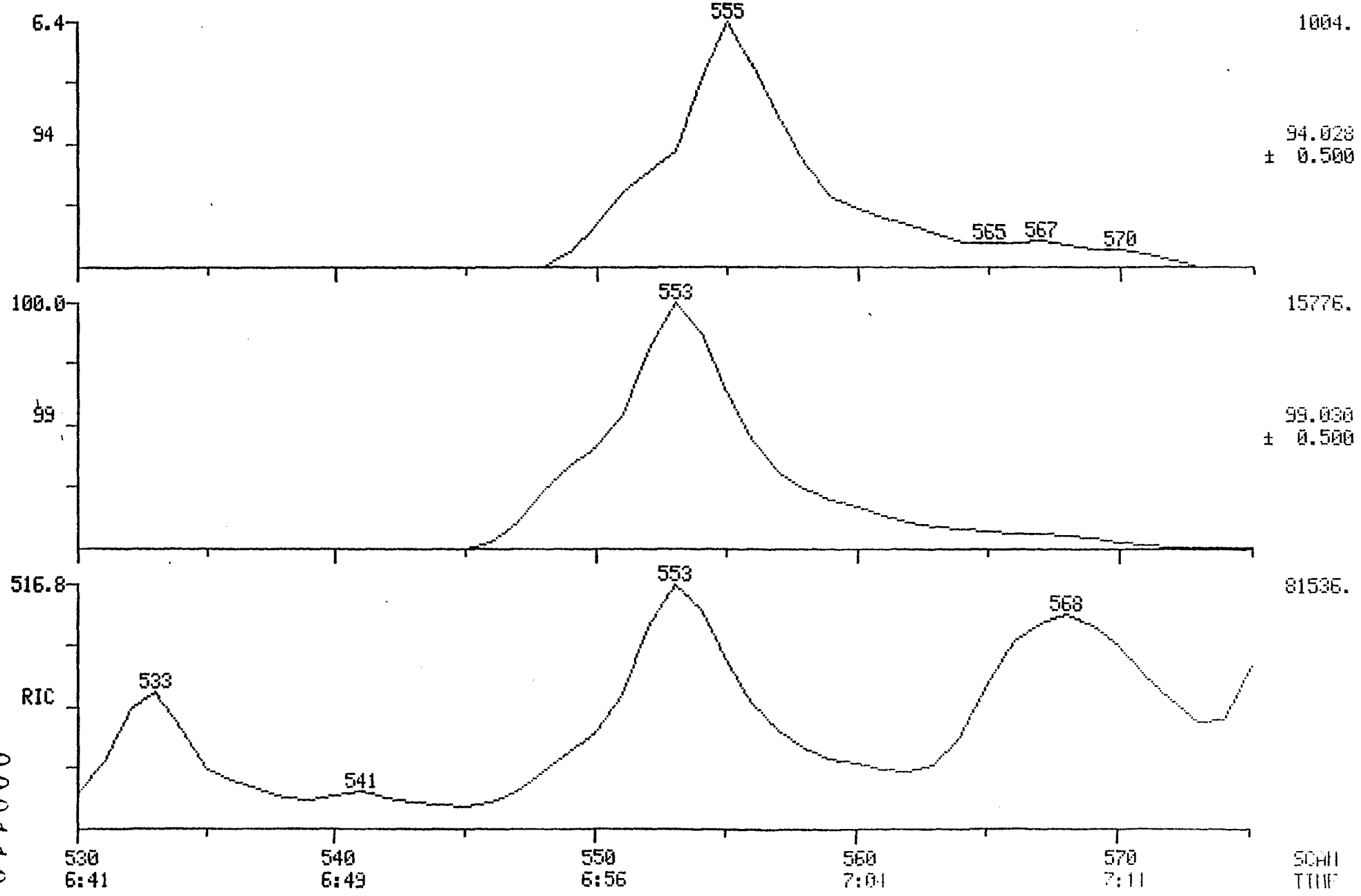
OK JW 11/17/93

COMPOUND: C315 PHENOL*

RAW DATA: 93L16Y18 #555 BASE M/Z: 99 RIC: 56896.
11/17/93 1:58
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



RIC+MASS CHROMATOGRAMS DATA: 93L16Y18 #555 SCANS 530 TO 575
11/17/93 1:58:00 CALI: 93L16Y18 #3
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,
RANGE: G 1,2743 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



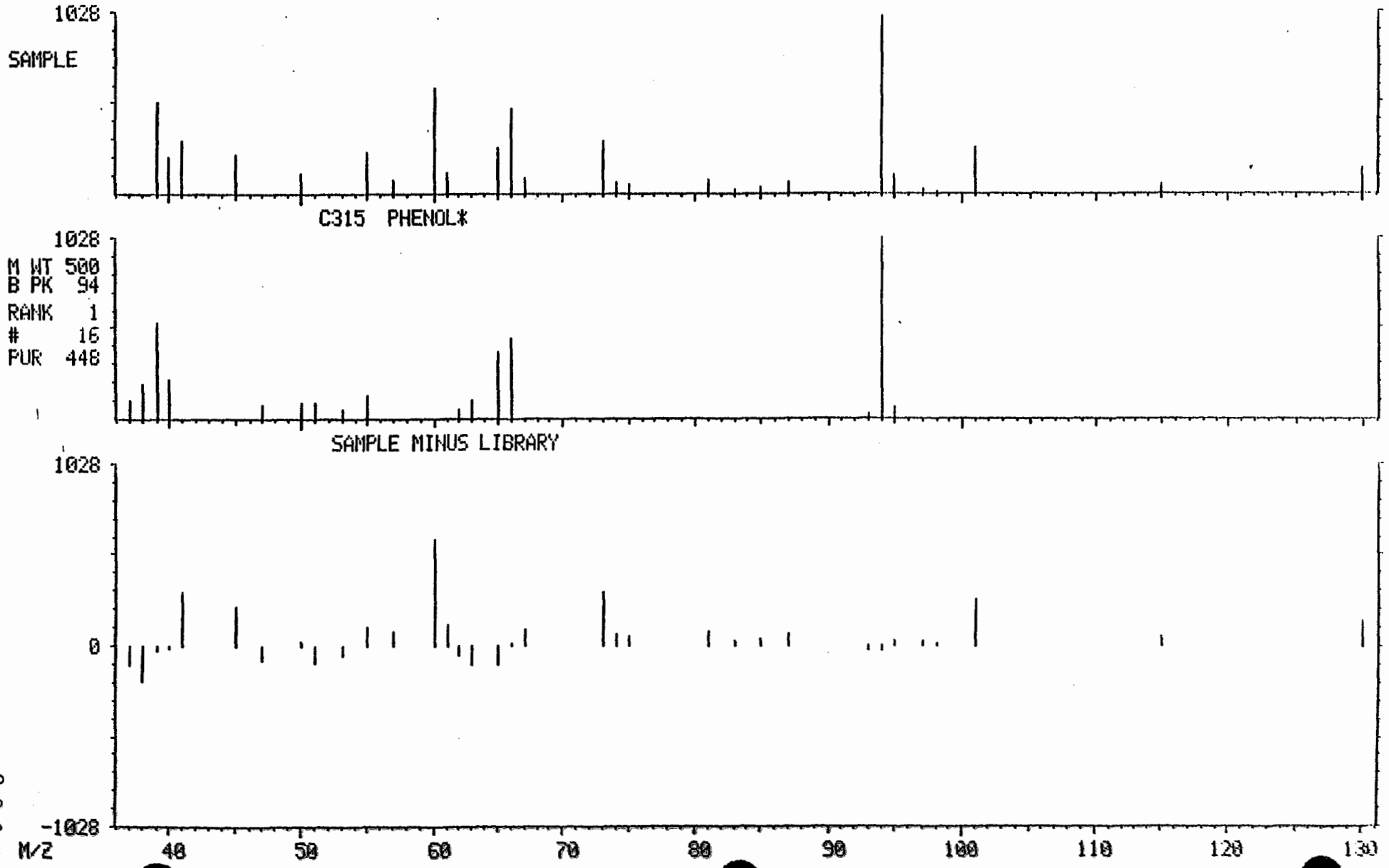
000119

OK 19
11/17/93

MID LIBRARY SEARCH (LIBRARYSC)
11/17/93 1:58:00 + 7:00
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,
555 - # 553 - # 550 TO # 552

DATA: 93L16Y18 # 555
CALI: 93L16Y18 # 3

BASE M/Z: 94
RIC: 3644.



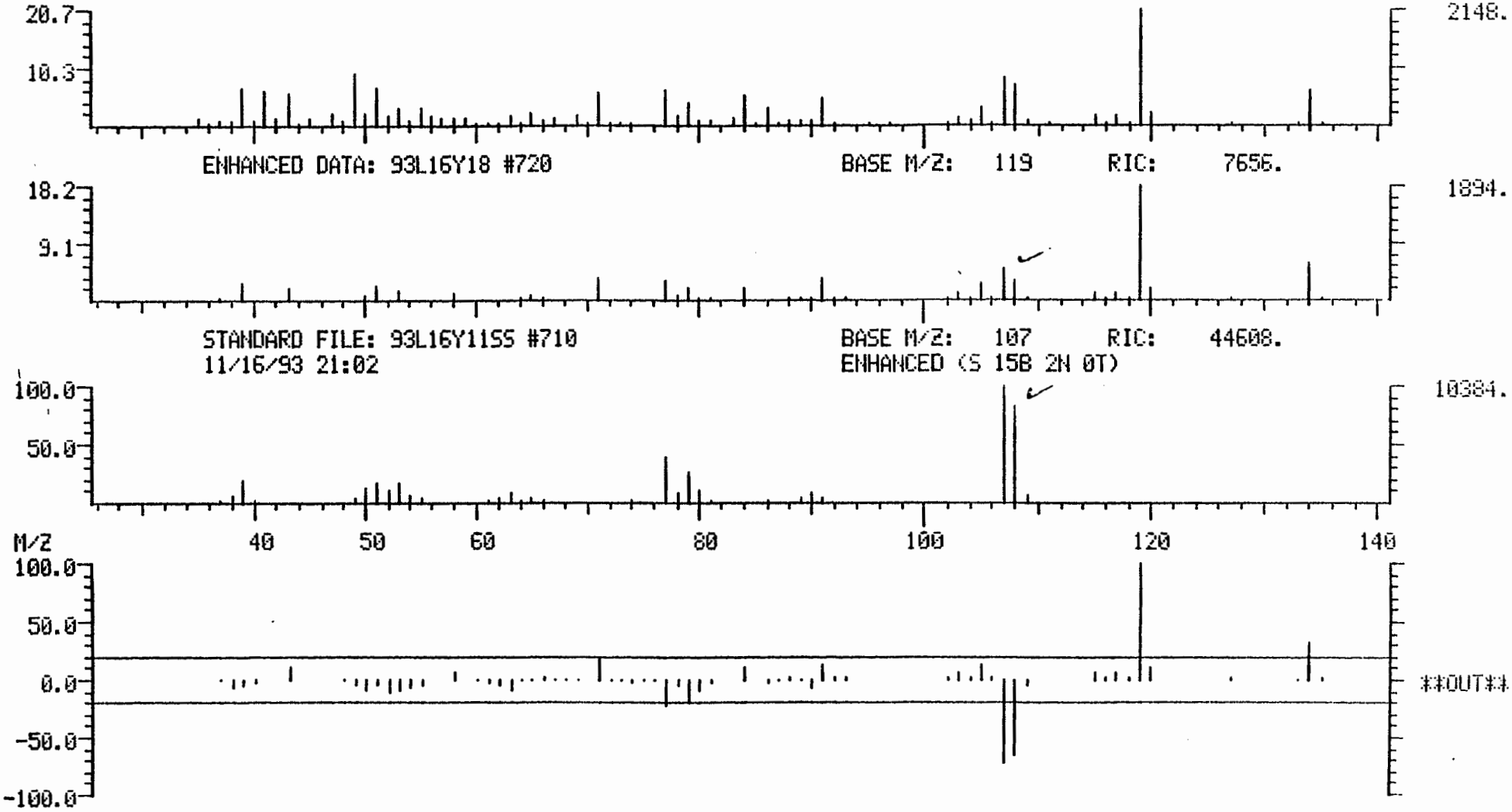
ok cg 11/17/93

ok JW 11/17/93

TARGET COMPOUND COMPARISON

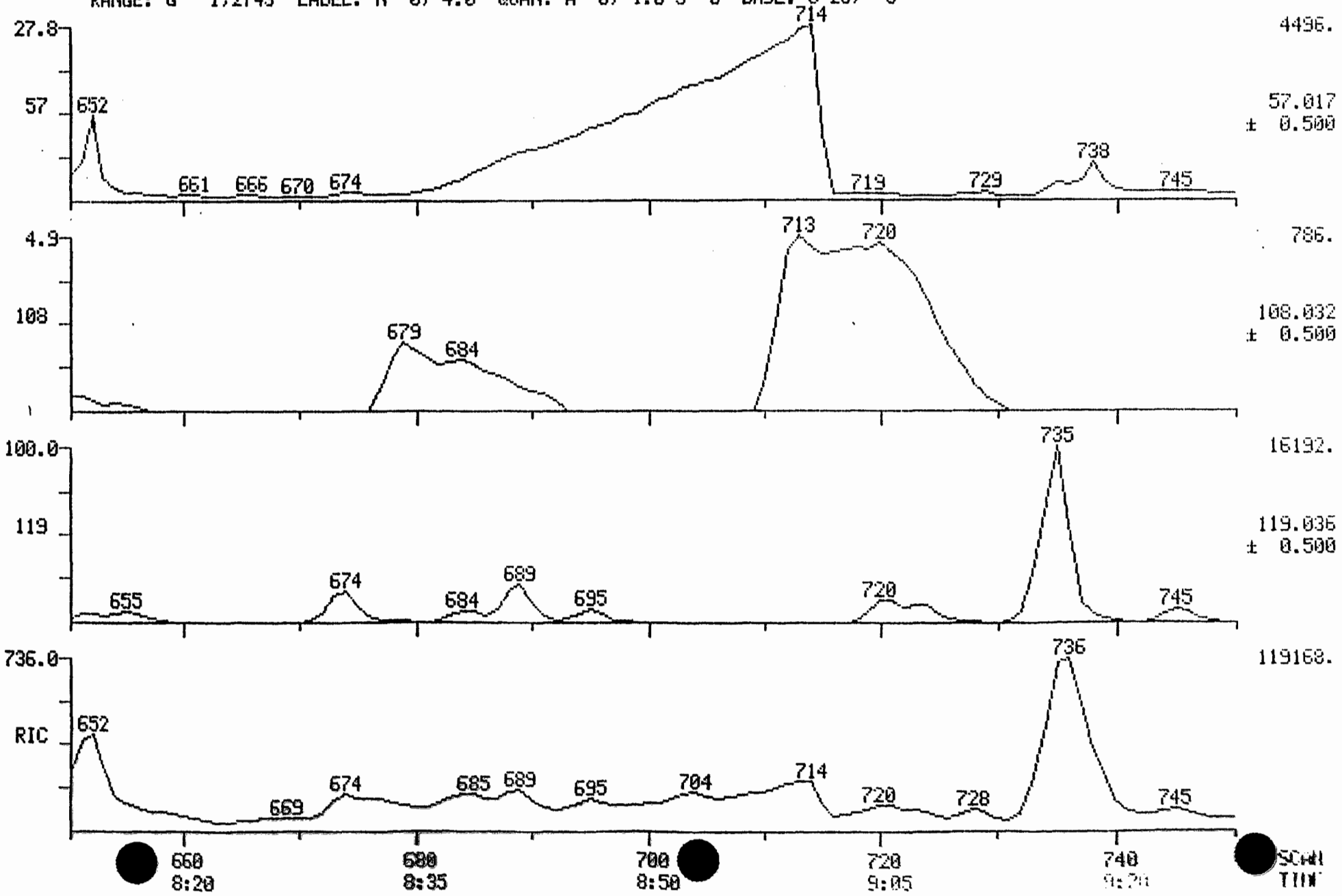
COMPOUND: C365 4-METHYLPHENOL*

RAW DATA: 93L16Y18 #720 BASE M/Z: 119 RIC: 17984.
11/17/93 1:58
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,

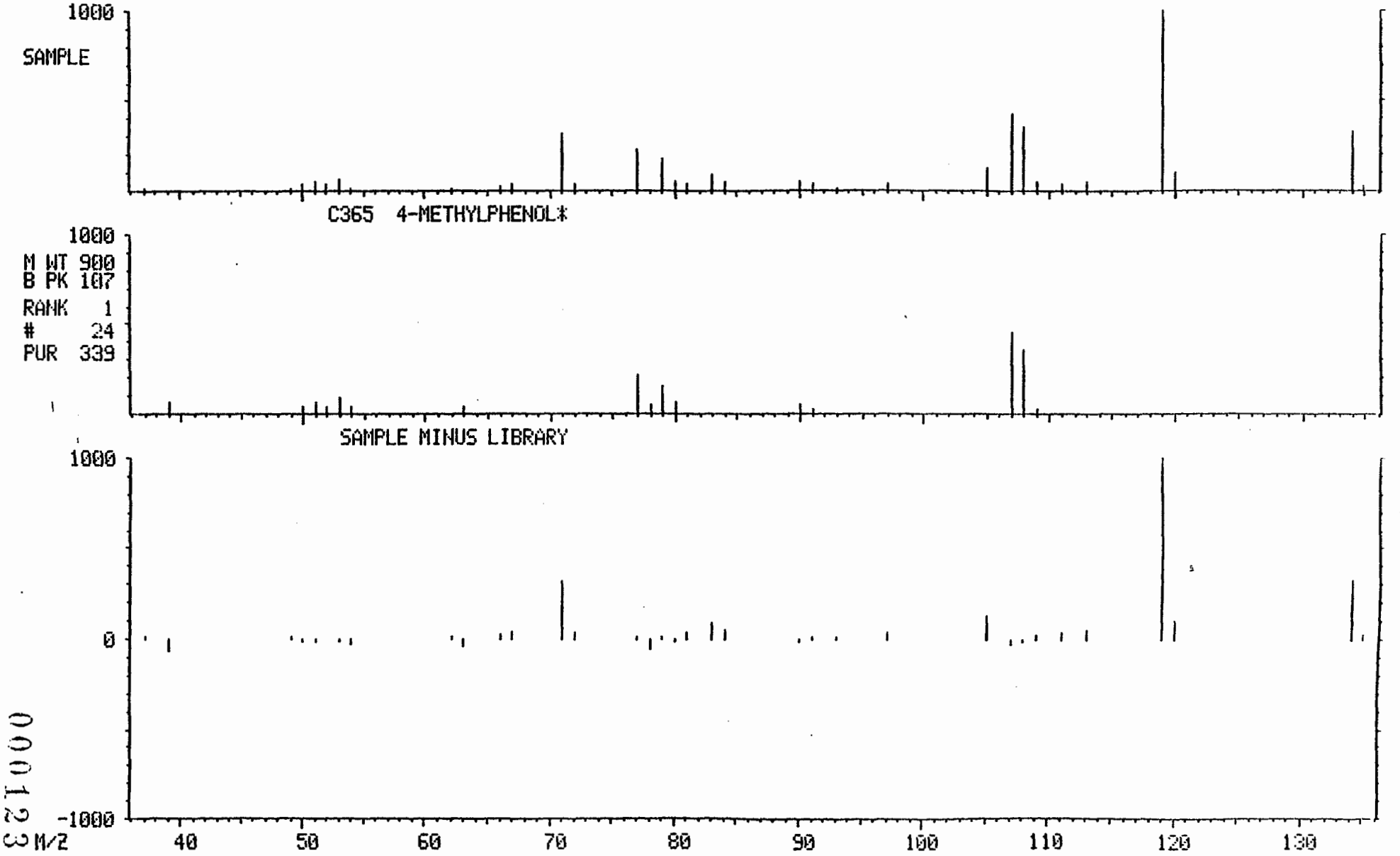


000121

RIC+MASS CHROMATOGRAMS DATA: 93L16Y18 #713 SCANS 650 TO 750
11/17/93 1:58:00 CALI: 93L16Y18 #3
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,
RANGE: G 1,2743 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



MID LIBRARY SEARCH (LIBRARYSC) DATA: 93L16Y18 # 719 BASE M/Z: 119
11/17/93 1:58:00 + 9:04 CALI: 93L16Y18 # 3 RIC: 3968.
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,
717 TO # 721 AVERAGED - # 712 TO # 714 - # 726 TO # 730



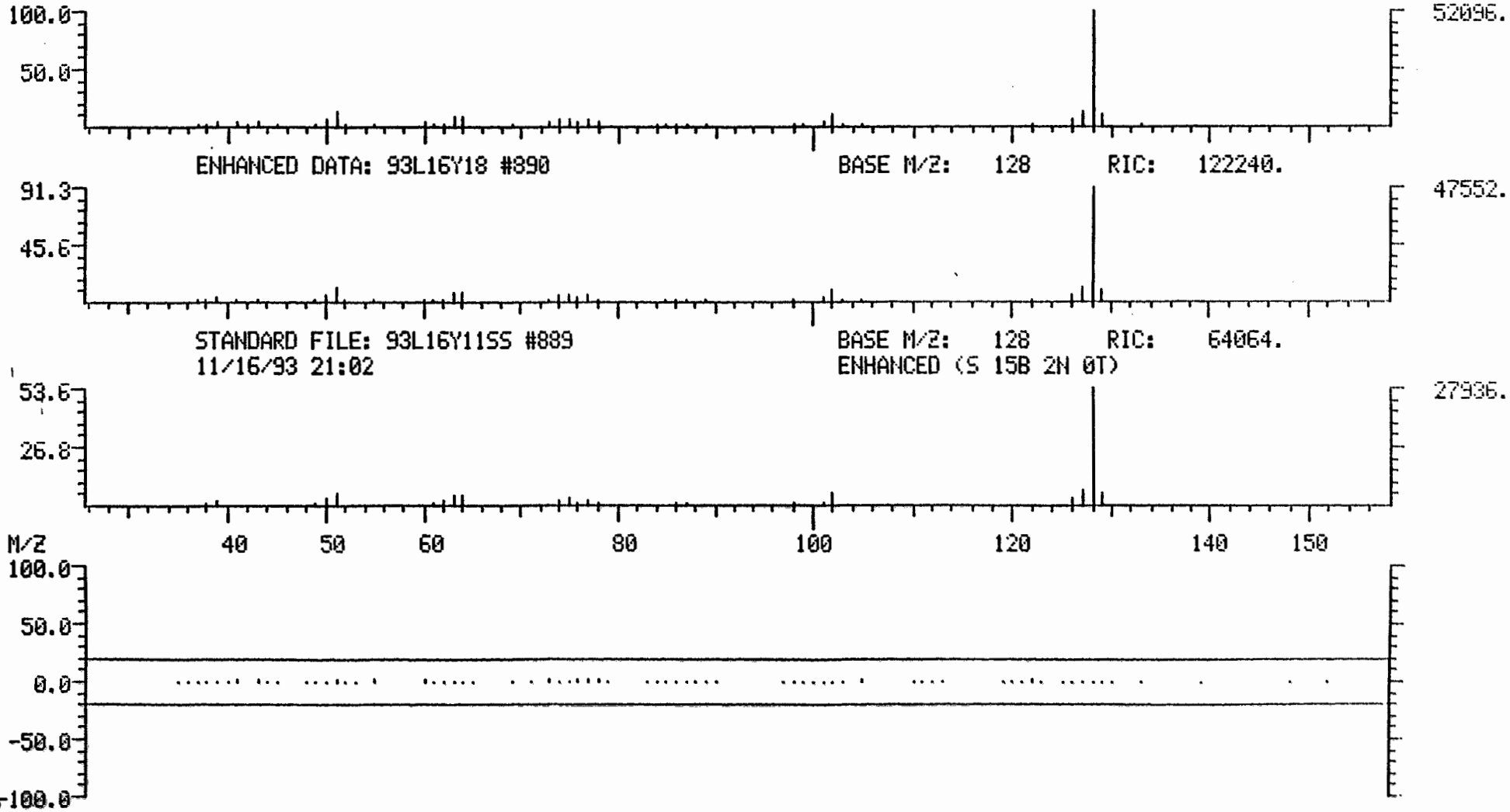
ok iy
11/17/93

TARGET COMPOUND COMPARISON

ok
JHW
11/17/93

COMPOUND: C450 NAPHTHALENE*

RAW DATA: 93L16Y18 #890 BASE M/Z: 128 RIC: 151552.
11/17/93 1:58
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



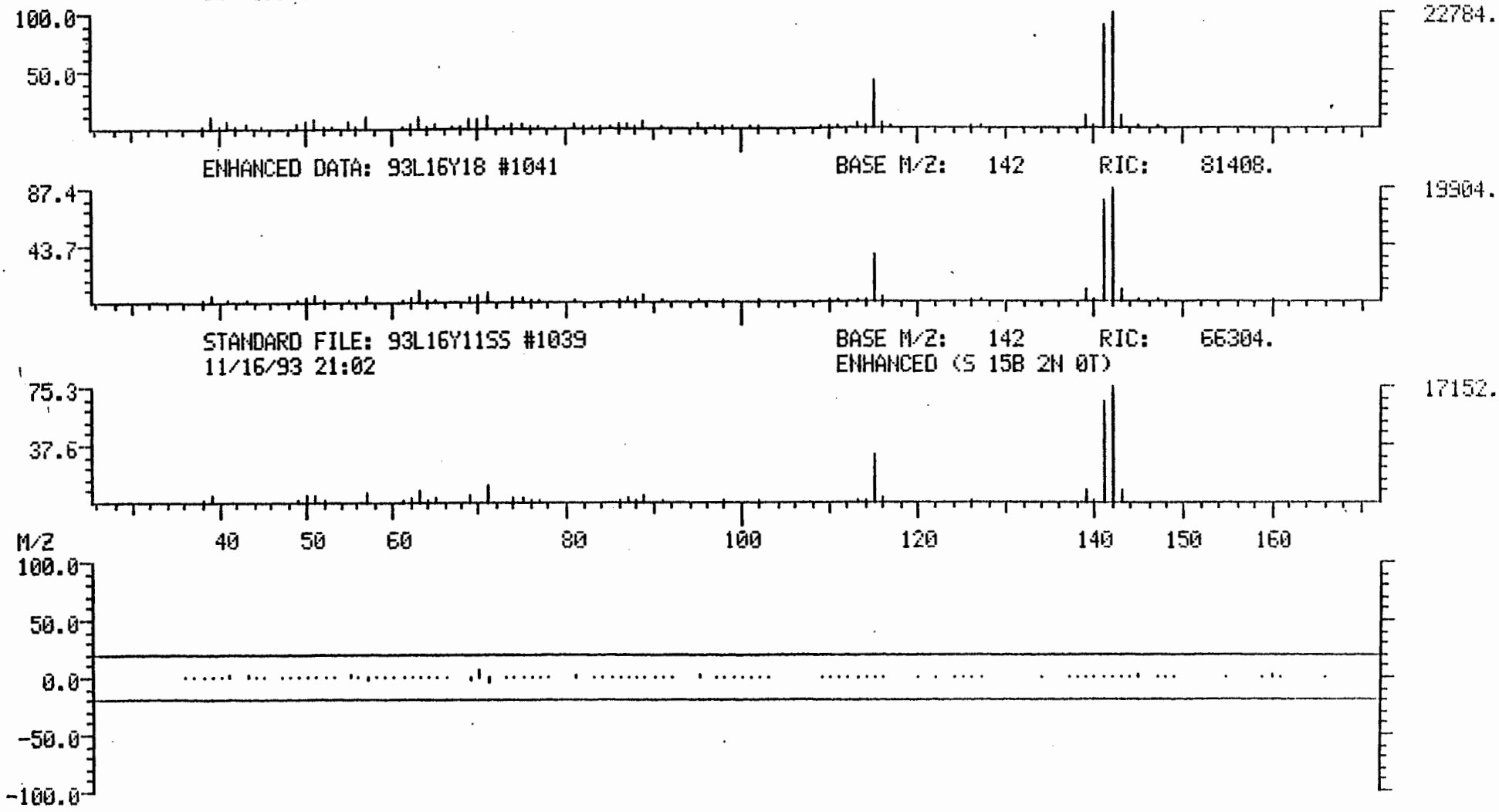
TARGET COMPOUND COMPARISON

ok JRW 11/17/93

OK. cy 11/17/93

COMPOUND: C470 2-METHYLNAPHTHALENE*

RAW DATA: 93L16Y18 #1041 BASE M/Z: 142 RIC: 110720.
11/17/93 1:58
SAMPLE: CLP,ABBES,90212,DFSPMW22,LOW,WATER,90212004,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW23

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212005

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y19

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	1	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW23

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212005

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y19

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

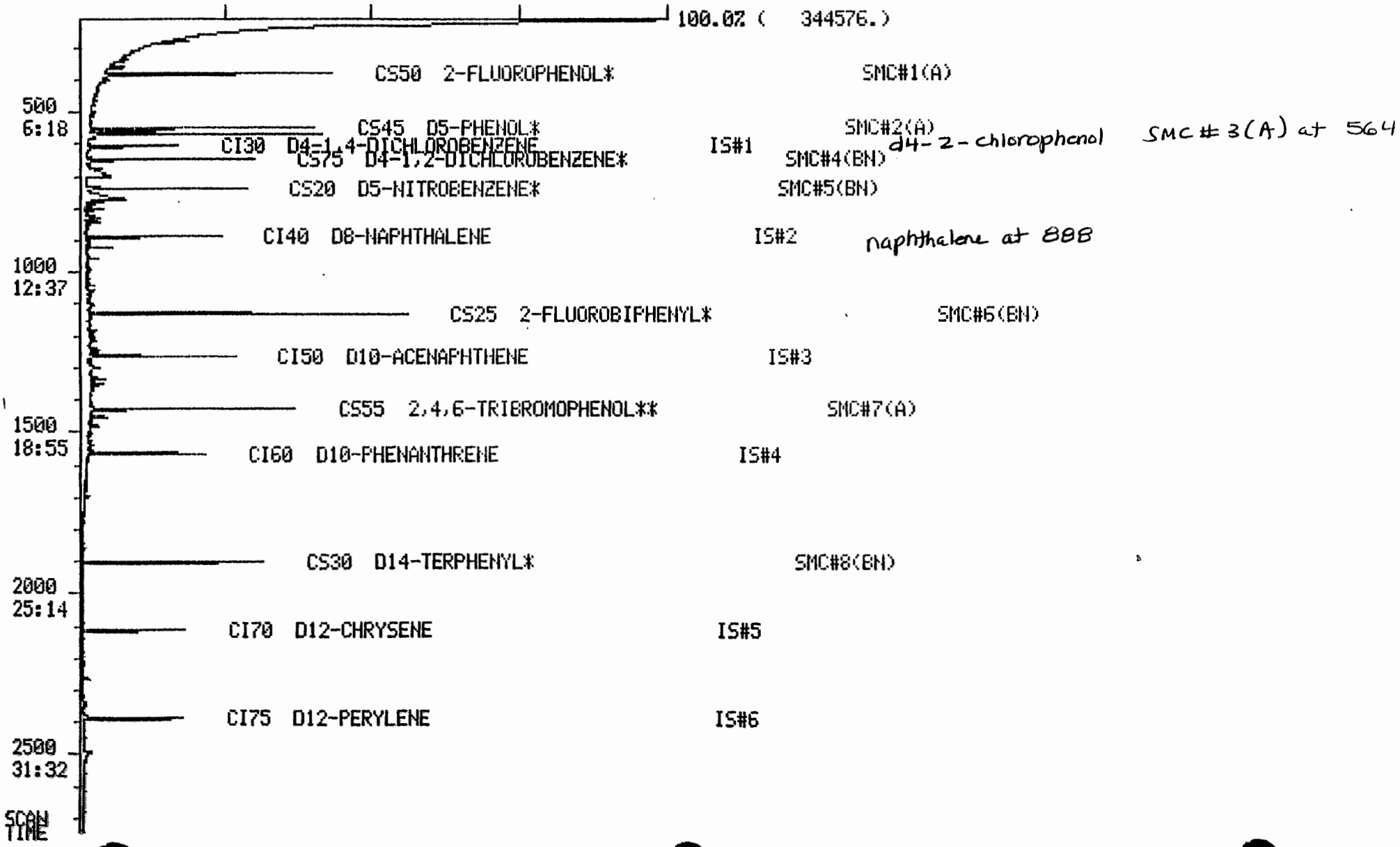
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y19 SCANS 210 TO 2743 ACQUIRED: 11/17/93 2:40:00
CALI: 93L16Y19 #3
SAMPLE: CLP,ABBES,90212,DFSPMW23,LOW,WATER,90212005,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



000128

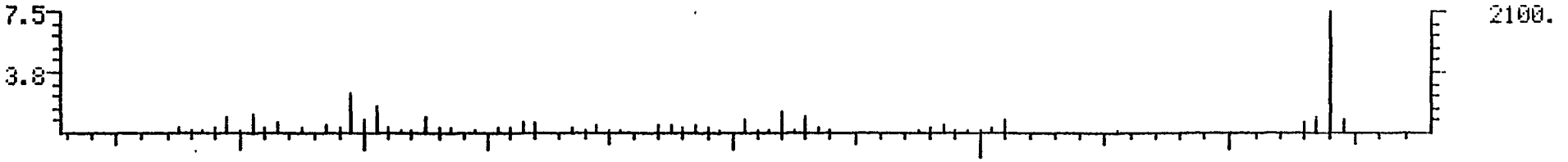
OK-19
11/17/93

TARGET COMPOUND COMPARISON

OK
JRW
11/17/93

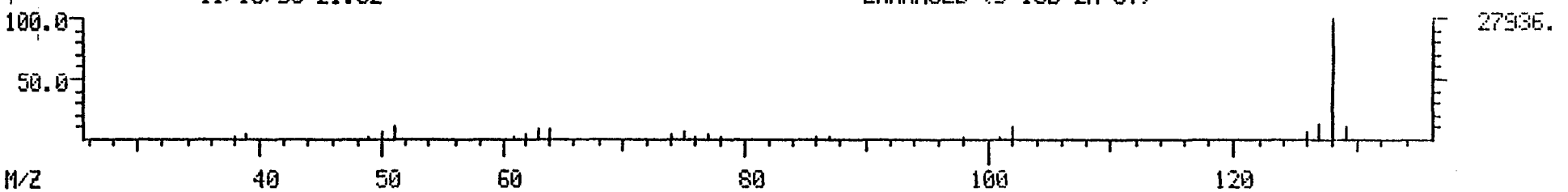
COMPOUND: C450 NAPHTHALENE*

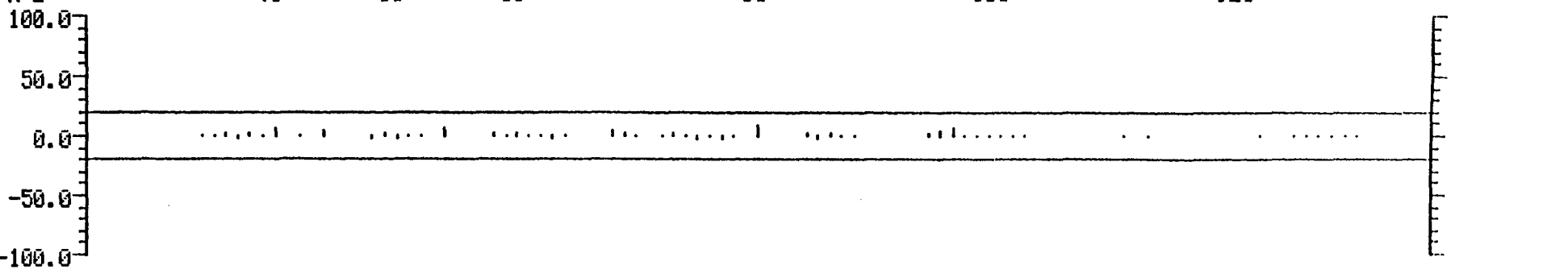
RAW DATA: 93L16Y19 #888 BASE M/Z: 128 RIC: 10064.
11/17/93 2:40
SAMPLE: CLP,ABBES,90212,DFSPMW23,LOW,WATER,90212005,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



ENHANCED DATA: 93L16Y19 #888 BASE M/Z: 128 RIC: 5136.

STANDARD FILE: 93L16Y11SS #889 BASE M/Z: 128 RIC: 64064.
11/16/93 21:02 ENHANCED (S 15B 2N 0T)





00012

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW24

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212006

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y20

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	4	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	2	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW24

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212006

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y20

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

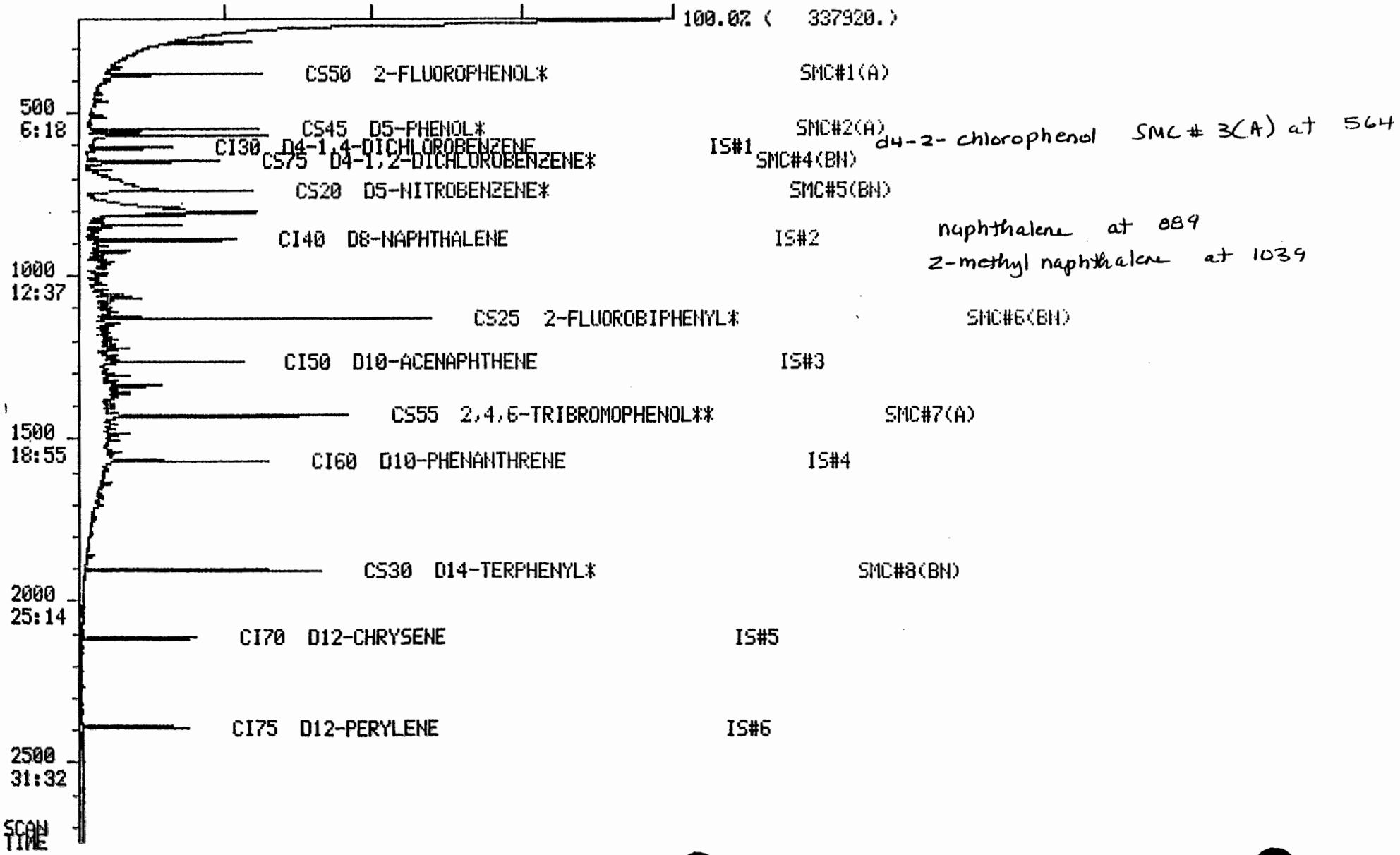
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y20 SCANS 210 TO 2743 ACQUIRED: 11/17/93 3:23:00
CALI: 93L16Y20 #3
SAMPLE: CLP,ABBES,90212,DFSPMW24,LOW,WATER,90212006,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



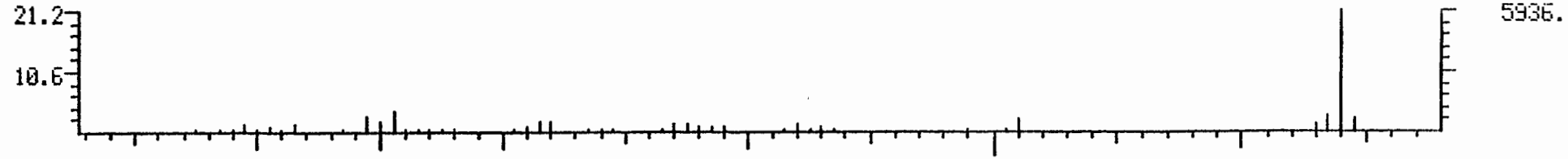
OK
11/17/93

TARGET COMPOUND COMPARISON

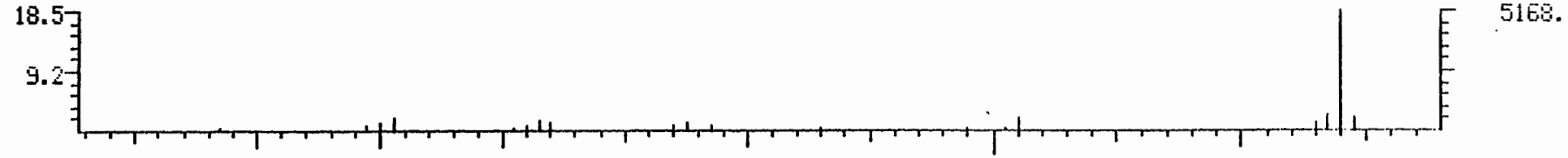
COMPOUND: C450 NAPHTHALENE*

ok
JW
11/17/93

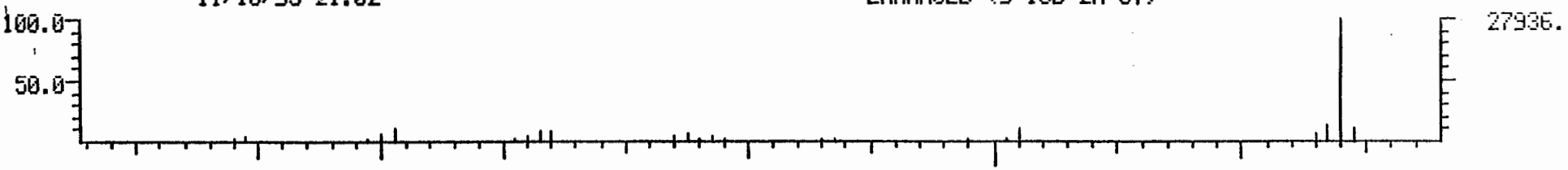
RAW DATA: 93L16Y20 #889 BASE M/Z: 128 RIC: 19328.
11/17/93 3:23
SAMPLE: CLP,ABBES,90212,DFSPMW24,LOW,WATER,90212006,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,

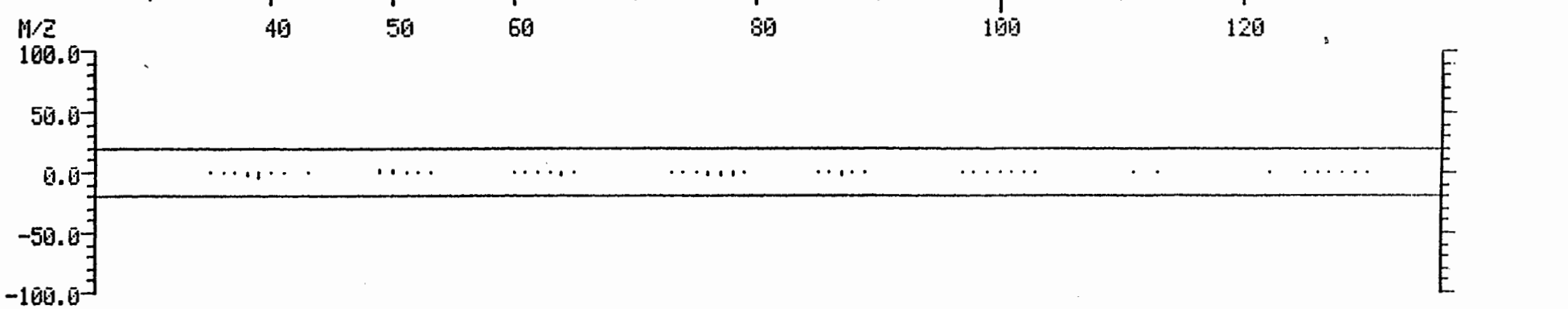


ENHANCED DATA: 93L16Y20 #889 BASE M/Z: 128 RIC: 10944.



STANDARD FILE: 93L16Y11SS #889 BASE M/Z: 128 RIC: 64064.
11/16/93 21:02 ENHANCED (S 15B 2N 0T)





001123

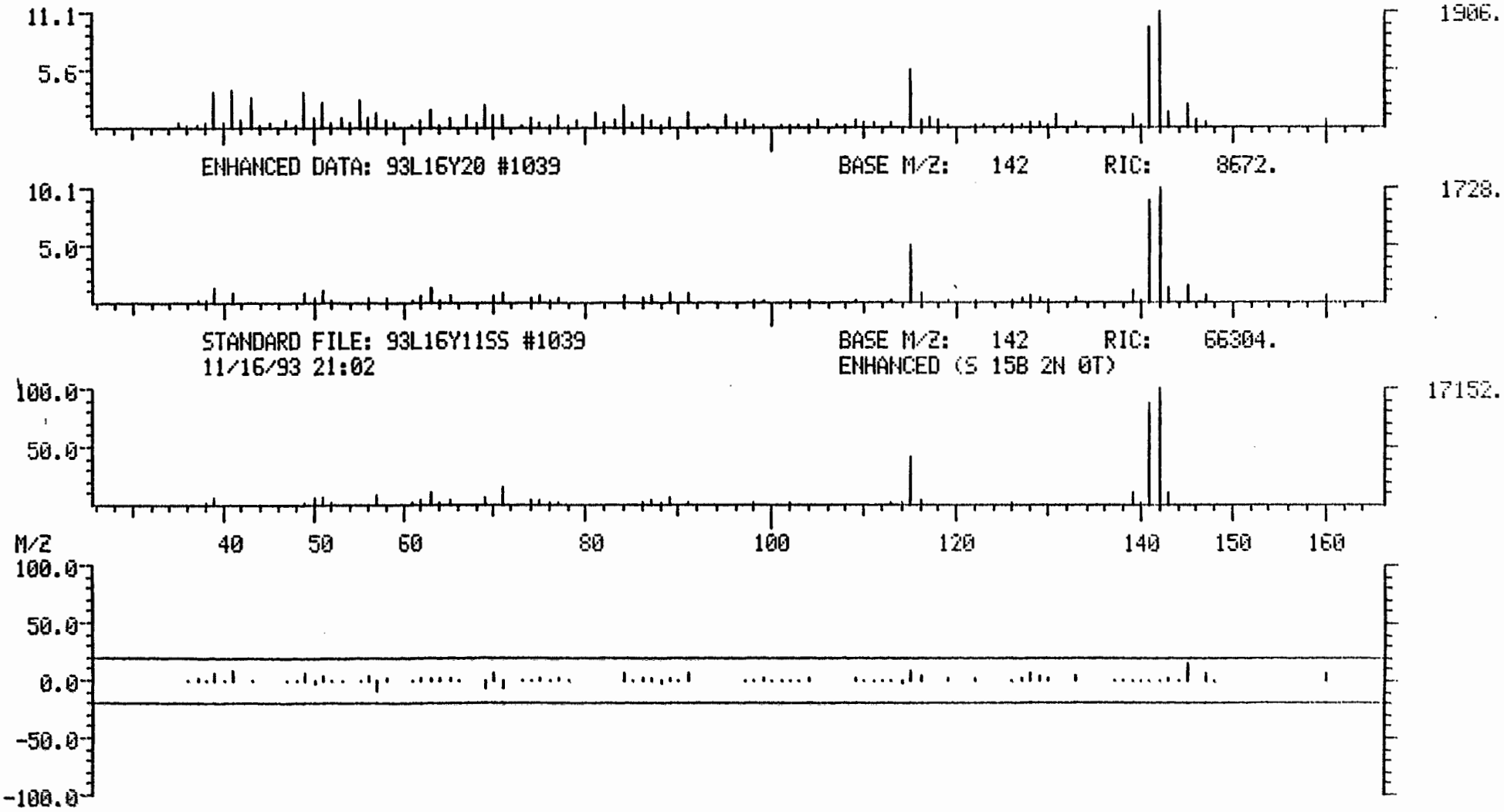
ok cg
11/17/93

TARGET COMPOUND COMPARISON

COMPOUND: C470 2-METHYLNAPHTHALENE*

ok JW 11/17/93

RAW DATA: 93L16Y20 #1039 BASE M/Z: 142 RIC: 17792.
11/17/93 3:23
SAMPLE: CLP,ABBES,90212,DFSPNW24,LOW,WATER,90212006,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW25

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y21

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW25

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y21

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

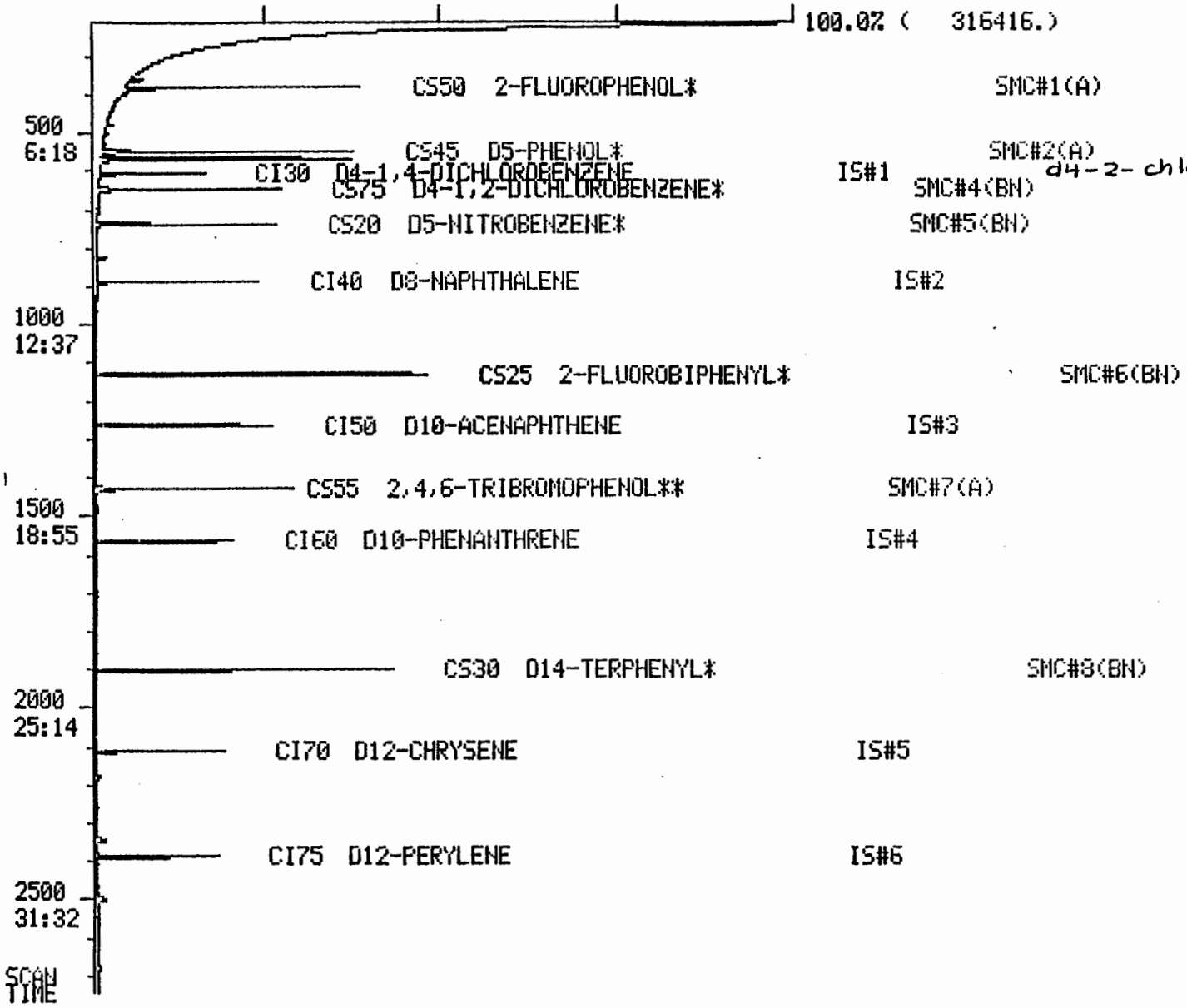
GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

J8u

DATA FROM FILE: 93L16Y21 SCANS 210 TO 2743 ACQUIRED: 11/17/93 4:06:00
CALI: 93L16Y21 #3
SAMPLE: CLP,ABBES,90212,DFSPMW25,LOW,WATER,90212007,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



d4-2-chlorophenol SMC #3(A) at 562

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW13

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y22

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	220	E
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	93	E
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW13

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y22

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

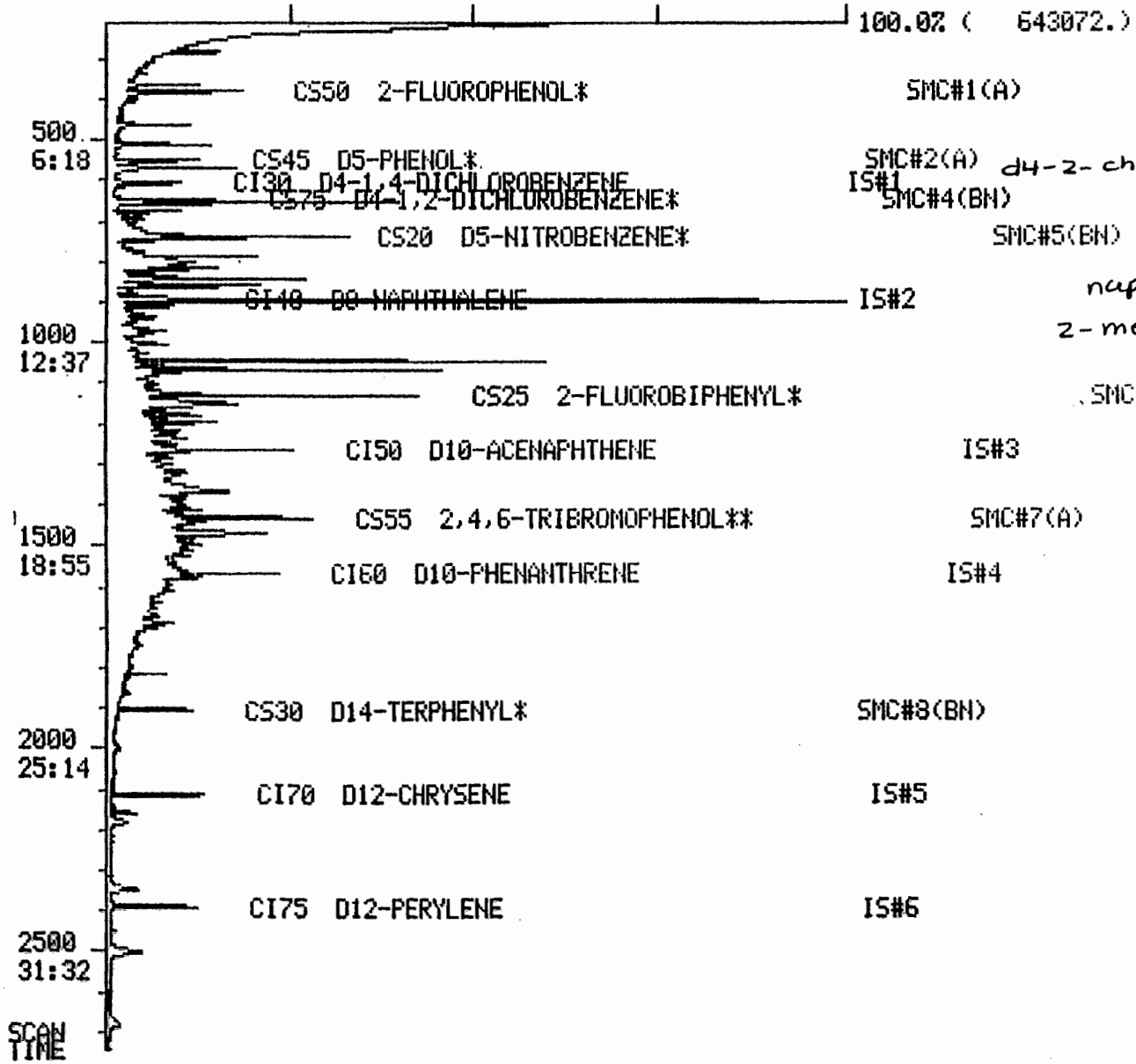
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y22 SCANS 210 TO 2743 ACQUIRED: 11/17/93 4:47:00
CALI: 93L16Y22 #3
SAMPLE: CLP,ABBES,90212,DFSPMW13,LOW,WATER,90212008,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



d4-2-chlorophenol SMC#3(A) at 564

naphthalene at 894

2-methyl naphthalene at 1042

000140

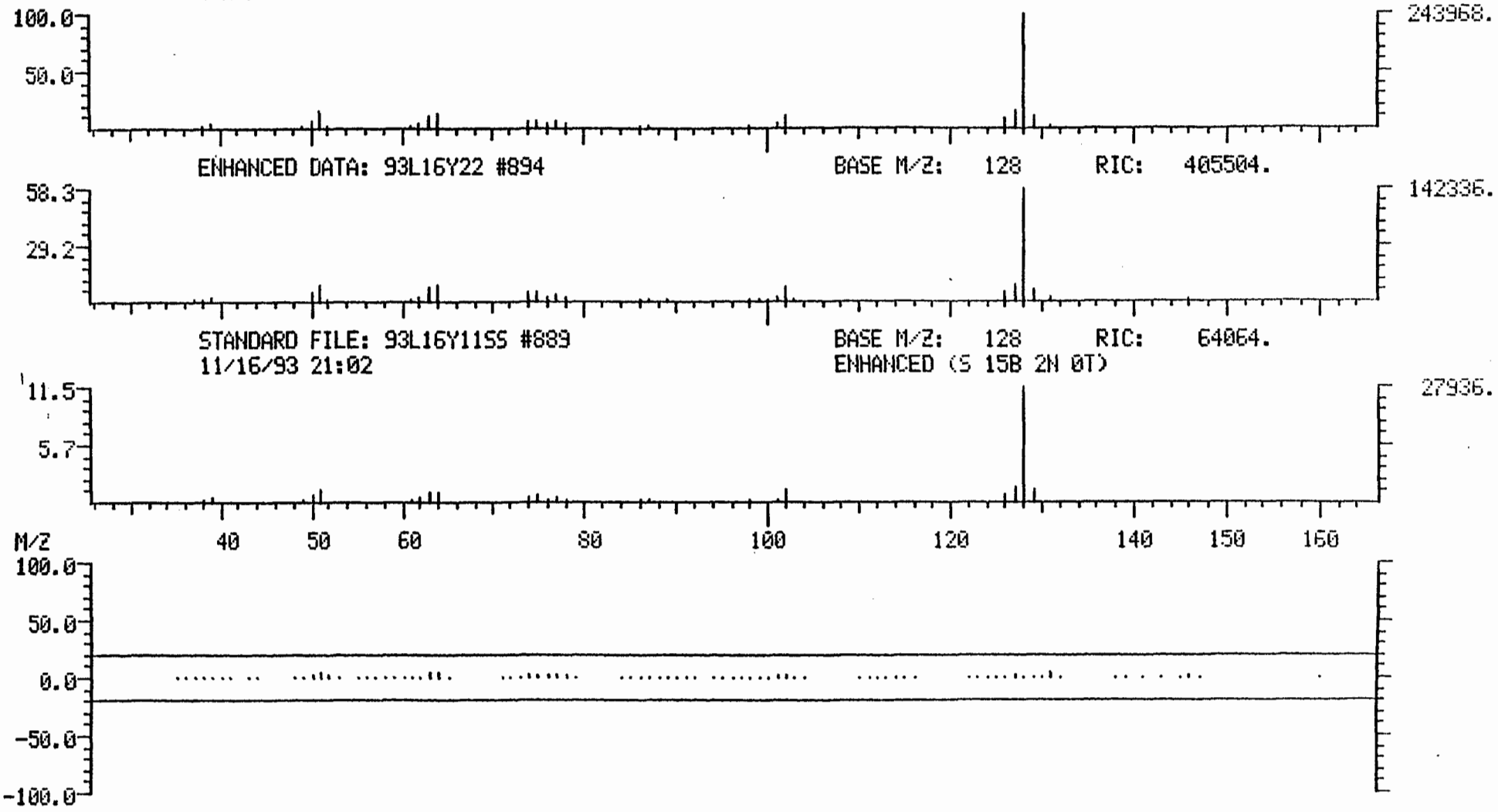
OF 8
11/17/93

TARGET COMPOUND COMPARISON

COMPOUND: C450 NAPHTHALENE*

ok
JKW
11/17/93

RAW DATA: 93L16Y22 #894 BASE M/Z: 128 RIC: 643072.
11/17/93 4:47
SAMPLE: CLP,ABBES,90212,DFSPMW13,LOW,WATER,90212008,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



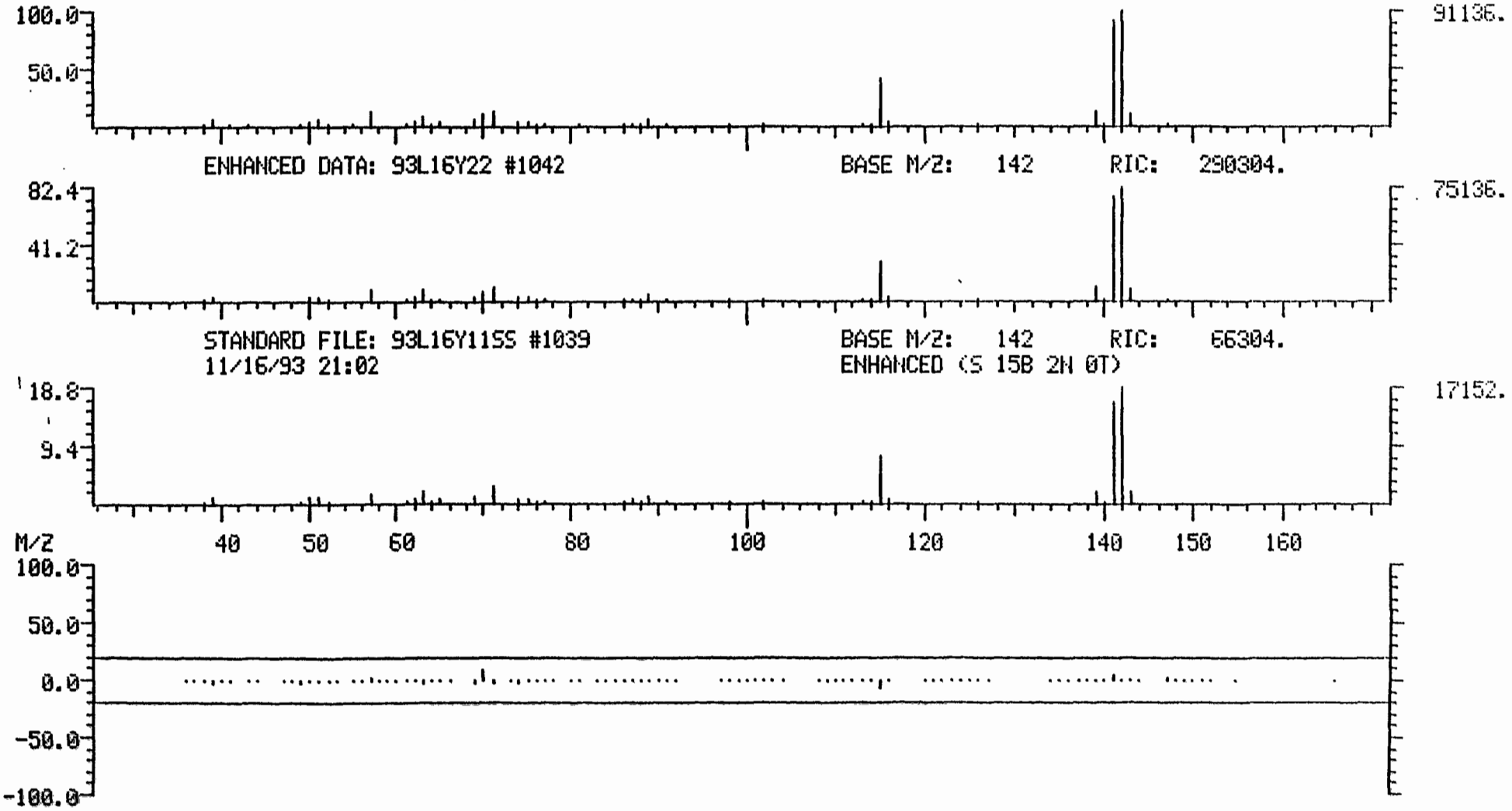
OK 19
11/17/93

TARGET COMPOUND COMPARISON

DK
JRW
11/17/93

COMPOUND: C470 2-METHYLNAPHTHALENE*

RAW DATA: 93L16Y22 #1042 BASE M/Z: 142 RIC: 386560.
11/17/93 4:47
SAMPLE: CLP,ABBES,90212,DFSPMW13,LOW,WATER,90212008,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW13DL

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212008DL

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L17Y04DL

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	50	U
111-44-4	bis(2-Chloroethyl)Ether	50	U
95-57-8	2-Chlorophenol	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-60-1	2,2'-oxybis(1-Chloropropane)	50	U
106-44-5	4-Methylphenol	50	U
621-64-7	N-Nitroso-Di-n-Propylamine	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
78-59-1	Isophorone	50	U
88-75-5	2-Nitrophenol	50	U
105-67-9	2,4-Dimethylphenol	50	U
111-91-1	bis(2-Chloroethoxy)Methane	50	U
120-83-2	2,4-Dichlorophenol	50	U
120-82-1	1,2,4-Trichlorobenzene	50	U
91-20-3	Naphthalene	200	D
106-47-8	4-Chloroaniline	50	U
87-68-3	Hexachlorobutadiene	50	U
59-50-7	4-Chloro-3-Methylphenol	50	U
91-57-6	2-Methylnaphthalene	80	D
77-47-4	Hexachlorocyclopentadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	120	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	120	U
131-11-3	Dimethylphthalate	50	U
208-96-8	Acenaphthylene	50	U
606-20-2	2,6-Dinitrotoluene	50	U
99-09-2	3-Nitroaniline	120	U
83-32-9	Acenaphthene	50	U

JW

000113

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW13DL

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212008DL

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L17Y04DL

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

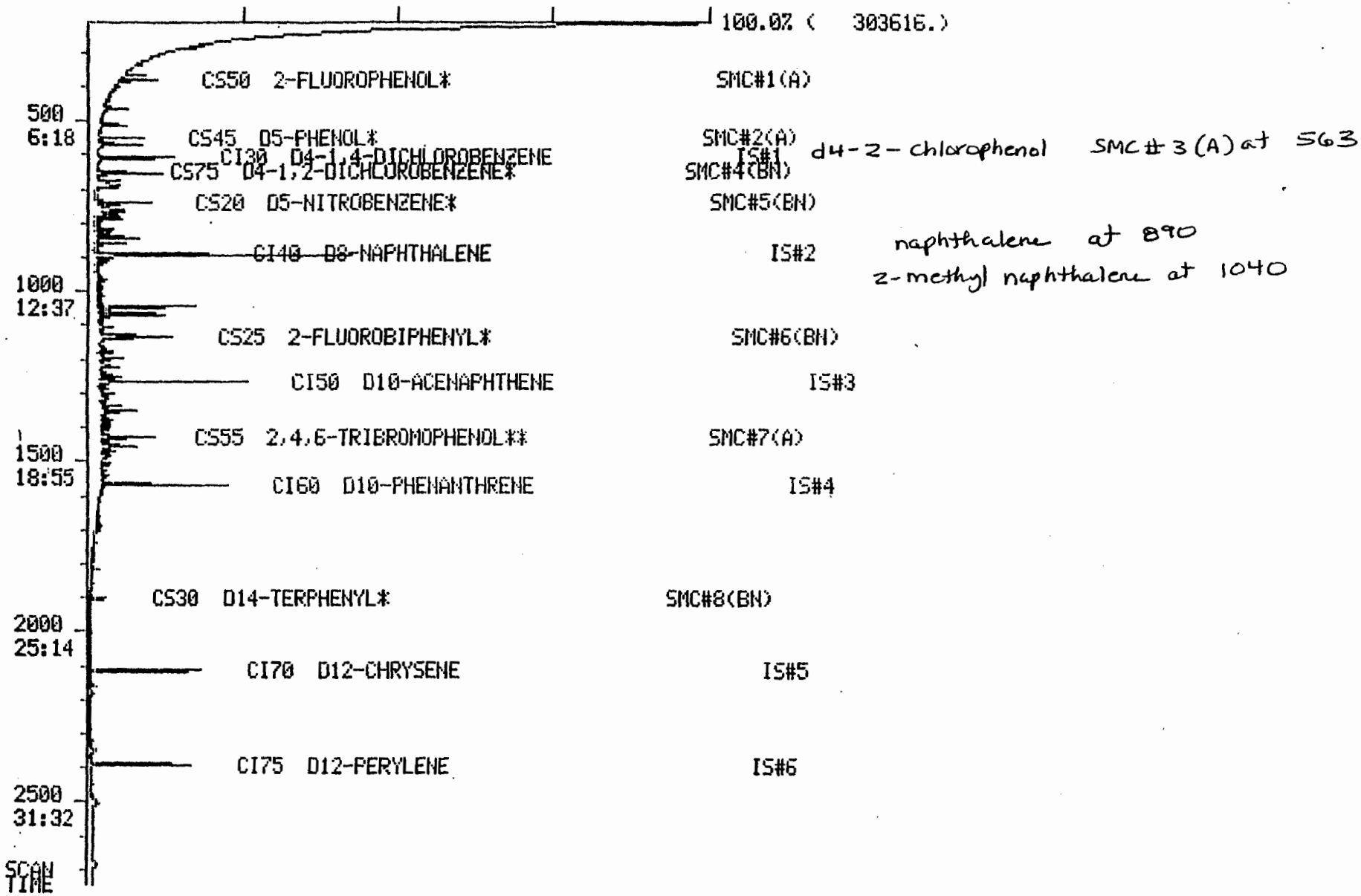
GPC Cleanup: (Y/N) N pH: 7.5

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	120	U
100-02-7	4-Nitrophenol	120	U
132-64-9	Dibenzofuran	50	U
121-14-2	2,4-Dinitrotoluene	50	U
84-66-2	Diethylphthalate	50	U
7005-72-3	4-Chlorophenyl-phenylether	50	U
86-73-7	Fluorene	50	U
100-01-6	4-Nitroaniline	120	U
534-52-1	4,6-Dinitro-2-Methylphenol	120	U
86-30-6	N-Nitrosodiphenylamine (1)	50	U
101-55-3	4-Bromophenyl-phenylether	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	120	U
85-01-8	Phenanthrene	50	U
120-12-7	Anthracene	50	U
86-74-8	Carbazole	50	U
84-74-2	Di-n-Butylphthalate	50	U
206-44-0	Fluoranthene	50	U
129-00-0	Pyrene	50	U
85-68-7	Butylbenzylphthalate	50	U
91-94-1	3,3'-Dichlorobenzidine	50	U
56-55-3	Benzo(a)Anthracene	50	U
218-01-9	Chrysene	50	U
117-81-7	bis(2-Ethylhexyl)Phthalate	50	U
117-84-0	Di-n-Octyl Phthalate	50	U
205-99-2	Benzo(b)Fluoranthene	50	U
207-08-9	Benzo(k)Fluoranthene	50	U
50-32-8	Benzo(a)Pyrene	50	U
193-39-5	Indeno(1,2,3-cd)Pyrene	50	U
53-70-3	Dibenz(a,h)Anthracene	50	U
191-24-2	Benzo(g,h,i)Perylene	50	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L17Y04DL SCANS 210 TO 2743 ACQUIRED: 11/17/93 13:28:00
CALI: 93L17Y04DL #3
SAMPLE: CLP,ABBES,90212,DFSPMW13DL,LOW,WATER,90212008DL,BNA,EPA,CLP
CONDS.: CAP/0.32,93L17Y02SS,93L17Y01DF,93L17Y03BK,,,,FINY DF=5



d4-2-chlorophenol SMC#3(A) at 563

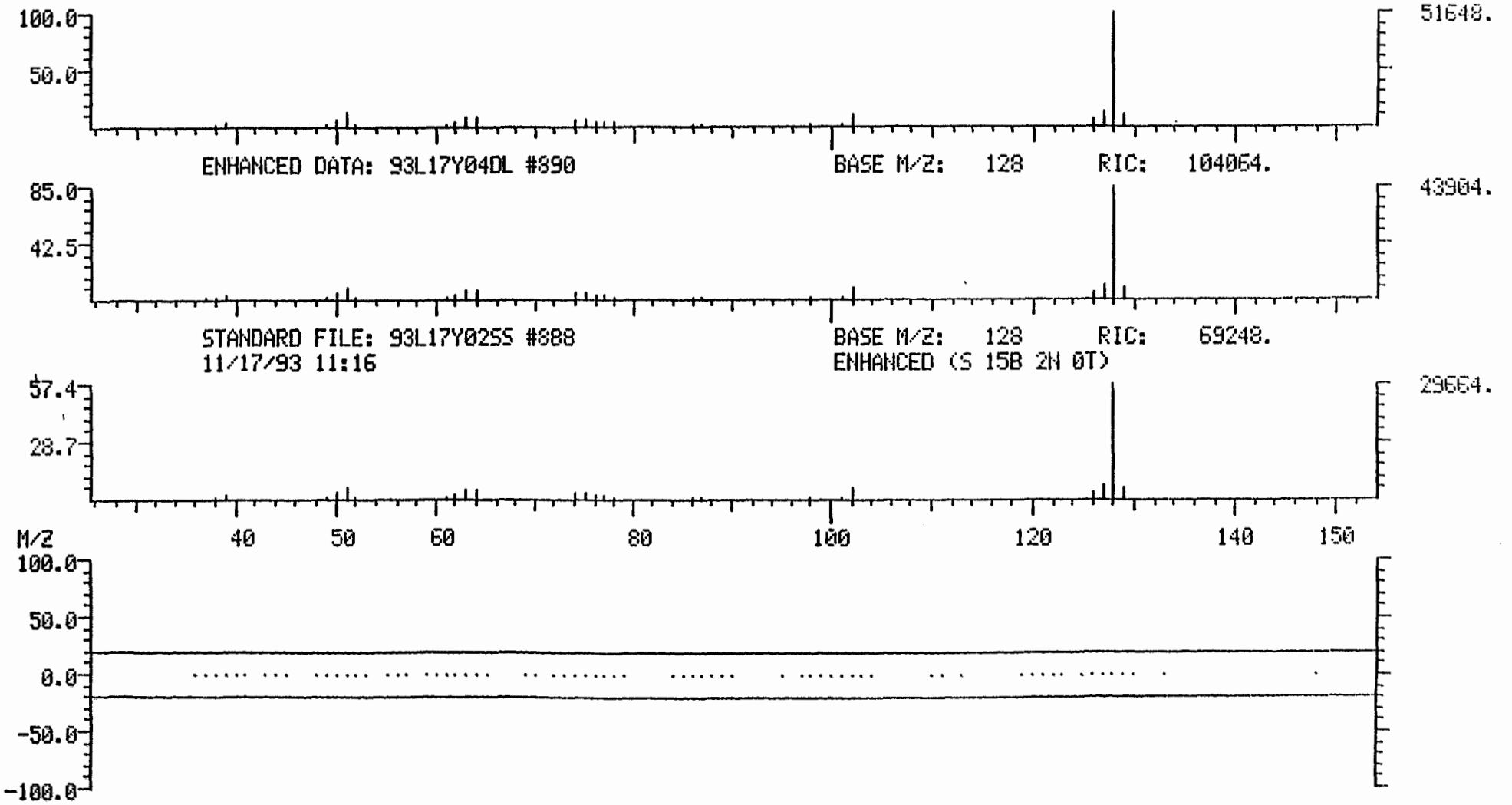
naphthalene at 890
2-methyl naphthalene at 1040

TARGET COMPOUND COMPARISON

COMPOUND: C450 NAPHTHALENE*

ok JBW 11/18/93

RAW DATA: 93L17Y04DL #890 BASE M/Z: 128 RIC: 129792.
11/17/93 13:28
SAMPLE: CLP,ABBES,90212,DFSPMW13DL,LOW,WATER,90212008DL,BNA,EPA,CLP
CONDS.: CAP/0.32,93L17Y02SS,93L17Y01DF,93L17Y03BK,,,,FINY DF=5

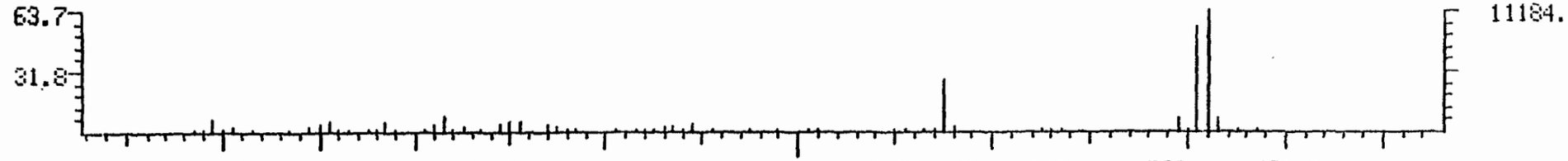


TARGET COMPOUND COMPARISON

COMPOUND: C470 2-METHYLNAPHTHALENE*

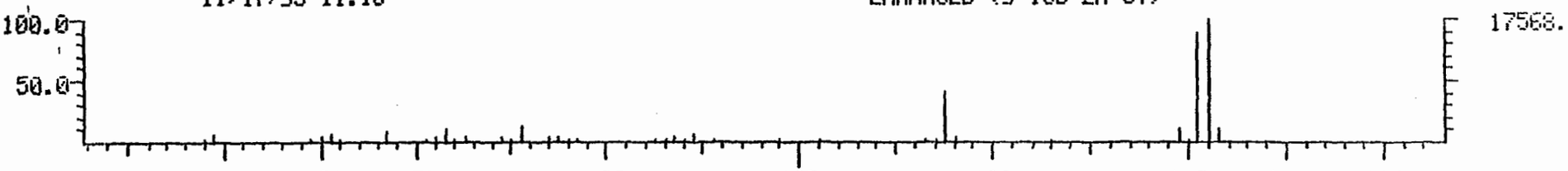
dc
JW
11/18/93

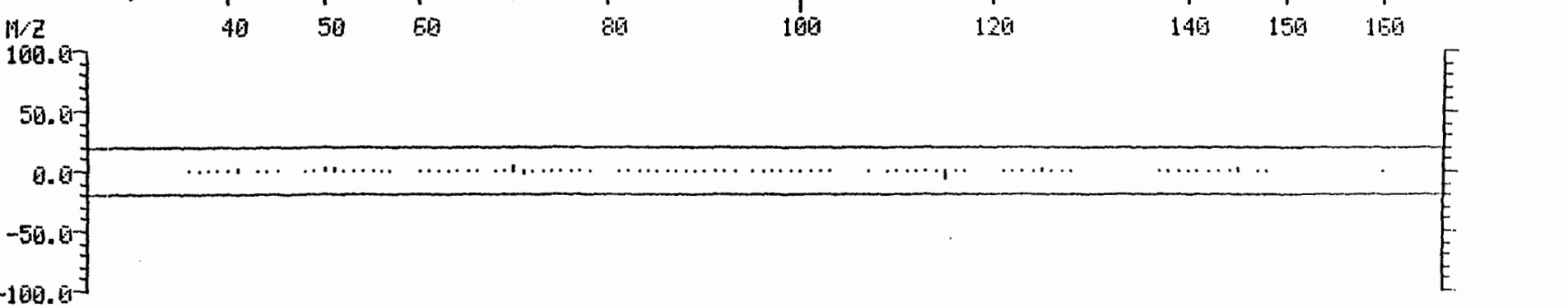
RAW DATA: 93L17Y04DL #1040 BASE M/Z: 142 RIC: 52352.
11/17/93 13:28
SAMPLE: CLP,ABBES,90212,DFSPMW13DL,LOW,WATER,90212008DL,BNA,EPA,CLP
CONDS.: CAP/0.32,93L17Y02SS,93L17Y01DF,93L17Y03BK,,,,FINY DF=5



ENHANCED DATA: 93L17Y04DL #1040 BASE M/Z: 142 RIC: 40640.

STANDARD FILE: 93L17Y02SS #1038 BASE M/Z: 142 RIC: 68864.
11/17/93 11:16 ENHANCED (S 15B 2N 0T)





000147

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW20

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212009

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y23

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPMW20

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212009

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y23

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

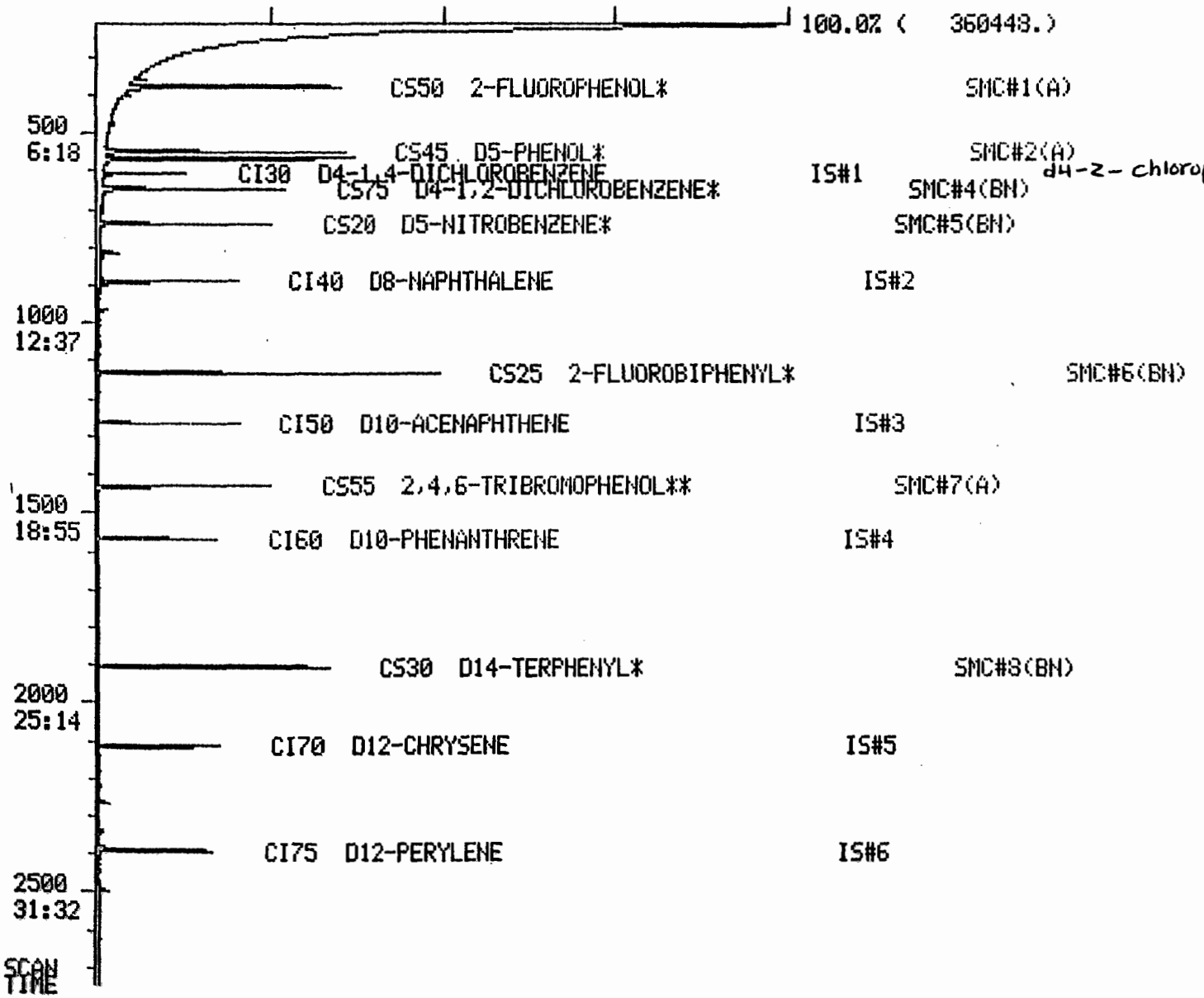
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y23 SCANS 210 TO 2743 ACQUIRED: 11/17/93 5:32:00
CALI: 93L16Y23 #3
SAMPLE: CLP,ABBES,90212,DFSPMW20,LOW,WATER,90212009,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



d4-2-chlorophenol SMC #3 (A) at 561

000150

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPDUP

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212010

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y24

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	4	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	2	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

JSW

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPDUP

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212010

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y24

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

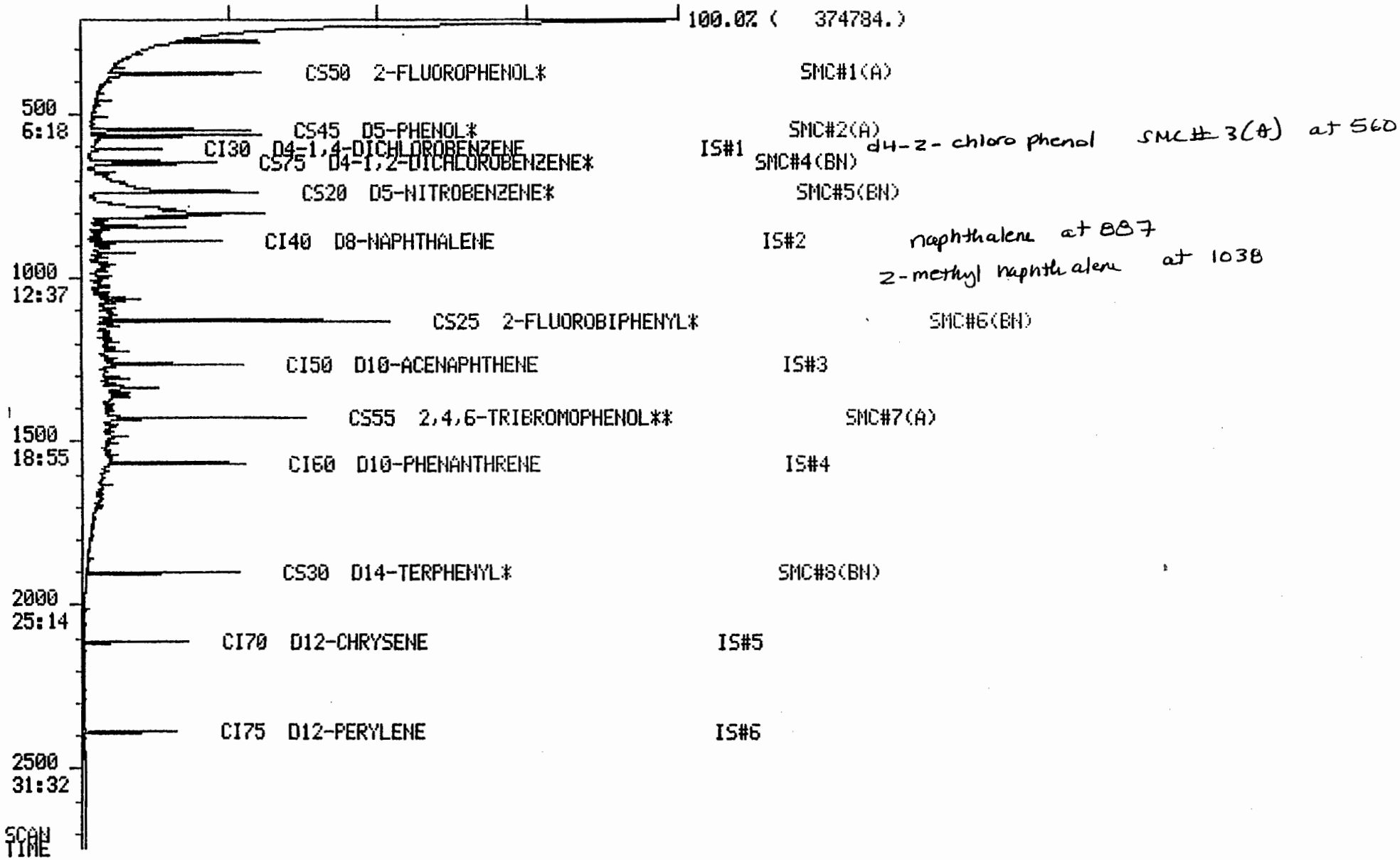
Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

DATA FROM FILE: 93L16Y24 SCANS 210 TO 2743 ACQUIRED: 11/17/93 6:14:00
CALI: 93L16Y24 #3
SAMPLE: CLP,ABBES,90212,DFSPDUP,LOW,WATER,90212010,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



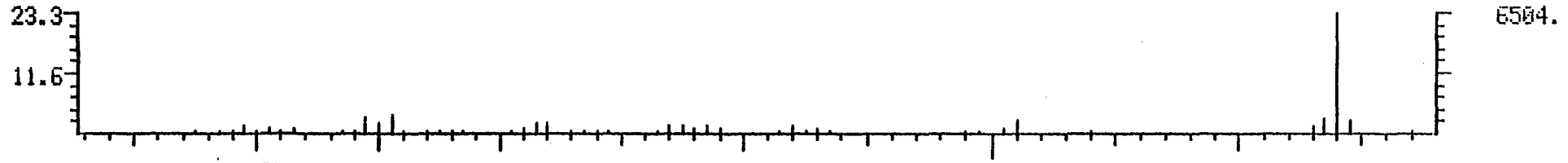
OK. cg
11/17/93

TARGET COMPOUND COMPARISON

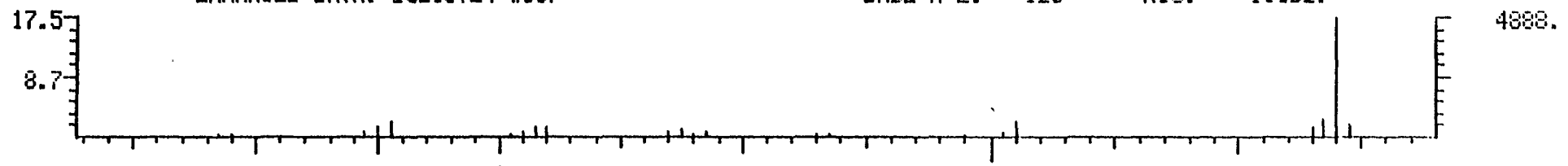
COMPOUND: C450 NAPHTHALENE*

OK
JW
11/17/93

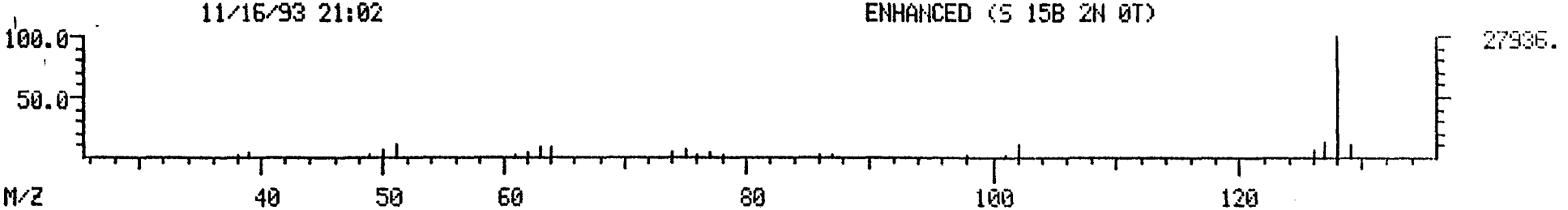
RAW DATA: 93L16Y24 #887 BASE M/Z: 128 RIC: 21568.
11/17/93 6:14
SAMPLE: CLP,ABBES,90212,DFSPDUP,LOW,WATER,90212010,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,

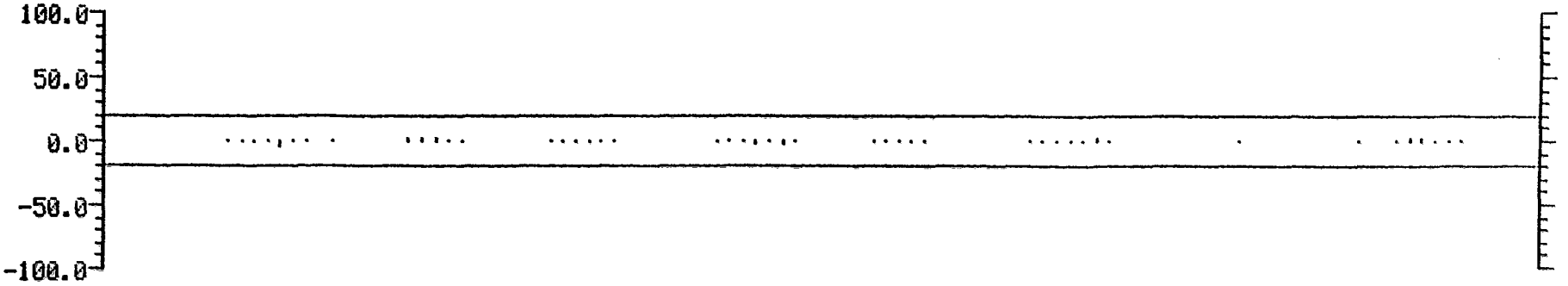


ENHANCED DATA: 93L16Y24 #887 BASE M/Z: 128 RIC: 11392.



STANDARD FILE: 93L16Y11SS #889 BASE M/Z: 128 RIC: 64064.
11/16/93 21:02 ENHANCED (S 15B 2N 0T)





0001324

OK 18
11/17/93

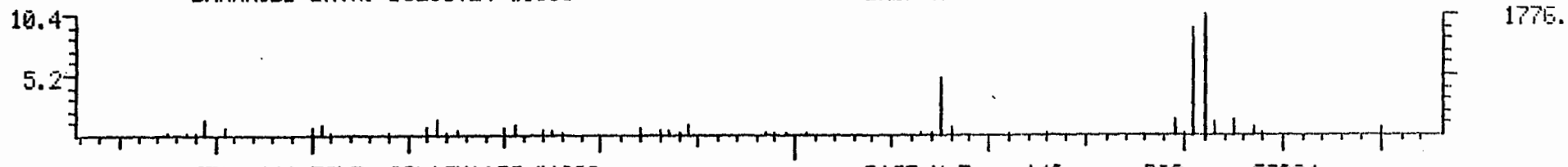
TARGET COMPOUND COMPARISON

dc
JHW
11/17/93

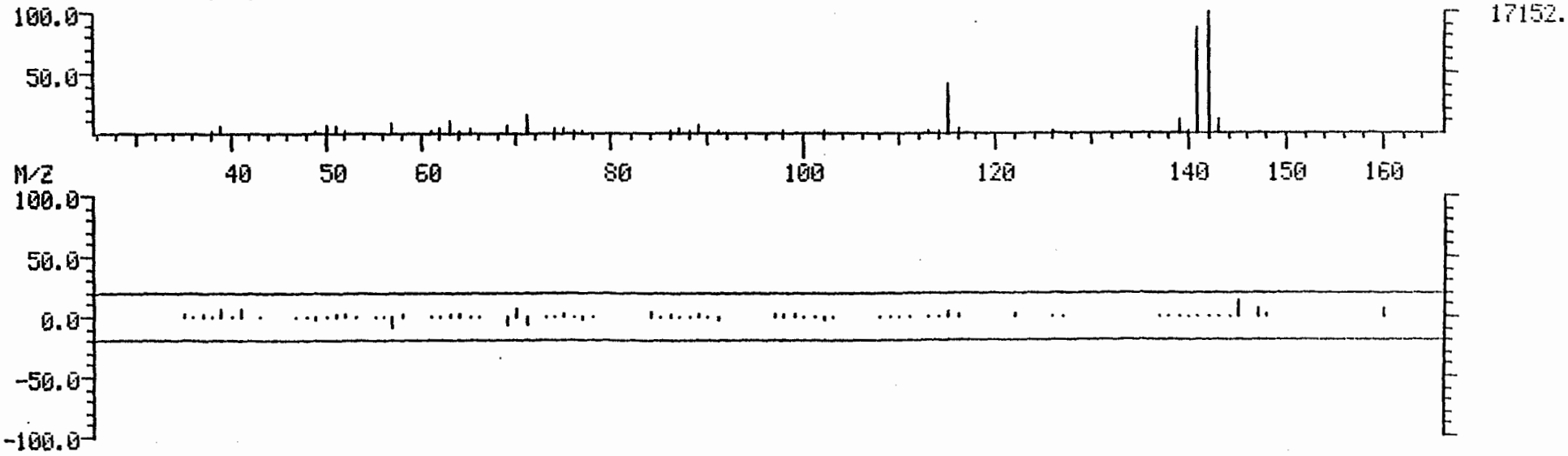
COMPOUND: C470 2-METHYLNAPHTHALENE*

RAW DATA: 93L16Y24 #1038 BASE M/Z: 142 RIC: 17504.
11/17/93 6:14
SAMPLE: CLP,ABBES,90212,DFSPDUP,LOW,WATER,90212010,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,

ENHANCED DATA: 93L16Y24 #1038 BASE M/Z: 142 RIC: 7816.



STANDARD FILE: 93L16Y11SS #1039 BASE M/Z: 142 RIC: 66304.
11/16/93 21:02 ENHANCED (S 15B 2N 0T)



1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPEB

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212011

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y25

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DFSPEB

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: 90212011

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y25

Level: (low/med) LOW Date Received: 11/11/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

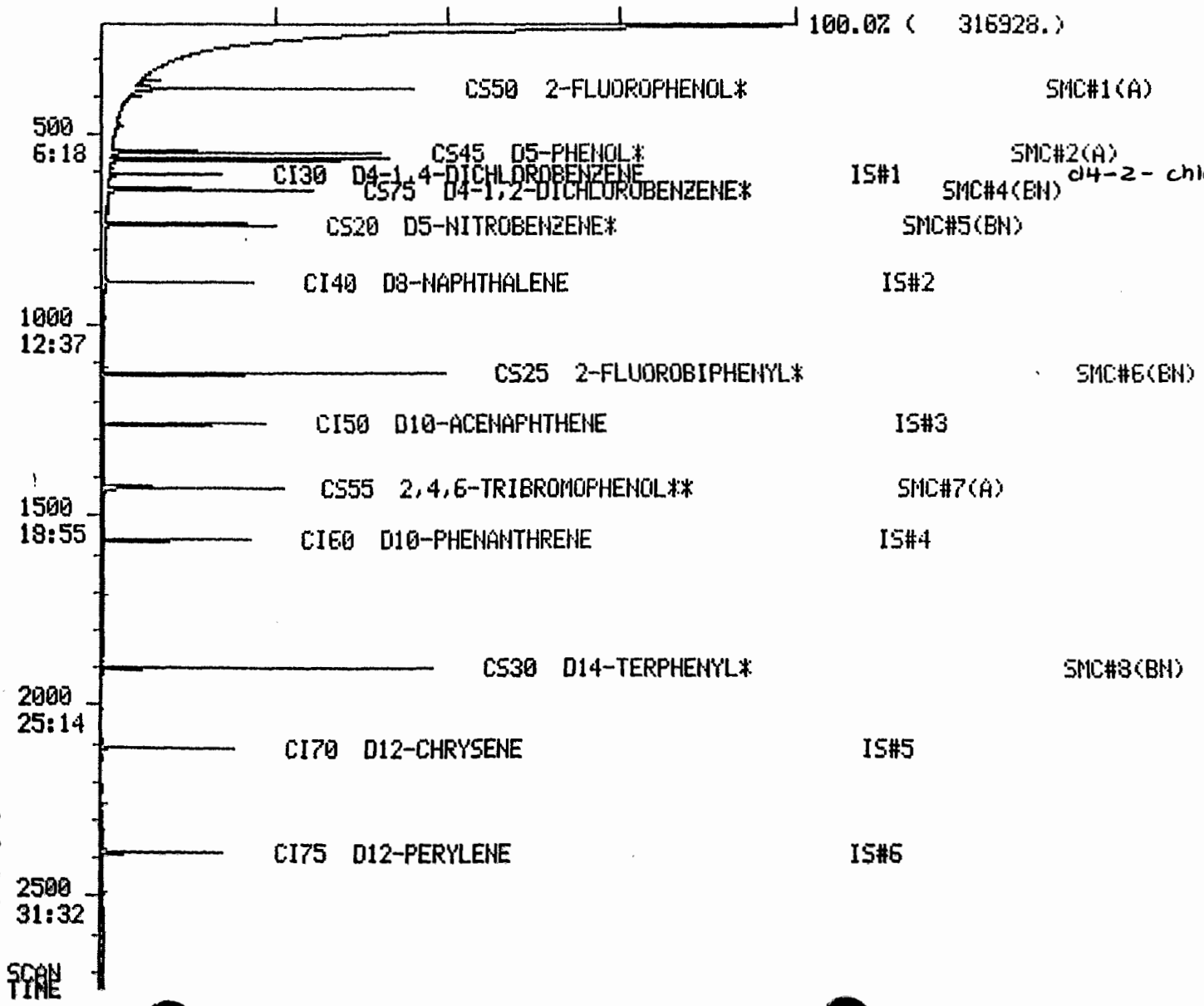
GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

000157 JSW

DATA FROM FILE: 93L16Y25 SCANS 210 TO 2743 ACQUIRED: 11/17/93 6:56:00
CALI: 93L16Y25 #3
SAMPLE: CLP,ABBES,90212,DFSPEB,LOW,WATER,90212011,BNA,EPA,CLP
CONDS.: CAP/0.32,93L16Y11SS,93L16Y10DF,



d4-2- chloro phenol

SMC # 3(A) at 561

000158

CH2M HILL

Surrogate Recovery Summary

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	S7 (2CP)#	S8 (DCB)#	TOT OUT
01	DFSPDUP	91	103	69	89	83	118	88	80	0
02	DFSPEB	88	100	126	86	86	95	86	79	0
03	DFSPMW13	98	83	36	91	88	95	94	89	0
04	DFSPMW13DL	88	94	30 *	89	88	96	83	79	1
05	DFSPMW20	101	105	91	98	94	105	97	88	0
06	DFSPMW21	99	109	65	94	91	126 *	93	86	1
07	DFSPMW21D	105	110	74	97	96	120	97	90	0
08	DFSPMW22	90	84	67	86	100	100	83	75	0
09	DFSPMW23	94	106	79	97	95	117	95	84	0
10	DFSPMW24	82	99	98	85	74	120	80	70	0
11	DFSPMW25	90	98	108	89	84	98	87	78	0
12	MW18	92	101	61	92	89	112	89	81	0
13	SBLK7R	101	115	142 *	98	98	98	95	85	1
14	SBLK7V	83	103	135	87	85	80	84	79	0

		QC LIMITS	
S1 (NBZ)	= Nitrobenzene-d5	(35-114)	
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)	
S3 (TPH)	= Terphenyl-d14	(33-141)	
S4 (PHL)	= Phenol-d5	(10-110)	
S5 (2FP)	= 2-Fluorophenol	(21-110)	
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)	
S7 (2CP)	= 2-Chlorophenol-d4	(33-110)	(advisory)
S8 (DCB)	= 1,2-Dichlorobenzene-d4	(16-110)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

CH2M HILL

Blank(s) Results

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK7R

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID: 93L16Y12BK Lab Sample ID: BKL15CLPA

Instrument ID: FINY Date Extracted: 11/15/93

Matrix: (soil/water) WATER Date Analyzed: 11/16/93

Level:(low/med) LOW Time Analyzed: 2147

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	DFSPDUP	90212010	93L16Y24	11/17/93
02	DFSPEB	90212011	93L16Y25	11/17/93
03	DFSPMW13	90212008	93L16Y22	11/17/93
04	DFSPMW20	90212009	93L16Y23	11/17/93
05	DFSPMW21	90212003	93L16Y17	11/17/93
06	DFSPMW21D	90212002	93L16Y16	11/17/93
07	DFSPMW22	90212004	93L16Y18	11/17/93
08	DFSPMW23	90212005	93L16Y19	11/17/93
09	DFSPMW24	90212006	93L16Y20	11/17/93
10	DFSPMW25	90212007	93L16Y21	11/17/93
11	MW18	90212001	93L16Y15	11/16/93

COMMENTS: CLP,BLANK,,SBLK7R,LOW,WATER,BKL15CLPA,BNA,BLANK,CLP CAP/0.32,93L16Y11SS,93L16Y10DF,

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK7R

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: BKL15CLPA

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y12BK

Level: (low/med) LOW Date Received: 11/15/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/16/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK7R

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: BKL15CLPA

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L16Y12BK

Level: (low/med) LOW Date Received: 11/15/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/16/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

JRW

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK7V

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID: 93L17Y06BK Lab Sample ID: BKL15CLPA_2

Instrument ID: FINY Date Extracted: 11/15/93

Matrix: (soil/water) WATER Date Analyzed: 11/17/93

Level:(low/med) LOW Time Analyzed: 1739

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	DFSPMW13DL	90212008DL	93L17Y04DL	11/17/93

COMMENTS: CLP,BLANK,,SBLK7V,LOW,WATER,BKL15CLPA,BNA,BLANK,CLP CAP/0.32,93L17Y02SS,93L17Y02SS,,,,,FINY

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK7V

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: BKL15CLPA 2

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L17Y06BK

Level: (low/med) LOW Date Received: 11/15/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK7V

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Matrix: (soil/water) WATER Lab Sample ID: BKL15CLPA 2

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 93L17Y06BK

Level: (low/med) LOW Date Received: 11/15/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/15/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	0.03	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	0.04	J
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	0.2	J
117-84-0	Di-n-Octyl Phthalate	0.5	J
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

CH2M HILL

Tune Summary

5B
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID: 93L11Y19DF DFTPP Injection Date: 11/11/93

Instrument ID: FINY DFTPP Injection Time: 2254

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 80.0% of mass 198	38.9
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	49.0
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	25.0 - 75.0% of mass 198	48.3
197	Less than 1.0% of mass 198	0.1
198	Base peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.5
275	10.0 - 30.0% of mass 198	25.4
365	Greater than 0.75% of mass 198	2.68
441	Present, but less than mass 443	13.6
442	40.0 - 110.0% of mass 198	92.6
443	15.0 - 24.0% of mass 442	17.4 (18.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD160	BNA_160_STND	93L11Y20IC	11/11/93	2315
02	SSTD120	BNA_120_STND	93L11Y21IC	11/12/93	0013
03	SSTD080	BNA_080_STND	93L11Y22IC	11/12/93	0050
04	SSTD050	BNA_050_STND	93L11Y23IC	11/12/93	0134
05	SSTD020	BNA_020_STND	93L11Y24IC	11/12/93	0218

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID: 93L16Y10DF DFTPP Injection Date: 11/16/93

Instrument ID: FINY DFTPP Injection Time: 2040

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 80.0% of mass 198	79.5
68	Less than 2.0% of mass 69	0.5 (0.6)1
69	Mass 69 relative abundance	77.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	25.0 - 75.0% of mass 198	62.4
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.3
275	10.0 - 30.0% of mass 198	25.2
365	Greater than 0.75% of mass 198	3.27
441	Present, but less than mass 443	10.2
442	40.0 - 110.0% of mass 198	72.8
443	15.0 - 24.0% of mass 442	13.2 (18.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	BNA_050_STND	93L16Y11SS	11/16/93	2102
02	SBLK7R	BKL15CLPA	93L16Y12BK	11/16/93	2147
03	MW18	90212001	93L16Y15	11/16/93	2347
04	DFSPMW21D	90212002	93L16Y16	11/17/93	0032
05	DFSPMW21	90212003	93L16Y17	11/17/93	0114
06	DFSPMW22	90212004	93L16Y18	11/17/93	0158
07	DFSPMW23	90212005	93L16Y19	11/17/93	0240
08	DFSPMW24	90212006	93L16Y20	11/17/93	0323
09	DFSPMW25	90212007	93L16Y21	11/17/93	0406
10	DFSPMW13	90212008	93L16Y22	11/17/93	0447
11	DFSPMW20	90212009	93L16Y23	11/17/93	0532
12	DFSPDUP	90212010	93L16Y24	11/17/93	0614
13	DFSPEB	90212011	93L16Y25	11/17/93	0656

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID: 93L17Y02SS DFTPP Injection Date: 11/17/93

Instrument ID: FINY DFTPP Injection Time: 1116

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 80.0% of mass 198	65.9
68	Less than 2.0% of mass 69	1.0 (1.5)1
69	Mass 69 relative abundance	67.9
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	25.0 - 75.0% of mass 198	59.1
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.1
275	10.0 - 30.0% of mass 198	26.7
365	Greater than 0.75% of mass 198	3.94
441	Present, but less than mass 443	11.8
442	40.0 - 110.0% of mass 198	76.3
443	15.0 - 24.0% of mass 442	14.6 (19.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	BNA_050_STND	93L17Y02SS	11/17/93	1116
02	DFSPMW13DL	90212008DL	93L17Y04DL	11/17/93	1328
03	SBLK7V	BKL15CLPA_2	93L17Y06BK	11/17/93	1739

CH2M HILL

Initial Calibration Summary

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Instrument ID: FINY Calibration Date(s): 11/11/93 11/12/93

Calibration Times: 2315 0218

LAB FILE ID: RRF20 = 93L11Y24IC RRF50 = 93L11Y23IC
RRF80 = 93L11Y22IC RRF120= 93L11Y21IC RRF160= 93L11Y20IC

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol *	1.551	1.642	1.611	1.593	1.498	1.579	3.5*
bis(2-Chloroethyl)Ether *	1.404	1.466	1.410	1.335	1.248	1.373	6.1*
2-Chlorophenol *	1.280	1.402	1.393	1.375	1.309	1.352	4.0*
1,3-Dichlorobenzene *	1.278	1.361	1.330	1.317	1.264	1.310	3.0*
1,4-Dichlorobenzene *	1.478	1.609	1.558	1.494	1.451	1.518	4.2*
1,2-Dichlorobenzene *	1.403	1.490	1.449	1.388	1.287	1.403	5.4*
2-Methylphenol *	1.134	1.224	1.209	1.189	1.125	1.176	3.8*
2,2'-oxybis(1-Chloropropane	1.826	1.944	1.934	1.943	1.847	1.899	3.0
4-Methylphenol *	1.162	1.266	1.272	1.261	1.245	1.241	3.7*
N-Nitroso-Di-n-Propylamine *	1.087	1.187	1.187	1.177	1.102	1.148	4.3*
Hexachloroethane *	0.580	0.644	0.639	0.607	0.563	0.607	5.9*
Nitrobenzene *	0.409	0.428	0.422	0.405	0.375	0.408	5.0*
Isophorone *	0.735	0.769	0.751	0.721	0.676	0.730	4.8*
2-Nitrophenol *	0.158	0.173	0.174	0.172	0.166	0.169	4.0*
2,4-Dimethylphenol *	0.321	0.341	0.339	0.324	0.308	0.327	4.2*
bis(2-Chloroethoxy)Methane *	0.470	0.487	0.476	0.455	0.427	0.463	5.0*
2,4-Dichlorophenol *	0.256	0.277	0.273	0.262	0.252	0.264	4.1*
1,2,4-Trichlorobenzene *	0.296	0.299	0.287	0.274	0.259	0.283	5.9*
Naphthalene *	1.011	1.002	0.942	0.875	0.807	0.927	9.3*
4-Chloroaniline	0.369	0.404	0.408	0.395	0.382	0.392	4.1
Hexachlorobutadiene	0.172	0.170	0.159	0.145	0.132	0.156	10.9
4-Chloro-3-Methylphenol *	0.266	0.290	0.290	0.281	0.269	0.279	4.1*
2-Methylnaphthalene *	0.598	0.595	0.561	0.510	0.476	0.548	9.8*
Hexachlorocyclopentadiene	0.274	0.305	0.302	0.299	0.277	0.291	5.1
2,4,6-Trichlorophenol *	0.359	0.380	0.377	0.371	0.354	0.368	3.1*
2,4,5-Trichlorophenol *		0.391	0.390	0.384	0.367	0.383	2.9*
2-Chloronaphthalene *	1.149	1.156	1.129	1.086	1.014	1.107	5.3*
2-Nitroaniline		0.452	0.459	0.453	0.423	0.447	3.6
Dimethylphthalate	1.308	1.309	1.265	1.182	1.067	1.226	8.4
Acenaphthylene *	1.851	1.872	1.803	1.682	1.507	1.743	8.7*
2,6-Dinitrotoluene *	0.261	0.295	0.310	0.313	0.309	0.298	7.2*
3-Nitroaniline		0.324	0.338	0.351	0.331	0.336	3.4
Acenaphthene *	1.204	1.184	1.134	1.060	0.989	1.114	8.0*
2,4-Dinitrophenol		0.165	0.182	0.192	0.194	0.183	7.2
4-Nitrophenol		0.213	0.213	0.213	0.199	0.210	3.3
Dibenzofuran *	1.594	1.597	1.527	1.430	1.322	1.494	7.9*
2,4-Dinitrotoluene *	0.376	0.413	0.424	0.430	0.415	0.412	5.1*

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Instrument ID: FINY Calibration Date(s): 11/11/93 11/12/93

Calibration Times: 2315 0218

LAB FILE ID: RRF20 = 93L11Y24IC RRF50 = 93L11Y23IC
RRF80 = 93L11Y22IC RRF120= 93L11Y21IC RRF160= 93L11Y20IC

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Diethylphthalate	1.492	1.519	1.464	1.364	1.250	1.418	7.8
4-Chlorophenyl-phenylether *	0.607	0.636	0.635	0.618	0.578	0.615	3.9*
Fluorene *	1.206	1.176	1.078	0.984	0.897	1.068	12.1*
4-Nitroaniline		0.251	0.269	0.301	0.317	0.284	10.6
4,6-Dinitro-2-Methylphenol		0.137	0.144	0.148	0.145	0.144	3.2
N-Nitrosodiphenylamine (1)	0.502	0.522	0.509	0.491	0.462	0.497	4.6
4-Bromophenyl-phenylether *	0.204	0.212	0.205	0.196	0.182	0.200	5.7*
Hexachlorobenzene *	0.250	0.248	0.237	0.224	0.206	0.233	7.9*
Pentachlorophenol *		0.159	0.160	0.159	0.152	0.158	2.3*
Phenanthrene *	1.058	1.034	0.974	0.933	0.857	0.971	8.3*
Anthracene *	1.050	1.061	0.990	0.935	0.863	0.980	8.[illegible]
Carbazole	0.909	0.868	0.800	0.797	0.789	0.833	6.[illegible]
Di-n-Butylphthalate	1.354	1.369	1.308	1.231	1.160	1.284	6.8
Fluoranthene *	1.047	1.058	0.982	0.909	0.837	0.967	9.7*
Pyrene *	1.164	1.109	1.014	0.933	0.871	1.018	11.9*
Butylbenzylphthalate	0.631	0.654	0.648	0.628	0.603	0.633	3.2
3,3'-Dichlorobenzidine	0.303	0.277	0.237	0.227	0.226	0.254	13.5
Benzo(a)Anthracene *	1.050	1.033	0.949	0.862	0.785	0.936	12.0*
Chrysene *	1.067	1.040	0.977	0.918	0.869	0.974	8.5*
bis(2-Ethylhexyl)Phthalate	0.986	1.036	1.036	1.016	0.978	1.010	2.7
Di-n-Octyl Phthalate	1.483	1.604	1.535	1.403	1.256	1.456	9.2
Benzo(b)Fluoranthene *	1.103	1.149	1.091	1.099	0.922	1.073	8.1*
Benzo(k)Fluoranthene *	0.971	0.979	0.914	0.889	0.831	0.917	6.7*
Benzo(a)Pyrene *	0.957	1.012	0.963	0.891	0.803	0.925	8.7*
Indeno(1,2,3-cd)Pyrene *	1.133	1.173	1.094	1.005	0.848	1.051	12.3*
Dibenz(a,h)Anthracene *	0.912	0.940	0.857	0.737	0.626	0.814	16.1*
Benzo(g,h,i)Perylene *	0.940	0.963	0.939	0.907	0.687	0.887	12.8*
Nitrobenzene-d5	0.395	0.418	0.417	0.406	0.374	0.402	4.5
2-Fluorobiphenyl *	1.246	1.219	1.145	1.076	0.994	1.136	9.1*
Terphenyl-d14 *	0.790	0.757	0.703	0.634	0.581	0.693	12.4*
Phenol-d5 *	1.508	1.585	1.560	1.521	1.411	1.517	4.4*
2-Fluorophenol *	1.107	1.217	1.176	1.196	1.078	1.155	5.2*
2,4,6-Tribromophenol	0.201	0.214	0.215	0.214	0.212	0.211	2.8
2-Chlorophenol-d4 *	1.272	1.329	1.304	1.252	1.188	1.269	4.3*
1,2-Dichlorobenzene-d4 *	0.877	0.919	0.871	0.816	0.766	0.850	7.0*

(1) Cannot be separated from Diphenylamine

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

CH2M HILL

Continuing Calibration Summary

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Instrument ID: FINY Calibration date: 11/16/93 Time: 2102

Lab File ID: 93L16Y11SS Init. Calib. Date(s): 11/11/93 11/12/93

Init. Calib. Times: 2315 0218

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	1.579	1.516	0.800	4.0	25.0
bis(2-Chloroethyl)Ether	1.373	1.311	0.700	4.5	25.0
2-Chlorophenol	1.352	1.241	0.800	8.2	25.0
1,3-Dichlorobenzene	1.310	1.263	0.600	3.6	25.0
1,4-Dichlorobenzene	1.518	1.450	0.500	4.5	25.0
1,2-Dichlorobenzene	1.403	1.318	0.400	6.1	25.0
2-Methylphenol	1.176	1.082	0.700	8.0	25.0
2,2'-oxybis(1-Chloropropane)	1.899	2.187		-15.2	
4-Methylphenol	1.241	1.139	0.600	8.2	25.0
N-Nitroso-Di-n-Propylamine	1.148	1.156	0.500	-0.7	25.0
Hexachloroethane	0.607	0.620	0.300	-2.1	25.0
Nitrobenzene	0.408	0.412	0.200	-1.0	25.0
Isophorone	0.730	0.702	0.400	3.8	25.0
2-Nitrophenol	0.169	0.139	0.100	17.8	25.0
2,4-Dimethylphenol	0.327	0.321	0.200	1.8	25.0
bis(2-Chloroethoxy)Methane	0.463	0.436	0.300	5.8	25.0
2,4-Dichlorophenol	0.264	0.249	0.200	5.7	25.0
1,2,4-Trichlorobenzene	0.283	0.281	0.200	0.7	25.0
Naphthalene	0.927	0.929	0.700	-0.2	25.0
4-Chloroaniline	0.392	0.349		11.0	
Hexachlorobutadiene	0.156	0.190		-21.8	
4-Chloro-3-Methylphenol	0.279	0.262	0.200	6.1	25.0
2-Methylnaphthalene	0.548	0.552	0.400	-0.7	25.0
Hexachlorocyclopentadiene	0.291	0.331		-13.8	
2,4,6-Trichlorophenol	0.368	0.305	0.200	17.1	25.0
2,4,5-Trichlorophenol	0.383	0.330	0.200	13.8	25.0
2-Chloronaphthalene	1.107	1.004	0.800	9.3	25.0
2-Nitroaniline	0.447	0.425		4.9	
Dimethylphthalate	1.226	1.164		5.1	
Acenaphthylene	1.743	1.660	1.300	4.8	25.0
2,6-Dinitrotoluene	0.298	0.222	0.200	25.5	25.0
3-Nitroaniline	0.336	0.257		23.5	
Acenaphthene	1.114	1.068	0.800	4.1	25.0
2,4-Dinitrophenol	0.183	0.114		37.7	
4-Nitrophenol	0.210	0.231		-10.0	
Dibenzofuran	1.494	1.505	0.800	-0.7	25.0
2,4-Dinitrotoluene	0.412	0.321	0.200	22.1	25.0

All other compounds must meet a minimum RRF of 0.010.

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Instrument ID: FINY Calibration date: 11/16/93 Time: 2102

Lab File ID: 93L16Y11SS Init. Calib. Date(s): 11/11/93 11/12/93

Init. Calib. Times: 2315 0218

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Diethylphthalate	1.418	1.469		-3.6	
4-Chlorophenyl-phenylether	0.615	0.537	0.400	12.7	25.0
Fluorene	1.068	1.243	0.900	-16.4	25.0
4-Nitroaniline	0.284	0.193		32.0	
4,6-Dinitro-2-Methylphenol	0.144	0.101		29.9	
N-Nitrosodiphenylamine (1)	0.497	0.456		8.2	
4-Bromophenyl-phenylether	0.200	0.195	0.100	2.5	25.0
Hexachlorobenzene	0.233	0.244	0.100	-4.7	25.0
Pentachlorophenol	0.158	0.129	0.050	18.4	25.0
Phenanthrene	0.971	0.957	0.700	1.4	25.0
Anthracene	0.980	0.940	0.700	4.1	25.0
Carbazole	0.833	0.679		18.5	
Di-n-Butylphthalate	1.284	1.262		1.7	
Fluoranthene	0.967	0.954	0.600	1.3	25.0
Pyrene	1.018	0.987	0.600	3.0	25.0
Butylbenzylphthalate	0.633	0.518		18.2	
3,3'-Dichlorobenzidine	0.254	0.240		5.5	
Benzo(a)Anthracene	0.936	0.898	0.800	4.1	25.0
Chrysene	0.974	0.867	0.700	11.0	25.0
bis(2-Ethylhexyl)Phthalate	1.010	0.824		18.4	
Di-n-Octyl Phthalate	1.456	1.507		-3.5	
Benzo(b)Fluoranthene	1.073	1.047	0.700	2.4	25.0
Benzo(k)Fluoranthene	0.917	1.050	0.700	-14.5	25.0
Benzo(a)Pyrene	0.925	0.915	0.700	1.1	25.0
Indeno(1,2,3-cd)Pyrene	1.051	1.078	0.500	-2.6	25.0
Dibenz(a,h)Anthracene	0.814	0.879	0.400	-8.0	25.0
Benzo(g,h,i)Perylene	0.887	0.831	0.500	6.3	25.0
Nitrobenzene-d5	0.402	0.392	0.200	2.5	25.0
2-Fluorobiphenyl	1.136	1.131	0.700	0.4	25.0
Terphenyl-d14	0.693	0.699	0.500	-0.9	25.0
Phenol-d5	1.517	1.448	0.800	4.5	25.0
2-Fluorophenol	1.155	1.132	0.600	2.0	25.0
2,4,6-Tribromophenol	0.211	0.198		6.2	
2-Chlorophenol-d4	1.269	1.266	0.800	0.2	25.0
1,2-Dichlorobenzene-d4	0.850	0.896	0.400	-5.4	25.0

(1) Cannot be separated from Diphenylamine

All other compounds must meet a minimum RRF of 0.010.

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Instrument ID: FINY Calibration date: 11/17/93 Time: 1116

Lab File ID: 93L17Y02SS Init. Calib. Date(s): 11/11/93 11/12/93

Init. Calib. Times: 2315 0218

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	1.579	1.470	0.800	6.9	25.0
bis(2-Chloroethyl)Ether	1.373	1.313	0.700	4.4	25.0
2-Chlorophenol	1.352	1.254	0.800	7.2	25.0
1,3-Dichlorobenzene	1.310	1.231	0.600	6.0	25.0
1,4-Dichlorobenzene	1.518	1.410	0.500	7.1	25.0
1,2-Dichlorobenzene	1.403	1.325	0.400	5.6	25.0
2-Methylphenol	1.176	1.093	0.700	7.1	25.0
2,2'-oxybis(1-Chloropropane)	1.899	2.248		-18.4	
4-Methylphenol	1.241	1.149	0.600	7.4	25.0
N-Nitroso-Di-n-Propylamine	1.148	1.192	0.500	-3.8	25.0
Hexachloroethane	0.607	0.642	0.300	-5.8	25.0
Nitrobenzene	0.408	0.416	0.200	-2.0	25.0
Isophorone	0.730	0.708	0.400	3.0	25.0
2-Nitrophenol	0.169	0.143	0.100	15.4	25.0
2,4-Dimethylphenol	0.327	0.327	0.200	0.0	25.0
bis(2-Chloroethoxy)Methane	0.463	0.439	0.300	5.2	25.0
2,4-Dichlorophenol	0.264	0.248	0.200	6.1	25.0
1,2,4-Trichlorobenzene	0.283	0.280	0.200	1.1	25.0
Naphthalene	0.927	0.935	0.700	-0.9	25.0
4-Chloroaniline	0.392	0.353		9.9	
Hexachlorobutadiene	0.156	0.187		-19.9	
4-Chloro-3-Methylphenol	0.279	0.268	0.200	3.9	25.0
2-Methylnaphthalene	0.548	0.560	0.400	-2.2	25.0
Hexachlorocyclopentadiene	0.291	0.306		-5.2	
2,4,6-Trichlorophenol	0.368	0.303	0.200	17.7	25.0
2,4,5-Trichlorophenol	0.383	0.323	0.200	15.7	25.0
2-Chloronaphthalene	1.107	0.988	0.800	10.8	25.0
2-Nitroaniline	0.447	0.442		1.1	
Dimethylphthalate	1.226	1.140		7.0	
Acenaphthylene	1.743	1.633	1.300	6.3	25.0
2,6-Dinitrotoluene	0.298	0.223	0.200	25.2	25.0
3-Nitroaniline	0.336	0.270		19.6	
Acenaphthene	1.114	1.052	0.800	5.6	25.0
2,4-Dinitrophenol	0.183	0.123		32.8	
4-Nitrophenol	0.210	0.232		-10.5	
Dibenzofuran	1.494	1.439	0.800	3.7	25.0
2,4-Dinitrotoluene	0.412	0.322	0.200	21.8	25.0

(1) Cannot be separated from Diphenylamine

All other compounds must meet a minimum RRF of 0.010.

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Instrument ID: FINY Calibration date: 11/17/93 Time: 1116

Lab File ID: 93L17Y02SS Init. Calib. Date(s): 11/11/93 11/12/93

Init. Calib. Times: 2315 0218

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Diethylphthalate	1.418	1.467		-3.5	
4-Chlorophenyl-phenylether	0.615	0.530	0.400	13.8	25.0
Fluorene	1.068	1.216	0.900	-13.9	25.0
4-Nitroaniline	0.284	0.187		34.2	
4,6-Dinitro-2-Methylphenol	0.144	0.105		27.1	
N-Nitrosodiphenylamine (1)	0.497	0.466		6.2	
4-Bromophenyl-phenylether	0.200	0.194	0.100	3.0	25.0
Hexachlorobenzene	0.233	0.241	0.100	-3.4	25.0
Pentachlorophenol	0.158	0.136	0.050	13.9	25.0
Phenanthrene	0.971	0.947	0.700	2.5	25.0
Anthracene	0.980	0.924	0.700	5.7	25.0
Carbazole	0.833	0.706		15.2	
Di-n-Butylphthalate	1.284	1.271		1.0	
Fluoranthene	0.967	0.954	0.600	1.3	25.0
Pyrene	1.018	0.964	0.600	5.3	25.0
Butylbenzylphthalate	0.633	0.538		15.0	
3,3'-Dichlorobenzidine	0.254	0.254		0.0	
Benzo(a)Anthracene	0.936	0.903	0.800	3.5	25.0
Chrysene	0.974	0.865	0.700	11.2	25.0
bis(2-Ethylhexyl)Phthalate	1.010	0.857		15.2	
Di-n-Octyl Phthalate	1.456	1.598		-9.8	
Benzo(b)Fluoranthene	1.073	1.138	0.700	-6.1	25.0
Benzo(k)Fluoranthene	0.917	0.974	0.700	-6.2	25.0
Benzo(a)Pyrene	0.925	0.938	0.700	-1.4	25.0
Indeno(1,2,3-cd)Pyrene	1.051	1.067	0.500	-1.5	25.0
Dibenz(a,h)Anthracene	0.814	0.882	0.400	-8.4	25.0
Benzo(g,h,i)Perylene	0.887	0.803	0.500	9.5	25.0
Nitrobenzene-d5	0.402	0.398	0.200	1.0	25.0
2-Fluorobiphenyl	1.136	1.105	0.700	2.7	25.0
Terphenyl-d14	0.693	0.687	0.500	0.9	25.0
Phenol-d5	1.517	1.436	0.800	5.3	25.0
2-Fluorophenol	1.155	1.120	0.600	3.0	25.0
2,4,6-Tribromophenol	0.211	0.197		6.6	
2-Chlorophenol-d4	1.269	1.263	0.800	0.5	25.0
1,2-Dichlorobenzene-d4	0.850	0.888	0.400	-4.5	25.0

(1) Cannot be separated from Diphenylamine
All other compounds must meet a minimum RRF of 0.010.

CH2M HILL

Internal Standards Summary

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID (Standard): 93L16Y11SS Date Analyzed: 11/16/93

Instrument ID: FINY Time Analyzed: 2102

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	20250	7.60	74936	11.15	38892	15.90
	UPPER LIMIT	40500	8.10	149872	11.65	77784	16.40
	LOWER LIMIT	10125	7.10	37468	10.65	19446	15.40
	EPA SAMPLE NO.						
01	DFSPDUP	22768	7.57	88938	11.14	46176	15.90
02	DFSPEB	22734	7.57	82394	11.14	41097	15.87
03	DFSPMW13	24274	7.62	104174	11.19	71908	15.92
04	DFSPMW20	22498	7.57	81396	11.15	42318	15.90
05	DFSPMW21	21982	7.60	82662	11.17	42901	15.90
06	DFSPMW21D	19470	7.60	73522	11.15	37063	15.90
07	DFSPMW22	23306	7.63	88542	11.19	57928	15.92
08	DFSPMW23	23582	7.60	87677	11.15	45819	15.90
09	DFSPMW24	23456	7.60	92364	11.17	48183	15.90
10	DFSPMW25	22679	7.60	81868	11.14	41982	15.89
11	MW18	20608	7.60	73912	11.17	38058	15.90
12	SBLK7R	20800	7.60	70097	11.14	32175	15.89

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d8

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID (Standard): 93L16Y11SS Date Analyzed: 11/16/93

Instrument ID: FINY Time Analyzed: 2102

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	64612	19.70	66872	26.61	56740	30.09
	UPPER LIMIT	129224	20.20	133744	27.11	113480	30.59
	LOWER LIMIT	32306	19.20	33436	26.11	28370	29.59
	EPA SAMPLE NO.						
01	DFSPDUP	81629	19.69	68298	26.59	68129	30.07
02	DFSPEB	74357	19.67	63502	26.57	65652	30.06
03	DFSPMW13	102753	19.72	84504	26.61	82165	30.09
04	DFSPMW20	72041	19.70	63821	26.61	67984	30.09
05	DFSPMW21	74178	19.70	62120	26.59	67150	30.07
06	DFSPMW21D	64433	19.70	55486	26.59	62243	30.07
07	DFSPMW22	87127	19.72	74708	26.61	73453	30.09
08	DFSPMW23	78919	19.69	65093	26.59	66815	30.07
09	DFSPMW24	84237	19.72	70134	26.61	69982	30.09
10	DFSPMW25	72544	19.69	62440	26.59	66286	30.07
11	MW18	62727	19.70	53200	26.61	54586	30.09
12	SBLK7R	57751	19.69	48819	26.59	48148	30.07

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID (Standard): 93L17Y02SS Date Analyzed: 11/17/93

Instrument ID: FINY Time Analyzed: 1116

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	19482	7.60	72332	11.15	38252	15.90
	UPPER LIMIT	38964	8.10	144664	11.65	76504	16.40
	LOWER LIMIT	9741	7.10	36166	10.65	19126	15.40
	EPA SAMPLE NO.						
01	DFSPMW13DL	17774	7.60	68280	11.17	35891	15.90
02	SBLK7V	26030	7.60	91420	11.17	45008	15.90

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d8

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL LGN Contract: _____

Lab Code: _____ Case No.: ABBES SAS No.: _____ SDG No.: 90212

Lab File ID (Standard): 93L17Y02SS Date Analyzed: 11/17/93

Instrument ID: FINY Time Analyzed: 1116

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	62670	19.69	65830	26.61	55882	30.07
	UPPER LIMIT	125340	20.19	131660	27.11	111764	30.57
	LOWER LIMIT	31335	19.19	32915	26.11	27941	29.57
	EPA SAMPLE NO.						
01	DFSPMW13DL	62744	19.70	53120	26.61	53241	30.09
02	SBLK7V	73860	19.72	63564	26.62	63211	30.11

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

CH2M HILL

Surrogate Control Charts

WATER (continuous) ACID EXTRACTABLES GC/MS

	SAMPLE #	DATE	2-FP SURROGATE % REC.	D5-PHENOL SURROGATE % REC.	246-TBP SURROGATE % REC.	2-FP ACCEPT. ?	2-FP OUTLIER ?	D5-PHENOL ACCEPT. ?	D5-PHENOL OUTLIER ?	246-TBP ACCEPT. ?	246-TBP OUTLIER ?	COMMENTS
1	93H02Y08BK	08/03/93	85.0	89.0	75.0	YES	NO	YES	NO	YES	NO	
2	93H04Y08BK	08/04/93	81.0	86.0	66.0	YES	NO	YES	NO	YES	NO	
3	93H04Y11BK	08/05/93	89.0	87.0	78.0	YES	NO	YES	NO	YES	NO	
4	93H04Y13BK	08/05/93	81.0	87.0	62.0	YES	NO	YES	NO	YES	NO	
5	93H10Y17BK	08/11/93	97.0	92.0	85.0	YES	NO	YES	NO	YES	NO	
6	93H10Y24BK	08/11/93	93.0	94.0	77.0	YES	NO	YES	NO	YES	NO	
7	93H13Y03BK	08/13/93	92.0	92.0	89.0	YES	NO	YES	NO	YES	NO	
8	93H15Y03BK	08/15/93	97.0	90.0	91.0	YES	NO	YES	NO	YES	NO	
9	93H23Y03BK	08/23/93	81.0	81.0	85.0	YES	NO	YES	NO	YES	NO	
10	93H23Y05BK	08/23/93	94.0	94.0	90.0	YES	NO	YES	NO	YES	NO	
11	93H23Y12BK	08/24/93	84.0	84.0	90.0	YES	NO	YES	NO	YES	NO	
12	93H24Y03BK	08/24/93	91.0	87.0	92.0	YES	NO	YES	NO	YES	NO	
13	93H27Y03BK	08/27/93	98.0	91.0	87.0	YES	NO	YES	NO	YES	NO	
14	93H27Y08BK	08/27/93	92.0	88.0	79.0	YES	NO	YES	NO	YES	NO	
15	93H27Y17BK	08/28/93	102.0	94.0	81.0	YES	NO	YES	NO	YES	NO	
16	93H27Y26BK	08/28/93	90.0	86.0	91.0	YES	NO	YES	NO	YES	NO	
17	93J01Y08BK	09/02/93	92.0	93.0	91.0	YES	NO	YES	NO	YES	NO	
18	93J02Y03BK	09/02/93	96.0	96.0	83.0	YES	NO	YES	NO	YES	NO	
19	93J02Y17BK	09/03/93	89.0	89.0	85.0	YES	NO	YES	NO	YES	NO	
20	93J02Y19BK	09/03/93	100.0	89.0	85.0	YES	NO	YES	NO	YES	NO	
21	93J02Y24BK	09/03/93	97.0	94.0	104.0	YES	NO	YES	NO	YES	NO	
22	93J03Y12BK	09/04/93	91.0	92.0	88.0	YES	NO	YES	NO	YES	NO	
23	93J07Y06BK	09/07/93	92.0	95.0	76.0	YES	NO	YES	NO	YES	NO	
24	93J07Y08BK	09/07/93	98.0	100.0	97.0	YES	NO	YES	NO	YES	NO	
25	93J07Y10BK	09/08/93	93.0	95.0	76.0	YES	NO	YES	NO	YES	NO	
26	93J08Y03BK	09/08/93	88.0	89.0	80.0	YES	NO	YES	NO	YES	NO	
27	93J08Y05BK	09/08/93	91.0	89.0	77.0	YES	NO	YES	NO	YES	NO	
28	93J08Y12BK	09/09/93	92.0	94.0	79.0	YES	NO	YES	NO	YES	NO	
29	93J09Y03BK	09/09/93	93.0	92.0	74.0	YES	NO	YES	NO	YES	NO	
30	93J09Y10BK	09/09/93	87.0	85.0	68.0	YES	NO	YES	NO	YES	NO	
31	93J10Y03BK	09/10/93	82.0	78.0	68.0	YES	NO	YES	NO	YES	NO	
32	93J12Y03BK	09/12/93	81.0	79.0	59.0	YES	NO	YES	NO	YES	NO	
33	93J13Y03BK	09/13/93	100.0	100.0	100.0	YES	NO	YES	NO	YES	NO	
34	93J22Y03BK	09/22/93	100.0	91.0	95.0	YES	NO	YES	NO	YES	NO	
35	93J23Y08BK	09/23/93	96.0	87.0	88.0	YES	NO	YES	NO	YES	NO	
36	93J23Y12BK	09/24/93	94.0	85.0	84.0	YES	NO	YES	NO	YES	NO	
37	93J24Y03BK	09/24/93	93.0	83.0	89.0	YES	NO	YES	NO	YES	NO	
38	93J24Y13BK	09/25/93	89.0	83.0	83.0	YES	NO	YES	NO	YES	NO	
39	93J27Y03BK	09/27/93	98.0	87.0	98.0	YES	NO	YES	NO	YES	NO	
40	93J27Y11BK	09/28/93	95.0	87.0	93.0	YES	NO	YES	NO	YES	NO	
41	93J28Y03BK	09/28/93	102.0	91.0	97.0	YES	NO	YES	NO	YES	NO	
42	93J28Y11BK	09/29/93	94.0	87.0	91.0	YES	NO	YES	NO	YES	NO	
43	93J28Y13BK	09/29/93	94.0	84.0	91.0	YES	NO	YES	NO	YES	NO	
44	93J29Y03BK	09/29/93	97.0	87.0	88.0	YES	NO	YES	NO	YES	NO	
45	93J29Y08BK	09/30/93	109.0	93.0	103.0	YES	NO	YES	NO	YES	NO	
46	93J30Y03BK	09/30/93	111.0	94.0	100.0	YES	NO	YES	NO	YES	NO	
47	93J30Y10BK	09/30/93	90.0	82.0	95.0	YES	NO	YES	NO	YES	NO	
48	93K10Y03BK	10/10/93	96.0	97.0	81.0	YES	NO	YES	NO	YES	NO	
49	93K10Y05BK	10/10/93	93.0	93.0	82.0	YES	NO	YES	NO	YES	NO	
50	93K10Y07BK	10/10/93	98.0	96.0	82.0	YES	NO	YES	NO	YES	NO	
51	93K11Y10BK	10/11/93	99.0	99.0	80.0	YES	NO	YES	NO	YES	NO	
52	93K11Y12BK	10/11/93	88.0	91.0	73.0	YES	NO	YES	NO	YES	NO	
53	93K19Y09BK	10/19/93	101.0	102.0	75.0	YES	NO	YES	NO	YES	NO	
54	93K20Y13BK	10/20/93	113.0	108.0	92.0	NO	YES	YES	NO	YES	NO	
55	93K20Y24BK	10/21/93	103.0	103.0	84.0	YES	NO	YES	NO	YES	NO	
56	93K22Y08BK	10/22/93	93.0	85.0	73.0	YES	NO	YES	NO	YES	NO	
57	93K22Y11BK	10/22/93	96.0	88.0	85.0	YES	NO	YES	NO	YES	NO	
58	93L11Y25BK	11/12/93	94.0	95.0	82.0	YES	NO	YES	NO	YES	NO	
59	93L12Y03BK	11/12/93	100.0	101.0	92.0	YES	NO	YES	NO	YES	NO	
60	93L12Y12BK	11/12/93	88.0	88.0	78.0	YES	NO	YES	NO	YES	NO	
61	93L13Y03BK	11/13/93	105.0	108.0	118.0	YES	NO	YES	NO	YES	YES	
62	93L13Y07BK	11/13/93	117.0	108.0	118.0	YES	YES	YES	NO	YES	NO	
63	93L13Y14BK	11/13/93	105.0	108.0	125.0	YES	NO	YES	NO	NO	YES	
64	93L13Y17BK	11/13/93	93.0	96.0	119.0	YES	NO	YES	NO	YES	NO	
65	93L14Y03BK	11/14/93	92.0	96.0	93.0	YES	NO	YES	NO	YES	NO	
66	93L14Y14BK	11/14/93	96.0	98.0	103.0	YES	NO	YES	NO	YES	NO	
67	93L14Y19BK	11/14/93	85.0	87.0	86.0	YES	NO	YES	NO	YES	NO	
68	93L14Y22BK	11/14/93	94.0	97.0	93.0	YES	NO	YES	NO	YES	NO	
69	93L14Y27BK	11/14/93	101.0	104.0	99.0	YES	NO	YES	NO	YES	NO	
70	93L14Y33BK	11/15/93	90.0	98.0	91.0	YES	NO	YES	NO	YES	NO	
71	93L15Y03BK	11/15/93	47.0	47.0	40.0	YES	YES	YES	YES	YES	YES	

WATER (continuous) ACID EXTRACTABLES GC/MS

	SAMPLE #	DATE	2-FP SURROGATE % REC.	D5-PHENOL SURROGATE % REC.	246-TBP SURROGATE % REC.	2-FP ACCEPT. ?	2-FP OUTLIER ?	D5-PHENOL ACCEPT. ?	D5-PHENOL OUTLIER ?	246-TBP ACCEPT. ?	246-TBP OUTLIER ?	COMMENTS
72	93L16Y07BK	11/16/93	98.0	97.0	97.0	YES	NO	YES	NO	YES	NO	
73	93L16Y08BK	11/16/93	46.0	46.0	40.0	YES	YES	YES	YES	YES	YES	
74	93L16Y12BK	11/16/93	98.0	98.0	98.0	YES	YES	YES	YES	YES	YES	
75	93L17Y06BK	11/17/93	85.0	87.0	80.0	YES	NO	YES	NO	YES	NO	
76												
77												
78												
79												
80												
81												
82												
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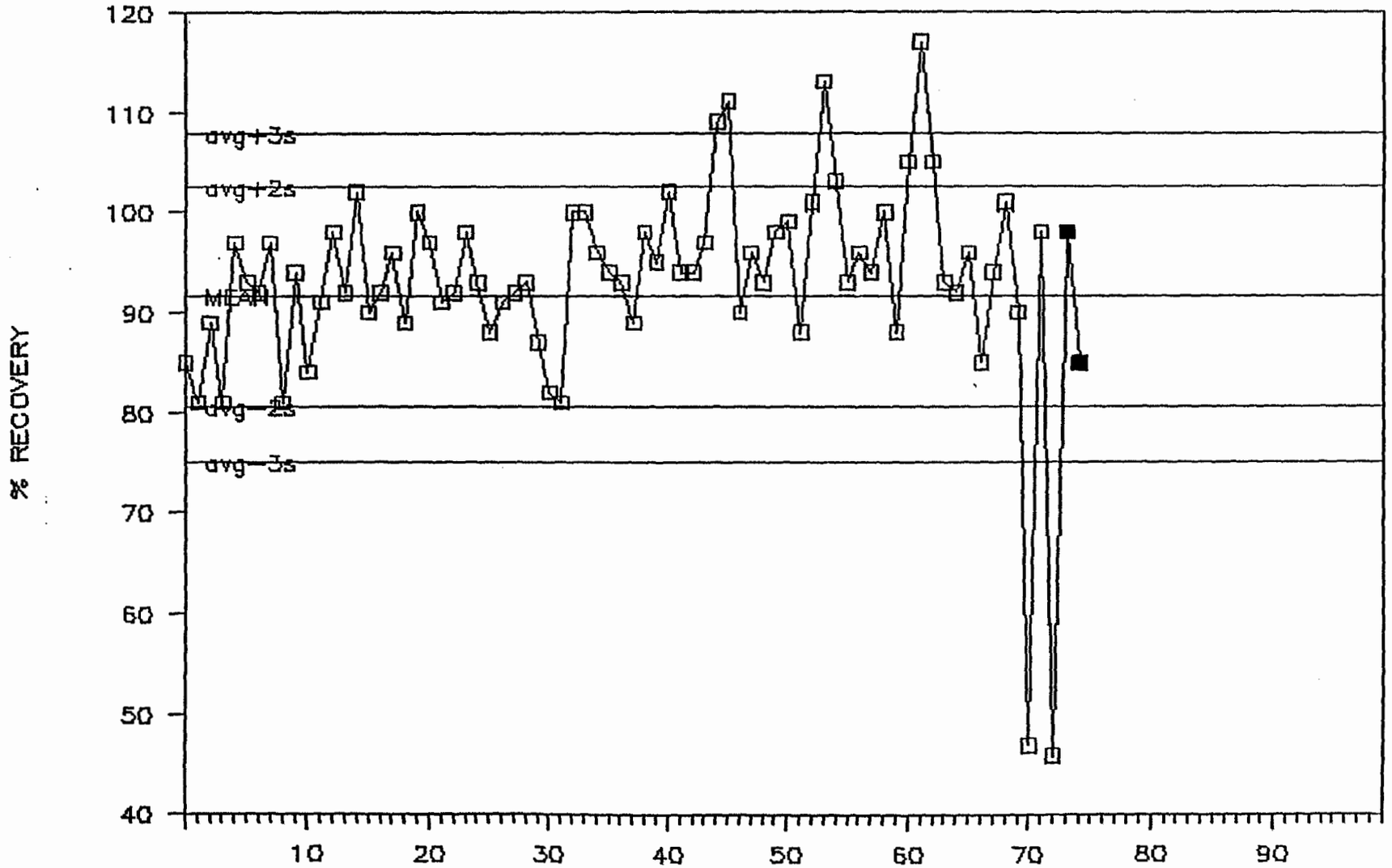
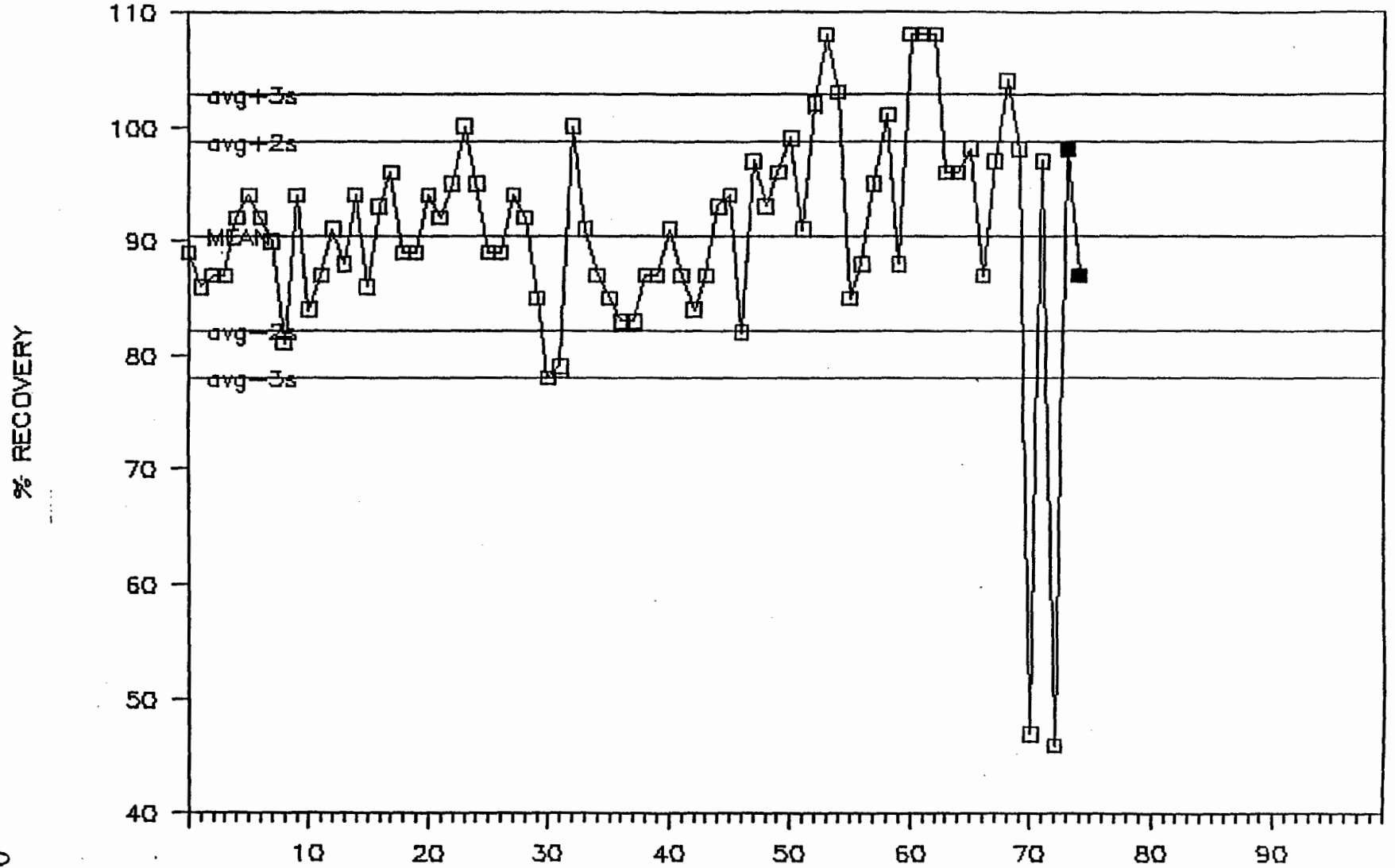
SURROGATE RECOVERY (WATER—CONT.)

2—FLUOROPHENOL



SURROGATE RECOVERY (WATER—CONT.)

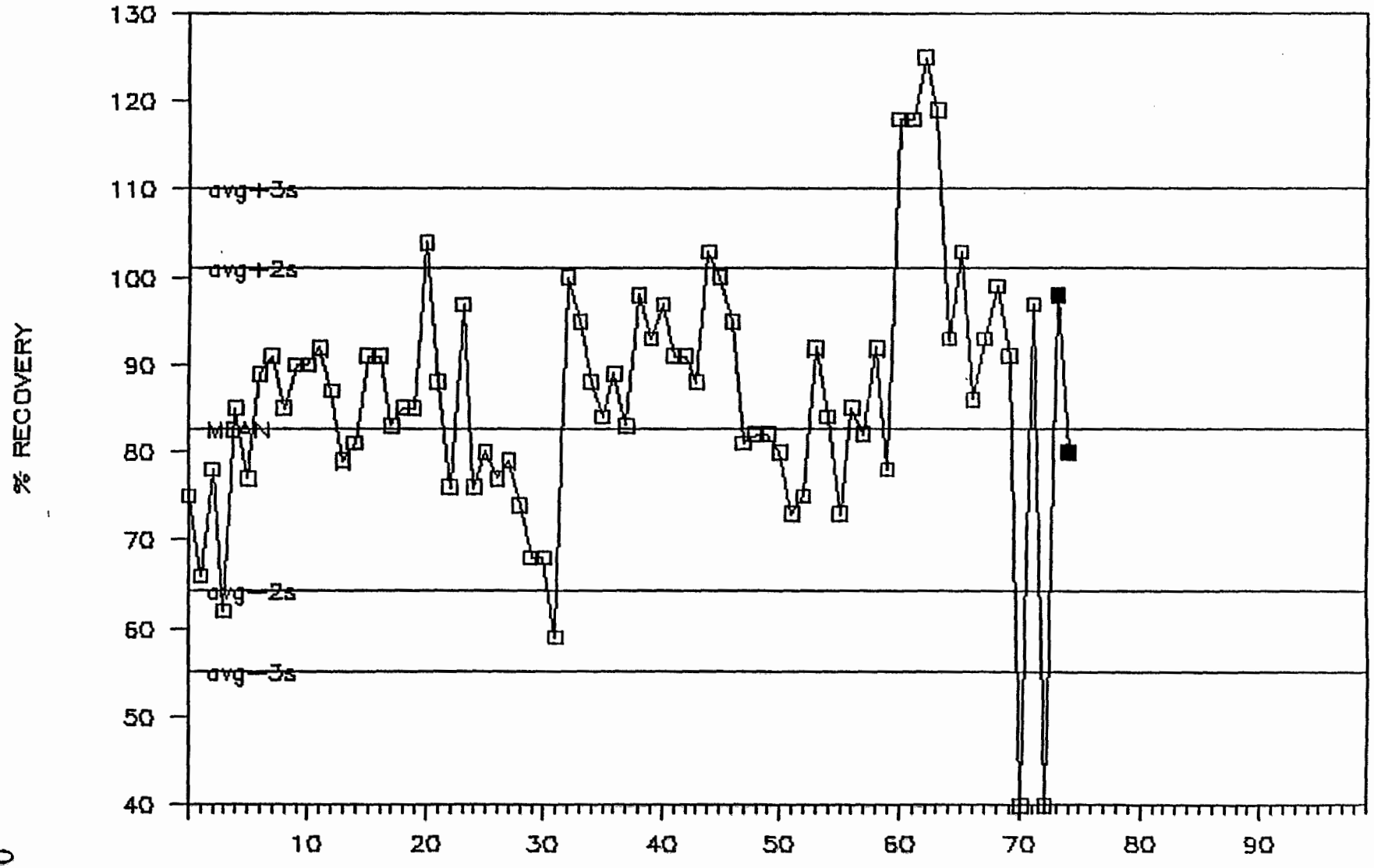
D5—PHENOL



000189

SURROGATE RECOVERY (WATER—CONT.)

2,4,6—TRIBROMOPHENOL



000190

WATER (Continuous) BASE NEUTRALS GC/MS

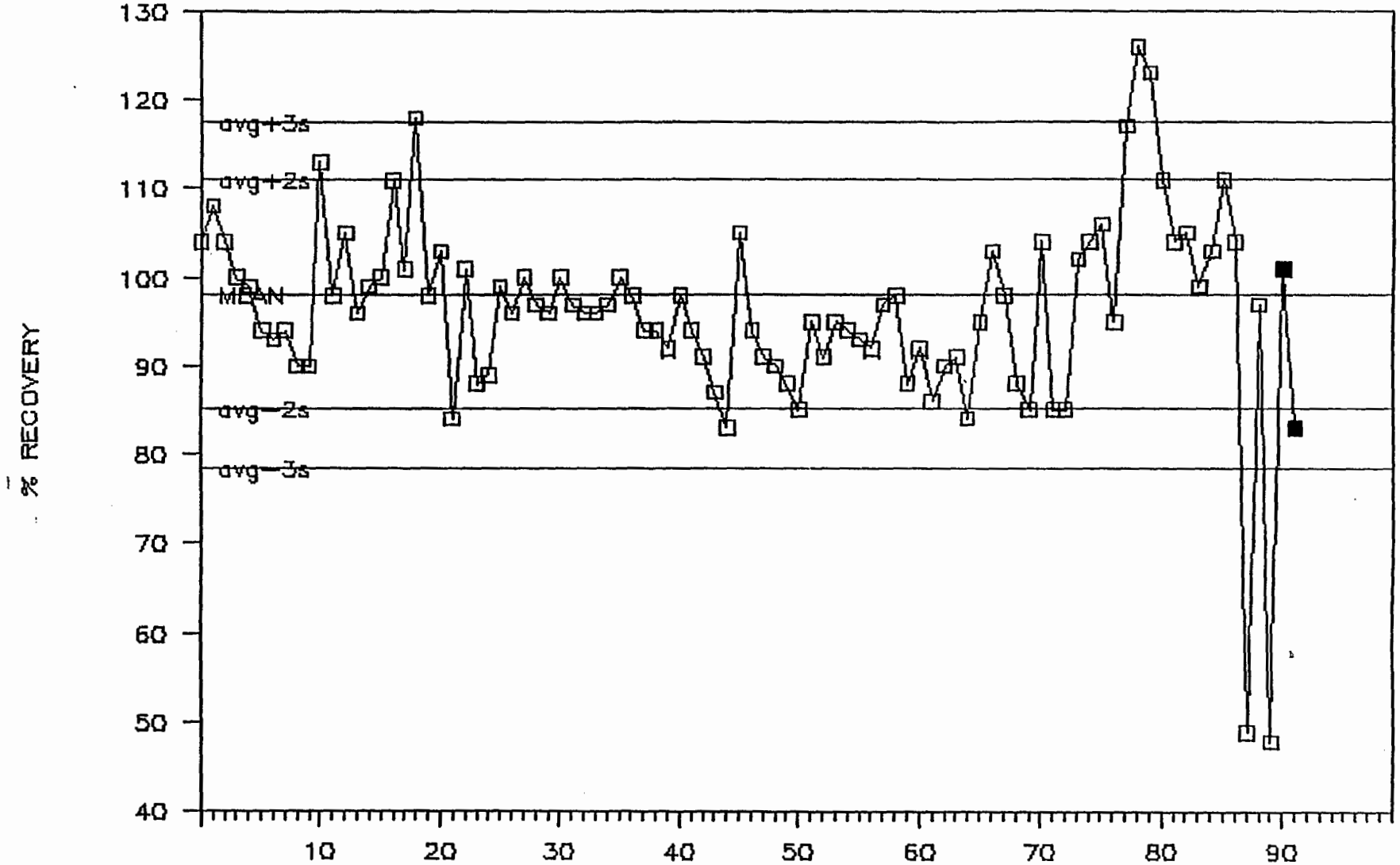
	SAMPLE #	DATE	D5-NB SURROGATE % REC.	2-FB SURROGATE % REC.	D14-TP SURROGATE % REC.	D5-NB ACCEPT. ?	D5-NB OUTLIER ?	2-FB ACCEPT. ?	2-FB OUTLIER ?	D14-TP ACCEPT. ?	D14-TP OUTLIER ?	COMMENTS
1	93G20Y16BK	07/21/93	104.0	90.0	92.0	YES	NO	YES	NO	YES	NO	
2	93G21Y03BK	07/21/93	108.0	93.0	92.0	YES	NO	YES	NO	YES	NO	
3	93G21Y17BK	07/22/93	104.0	84.0	77.0	YES	NO	YES	NO	YES	NO	
4	93G27Y05BK	07/27/93	100.0	88.0	88.0	YES	NO	YES	NO	YES	NO	
5	93H02Y08BK	08/03/93	99.0	86.0	86.0	YES	NO	YES	NO	YES	NO	
6	93H04Y08BK	08/04/93	94.0	80.0	85.0	YES	NO	YES	NO	YES	NO	
7	93H04Y11BK	08/05/93	93.0	79.0	84.0	YES	NO	YES	NO	YES	NO	
8	93H04Y13BK	08/05/93	94.0	81.0	81.0	YES	NO	YES	NO	YES	NO	
9	93H08Y03BK	08/08/93	90.0	82.0	60.0	YES	NO	YES	NO	YES	NO	
10	93H08Y18BK	08/09/93	90.0	79.0	75.0	YES	NO	YES	NO	YES	NO	
11	93H09Y06BK	08/09/93	113.0	98.0	91.0	YES	NO	YES	NO	YES	NO	
12	93H09Y23BK	08/10/93	98.0	85.0	82.0	YES	NO	YES	NO	YES	NO	
13	93H10Y03BK	08/10/93	105.0	93.0	100.0	YES	NO	YES	NO	YES	NO	
14	93H10Y13BK	08/11/93	96.0	85.0	89.0	YES	NO	YES	NO	YES	NO	
15	93H10Y17BK	08/11/93	99.0	80.0	90.0	YES	NO	YES	NO	YES	NO	
16	93H10Y24BK	08/11/93	100.0	87.0	90.0	YES	NO	YES	NO	YES	NO	
17	93H11Y03BK	08/11/93	111.0	99.0	104.0	YES	NO	YES	NO	YES	NO	
18	93H13Y03BK	08/13/93	101.0	93.0	98.0	YES	NO	YES	NO	YES	NO	
19	93H13Y05BK	08/13/93	118.0	111.0	120.0	NO	NO	YES	NO	YES	NO	
20	93H15Y03BK	08/15/93	98.0	82.0	83.0	YES	NO	YES	NO	YES	NO	
21	93H15Y10BK	08/16/93	103.0	85.0	81.0	YES	NO	YES	NO	YES	NO	
22	93H23Y03BK	08/23/93	84.0	77.0	91.0	YES	NO	YES	NO	YES	NO	
23	93H23Y05BK	08/23/93	101.0	91.0	80.0	YES	NO	YES	NO	YES	NO	
24	93H23Y12BK	08/24/93	88.0	77.0	86.0	YES	NO	YES	NO	YES	NO	
25	93H24Y03BK	08/24/93	89.0	84.0	94.0	YES	NO	YES	NO	YES	NO	
26	93H27Y03BK	08/27/93	99.0	89.0	96.0	YES	NO	YES	NO	YES	NO	
27	93H27Y08BK	08/27/93	96.0	86.0	91.0	YES	NO	YES	NO	YES	NO	
28	93H27Y17BK	08/28/93	100.0	85.0	89.0	YES	NO	YES	NO	YES	NO	
29	93H27Y26BK	08/28/93	97.0	86.0	87.0	YES	NO	YES	NO	YES	NO	
30	93J01Y08BK	09/02/93	96.0	96.0	93.0	YES	NO	YES	NO	YES	NO	
31	93J02Y03BK	09/02/93	100.0	98.0	97.0	YES	NO	YES	NO	YES	NO	
32	93J02Y17BK	09/03/93	97.0	93.0	95.0	YES	NO	YES	NO	YES	NO	
33	93J02Y19BK	09/03/93	96.0	93.0	98.0	YES	NO	YES	NO	YES	NO	
34	93J02Y24BK	09/03/93	96.0	95.0	98.0	YES	NO	YES	NO	YES	NO	
35	93J03Y12BK	09/04/93	97.0	91.0	86.0	YES	NO	YES	NO	YES	NO	
36	93J07Y06BK	09/07/93	100.0	91.0	88.0	YES	NO	YES	NO	YES	NO	
37	93J07Y08BK	09/07/93	98.0	88.0	83.0	YES	NO	YES	NO	YES	NO	
38	93J07Y10BK	09/08/93	94.0	86.0	83.0	YES	NO	YES	NO	YES	NO	
39	93J08Y03BK	09/08/93	94.0	91.0	90.0	YES	NO	YES	NO	YES	NO	
40	93J08Y05BK	09/08/93	92.0	87.0	83.0	YES	NO	YES	NO	YES	NO	
41	93J08Y12BK	09/09/93	98.0	92.0	90.0	YES	NO	YES	NO	YES	NO	
42	93J09Y03BK	09/09/93	94.0	89.0	90.0	YES	NO	YES	NO	YES	NO	
43	93J09Y10BK	09/09/93	91.0	85.0	89.0	YES	NO	YES	NO	YES	NO	
44	93J10Y03BK	09/10/93	87.0	83.0	87.0	YES	NO	YES	NO	YES	NO	
45	93J12Y03BK	09/12/93	83.0	81.0	71.0	YES	NO	YES	NO	YES	NO	
46	93J13Y03BK	09/13/93	105.0	100.0	100.0	YES	NO	YES	NO	YES	NO	
47	93J22Y03BK	09/22/93	94.0	87.0	89.0	YES	NO	YES	NO	YES	NO	
48	93J23Y08BK	09/23/93	91.0	85.0	79.0	YES	NO	YES	NO	YES	NO	
49	93J23Y12BK	09/24/93	90.0	82.0	76.0	YES	NO	YES	NO	YES	NO	
50	93J24Y03BK	09/24/93	88.0	87.0	79.0	YES	NO	YES	NO	YES	NO	
51	93J24Y13BK	09/25/93	85.0	77.0	73.0	YES	NO	YES	NO	YES	NO	
52	93J27Y03BK	09/27/93	95.0	100.0	91.0	YES	NO	YES	NO	YES	NO	
53	93J27Y11BK	09/28/93	91.0	89.0	80.0	YES	NO	YES	NO	YES	NO	
54	93J28Y03BK	09/28/93	95.0	89.0	89.0	YES	NO	YES	NO	YES	NO	
55	93J28Y11BK	09/29/93	94.0	90.0	84.0	YES	NO	YES	NO	YES	NO	
56	93J28Y13BK	09/29/93	93.0	87.0	79.0	YES	NO	YES	NO	YES	NO	
57	93J29Y03BK	09/29/93	92.0	86.0	87.0	YES	NO	YES	NO	YES	NO	
58	93J29Y08BK	09/30/93	97.0	92.0	86.0	YES	NO	YES	NO	YES	NO	
59	93J30Y03BK	09/30/93	98.0	92.0	93.0	YES	NO	YES	NO	YES	NO	
60	93J30Y10BK	09/30/93	88.0	84.0	87.0	YES	NO	YES	NO	YES	NO	
61	93K10Y03BK	10/10/93	92.0	87.0	89.0	YES	NO	YES	NO	YES	NO	
62	93K10Y05BK	10/10/93	86.0	80.0	75.0	YES	NO	YES	NO	YES	NO	
63	93K10Y07BK	10/10/93	90.0	84.0	86.0	YES	NO	YES	NO	YES	NO	
64	93K11Y10BK	10/11/93	91.0	84.0	70.0	YES	NO	YES	NO	YES	NO	
65	93K11Y12BK	10/11/93	84.0	81.0	83.0	YES	NO	YES	NO	YES	NO	
66	93K19Y09BK	10/19/93	95.0	96.0	94.0	YES	NO	YES	NO	YES	NO	
67	93K20Y13BK	10/20/93	103.0	95.0	98.0	YES	NO	YES	NO	YES	NO	
68	93K20Y24BK	10/21/93	98.0	87.0	84.0	YES	NO	YES	NO	YES	NO	
69	93K22Y08BK	10/22/93	88.0	85.0	96.0	YES	NO	YES	NO	YES	NO	
70	93K22Y11BK	10/22/93	85.0	81.0	90.0	YES	NO	YES	NO	YES	NO	
71	93L08Y03BK	11/08/93	104.0	90.0	96.0	YES	NO	YES	NO	YES	NO	

WATER (continuous) BASE NEUTRALS GC/MS

	SAMPLE #	DATE	D5-NB SURROGATE % REC.	2-FB SURROGATE % REC.	D14-TP SURROGATE % REC.	D5-NB ACCEPT. ?	D5-NB OUTLIER ?	2-FB ACCEPT. ?	2-FB OUTLIER ?	D14-TP ACCEPT. ?	D14-TP OUTLIER ?	COMMENTS
72	93L09Y12BK	11/10/93	85.0	79.0	70.0	YES	NO	YES	NO	YES	NO	
73	93L10Y13BK	11/10/93	85.0	83.0	92.0	YES	NO	YES	NO	YES	NO	
74	93L11Y03BK	11/11/93	102.0	95.0	98.0	YES	NO	YES	NO	YES	NO	
75	93L11Y25BK	11/12/93	104.0	91.0	100.0	YES	NO	YES	NO	YES	NO	
76	93L12Y03BK	11/12/93	106.0	99.0	109.0	YES	NO	YES	NO	YES	NO	
77	93L12Y12BK	11/12/93	95.0	88.0	96.0	YES	NO	YES	NO	YES	NO	
78	93L13Y03BK	11/13/93	117.0	106.0	118.0	YES	NO	YES	NO	YES	YES	
79	93L13Y07BK	11/13/93	126.0	108.0	116.0	NO	YES	YES	NO	YES	NO	
80	93L13Y14BK	11/13/93	123.0	107.0	121.0	YES	YES	YES	NO	YES	YES	
81	93L13Y17BK	11/13/93	111.0	99.0	110.0	YES	NO	YES	NO	YES	NO	
82	93L14Y03BK	11/14/93	104.0	111.0	126.0	YES	NO	YES	NO	NO	YES	
83	93L14Y14BK	11/14/93	105.0	115.0	129.0	YES	NO	YES	YES	NO	YES	
84	93L14Y19BK	11/14/93	99.0	109.0	135.0	YES	NO	YES	NO	NO	YES	
85	93L14Y22BK	11/14/93	103.0	113.0	148.0	YES	NO	YES	NO	NO	YES	
86	93L14Y27BK	11/14/93	111.0	121.0	136.0	YES	NO	NO	YES	YES	YES	
87	93L14Y33BK	11/15/93	104.0	106.0	122.0	YES	NO	YES	NO	YES	NO	
88	93L15Y03BK	11/15/93	49.0	51.0	62.0	YES	YES	YES	YES	YES	YES	
89	93L16Y07BK	11/16/93	97.0	110.0	142.0	YES	NO	YES	NO	NO	YES	
90	93L16Y08BK	11/16/93	48.0	48.0	60.0	YES	YES	YES	YES	YES	YES	
91	93L16Y12BK	11/16/93	101.0	115.0	142.0	YES	NO	YES	NO	NO	YES	
92	93L17Y06BK	11/17/93	83.0	103.0	135.0	YES	NO	YES	NO	NO	NO	
93												
94												
95												
96												
97												
98												
99												
100												

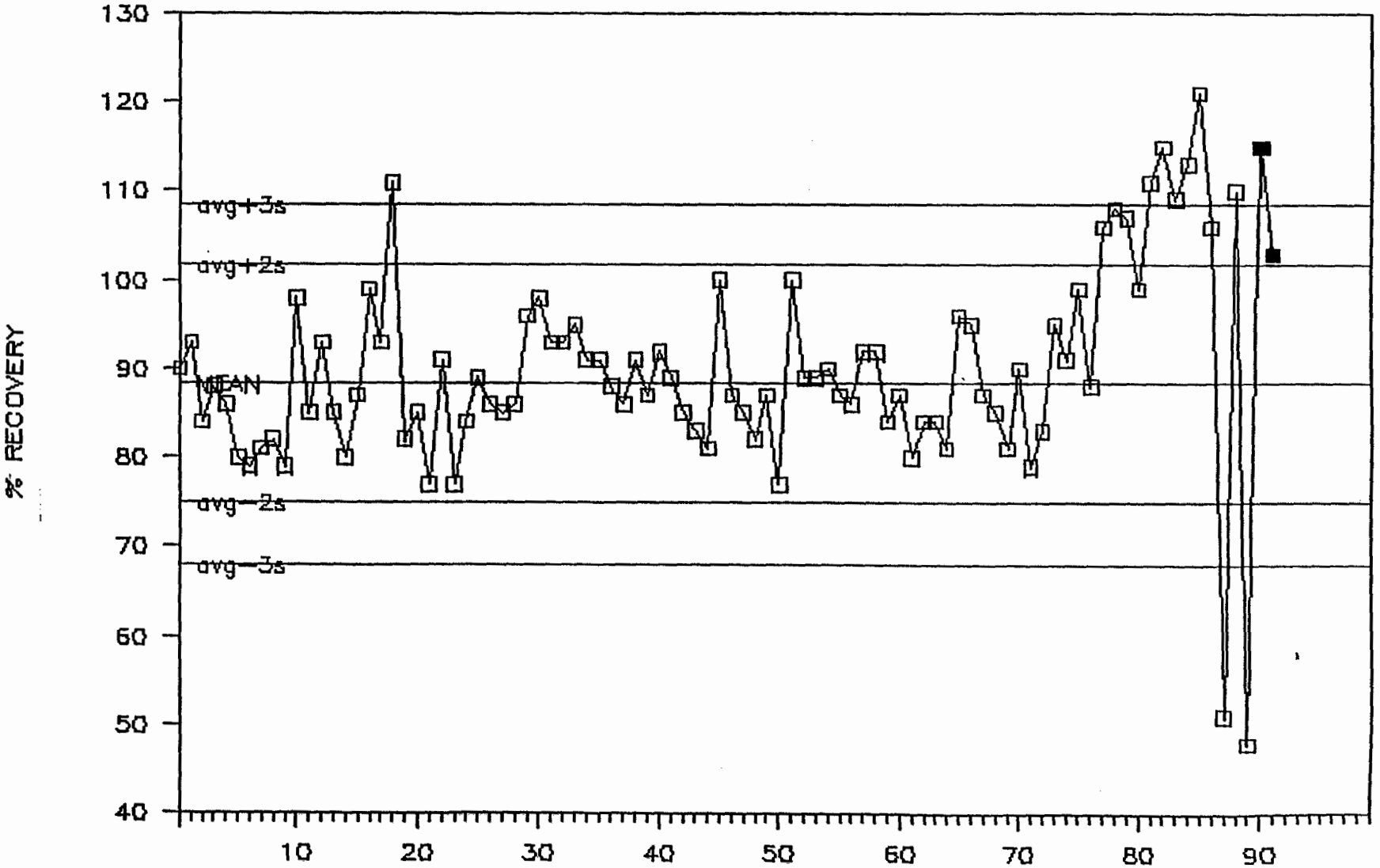
SURROGATE RECOVERY (WATER-CONT.)

D5-NITROBENZENE



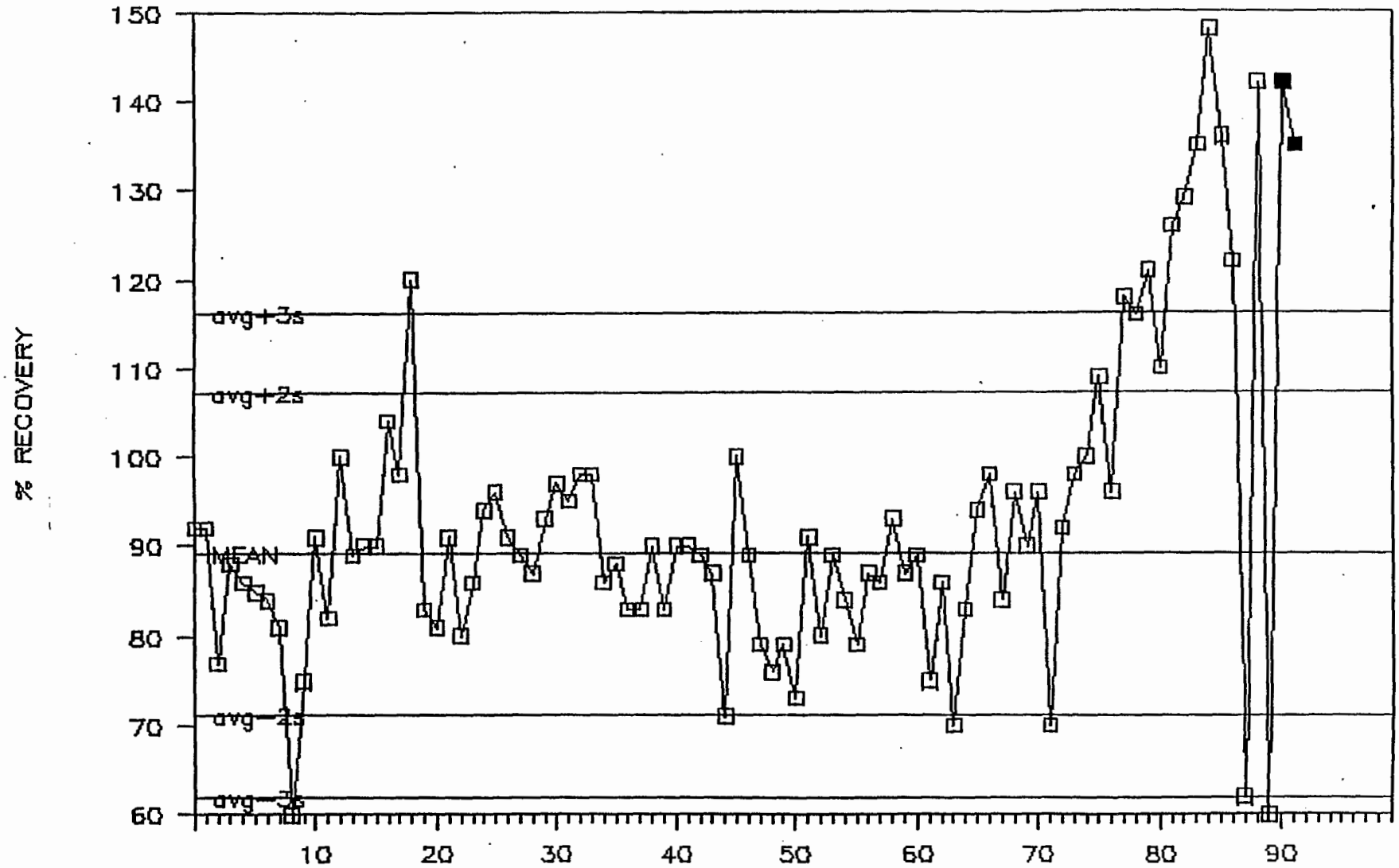
SURROGATE RECOVERY (WATER-CONT.)

2-FLUOROBIPHENYL



SURROGATE RECOVERY (WATER—CONT.)

D14—TERPHENYL



WATER (continuous) ADVISORY ACID AND BASE NEUTRAL EXTRACTABLES GC/MS

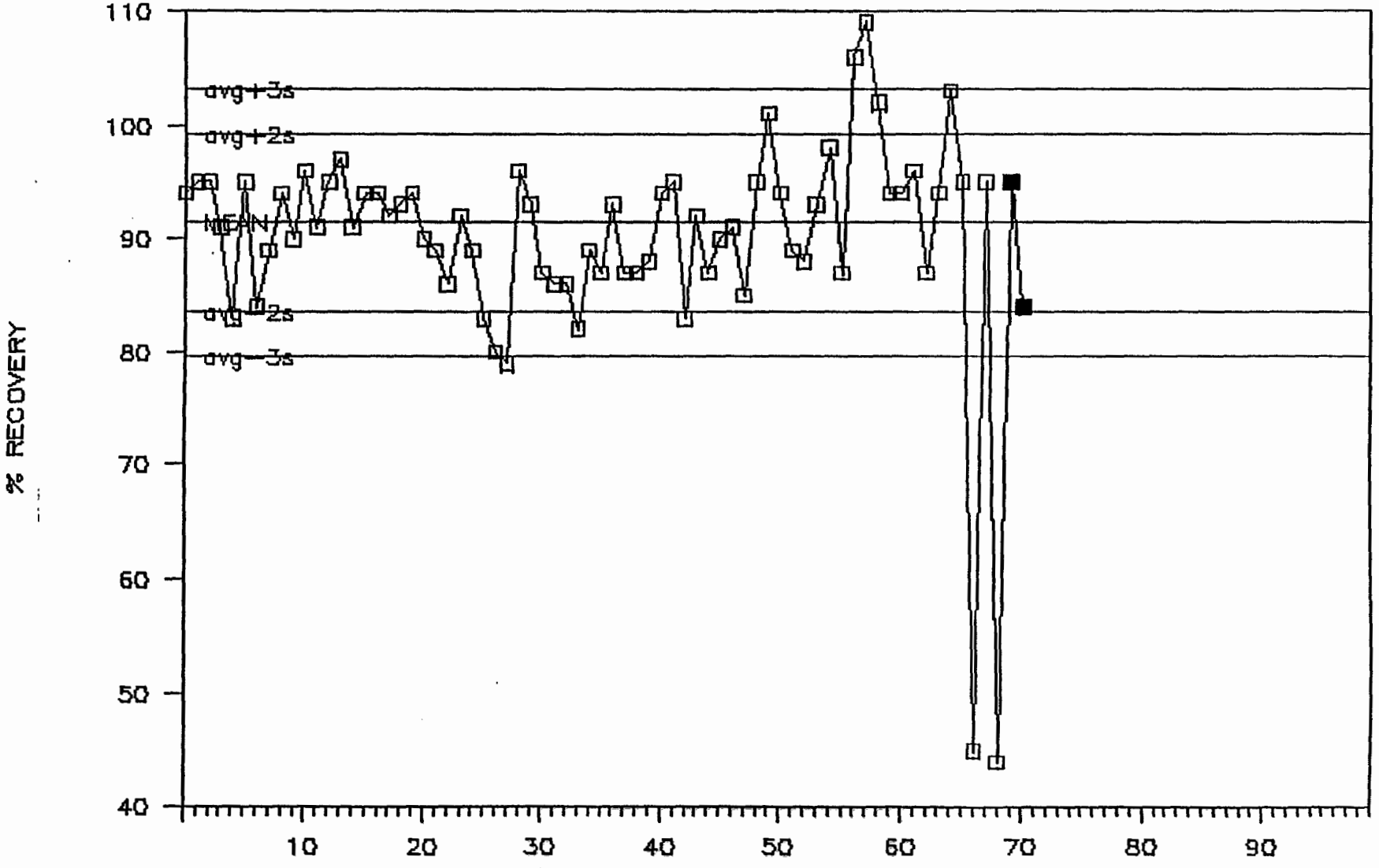
	SAMPLE #	DATE	D4-2-CP SURROGATE % REC.	D4-1,2-DCB SURROGATE % REC.	D4-2-CP ACCEPT. ?	D4-2-CP OUTLIER ?	D4-1,2-DCB ACCEPT. ?	D4-1,2-DCB OUTLIER ?	COMMENTS
1	93H08Y03BK	08/08/93		80.0	N/A	N/A	YES	NO	
2	93H08Y18BK	08/09/93		81.0	N/A	N/A	YES	NO	
3	93H09Y06BK	08/09/93		98.0	N/A	N/A	YES	NO	
4	93H09Y23BK	08/10/93		86.0	N/A	N/A	YES	NO	
5	93H10Y03BK	08/10/93		90.0	N/A	N/A	YES	NO	
6	93H10Y13BK	08/11/93		81.0	N/A	N/A	YES	NO	
7	93H10Y17BK	08/11/93	94.0	79.0	YES	NO	YES	NO	
8	93H10Y24BK	08/11/93	95.0	87.0	YES	NO	YES	NO	
9	93H11Y03BK	08/11/93		93.0	N/A	N/A	YES	NO	
10	93H13Y03BK	08/13/93	95.0	89.0	YES	NO	YES	NO	
11	93H13Y05BK	08/13/93		102.0	N/A	N/A	YES	NO	
12	93H15Y03BK	08/15/93	91.0	79.0	YES	NO	YES	NO	
13	93H15Y10BK	08/16/93		89.0	N/A	N/A	YES	NO	
14	93H23Y03BK	08/23/93	83.0	76.0	YES	NO	YES	NO	
15	93H23Y05BK	08/23/93	95.0	88.0	YES	NO	YES	NO	
16	93H23Y12BK	08/24/93	84.0	76.0	YES	NO	YES	NO	
17	93H24Y03BK	08/24/93	89.0	77.0	YES	NO	YES	NO	
18	93H27Y03BK	08/27/93	94.0	89.0	YES	NO	YES	NO	
19	93H27Y08BK	08/27/93	90.0	87.0	YES	NO	YES	NO	
20	93H27Y17BK	08/28/93	96.0	87.0	YES	NO	YES	NO	
21	93H27Y26BK	08/28/93	91.0	85.0	YES	NO	YES	NO	
22	93J01Y08BK	09/01/93	95.0	93.0	YES	NO	YES	NO	
23	93J02Y03BK	09/02/93	97.0	94.0	YES	NO	YES	NO	
24	93J02Y17BK	09/03/93	91.0	90.0	YES	NO	YES	NO	
25	93J02Y19BK	09/03/93	94.0	91.0	YES	NO	YES	NO	
26	93J02Y24BK	09/03/93	94.0	89.0	YES	NO	YES	NO	
27	93J03Y12BK	09/04/93	92.0	89.0	YES	NO	YES	NO	
28	93J07Y06BK	09/07/93	93.0	89.0	YES	NO	YES	NO	
29	93J07Y08BK	09/07/93	94.0	87.0	YES	NO	YES	NO	
30	93J07Y10BK	09/08/93	90.0	85.0	YES	NO	YES	NO	
31	93J08Y03BK	09/08/93	89.0	88.0	YES	NO	YES	NO	
32	93J08Y05BK	09/08/93	86.0	85.0	YES	NO	YES	NO	
33	93J08Y12BK	09/09/93	92.0	90.0	YES	NO	YES	NO	
34	93J09Y03BK	09/09/93	89.0	87.0	YES	NO	YES	NO	
35	93J09Y10BK	09/09/93	83.0	83.0	YES	NO	YES	NO	
36	93J10Y03BK	09/10/93	80.0	82.0	YES	NO	YES	NO	
37	93J12Y03BK	09/12/93	79.0	79.0	YES	NO	YES	NO	
38	93J13Y03BK	09/13/93	96.0	95.0	YES	NO	YES	NO	
39	93J22Y03BK	09/22/93	93.0	89.0	YES	NO	YES	NO	
40	93J23Y08BK	09/23/93	87.0	83.0	YES	NO	YES	NO	
41	93J23Y12BK	09/24/93	86.0	83.0	YES	NO	YES	NO	
42	93J24Y03BK	09/24/93	86.0	79.0	YES	NO	YES	NO	
43	93J24Y13BK	09/25/93	82.0	73.0	YES	NO	YES	NO	
44	93J27Y03BK	09/27/93	89.0	86.0	YES	NO	YES	NO	
45	93J27Y11BK	09/28/93	87.0	85.0	YES	NO	YES	NO	
46	93J28Y03BK	09/28/93	93.0	89.0	YES	NO	YES	NO	
47	93J28Y11BK	09/29/93	87.0	86.0	YES	NO	YES	NO	
48	93J28Y13BK	09/29/93	87.0	85.0	YES	NO	YES	NO	
49	93J29Y03BK	09/29/93	88.0	86.0	YES	NO	YES	NO	
50	93J29Y08BK	09/30/93	94.0	91.0	YES	NO	YES	NO	
51	93J30Y03BK	09/30/93	95.0	94.0	YES	NO	YES	NO	
52	93J30Y10BK	09/30/93	83.0	83.0	YES	NO	YES	NO	
53	93K10Y03BK	10/10/93	92.0	86.0	YES	NO	YES	NO	
54	93K10Y05BK	10/10/93	87.0	82.0	YES	NO	YES	NO	
55	93K10Y07BK	10/10/93	90.0	83.0	YES	NO	YES	NO	
56	93K11Y10BK	10/11/93	91.0	88.0	YES	NO	YES	NO	
57	93K11Y12BK	10/11/93	85.0	82.0	YES	NO	YES	NO	
58	93K19Y09BK	10/19/93	95.0	95.0	YES	NO	YES	NO	
59	93K20Y13BK	10/20/93	101.0	95.0	YES	NO	YES	NO	
60	93K20Y24BK	10/21/93	94.0	88.0	YES	NO	YES	NO	
61	93K22Y08BK	10/22/93	89.0	84.0	YES	NO	YES	NO	
62	93K22Y11BK	10/22/93	88.0	81.0	YES	NO	YES	NO	
63	93L08Y03BK	11/08/93		88.0	N/A	N/A	YES	NO	
64	93L09Y12BK	11/10/93		77.0	N/A	N/A	YES	NO	
65	93L10Y13BK	11/10/93		81.0	N/A	N/A	YES	NO	
66	93L11Y03BK	11/11/93		95.0	N/A	N/A	YES	NO	
67	93L11Y25BK	11/12/93	93.0	85.0	YES	NO	YES	NO	
68	93L12Y03BK	11/12/93	98.0	94.0	YES	NO	YES	NO	
69	93L12Y12BK	11/12/93	87.0	83.0	YES	NO	YES	NO	
70	93L13Y03BK	11/13/93	106.0	97.0	YES	NO	YES	NO	
71	93L13Y07BK	11/13/93	109.0	93.0	YES	NO	YES	NO	

WATER (continuous) ADVISORY ACID AND BASE NEUTRAL EXTRACTABLES GC/MS

	SAMPLE #	DATE	D4-2-CP SURROGATE % REC.	D4-1,2-DCB SURROGATE % REC.	D4-2-CP ACCEPT. ?	D4-2-CP OUTLIER ?	D4-1,2-DCB ACCEPT. ?	D4-1,2-DCB OUTLIER ?	COMMENTS
72	93L13Y14BK	11/13/93	102.0	91.0	YES	NO	YES	NO	
73	93L13Y17BK	11/13/93	94.0	86.0	YES	NO	YES	NO	
74	93L14Y03BK	11/14/93	94.0	86.0	YES	NO	YES	NO	
75	93L14Y14BK	11/14/93	96.0	89.0	YES	NO	YES	NO	
76	93L14Y19BK	11/14/93	87.0	82.0	YES	NO	YES	NO	
77	93L14Y22BK	11/14/93	94.0	87.0	YES	NO	YES	NO	
78	93L14Y27BK	11/14/93	103.0	94.0	YES	NO	YES	NO	
79	93L14Y33BK	11/15/93	95.0	83.0	YES	NO	YES	NO	
80	93L15Y03BK	11/15/93	45.0	41.0	YES	YES	YES	YES	
81	93L16Y07BK	11/16/93	95.0	83.0	YES	NO	YES	NO	
82	93L16Y08BK	11/16/93	44.0	40.0	NO	NO	NO	YES	
83	93L16Y12BK	11/16/93	95.0	85.0	YES	NO	YES	NO	
84	93L17Y06BK	11/17/93	84.0	79.0	YES	NO	YES	NO	
85									
86									
87									
88									
89									
90									
91									
92									
93									
94									
95									
96									
97									
98									
99									
100									

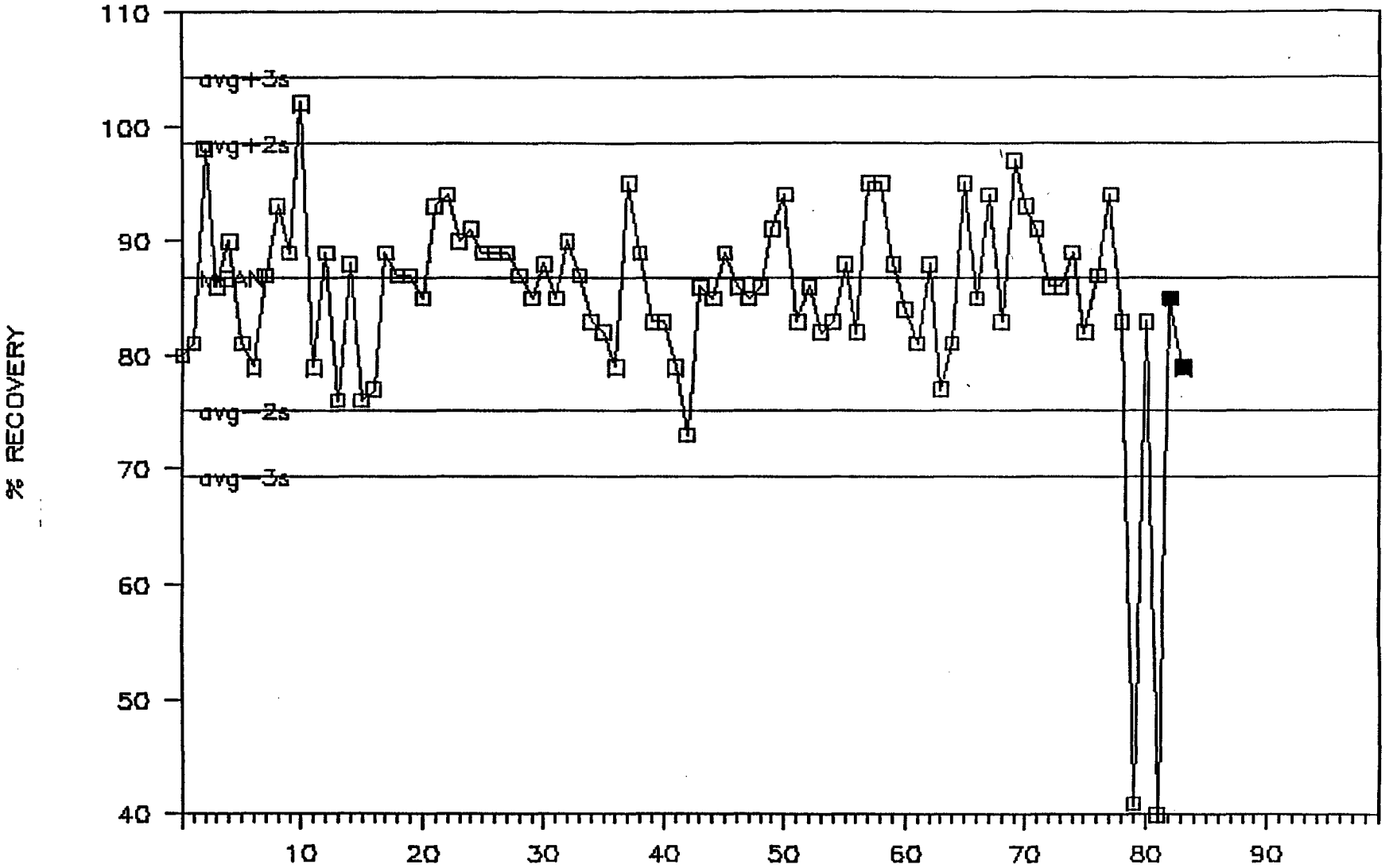
SURROGATE RECOVERY (WATER—CONT.)

D4—2—CHLOROPHENOL



SURROGATE RECOVERY (WATER—CONT.)

D4—1,2—DICHLOROBENZENE



CHAIN-OF-CUSTODY DOCUMENTATION

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project #:

Purchase Order #:

Project Name: DFSP HANAHAN

Company Name/CH2M HILL Office: ABB-ES

Project Manager & Phone #: Mr. [X] Ms. [ ] Dr. [ ] J. Pittman

Report Copy to: Mark Joop

Requested Completion Date: STANDARD

Sampling Requirements: SDWA [ ] NPDES [ ] RCRA [ ] OTHER [X]

Sample Disposal: Dispose [X] Return [ ]

LAB TEST CODES

ANALYSES REQUESTED

SHADED AREA -- FOR LAB USE ONLY

Lab 1 # GN-90212

Lab 2 #

Quote #

Kit Request #

Project #

No. of Samples: 11

Page: 1 of 1

COC Rev

Login: KD 11/11/93

LIMS Ver

Ack Gen

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	624	625	BOD (405.1)	METALS	VOC PH	REMARKS	LAB 1 ID	LAB 2 ID
11-10	7:15		X	X		MWI8	3	1	1	1	<2.0	silty	001	
	7:35					DFSPMW21D	3	1	1	1		hot	2	
	7:55					DFSPMW21	3	1	1	1			3	
	8:10					DFSPMW22	3	1	1	1		hot	4	
	8:30					DFSPMW23	3	1	1	1			5	
	8:45					DFSPMW24	3	1	1	1			6	
	10:10					DFSPMW25	3	1	1	1			7	
	11:25					DFSPMW13	3	1	1	1			8	
	11:50					DFSPMW20	3	1	1	1			9	
	—					DFSPDUP	3	1	1	1			10	
	9:15					DFSPEB	3	1	1	1			11	

Sampled By & Title: P. WAGNER (Please sign and print name) — Date/Time: 11-10-93 13:30

Relinquished By: P. WAGNER (Please sign and print name) — Date/Time: 11-10-93 14:00

Received By: (Please sign and print name) — Date/Time: 11-11-93 1330

Relinquished By (Please sign and print name) — Date/Time

Received By (Please sign and print name) — Date/Time

Relinquished By (Please sign and print name) — Date/Time

Received By (Please sign and print name) — Date/Time

Shipped Via: UPS BUS Fed-Ex Hand Other

Shipping #

Work Authorized By (Please sign and print name)

Remarks

HAZWRAP/NESSA: Y N

QC Level: 1 2 3 Other:

COC Rec Y

Ana Req Y

Cust Seal Y

ICE Y

TEMP 4°C

Ph Y

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: ORIGINAL LAB Yellow LAB Pink CH2M

SAMPLE RECEIPT RECORD

Page ___ of 1

LGN Sample Batch Number: [illegible] QC Level: 2

Cooler Temperature: [illegible]°C pH Checked By: [illegible] Date: [illegible]

pH OF PRESERVED ALIQUOTS

Check 10% of all samples (for HAZWRAP/NEESA samples check all samples)

LGN Sample No	Metals (HNO_3)	H_2SO_4	NaOH	HCL		
001	<2			<2.0		
002	<2					
003	<2					
004	<2					
005	<2					
006	<2					
007	<2					
008	<2					
009	<2					
010	<2					
011	<2			✓		
DISPOSAL RECORD						
Date						
Initials						

Metals Aliquots (acid preserved):
Relinquished By: B Jaund Date/Time: 11-11-93 1850
Received By: To Disposal Date/Time: ___

Volatile Organic Aliquots:
Relinquished By: B. Jaund Date/Time: 11-11-93 1850
Received By: To GC MS cooler Date/Time: ___

Extractions:
Relinquished By: ___ Date/Time: ___
Received By: ___ Date/Time: ___

All Other Aliquots:
Relinquished By: B Jaund Date/Time: 11-11-93 1850
Received By: To cooler Date/Time: ___

CH2M HILL

QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project #: [illegible]

Purchase Order #:

Project Name: DFSP HANAHAN

Company Name/CH2M HILL Office: ABB-ES

Project Manager & Phone #: Mr. [X] Ms. [ ] Dr. [ ] J. Pittman

Report Copy to: Mark Joop

Requested Completion Date: STANDARD

Sampling Requirements: SDWA [ ] NPDES [ ] RCRA [ ] OTHER [X]

Sample Disposal: Dispose [X] Return [ ]

LAB TEST CODES

FORM [illegible]

LAB # 90212

LBN00999.99 HA

ACK [illegible] 11/29 — SMM 11/24/93 — 11/24/93

HAZWRAP: ①

QC LEVEL: 2

ANALYSES REQUESTED

COC [illegible]

ANA REQ [illegible]

CUST SEAL [illegible]

SAMPLE COND [illegible]

LOGIN [illegible] 11/25/93

OB030312

SHADED AREA – FOR LAB USE ONLY

Lab 1 # GN-90212

Lab 2 #

Quote #

Kit Request #

Project #

No. of Samples: 11

Page 1 of 1

COC Rev

Login: KD 11/11/93

LIMS Ver

Ack Gen

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS 624/8015 MVC34 (To LMG)	625	BOD (405)	METALS	VOC PH	REMARKS	LAB 1 ID	LAB 2 ID
11-10	7:15		X	X		MW18	3	1	1	1	<2.0	silty	001	
	7:35					DFSPMW21 D	3	1	1	1		hot	2	
	7:55					DFSPMW21	3	1	1	1			3	
	8:10					DFSPMW22	3	1	1	1		hot	4	
	8:30					DFSPMW23	3	1	1	1			5	
	8:45					DFSPMW24	3	1	1	1			6	
	10:10					DFSPMW25	3	1	1	1			7	
	11:25					DFSPMW13	3	1	1	1			8	
	11:50					DFSPMW20	3	1	1	1			9	
	—					DFSPDUP	3	1	1	1			10	
	9:15					DFSPEB	3	1	1	1			11	

Sampled By & Title (Please sign and print name): P. WAGNER	Date/Time: 11-10-93 13:30	Relinquished By (Please sign and print name): P. WAGNER	Date/Time: 11-10-93 14:00	HAZWRAP/NESSA: (Y) N	
Received By (Please sign and print name): Bonnie Walsh	Date/Time: 11-11-93 1330	Relinquished By (Please sign and print name): B. North	Date/Time: 11-23-93 1/25	QC Level: 1 (2) 3 Other:	
Received By (Please sign and print name): Nan Jones	Date/Time: 11-23-93 1800	Relinquished By (Please sign and print name):	Date/Time:	COC Rec Y	ICE Y
Received By (Please sign and print name):	Date/Time:	Shipped Via: UPS BUS (Fed-Ex) Hand Other	Shipping #	Ana Req Y	TEMP 4°C
Work Authorized By (Please sign and print name):	Remarks			Cust Seal Y	Ph ✓

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: ORIGINAL - LAB, Yellow - LAB, Pink - Client

REV 11/92 FORM 346

1001203

CH2M HILL
Engineers
Planners
Economists
Scientists

December 29, 1993

Jack Pittman
ABB Environmental Services
2590 Executive Center Circle East
Tallahassee, FL 32301

RE: Analytical Data for ABB/Hanahan
LGN Lab Ref. No. 90212

Dear Mr. Pittman:

On November 11, 1993 the CH2M HILL Gainesville Laboratory(LGN) received eleven samples with a request for analysis of selected inorganic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

Under CH2M HILL policy, your samples will be stored for up to 30 days after reporting. If you have not given us prior instructions for disposal, we will contact you if any samples require disposal as hazardous waste.

CH2M HILL Laboratories appreciate your business and look forward to serving your analytical needs again. If you should have any questions concerning the data, or if you need additional information, please call me or Tom Emenhiser, Client Services Manager, at 904-462-3050.

Sincerely,

for Karen Daniels
Client Services Coordinator

Enclosures

xc: M. Joop/ABB Orange Park

State Certifications:

Florida No. 82112, E82124 Alabama No. 40080 California No. I-1014

CH2M HILL Quality
Analytical Laboratory

One Innovation Drive, Suite C, Alachua, FL 32615-9586
P.O. Box 370, Alachua, FL 32615-0370

904 462-3050
Fax No. 904 462-1670

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EPA QUALIFIERS

INORGANIC ANALYSES

- C (Concentration) Qualifier -- Enter "B" if the reported value obtained was less than the CRDL but greater than or equal to the IDL. Enter "U" if the value was less than the IDL or was not detected.

- Q Qualifier -- Entries and their meanings are:

  E - The reported value is estimated because of matrix interference. See Cover Page, case narrative, or Form I.

  M - Duplicate injection precision was not met.

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by the Method of Standard Additions (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

  * - Duplicate analysis not within control limits.

  + - Correlation coefficient for the MSA is less than 0.995.

  Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

- M (Method) Qualifier -- Enter one of the following:

  P - ICP
  A - Flame AA
  F - Furnace AA
  CV - Manual Cold Vapor AA
  AS - Semi-Automated Spectrophotometric
  CA - Manual Spectrophotometric
  NR - Analysis was not required by your lab

CLIENT SAMPLE CROSS-REFERENCE

CH2M HILL Lab Ref. No. 90212

CH2M HILL Sample ID.	Client Sample ID.
90212001	MW18
90212002	DFSPMW21D
90212003	DFSPMW21
90212004	DFSPMW22
90212005	DFSPMW23
90212006	DFSPMW24
90212007	DFSPMW25
90212008	DFSPMW13
90212009	DFSPMW20
90212010	DFSPDUP
90212011	DFSPEB

CH2M HILL

CATIONS DATA PACKAGE

CASE NARRATIVE
Cations

SDG Number: GN-90212

Client/Project: ABB Environmental Service / HANAHAN

I. Holding Time:
All holding times were met.

II. Digestion Exceptions:
None.

III. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. ICP Interference Check Sample:
All acceptance criteria were met.

D. Spike Sample(s):
All acceptance criteria were met.

E. Duplicate Sample(s):
All acceptance criteria were met.

F. Laboratory Control Sample(s):
All acceptance criteria were met.

G. ICP Serial Dilution:
All acceptance criteria were met.

H. Other:
In the analysis of Chromium, the result for sample GN-90212006 was determined by the Method of Standard Additions (MSA).

IV. Documentation Exceptions:
None.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

SIGNED: Isaac Lynch DATE: 12/09/93
Isaac D. Lynch
Manager, Inorganics Division

MODIFIED U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES SAS No.: 90212_ SDG No.:90212_

SOW No.: 3/90_

EPA Sample No.	Lab Sample ID
_DFSPDUP_____	_90212010_____
_DFSPEB_____	_90212011_____
_DFSPMW13_____	_90212008_____
_DFSPMW20_____	_90212009_____
_DFSPMW21_____	_90212003_____
_DFSPMW21D____	_90212002_____
_DFSPMW22_____	_90212004_____
_DFSPMW22D____	_90212004D____
_DFSPMW22S____	_90212004S____
_DFSPMW23_____	_90212005_____
_DFSPMW24_____	_90212006_____
_DFSPMW25_____	_90212007_____
_MW18_____	_90212001_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:
____SEE_CATIONS_CASE_NARRATIVE_____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Isaac Lynch Name: ISAAC_D._LYNCH_____

Date: 12/09/93 Title: INORGANIC_SUPERVISOR_____

MODIFIED U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPDUP

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Lab Sample ID: 90212010

Level (low/med): LOW Date Received: 11/11/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	10.5			F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.23	B	W	F
7440-70-2	Calcium				NR
7440-47-3	Chromium	40.4			F
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	5.3			F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:
THE "W" QUALIFIER INDICATES POSTSPIKE RECOVERY OUT OF CONTROL LIMITS

MODIFIED U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPEB

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Matrix (soil/water): WATER Lab Sample ID: 90212011__

Level (low/med): LOW__ Date Received: 11/11/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__	1.6	U		F_
7440-39-3	Barium___				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__	0.16	U		F_
7440-70-2	Calcium__				NR
7440-47-3	Chromium_	1.5	B		F_
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron_____				NR
7439-92-1	Lead_____	1.0	U		F_
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc_____				NR
	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM02.1(MOD-9a)

MODIFIED U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW13

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Lab Sample ID: 90212008

Level (low/med): LOW Date Received: 11/11/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	5.4	B		F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.16	U	W	F
7440-70-2	Calcium				NR
7440-47-3	Chromium	1.3	B		F
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: GRAY Clarity Before: CLEAR Texture:

Color After: GRAY Clarity After: CLEAR Artifacts:

Comments:

MODIFIED U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW20

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Lab Sample ID: 90212009

Level (low/med): LOW Date Received: 11/11/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	1.6	U		F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.16	U		F
7440-70-2	Calcium				NR
7440-47-3	Chromium	1.5	B	W	F
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: GRAY Clarity Before: CLEAR Texture:

Color After: GRAY Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN ILM02.1(MOD-9a)

MODIFIED U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW21

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Lab Sample ID: 90212003

Level (low/med): LOW Date Received: 11/11/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	2.6	B		F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.16	U		F
7440-70-2	Calcium				NR
7440-47-3	Chromium	37.6			F
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	30.3			F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

MODIFIED U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW21D

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Matrix (soil/water): WATER Lab Sample ID: 90212002__

Level (low/med): LOW__ Date Received: 11/11/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__	3.4	B		F_
7440-39-3	Barium___				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__	0.16	U		F_
7440-70-2	Calcium__				NR
7440-47-3	Chromium_	10.0			F_
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron_____				NR
7439-92-1	Lead_____	1.8	B		F_
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc_____				NR
	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW22

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Lab Sample ID: 90212004

Level (low/med): LOW Date Received: 11/11/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	35.4			F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.16	U	W	F
7440-70-2	Calcium				NR
7440-47-3	Chromium	2.0	B		F
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	1.5	B	W	F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: GRAY Clarity Before: CLEAR Texture:

Color After: GRAY Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW23

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Matrix (soil/water): WATER Lab Sample ID: 90212005__

Level (low/med): LOW__ Date Received: 11/11/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__	3.4	B		F_
7440-39-3	Barium___				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__	0.16	U		F_
7440-70-2	Calcium__				NR
7440-47-3	Chromium_	5.1			F_
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron_____				NR
7439-92-1	Lead_____	1.0	U		F_
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc_____				NR
	Cyanide__				NR

Color Before: GRAY_____ Clarity Before: CLEAR_ Texture: _____

Color After: GRAY_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW24

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Matrix (soil/water): WATER Lab Sample ID: 90212006__

Level (low/med): LOW__ Date Received: 11/11/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__	10.3			F_
7440-39-3	Barium___				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__	0.16	U		F_
7440-70-2	Calcium__				NR
7440-47-3	Chromium_	45.6		S	F_
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron____				NR
7439-92-1	Lead____	3.3			F_
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc____				NR
	Cyanide__				NR

Color Before: BROWN____ Clarity Before: CLOUDY Texture: _____

Color After: BROWN____ Clarity After: CLOUDY Artifacts: _____

Comments:
THE_"S"_QUALIFIER_INDICATES_RESULT_OBTAINED_BY_THE_METHOD_OF_STANDARD_ADDITIONS_(MSA).

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DFSPMW25

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Lab Sample ID: 90212007

Level (low/med): LOW Date Received: 11/11/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	6.0	B	W	F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.16	U		F
7440-70-2	Calcium				NR
7440-47-3	Chromium	26.0			F
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	5.3			F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: GRAY Clarity Before: CLOUDY Texture:

Color After: GRAY Clarity After: CLOUDY Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW18

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Lab Sample ID: 90212001

Level (low/med): LOW Date Received: 11/11/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	3.6	B	W	F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.46	B		F
7440-70-2	Calcium				NR
7440-47-3	Chromium	44.8			F
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	36.9			F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

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2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Initial Calibration Source: LAB STD_____

Continuing Calibration Source: LAB STD_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic	50.0	49.20	98.4	50.0	49.43	98.9	49.95	99.9	F
Barium									NR
Beryllium									NR
Cadmium	5.0	5.33	106.6	5.0	5.22	104.4	5.30	106.0	F
Calcium									NR
Chromium	25.0	26.33	105.3	25.0	0.56	2.2	25.32	101.3	F
Cobalt									NR
Copper									NR
Iron									NR
Lead	50.0	51.13	102.3	50.0	48.42	96.8	48.04	96.1	F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Initial Calibration Source: LAB STD_____

Continuing Calibration Source: LAB STD_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic				50.0	50.83	101.7	49.23	98.5	F
Barium									NR
Beryllium									NR
Cadmium				5.0	5.47	109.4	5.30	106.0	F
Calcium									NR
Chromium				25.0	23.49	94.0	25.35	101.4	F
Cobalt									NR
Copper									NR
Iron									NR
Lead				50.0	51.70	103.4	52.90	105.8	F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Initial Calibration Source: LAB STD_____

Continuing Calibration Source: LAB STD_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic				50.0	50.03	100.1			F
Barium									NR
Beryllium									NR
Cadmium				5.0	5.16	103.2			F
Calcium									NR
Chromium				25.0	23.04	92.2	26.22	104.9	F
Cobalt									NR
Copper									NR
Iron									NR
Lead				50.0	50.54	101.1	52.14	104.3	F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Initial Calibration Source: LAB STD_____

Continuing Calibration Source: LAB STD_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium				25.0	26.60	106.4			F
Cobalt									NR
Copper									NR
Iron									NR
Lead				50.0	51.25	102.5	49.71	99.4	F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Initial Calibration Source: LAB STD_____

Continuing Calibration Source: LAB STD_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead				50.0	47.69	95.4	48.22	96.4	F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Initial Calibration Source: LAB STD_____

Continuing Calibration Source: LAB STD_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead				50.0	45.12	90.2			F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2B
CRDL STANDARD FOR AA AND ICP

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

AA CRDL Standard Source: PREPARED STD

ICP CRDL Standard Source: PREPARED STD

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
					Initial		Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic	10.0	9.22	92.2					
Barium								
Beryllium								
Cadmium	0.5	0.57	114.0					
Calcium								
Chromium	2.0	2.32	116.0					
Cobalt								
Copper								
Iron								
Lead	3.0	2.41	80.3					
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

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3
BLANKS

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum_											NR_
Antimony_											NR_
Arsenic__	1.6	U	1.6	U	1.6	U	1.6	U	1.650	U	F__
Barium___											N
Beryllium											N
Cadmium__	0.2	U	0.2	U	0.2	U	0.2	U	0.162	U	F__
Calcium__											NR_
Chromium_	0.6	U	0.6	B	0.6	U	0.8	B	0.564	U	F__
Cobalt___											NR_
Copper___											NR_
Iron____											NR_
Lead____	1.0	U	-2.7	B	-2.9	B	1.0	U	1.191	B	F__
Magnesium											NR_
Manganese											NR_
Mercury__											NR_
Nickel___											NR_
Potassium											NR_
Selenium_											NR_
Silver___											NR_
Sodium___											NR_
Thallium_											NR_
Vanadium_											NR_
Zinc____											NR_
Cyanide__											NR_

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BLANKS

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic			1.6	U	1.6	U					F
Barium											NR
Beryllium											NR
Cadmium			0.2	U	0.2	U					F
Calcium											NR
Chromium			-1.3	B	-0.6	B	0.6	U			F
Cobalt											NR
Copper											NR
Iron											NR
Lead			1.0	U	1.0	U	1.0	U			F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR

FORM III - IN

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U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											N
Beryllium											N
Cadmium											NR
Calcium											NR
Chromium			-0.6	B							F
Cobalt											NR
Copper											NR
Iron											NR
Lead			1.0	U	2.2	B	1.0	U			F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR

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3
BLANKS

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead			1.0	U	-2.1	B					F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR

FORM III - IN

ILMO2.1

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5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

DFSPMW22S

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic	75-125	74.3420		35.4030		40.00	97.3		F
Barium									NR
Beryllium									NR
Cadmium	75-125	4.8800	B	0.1620	U	5.00	97.6		F
Calcium									NR
Chromium	75-125	11.1870		1.9690	B	10.00	92.2		F
Cobalt									NR
Copper									NR
Iron									NR
Lead	75-125	21.1790		1.5270	B	20.00	98.3		F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

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6
DUPLICATES

EPA SAMPLE NO.

DFSPMW22D

Lab Name: CH2M_HILL Contract: HANAHAN

Lab Code: LGN Case No.: ABBES SAS No.: 90212 SDG No.: 90212

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								NR
Antimony								NR
Arsenic	10.0	35.4030		35.4300		0.1		F
Barium								NR
Beryllium								NR
Cadmium		0.1620	U	0.1620	U			F
Calcium								NR
Chromium		1.9690	B	1.8040	B	8.7		F
Cobalt								NR
Copper								NR
Iron								NR
Lead		1.5270	B	1.2030	B	23.7		F
Magnesium								NR
Manganese								NR
Mercury								NR
Nickel								NR
Potassium								NR
Selenium								NR
Silver								NR
Sodium								NR
Thallium								NR
Vanadium								NR
Zinc								NR
Cyanide								NR

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LABORATORY CONTROL SAMPLE

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

Solid LCS Source: _____

Aqueous LCS Source: LAB STD_____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum									
Antimony									
Arsenic	40.0	35.84	89.6						
Barium									
Beryllium									
Cadmium	5.0	5.13	102.6						
Calcium									
Chromium	10.0	10.60	106.0						
Cobalt									
Copper									
Iron									
Lead	20.0	21.65	108.2						
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

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STANDARD ADDITION RESULTS

Lab Name: CH2M_HILL_____ Contract:HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.:90212_ SDG No.:90212_

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
DFSPMW24	CR	65.53	10.00	65.53	20.00	65.53	30.00		60.0	0.3780	+
DFSPMW24	CR	0.016	10.00	0.031	20.00	0.053	30.00	0.066	9.1	0.9954	

FORM VIII - IN ILM02.1(MOD-9a)

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10

Instrument Detection Limits (Quarterly)

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

ICP ID Number: _____ Date: 11/01/93

Flame AA ID Number : _____

Furnace AA ID Number : TJA_188_____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic	197.20	BS	10	1.6	F
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium	357.90	BS	2	0.6	F
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead	283.30	BS	3	1.0	F
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR

Comments:

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Instrument Detection Limits (Quarterly)

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.: 90212_

ICP ID Number: _____ Date: 11/01/93

Flame AA ID Number : _____

Furnace AA ID Number : PE4100ZL____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium	228.80	BZ	5	0.2	F
Calcium			5000		NR
Chromium			2		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR

Comments:

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PREPARATION LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.:_ABBES_ SAS No.: 90212_ SDG No.:90212_

Method: F_

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DFSPDUP	11/16/93		100
DFSPEB	11/16/93		100
DFSPMW13	11/16/93		100
DFSPMW20	11/16/93		100
DFSPMW21	11/16/93		100
DFSPMW21D	11/16/93		100
DFSPMW22	11/16/93		100
DFSPMW22D	11/16/93		100
DFSPMW22S	11/16/93		100
DFSPMW23	11/16/93		100
DFSPMW24	11/16/93		100
DFSPMW25	11/16/93		100
LCSW	11/16/93		100
MW18	11/16/93		100
PBW	11/16/93		100

FORM XIII - IN ILM02.1(MOD-9a)

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 11/17/93 End Date: 11/17/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1041				X																					
S10	1.00	1045				X																					
S50	1.00	1049				X																					
S100	1.00	1053				X																					
ZZZZZZ	1.00	1058																									
ZZZZZZ	1.00	1103																									
AUTOZERO	1.00	1108				X																					
AUTOCAL	1.00	1112				X																					
ICV	1.00	1116				X																					
ICB	1.00	1120				X																					
CRA	1.00	1124				X																					
ZZZZZZ	5.00	1128																									
ZZZZZZA	5.00	1132	96.3																								
ZZZZZZ	5.00	1136																									
ZZZZZZA	5.00	1141	100.4																								
ZZZZZZ	5.00	1145																									
PBW	1.00	1149				X																					
PBWA	1.00	1153	97.9			X																					
LCSW	1.00	1157				X																					
LCSWA	1.00	1201	104.3			X																					
CCV	1.00	1205				X																					
CCB	1.00	1209				X																					
MW18	1.00	1213				X																					
MW18A	1.00	1217	116.4			X																					
DFSPMW21	1.00	1221				X																					
DFSPMW21	1.00	1225	98.0			X																					
DFSPMW21	1.00	1230				X																					
DFSPMW21	1.00	1234	109.2			X																					
DFSPMW22	1.00	1238				X																					
DFSPMW22	1.00	1242	113.2			X																					
DFSPMW22	1.00	1246				X																					
DFSPMW22	1.00	1250	115.3			X																					

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 11/17/93 End Date: 11/17/93

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV	1.00	1254				X																					
CCB	1.00	1258				X																					
ZZZZZZ	1.00	1302																									
ZZZZZZ	1.00	1306																									
CCV	1.00	1311				X																					
CCB	1.00	1315				X																					
DFSPMW22	1.00	1319				X																					
DFSPMW23	1.00	1323				X																					
DFSPMW23	1.00	1327	99.4			X																					
DFSPMW24	1.00	1331				X																					
DFSPMW24	1.00	1335	107.8			X																					
DFSPMW25	1.00	1339				X																					
DFSPMW25	1.00	1343	115.7			X																					
DFSPMW13	1.00	1347				X																					
DFSPMW13	1.00	1351	94.9			X																					
CCV	1.00	1356				X																					
CCB	1.00	1400				X																					
DFSPMW20	1.00	1404				X																					
DFSPMW20	1.00	1408	110.1			X																					
DFSPDUP	1.00	1412				X																					
DFSPDUPA	1.00	1416	101.1			X																					
DFSPEB	1.00	1420				X																					
DFSPEBA	1.00	1424	113.6			X																					
ZZZZZZ	1.00	1428																									
ZZZZZZ	1.00	1432																									
ZZZZZZ	1.00	1437																									
ZZZZZZ	1.00	1441																									
CCV	1.00	1445				X																					
CCB	1.00	1449				X																					

FORM XIV - IN ILMO

U.S. EPA - CLP

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 12/02/93 End Date: 12/02/93

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1334									X																
S5	1.00	1338									X																
S25	1.00	1342									X																
S50	1.00	1346									X																
S0	1.00	1352									X																
S5	1.00	1356									X																
S25	1.00	1400									X																
S50	1.00	1404									X																
AUTOZERO	1.00	1408									X																
AUTOCAL	1.00	1412									X																
ICV	1.00	1416																									
ICB	1.00	1419																									
CRA	1.00	1423																									
PBW	1.00	1427									X																
PBWA	1.00	1431	96.6								X																
LCSW	1.00	1434									X																
LCSWA	1.00	1438	91.8								X																
MW18	5.00	1442									X																
MW18A	5.00	1446	91.5								X																
DFSPMW21	2.00	1449									X																
DFSPMW21	2.00	1453	116.3								X																
CCV	1.00	1457																									
CCB	1.00	1501																									
DFSPMW21	5.00	1504									X																
DFSPMW21	5.00	1508	97.6								X																
DFSPMW22	1.00	1512									X																
DFSPMW22	1.00	1516	113.2								X																
DFSPMW22	1.00	1519									X																
DFSPMW22	1.00	1523	96.2								X																
DFSPMW22	1.00	1527									X																
DFSPMW23	1.00	1531									X																
DFSPMW23	1.00	1534	103.7								X																

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 12/02/93 End Date: 12/02/93

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV	1.00	1538		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1542		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUTOZERO	1.00	1546		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUTOCAL_	1.00	1549		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1553		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1557		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW24	5.00	1601		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW24	5.00	1604	138.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW25	5.00	1608		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW25	5.00	1612	109.4	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW13	1.00	1616		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW13	1.00	1619	87.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW20	1.00	1623		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW20	1.00	1627	88.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPDUP_	5.00	1631		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPDUPA	5.00	1634	87.7	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1638		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1642		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPEB__	1.00	1646		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPEBA_	1.00	1649	88.7	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1653		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1657		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ__	1.00	1702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ__	1.00	1703		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ__	1.00	1704		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ__	1.00	1708		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUTOZERO	1.00	1712		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUTOCAL_	1.00	1716		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1720		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1723		-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW24	10.00	1727		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW24	10.00	1731	124.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

FORM XIV - IN ILMO

U.S. EPA - CLP

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 12/02/93 End Date: 12/02/93

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
DFSPMW13	1.00	1735									X																
DFSPMW13	1.00	1739	105.6								X																
DFSPMW20	1.00	1742									X																
DFSPMW20	1.00	1746	120.6								X																
CCV	1.00	1750									X																
CCB	1.00	1753									X																

FORM XIV - IN ILMO2.1

U.S. EPA - CLP

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 11/19/93 End Date: 11/19/93

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1056													X												
S3	1.00	1100													X												
S50	1.00	1104													X												
S100	1.00	1108													X												
ZZZZZZ	1.00	1113																									
AUTOZERO	1.00	1118													X												
AUTOCAL	1.00	1122													X												
ICV	1.00	1126													X												
ICB	1.00	1130													X												
CRA	1.00	1135													X												
ZZZZZZ	1.00	1139																									
ZZZZZZA	1.00	1143	109.3																								
ZZZZZZ	1.00	1147																									
ZZZZZZA	1.00	1151	109.2																								
ZZZZZZ	1.00	1155																									
ZZZZZZA	1.00	1159	103.6																								
ZZZZZZ	1.00	1203																									
ZZZZZZA	1.00	1207	88.0																								
CCV	1.00	1211													X												
CCB	1.00	1216													X												
ZZZZZZ	1.00	1220																									
ZZZZZZA	1.00	1224	113.8																								
ZZZZZZ	1.00	1228																									
ZZZZZZA	1.00	1232	124.1																								
ZZZZZZ	1.00	1236																									
ZZZZZZ	1.00	1240																									
ZZZZZZA	1.00	1244	95.9																								
ZZZZZZ	1.00	1248																									
ZZZZZZA	1.00	1252	119.1																								
CCV	1.00	1257																									
CCB	1.00	1301																									
ZZZZZZ	1.00	1305																									

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 11/19/93 End Date: 11/19/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZA_	1.00	1309	95.1																								
CCV_____	1.00	1313													X												
CCB_____	1.00	1317													X												
AUTOZERO	1.00	1321													X												
AUTOCAL_	1.00	1325													X												
CCV_____	1.00	1329													X												
CCB_____	1.00	1334													X												
ZZZZZZ__	1.00	1339																									
ZZZZZZA_	1.00	1343	120.3																								
ZZZZZZ__	1.00	1347																									
ZZZZZZA_	1.00	1351	115.5																								
ZZZZZZ__	1.00	1355																									
ZZZZZZ__	1.00	1359																									
ZZZZZZA_	1.00	1403	104.4																								
ZZZZZZ__	1.00	1407																									
ZZZZZZA_	1.00	1412	112.5																								
CCV_____	1.00	1416													X												
CCB_____	1.00	1420													X												
ZZZZZZ__	1.00	1424																									
ZZZZZZA_	1.00	1428	110.6																								
CCV_____	1.00	1432													X												
CCB_____	1.00	1436													X												
AUTOZERO	1.00	1440													X												
AUTOCAL_	1.00	1444													X												
CCV_____	1.00	1448																									
CCB_____	1.00	1452																									
ZZZZZZ__	1.00	1456																									
ZZZZZZ__	1.00	1505																									
AUTOZERO	1.00	1509													X												
AUTOCAL_	1.00	1513													X												
CCV_____	1.00	1517													X												
CCB_____	1.00	1522													X												

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 11/19/93 End Date: 11/19/93

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1526		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZA	1.00	1530	100.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ	1.00	1534		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZA	1.00	1538	93.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ	1.00	1542		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZA	1.00	1546	107.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBW	1.00	1550		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
PBWA	1.00	1554	102.0	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
LCSW	1.00	1558		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
LCSWA	1.00	1603	97.8	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1607		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1611		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW18	1.00	1615		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW18A	1.00	1619	89.2	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW21	1.00	1623		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW21	1.00	1627	105.8	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW21	1.00	1631		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW21	1.00	1635	94.9	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW22	1.00	1640		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW22	1.00	1644	115.3	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW22	1.00	1648		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW22	1.00	1652	112.5	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1656		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1700		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
AUTOZERO	1.00	1704		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
AUTOCAL	1.00	1708		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1712		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1717		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW22	1.00	1721		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW23	1.00	1725		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW23	1.00	1729	99.0	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
DFSPMW24	1.00	1733		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 11/19/93 End Date: 11/19/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
DFSPMW24	1.00	1737	108.1												X												
DFSPMW25	1.00	1741													X												
DFSPMW25	1.00	1745	105.6												X												
DFSPMW13	1.00	1749													X												
DFSPMW13	1.00	1754	113.7												X												
CCV	1.00	1758													X												
CCB	1.00	1802													X												
DFSPMW20	1.00	1806													X												
DFSPMW20	1.00	1810	101.8												X												
DFSPDUP	1.00	1814													X												
DFSPDUPA	1.00	1818	101.0												X												
DFSPEB	1.00	1822													X												
DFSPEBA	1.00	1826	89.9												X												
CCV	1.00	1831													X												
CCB	1.00	1835													X												

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 12/03/93 End Date: 12/03/93

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1515									X																
S5	1.00	1519									X																
S25	1.00	1522									X																
S50	1.00	1526									X																
AUTOZERO	1.00	1531									X																
AUTOCAL_	1.00	1534									X																
ICV	1.00	1540																									
ICB	1.00	1544																									
CRA	1.00	1548																									
DFSPMW24	5.00	1551																									
DFSPMW24	5.00	1555	93.6																								
CCV	1.00	1601																									
AUTOZERO	1.00	1605									X																
AUTOCAL_	1.00	1609									X																
ICV	1.00	1613																									
ICB	1.00	1616																									
CRA	1.00	1620																									
DFSPMW24	5.00	1624																									
DFSPMW24	5.00	1630	132.1																								
DFSPMW24	5.00	1634																									
DFSPMW24	5.00	1642	146.5																								
DFSPMW24	5.00	1648																									
DFSPMW24	5.00	1651	-26.9																								
CCV	1.00	1655																									
CCB	1.00	1659																									
ZZZZZZ	1.00	1703																									
ZZZZZZ	1.00	1707																									
ZZZZZZ	1.00	1712																									
ZZZZZZ	1.00	1713																									
ZZZZZZ	1.00	1717																									
ZZZZZZ	1.00	1720																									
AUTOZERO	1.00	1720									X																

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: TJA 188_____ Method: F_

Start Date: 12/03/93 End Date: 12/03/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
AUTOCAL_	1.00	1723									X																
CCV_____	1.00	1726																									
CCB_____	1.00	1728																									
DFSPMW24	5.00	1730																									
DFSPMW24	5.00	1732									X																
DFSPMW24	5.00	1734									X																
DFSPMW24	5.00	1736									X																
CCV_____	1.00	1739																									
CCB_____	1.00	1741																									
ZZZZZZ__	1.00	1758																									
ZZZZZZ__	1.00	1800																									
AUTOZERO	1.00	1802									X																
AUTOCAL_	1.00	1804									X																
CCV_____	1.00	1811																									
CCB_____	1.00	1813																									
DFSPMW24	5.00	1816									X																
DFSPMW24	5.00	1818									X																
DFSPMW24	5.00	1820									X																
DFSPMW24	5.00	1822									X																
CCV_____	1.00	1825																									
CCB_____	1.00	1827																									

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: PE4100ZL_____ Method: F_

Start Date: 11/17/93 End Date: 11/17/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	0956							X																		
S0.5	1.00	1001							X																		
S5	1.00	1006							X																		
S10	1.00	1011							X																		
ICV	1.00	1017																									
ICB	1.00	1022																									
CRA	1.00	1027																									
PBW	1.00	1032																									
PBWA	1.00	1038	467.0																								
LCSW	1.00	1043																									
LCSWA	1.00	1049	431.0																								
MW18	1.00	1054																									
MW18A	1.00	1059	442.0																								
DFSPMW21	1.00	1104																									
DFSPMW21	1.00	1110	477.0																								
CCV	1.00	1115																									
ICB	1.00	1120																									
AUTOZERO	1.00	1125							X																		
AUTOCAL	1.00	1130							X																		
ICV	1.00	1137							X																		
ICB	1.00	1142							X																		
CRA	1.00	1147							X																		
PBW	1.00	1152							X																		
PBWA	1.00	1157	97.0						X																		
LCSW	1.00	1203							X																		
LCSWA	1.00	1208	74.0						X																		
MW18	1.00	1213							X																		
MW18A	1.00	1219	74.0						X																		
DFSPMW21	1.00	1224							X																		
DFSPMW21	1.00	1229	87.0						X																		
CCV	1.00	1235							X																		
CCB	1.00	1240							X																		

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: PE4100ZL_____ Method: F_

Start Date: 11/17/93 End Date: 11/17/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
DFSPMW21	1.00	1245							X																		
DFSPMW21	1.00	1250	85.0						X																		
DFSPMW22	1.00	1255							X																		
DFSPMW22	1.00	1300	80.0						X																		
DFSPMW22	1.00	1306							X																		
DFSPMW22	1.00	1311	81.0						X																		
DFSPMW22	1.00	1316							X																		
DFSPMW23	1.00	1321							X																		
DFSPMW23	1.00	1326	86.0						X																		
CCV	1.00	1331							X																		
CCB	1.00	1336							X																		
DFSPMW24	1.00	1341							X																		
DFSPMW24	1.00	1346	96.0						X																		
DFSPMW25	1.00	1351							X																		
DFSPMW25	1.00	1356	86.0						X																		
DFSPMW13	1.00	1401							X																		
DFSPMW13	1.00	1406	69.0						X																		
DFSPMW20	1.00	1411							X																		
DFSPMW20	1.00	1417	86.0						X																		
DFSPDUP	1.00	1422							X																		
DFSPDUPA	1.00	1427	70.0						X																		
CCV	1.00	1432							X																		
CCB	1.00	1437							X																		
AUTOZERO	1.00	1452							X																		
AUTOCAL	1.00	1457							X																		
CCV	1.00	1511							X																		
CCB	1.00	1516							X																		
DFSPEB	1.00	1521							X																		
DFSPEBA	1.00	1527	74.0						X																		
ZZZZZZ	1.00	1532																									
ZZZZZZ	1.00	1537																									
ZZZZZZ	1.00	1542																									

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ANALYSIS RUN LOG

Lab Name: CH2M_HILL_____ Contract: HANAHAN___

Lab Code: LGN___ Case No.: ABBES_ SAS No.: 90212_ SDG No.:90212_

Instrument ID Number: PE4100ZL_____ Method: F_

Start Date: 11/17/93 End Date: 11/17/93

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.00	1547																									
ZZZZZZ	1.00	1552																									
ZZZZZZA	1.00	1558	84.0																								
ZZZZZZ	1.00	1603																									
ZZZZZZ	1.00	1608																									
ZZZZZZ	1.00	1614																									
CCV	1.00	1619							X																		
CCB	1.00	1624							X																		

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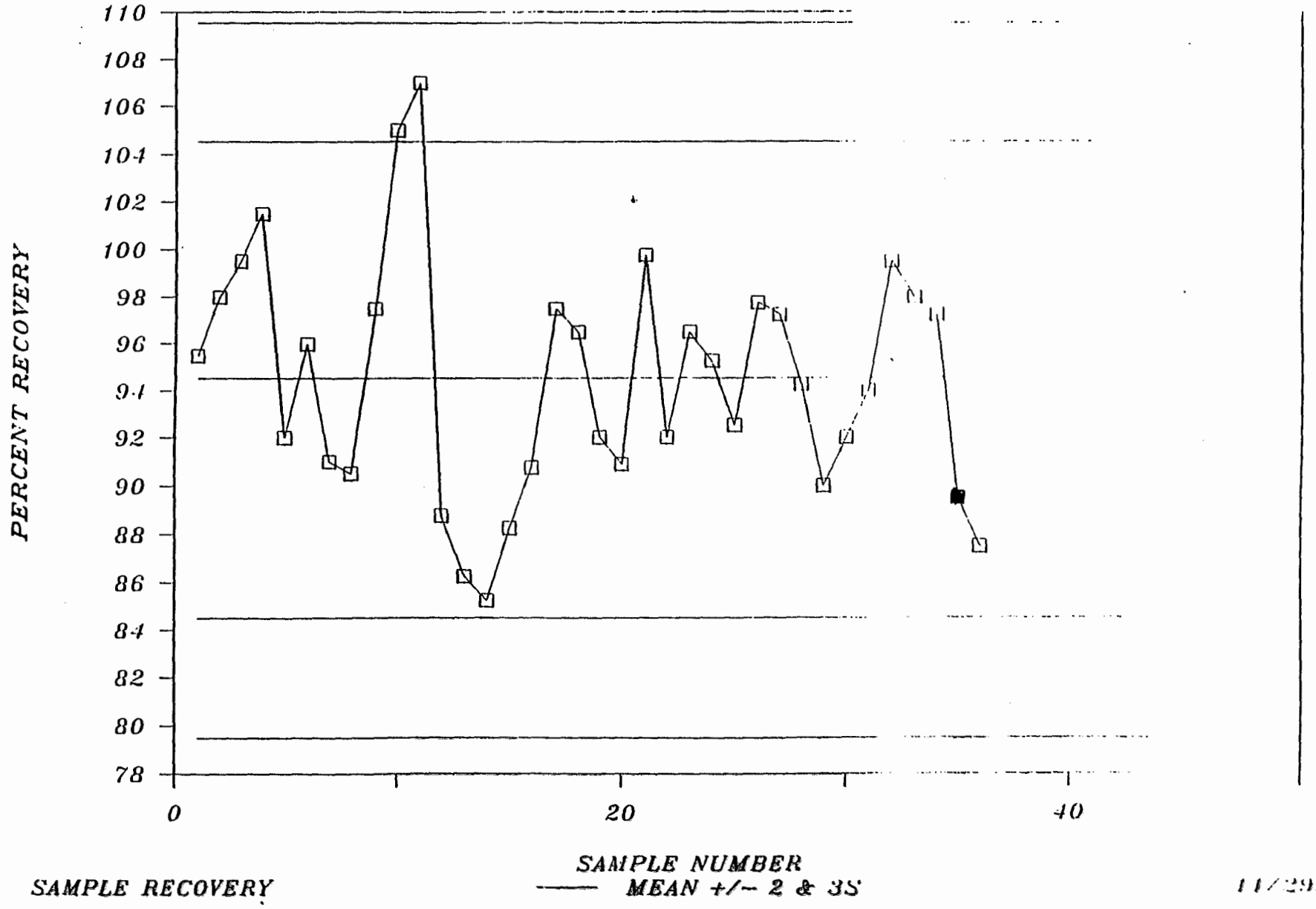
CH2M HILL

LCS CONTROL CHARTS

LAB CONTROL SAMPLE ACCURACY

ARSENIC FURN - WATER



11/29/93

000047

LAB CONTROL SAMPLE

DATE: 11.29/93
ANALYST: WKC
PARAMETER/METHOD: ARSENIC FURN - WATER

INPUT

	REF NUMBER	DATE	CONC.	DF	TRUE VALUE	FINAL CONC.	% REC	OUTLIER?
-->	1116LCS1	11/17/93	35	1	40	35.00	87.5	NO
1	0923LCS2	10/07/93	38.2	1	40	38.20	95.5	
2	0924LCS1	10/07/93	39.2	1	40	39.20	98.0	
3	0924LCS2	10/12/93	39.8	1	40	39.80	99.5	
4	0927LCS2	10/12/93	40.6	1	40	40.60	101.5	
5	1006LCS1	10/12/93	36.8	1	40	36.80	92.0	
6	1006LCS2	10/12/93	38.4	1	40	38.40	96.0	
7	1006LCS3	10/12/93	36.4	1	40	36.40	91.0	
8	1011LCS1	10/12/93	36.2	1	40	36.20	90.5	
9	0930LCS1	10/15/93	39	1	40	39.00	97.5	
10	0930LCS2	10/15/93	42	1	40	42.00	105.0	
11	1005LCS1	10/15/93	42.8	1	40	42.80	107.0	
12	0927LCS1	10/18/93	35.5	1	40	35.50	88.8	
13	0928LCS2	10/18/93	34.5	1	40	34.50	86.3	
14	1011LCS2	10/18/93	34.1	1	40	34.10	85.3	
15	1011LCS3	10/18/93	35.3	1	40	35.30	88.2	
16	1013LCS1	10/18/93	36.3	1	40	36.30	90.7	
17	1013LCS2	10/18/93	39	1	40	39.00	97.5	
18	1021LCS1	11/02/93	38.6	1	40	38.60	96.5	
19	1018LCS2	11/02/93	36.8	1	40	36.80	92.0	
20	1021LCS2	11/02/93	36.35	1	40	36.35	90.9	
21	1026LCS1	11/04/93	39.9	1	40	39.90	99.8	
22	1101LCS1	11/04/93	36.8	1	40	36.80	92.0	
23	1101LCS2	11/04/93	38.6	1	40	38.60	96.5	
24	1108LCS1	11/10/93	38.1	1	40	38.10	95.3	
25	1104LCS1	11/10/93	37	1	40	37.00	92.5	
26	1109LCS1	11/10/93	39.1	1	40	39.10	97.8	
27	1109LCS2	11/10/93	38.9	1	40	38.90	97.3	
28	1110LCS1	11/11/93	37.7	1	40	37.70	94.3	
29	1027LCS1	11/05/93	36	1	40	36.00	90.0	
30	1103LCS1	11/05/93	36.8	1	40	36.80	92.0	
31	1112LCS1	11/16/93	37.6	1	40	37.60	94.0	
32	1115LCS1	11/16/93	39.8	1	40	39.80	99.5	
33	1111LCS1	11/16/93	39.2	1	40	39.20	98.0	
34	1111LCS2	11/16/93	38.9	1	40	38.90	97.3	
35	1116LCS2	11/17/93	35.8	1	40	35.80	89.5	
36	1116LCS1	11/17/93	35	1	40	35.00	87.5	
37								
38								
39								
40								
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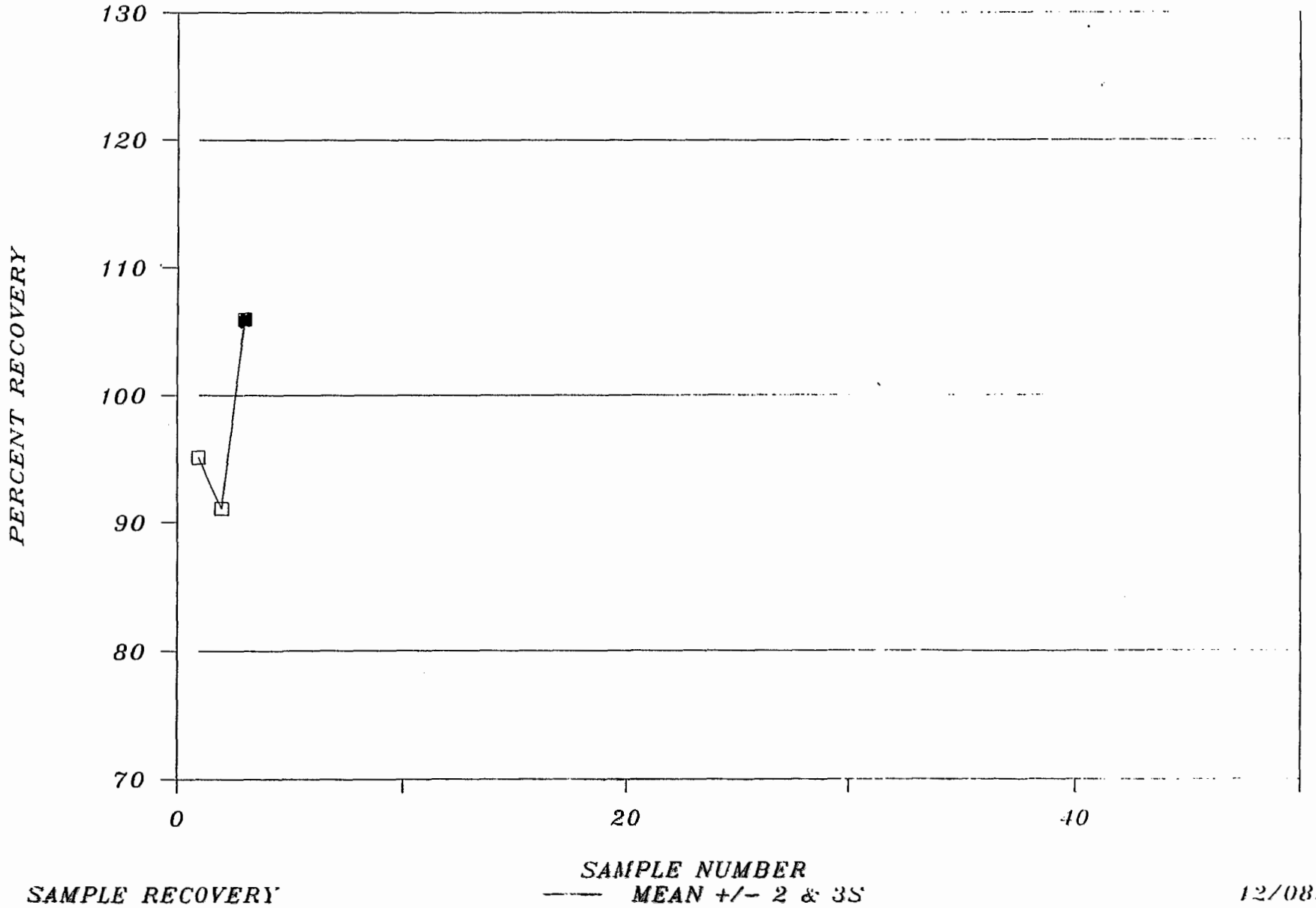
X -	X +			
		MEAN RECOVERY	=	94.5173
89.5	99.5	STD(N-1)	=	5.00804
84.5	104.5	2 STD(N-1)	=	10.0160
79.5	109.5	3 STD(N-1)	=	15.0241

LAB CONTROL SAMPLE ACCURACY

CHROMIUM FURN – WATER



12/08/93

000049

LAB CONTROL SAMPLE

DATE: 12/08/93
ANALYST: WKC
PARAMETER/METHOD: CHROMIUM FURN - WATER

INPUT

	REF NUMBER	DATE	CONC.	DF	TRUE VALUE	FINAL CONC.	% REC	OUTLIER?
-->	1116LCS2	12/02/93	10.6	1	10	10.60	106.0	NO
1	0616LCS1	06/30/93	9.51	1	10	9.51	95.1	
2	0831LCS4	09/24/93	9.11	1	10	9.11	91.1	
3	1116LCS2	12/02/93	10.6	1	10	10.60	106.0	
4								
5								
6								
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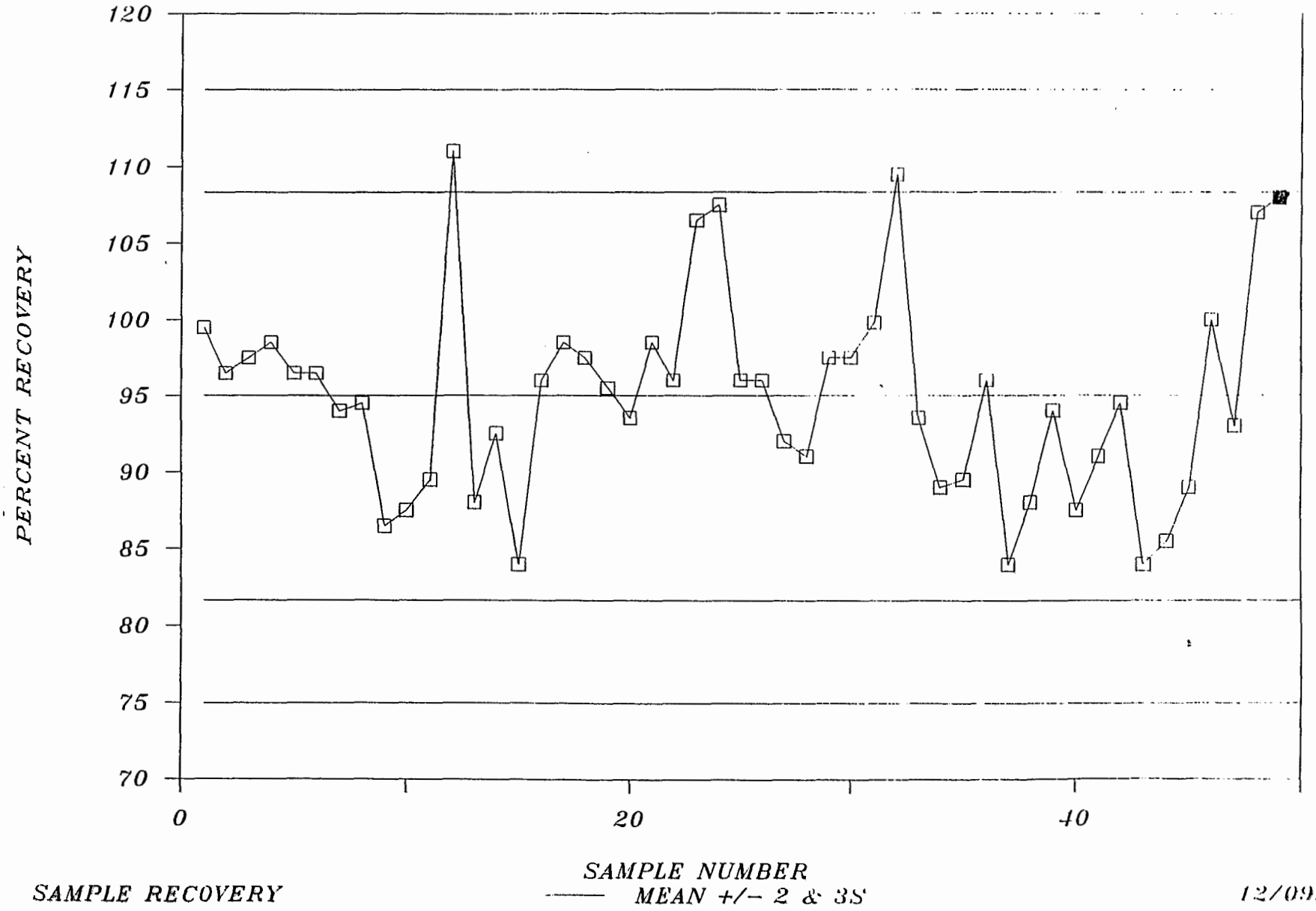
MEAN RECOVERY	=	100
STD(N-1)	=	10
2 STD(N-1)	=	20
3 STD(N-1)	=	30

LAB CONTROL SAMPLE ACCURACY

LEAD FURN – WATER



SAMPLE RECOVERY

12/09/93

000051

LAB CONTROL SAMPLE

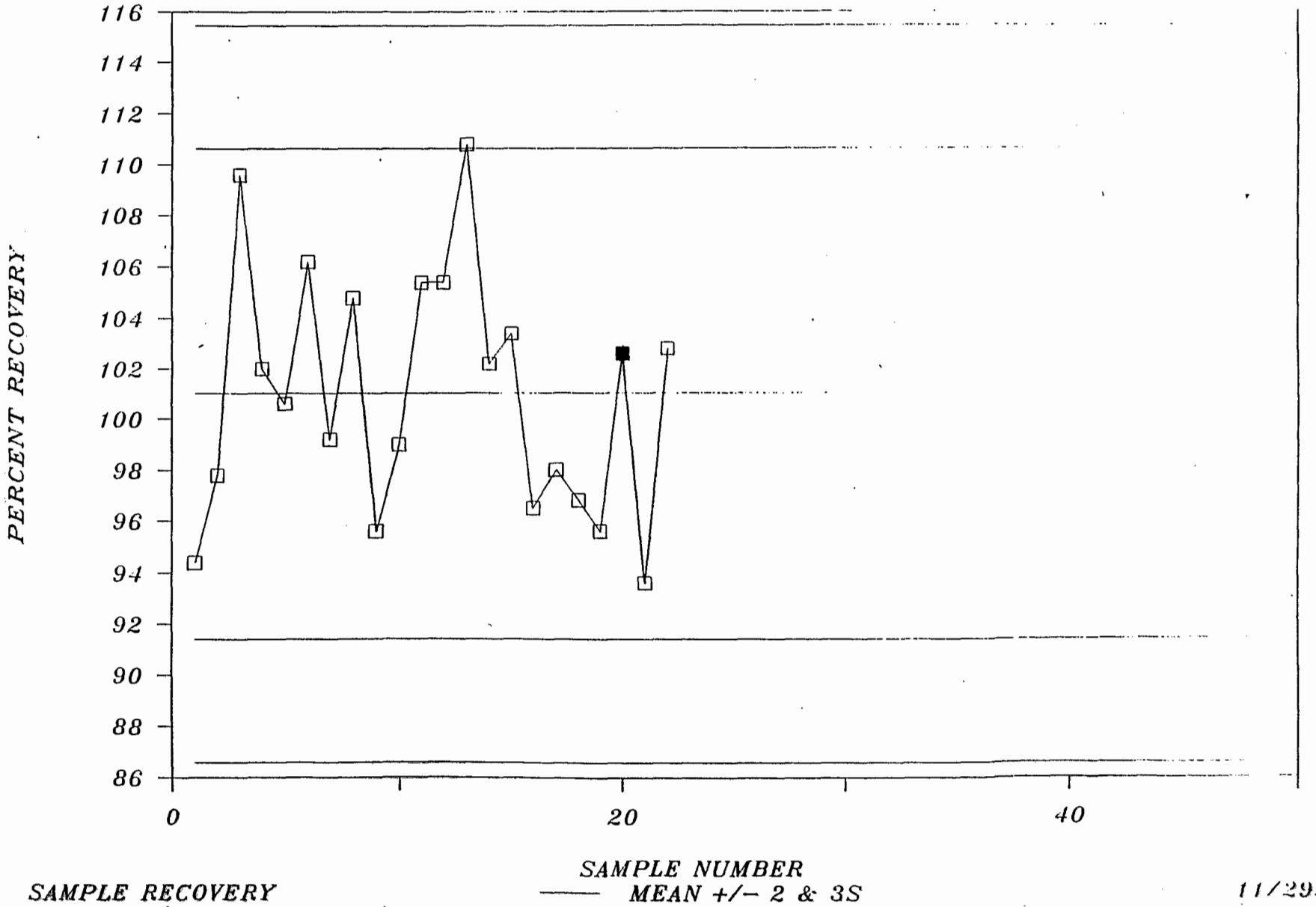
DATE: 12/09/93
ANALYST: WKC
PARAMETER/METHOD: LEAD FURN - WATER

INPUT	REF NUMBER	DATE	CONC.	DF	TRUE VALUE	FINAL CONC.	% REC	OUTLIER?
-->	1116LCS2	11/19/93	21.60	1	20	21.60	108.0	NO
1	1001LCS1	10/05/93	19.90	1	20	19.90	99.5	
2	1005LCS1	10/07/93	19.30	1	20	19.30	96.5	
3	0923LCS2	10/07/93	19.50	1	20	19.50	97.5	
4	0924LCS1	10/07/93	19.70	1	20	19.70	98.5	
5	1006LCS1	10/07/93	19.30	1	20	19.30	96.5	
6	0924LCS2	10/13/93	19.30	1	20	19.30	96.5	
7	0927LCS1	10/13/93	18.80	1	20	18.80	94.0	
8	0927LCS2	10/13/93	18.90	1	20	18.90	94.5	
9	1011LCS2	10/13/93	17.30	1	20	17.30	86.5	
10	1011LCS3	10/13/93	17.50	1	20	17.50	87.5	
11	0929LCS2	10/13/93	17.90	1	20	17.90	89.5	
12	0929LCS3	10/13/93	22.20	1	20	22.20	111.0	
13	0930LCS2	10/14/93	17.60	1	20	17.60	88.0	
14	0928LCS2	10/14/93	18.50	1	20	18.50	92.5	
15	0930LCS1	10/15/93	16.80	1	20	16.80	84.0	
16	1006LCS1	10/14/93	19.20	1	20	19.20	96.0	
17	1006LCS2	10/14/93	19.70	1	20	19.70	98.5	
18	1005LCS1	10/19/93	19.50	1	20	19.50	97.5	
19	1006LCS2A	10/19/93	19.10	1	20	19.10	95.5	
20	1011LCS1	10/19/93	18.70	1	20	18.70	93.5	
21	1011LCS2	10/19/93	19.70	1	20	19.70	98.5	
22	1011LCS3	10/19/93	19.20	1	20	19.20	96.0	
23	1013LCS2	10/19/93	21.30	1	20	21.30	106.5	
24	1013LCS3	10/19/93	21.50	1	20	21.50	107.5	
25	1018LCS1	10/19/93	19.20	1	20	19.20	96.0	
26	1018LCS2	10/19/93	19.20	1	20	19.20	96.0	
27	1011LCS2	10/21/93	18.40	1	20	18.40	92.0	
28	1011LCS3	10/21/93	18.20	1	20	18.20	91.0	
29	1027LCS2	10/28/93	19.50	1	20	19.50	97.5	
30	1021LCS1	10/28/93	19.50	1	20	19.50	97.5	
31	1026LCS1	11/03/93	19.96	1	20	19.96	99.8	
32	1101LCS1	11/03/93	21.90	1	20	21.90	109.5	
33	1101LCS2	11/03/93	18.70	1	20	18.70	93.5	
34	1102LCS1	11/03/93	17.80	1	20	17.80	89.0	
35	1027LCS1	11/08/93	17.90	1	20	17.90	89.5	
36	1103LCS1	11/08/93	19.20	1	20	19.20	96.0	
37	1104LCS1	11/08/93	16.80	1	20	16.80	84.0	
38	1101LCS1	11/09/93	17.60	1	20	17.60	88.0	
39	1101LCS2	11/09/93	18.80	1	20	18.80	94.0	
40	1109LCS1	11/09/93	17.50	1	20	17.50	87.5	
41	1109LCS2	11/09/93	18.20	1	20	18.20	91.0	
42	1108LCS1	11/10/93	18.90	1	20	18.90	94.5	
43	1110LCS1	11/12/93	16.80	1	20	16.80	84.0	
44	1111LCS1	11/12/93	17.10	1	20	17.10	85.5	
45	1111LCS2	11/12/93	17.80	1	20	17.80	89.0	
46	1112LCS1	11/15/93	20.00	1	20	20.00	100.0	
47	1115LCS1	11/15/93	18.60	1	20	18.60	93.0	
48	1129LCS1	12/01/93	21.40	1	20	21.40	107.0	
49	1116LCS2	11/19/93	21.60	1	20	21.60	108.0	
50								

X -	X +			
88.3	101.7	MEAN RECOVERY=		94.9959
81.7	108.3	STD(N-1)	=	6.67167
75.0	115.0	2 STD(N-1)	=	13.3433
		3 STD(N-1)	=	20.0150

LAB CONTROL SAMPLE ACCURACY

CADMIUM FURN – WATER



11/29/93

000053

LAB CONTROL SAMPLE

DATE: 11/29/93
ANALYST: WKC
PARAMETER/METHOD: CADMIUM FURN - WATER

INPUT	REF NUMBER	DATE	CONC.	DF	TRUE VALUE	FINAL CONC.	% REC	OUTLIER?
-->	1109LCS1	11/17/93	5.14	1	5	5.14	102.8	NO
1	0729LCS3	08/09/93	4.72	1	5	4.72	94.4	
2	0803LCS3	08/09/93	4.89	1	5	4.89	97.8	
3	0818LCS3	08/19/93	5.48	1	5	5.48	109.6	
4	0825LCS1	09/08/93	5.1	1	5	5.10	102.0	
5	0903LCS1	09/08/93	5.03	1	5	5.03	100.6	
6	0903LCS2	09/08/93	5.31	1	5	5.31	106.2	
7	0831LCS4	09/08/93	4.96	1	5	4.96	99.2	
8	0915LCS1	09/16/93	5.24	1	5	5.24	104.8	
9	0921LCS1	09/30/93	4.78	1	5	4.78	95.6	
10	0923LCS3	09/30/93	4.95	1	5	4.95	99.0	
11	1018LCS1	10/20/93	5.27	1	5	5.27	105.4	
12	1006LCS2	10/20/93	5.27	1	5	5.27	105.4	
13	1013LCS3	10/20/93	5.54	1	5	5.54	110.8	
14	1006LCS1	10/07/93	5.11	1	5	5.11	102.2	
15	1006LCS2	10/07/93	5.17	1	5	5.17	103.4	
16	1021LCS2	11/02/93	1.93	5	10	9.65	96.5	
17	1026LCS1	11/02/93	2.45	2	5	4.90	98.0	
18	1101LCS1	11/02/93	2.42	2	5	4.84	96.8	
19	1101LCS2	11/02/93	2.39	2	5	4.78	95.6	
20	1116LCS2	11/17/93	5.13	1	5	5.13	102.6	
21	1116LCS1	11/17/93	4.68	1	5	4.68	93.6	
22	1109LCS1	11/17/93	5.14	1	5	5.14	102.8	
23								
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MEAN RECOVERY	=	101.013
STD(N-1)	=	4.80756
2 STD(N-1)	=	9.61512
3 STD(N-1)	=	14.4226

CH2M HILL

General Chemistry

CASE NARRATIVE
General Chemistry

Lab Number: GN-90212

Client/Project: ABB - Hanahan

I. Holding Time:
All holding times were met.

II. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. Matrix Spike Sample(s):
All acceptance criteria were met.

D. Duplicate Sample(s):
All acceptance criteria were met.

E. Lab Control Sample(s):
All acceptance criteria were met.

F. Other:
Reporting Limits; 2 mg/L for undiluted samples and 4 mg/L when a 50% dilution is used.

III. Documentation Exceptions:
None.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

SIGNED: J Roman C. Emerson/for DATE: 12/22/93
Isaac Lynch
Supervisor, Inorganics Division

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: MW18
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-001

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 4.0 *	mg/L	2.0	11/12/93	EPA405.1

Notes: * See case narrative.

JCE
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW21D
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-002

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	5.6	mg/L	2.0	11/12/93	EPA405.1

J.C.E.
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW21
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-003

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 4.0 *	mg/L	2.0	11/12/93	EPA405.1

Notes: * See case narrative.

J.E.E.
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW22
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-004

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	80	mg/L	2.0	11/12/93	EPA405.1

JCE.
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW23
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-005

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 4.0 *	mg/L	2.0	11/12/93	EPA405.1

Notes: * See case narrative.

J.C.E.
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW24
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-006

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 4.0 *	mg/L	2.0	11/12/93	EPA405.1

Notes: * See case narrative.

J.C.E.
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW25
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-007

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 4.0 *	mg/L	2.0	11/12/93	EPA405.1

Notes: * See case narrative.

J.E.E.
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW13
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-008

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	9.1	mg/L	2.0	11/12/93	EPA405.1

J.C.E.
Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPMW20
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-009

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 2.0	mg/L	2.0	11/12/93	EPA405.1

Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPDUP
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-010

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 4.0 *	mg/L	2.0	11/12/93	EPA405.1

Notes: * See case narrative.

Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: 11/10/93
Date Received: 11/11/93
Sample Matrix: Water
Sample Description:

Client Sample ID: DFSPEB
Lab ReferenceNum: GN-90212
Lab Sample ID: GN-90212-011

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 2.0	mg/L	2.0	11/12/93	EPA405.1

Approved By

CH2M Hill Quality Analytical Laboratories

Report of Analytical Results
INORGANICS

Date Collected: None
Date Received: None
Sample Matrix: Water
Sample Description:

Client Sample ID: BLANK
Lab ReferenceNum: None
Lab Sample ID: Various

CATEGORY NAME Analytical Parameter	Result	Units	Reporting Level	Date of Analysis	Analytical Method(s)
DEMAND AND GENERAL ORGANIC					
BOD, 5 Day	< 2.0	mg/L	2.0	11/12/93	EPA405.1

Approved By

CH2M Hill Quality Analytical Laboratories

CH2M HILL

CHAIN OF CUSTODY

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project #: _____
Purchase Order #: _____
Project Name: DFSP HANAHAN
Company Name/CH2M HILL Office: ABB-ES
Project Manager & Phone #: Mr. [X] Ms. [ ] Dr. [ ] J. Pittman
Report Copy to: Mark Joop
Requested Completion Date: STANDARD
Sampling Requirements: SDWA [ ] NPDES [ ] RCRA [ ] OTHER [X]
Sample Disposal: Dispose [X] Return [ ]

SHADED AREA – FOR LAB USE ONLY
Lab 1 #: SN-90212
Lab 2 #:
Quote #:
Kit Request #:
Project #:
No. of Samples: 11
Page: 1 of 1
COC Rev:
Login: KD 11/11/93
LIMS Ver:
Ack Gen:

LAB TEST CODES / ANALYSES REQUESTED

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	624	625	BOD (405.1)	METALS						VOC PH	REMARKS	LAB 1 ID	LAB 2 ID
11-10	7:15		X	X		MW18		3	1	1	1						<2.0	silty	001	
	7:35					DFSPMW21D		3	1	1	1							hot	2	
	7:55					DFSPMW21		3	1	1	1								3	
	8:10					DFSPMW22		3	1	1	1							hot	4	
	8:30					DFSPMW23		3	1	1	1								5	
	8:45					DFSPMW24		3	1	1	1								6	
	10:10					DFSPMW25		3	1	1	1								7	
	11:25					DFSPMW13		3	1	1	1								8	
	11:50					DFSPMW20		3	1	1	1								9	
	—					DFSPDUP		3	1	1	1								10	
	9:15					DFSPEB		3	1	1	1								11	

Sampled By & Title: P. WAGNER (Please sign and print name) — Date/Time: 11-10-93 13:30
Relinquished By: P. WAGNER (Please sign and print name) — Date/Time: 11-10-93 14:00
Received By: Bonnie Walsh (Please sign and print name) — Date/Time: 11-11-93 1330
Relinquished By (Please sign and print name) — Date/Time:
Received By (Please sign and print name) — Date/Time:
Relinquished By (Please sign and print name) — Date/Time:
Received By (Please sign and print name) — Date/Time:
Shipped Via: UPS BUS Fed-Ex Hand Other _____ — Shipping #:
Work Authorized By (Please sign and print name) — Remarks:

HAZWRAP/NESSA: (Y) N
QC Level: 1 (2) 3 Other: ____
COC Rec Y — ICE Y
Ana Req Y — TEMP 4°C
Cust Seal Y — Ph ✓

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION ORIGINAL - LAB Yellow - LAB Pink

SAMPLE RECEIPT RECORD

Page ___ of ___

LGN Sample Batch Number: [illegible] QC Level: [illegible]

Cooler Temperature: [illegible]°C pH Checked By: [illegible] Date: [illegible]

pH OF PRESERVED ALIQUOTS

Check 10% of all samples (for HAZWRAP/NEESA samples check all samples)

LGN Sample No	Metals (HNO_3)	H_2SO_4	NaOH	HCL		
001	<2			<2.0		
002	<2			↓		
003	<2			↓		
004	<2			↓		
005	<2			↓		
006	<2			↓		
007	<2			↓		
008	<2			↓		
009	<2			↓		
010	<2			↓		
011	<2			✓		
DISPOSAL RECORD						
Date						
Initials						

Metals Aliquots (acid preserved):
Relinquished By: [illegible] Date/Time: 11-11-93 1850
Received By: TO Digest Date/Time:

Volatile Organic Aliquots:
Relinquished By: [illegible] Date/Time: 11-11-93 1850
Received By: TO GC MS cooler Date/Time:

Extractions:
Relinquished By: Date/Time:
Received By: Date/Time:

All Other Aliquots:
Relinquished By: [illegible] Date/Time: 11-11-93 1850
Received By: TO cooler Date/Time:

000071

Appendix B

APPENDIX B

BORING LOGS

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW1	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/14/93	**COMPLTD:** 4/14/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 16.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 16.5FT.	**DPTH TO ∇** 4.5 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

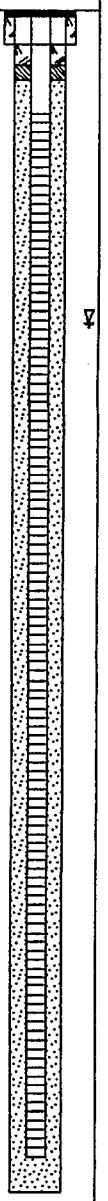


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW2	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/14/93	**COMPLTD:** 4/14/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 Inch	**SCREEN INT.:** 1.5 - 18.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 18.5FT.	**DPTH TO ∇** 4 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

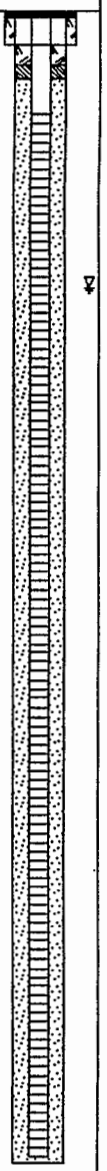


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW3	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/14/93	**COMPLTD:** 4/14/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 Inch	**SCREEN INT.:** 1.5 - 16.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 16.5FT.	**DPTH TO ∇** 4 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

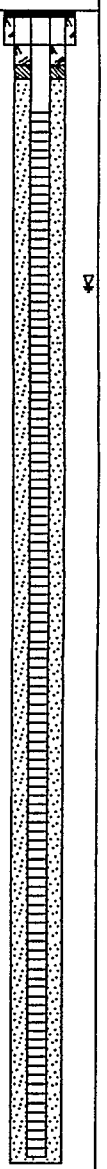


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW3D	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/15/93	**COMPLTD:** 4/18/93
METHOD: 8.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 27.0-32.0'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 32FT.	**DPTH TO ∇** 4 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN
5							SM	
10					SAND: red, dark gray, to tan, very silty with discontinous clay lenses, very fine- to fine-grained, sewage odor.			
15								
20								
25			18/24					7,4,3,2
			24/24				SC	3,2,2,1
			12/24		SAND: very dark gray, fine- to medium-grained, poorly sorted, angular		SM	10,12,8,14
30			23/24				CL	4,9,12,12
			12/24		Cooper Fm.: olive green to dark grey clays with dark grey dolomite layers. Clay is sandy, very hard, and dry.			5,7,10,11
35								

WELL DATA

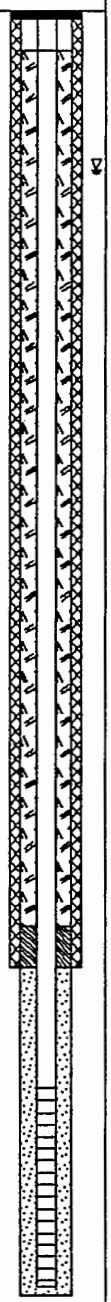


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW4	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/14/93	**COMPLTD:** 4/14/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 16.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 16.5FT.	**DPTH TO ∇** 4 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

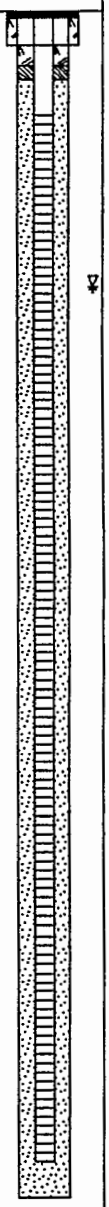


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW5	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/14/93	**COMPLTD:** 4/14/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 16.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 16.5FT.	**DPTH TO ∇** 4 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

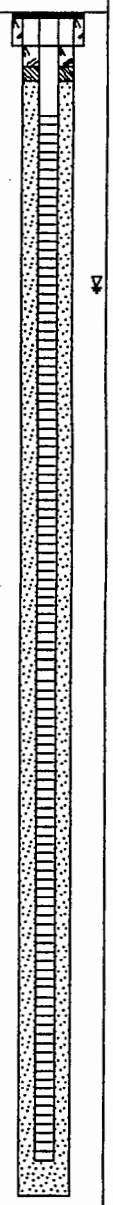


ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan	**LOG of WELL:** DFSP-MW8	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM		**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.	**DATE STARTED:** 4/14/93	**COMPLTD:** 4/14/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 2 - 17'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 17FT.	**DPTH TO ∇** 5 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 4/17/93	**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									∇
10									
15									
20									

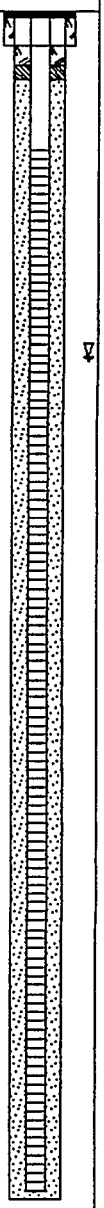


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW7	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/13/93	**COMPLTD:** 4/13/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1 - 18'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 18FT.	**DPTH TO ∇** 3.0 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 4/19/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

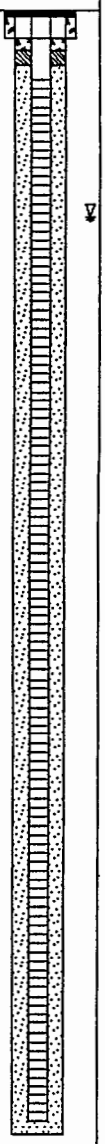


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW8	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/13/93	**COMPLTD:** 4/13/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 16.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 16.5FT.	**DPTH TO ∇** 4.5 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									∇
10									
15									
20									

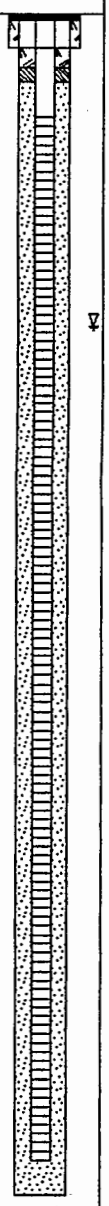


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW9	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/16/93	**COMPLTD:** 4/16/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 4 - 19'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 19FT.	**DPTH TO ∇** 8 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/20/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

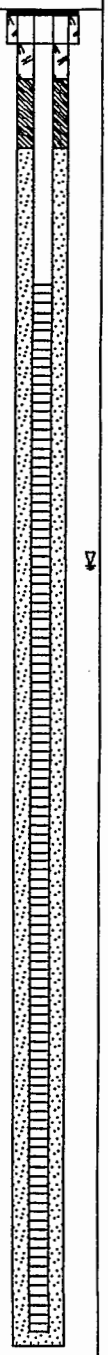


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan	**LOG of WELL:** DFSP-MW10	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM		**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.	**DATE STARTED:** 4/13/93	**COMPLTD:** 4/13/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 Inch	**SCREEN INT.:** 5 - 20'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 20FT.	**DPTH TO ∇** 9.0 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/17/93	**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

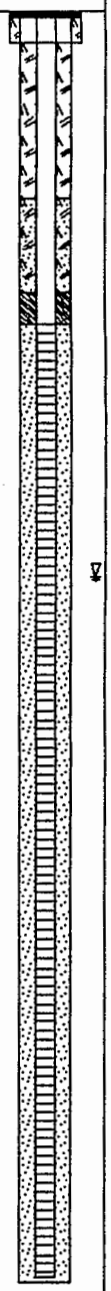


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW11	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/13/93	**COMPLTD:** 4/13/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 16.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 16.5FT.	**DPTH TO ∇** 4.5 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/17/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

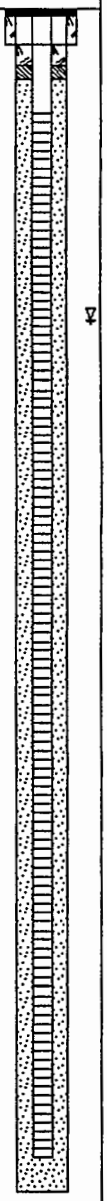


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW12	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/17/93	**COMPLTD:** 4/17/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 8 - 21'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 21FT.	**DPTH TO ∇** 10 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/21/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

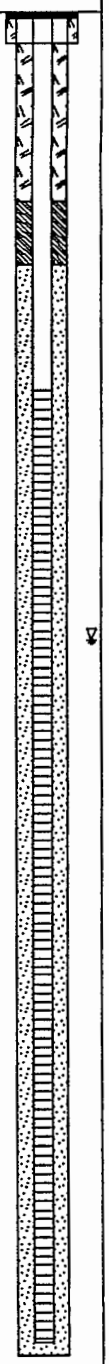


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW13	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/18/93	**COMPLTD:** 4/18/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 18.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 18.5FT.	**DPTH TO ∇** 4.5 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 4/21/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

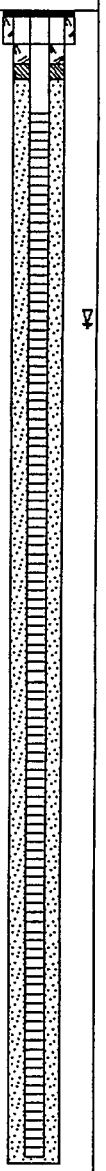


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW14	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/18/93	**COMPLTD:** 4/18/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 Inch	**SCREEN INT.:** 1.5 - 16.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 16.5FT.	**DPTH TO ∇** 4.5 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 4/21/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

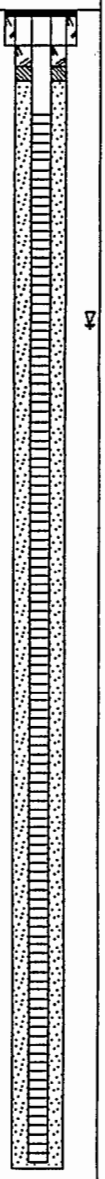


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW15	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/17/93	**COMPLTD:** 4/17/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 2 - 17'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 17FT.	**DPTH TO ∇** 6 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/21/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									∇
10									
15									
20									

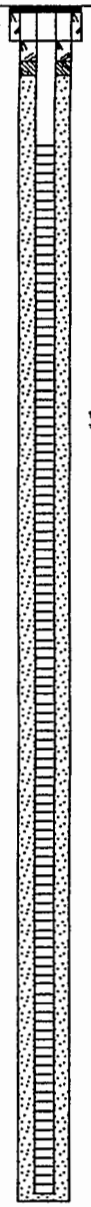


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW16	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/17/93	**COMPLTD:** 4/17/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 Inch	**SCREEN INT.:** 7 - 22'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 22FT.	**DPTH TO ∇** 12 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/21/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									∇
15									
20									

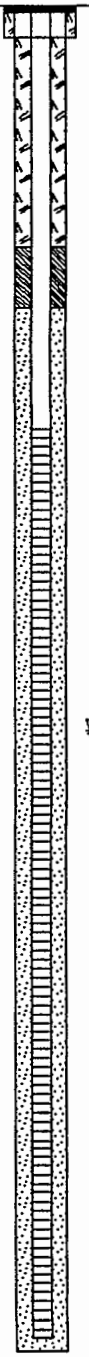


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan	**LOG of WELL:** DFSP-MW17	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM		**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.	**DATE STARTED:** 4/18/93	**COMPLTD:** 4/18/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1 - 11'
PROTECTION LEVEL: D		
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 11FT.
DPTH TO ∇ 2 FT.		
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/21/93	**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									

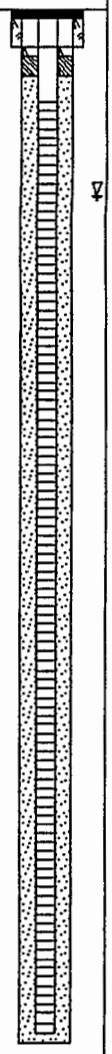


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW18	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/18/93	**COMPLTD:** 4/18/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 11.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 11.5FT.	**DPTH TO ∇** 2.5 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 4/21/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									

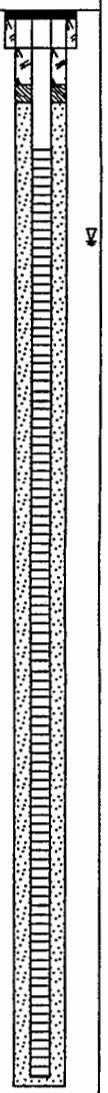


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW19	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 4/18/93	**COMPLTD:** 4/18/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 11.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 11.5FT.	**DPTH TO ∇** 3 FT.
LOGGED BY: M. Jaap	**WELL DEVELOPMENT DATE:** 4/21/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									

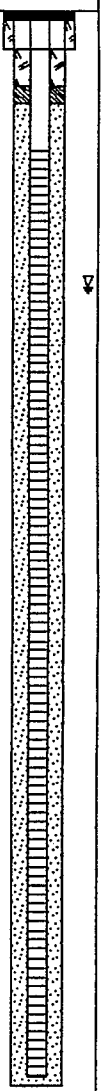


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW20	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 10/14/93	**COMPLTD:** 10/14/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.5 - 11.5'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 11.5FT.	**DPTH TO ∇** 3 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 10/14/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									

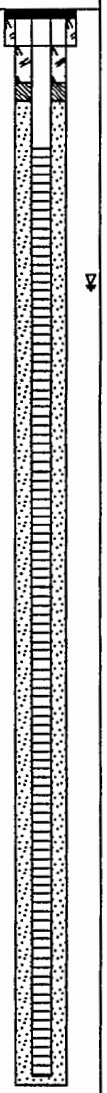


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan	**LOG of WELL:** DFSP-MW21	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM		**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.	**DATE STARTED:** 10/12/93	**COMPLTD:** 10/12/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 3- 18'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 18FT.	**DPTH TO ∇** 8.04 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 10/13/93	**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

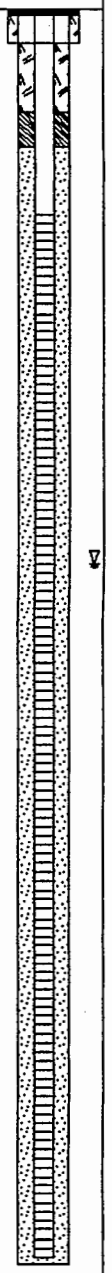


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW21D	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 10/11/93	**COMPLTD:** 10/12/93
METHOD: 8.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 25.0-30.0'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 30FT.	**DPTH TO ▽** 4 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 10/13/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									
25			18/24		SAND: light gray, medium-grained, slightly clayey, shelley sand with rock fragments of black shale or silty mudstone.		SC		
			24/24						
			12/24		CLAY: olive gray silty clay.		CL		
30									
			23/24						
			12/24						
35									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW22	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 10/12/93	**COMPLTD:** 10/12/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 3- 18'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 18FT.	**DPTH TO ∇** 8.94 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 10/13/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

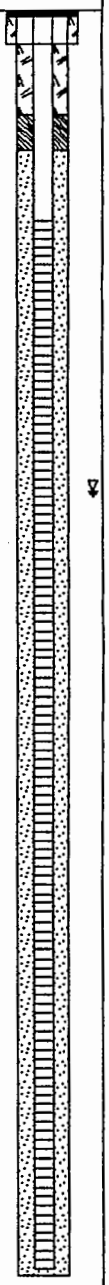


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW23	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 10/13/93	**COMPLTD:** 10/13/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 Inch	**SCREEN INT.:** 3- 18'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 18FT.	**DPTH TO ∇** 9.95 FT.
LOGGED BY: P. Wagner	**WELL DEVELOPMENT DATE:** 10/13/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

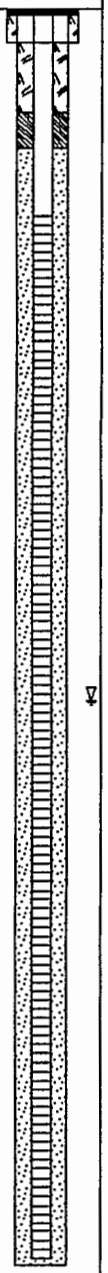


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW24	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 10/13/93	**COMPLTD:** 10/13/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 7 - 22'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 22FT.	**DPTH TO ∇** 10.75 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 10/13/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

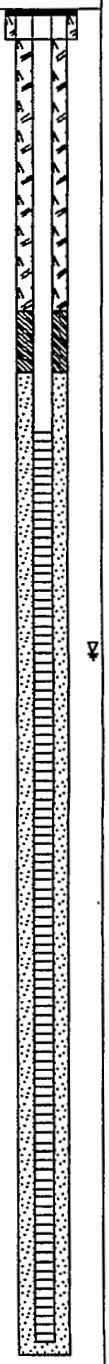


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW25	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 10/13/93	**COMPLTD:** 10/13/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 7 - 22'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 22FT.	**DPTH TO ∇** 10.84 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 10/13/93		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									∇
15									
20									

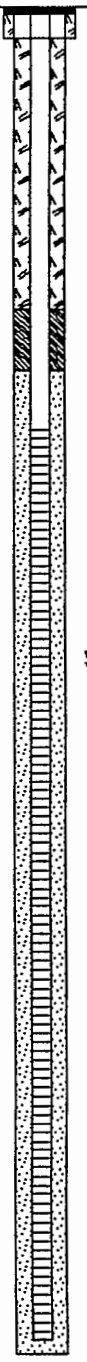


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW26	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Ivey Drilling		**DATE STARTED:** 10/25/93	**COMPLTD:** 10/25/93
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 1.2-12'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 12FT.	**DPTH TO ∇** 3.5 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 10/25/94		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									

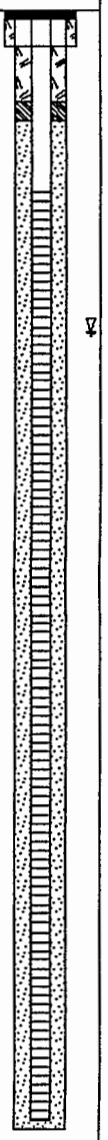


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW27	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Ivey Drilling		**DATE STARTED:** 10/25/94	**COMPLTD:** 10/25/94
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 2 - 17'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 17FT.	**DPTH TO ∇** FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 10/25/94		**SITE:** DFSP Hanahan Field

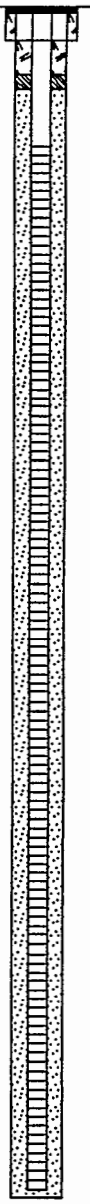
DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Defence Fuel Supply Point Hanahan		**LOG of WELL:** DFSP-MW28	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7508-40
CONTRACTOR: Ivey Drilling		**DATE STARTED:** 10/26/94	**COMPLTD:** 10/26/94
METHOD: 4.25" HSA	**CASE SIZE:** 2 inch	**SCREEN INT.:** 2 - 17'	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 17FT.	**DPTH TO ∇** 8.83 FT.
LOGGED BY: M. Joop	**WELL DEVELOPMENT DATE:** 10/26/94		**SITE:** DFSP Hanahan Field

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5									
10									
15									
20									

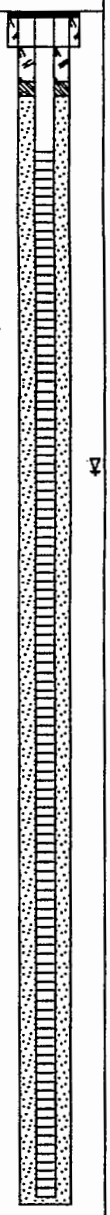


 ABB ENVIRONMENTAL SERVICES, INC.

Appendix C

APPENDIX C

SLUG TEST CALCULATIONS AND GRAPHS

Estimates of average pore water velocity were obtained using the following formula:

$$V = (K*I)/n$$

where

V = pore water velocity (ft/day)
K = hydraulic conductivity (ft/day)
I = hydraulic gradient (ft/ft)
n = estimated porosity

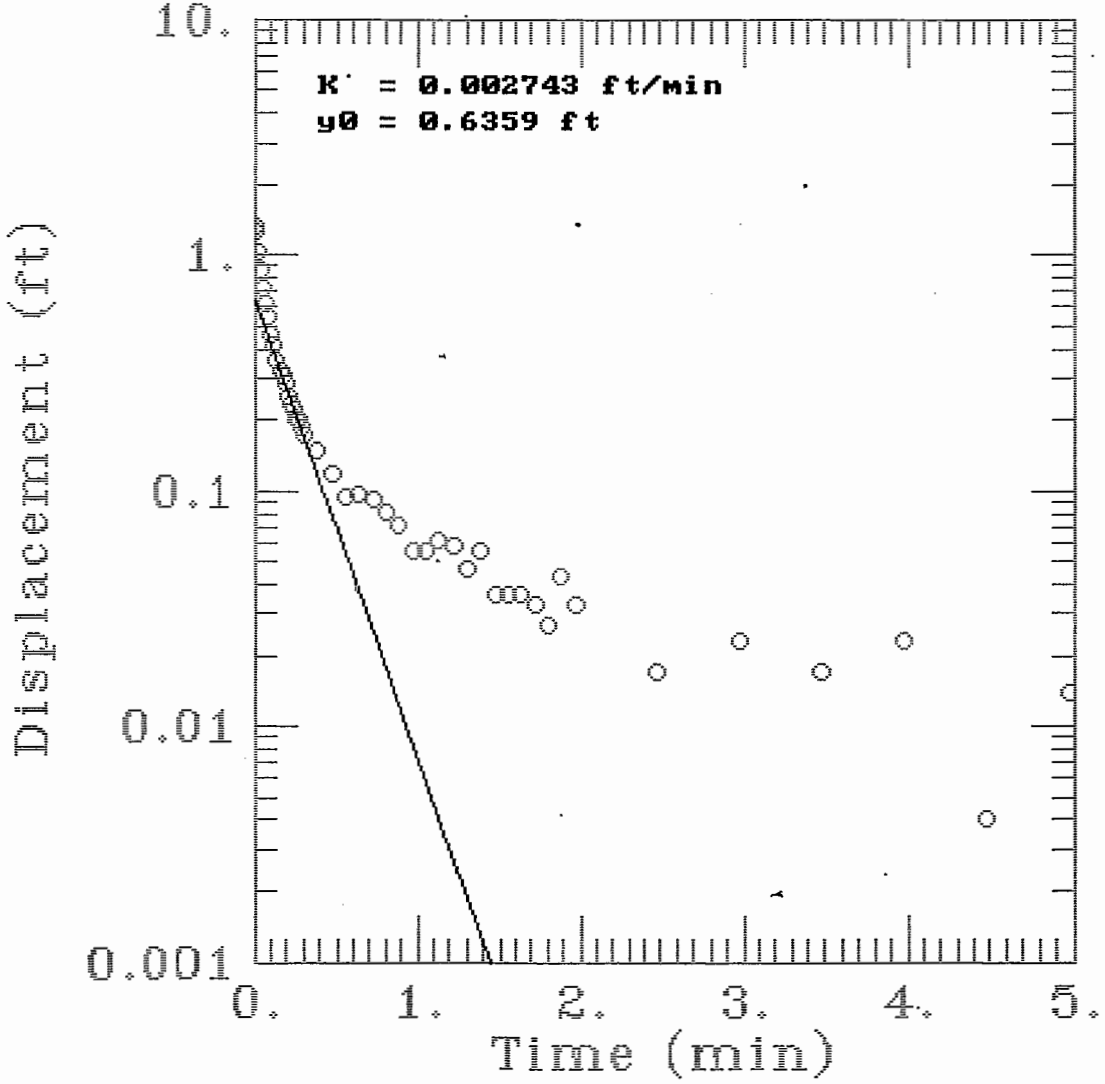
To calculate a transmissivity value from the slug test results, the following formula was used:

$$T = K*h$$

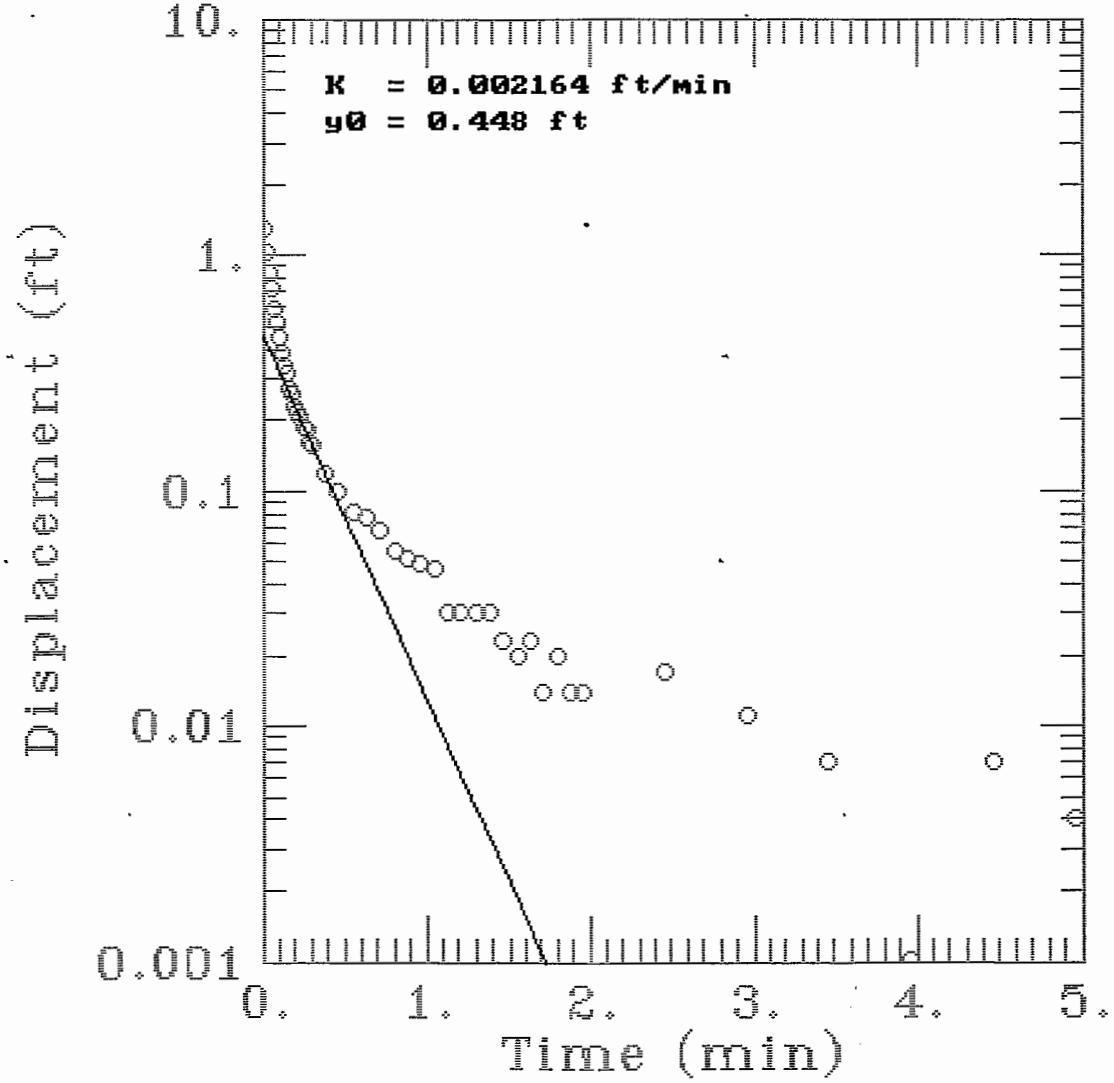
where

T = transmissivity (ft^2/day)
K = hydraulic conductivity (ft/day)
h = aquifer thickness (ft from water table to confining bed)

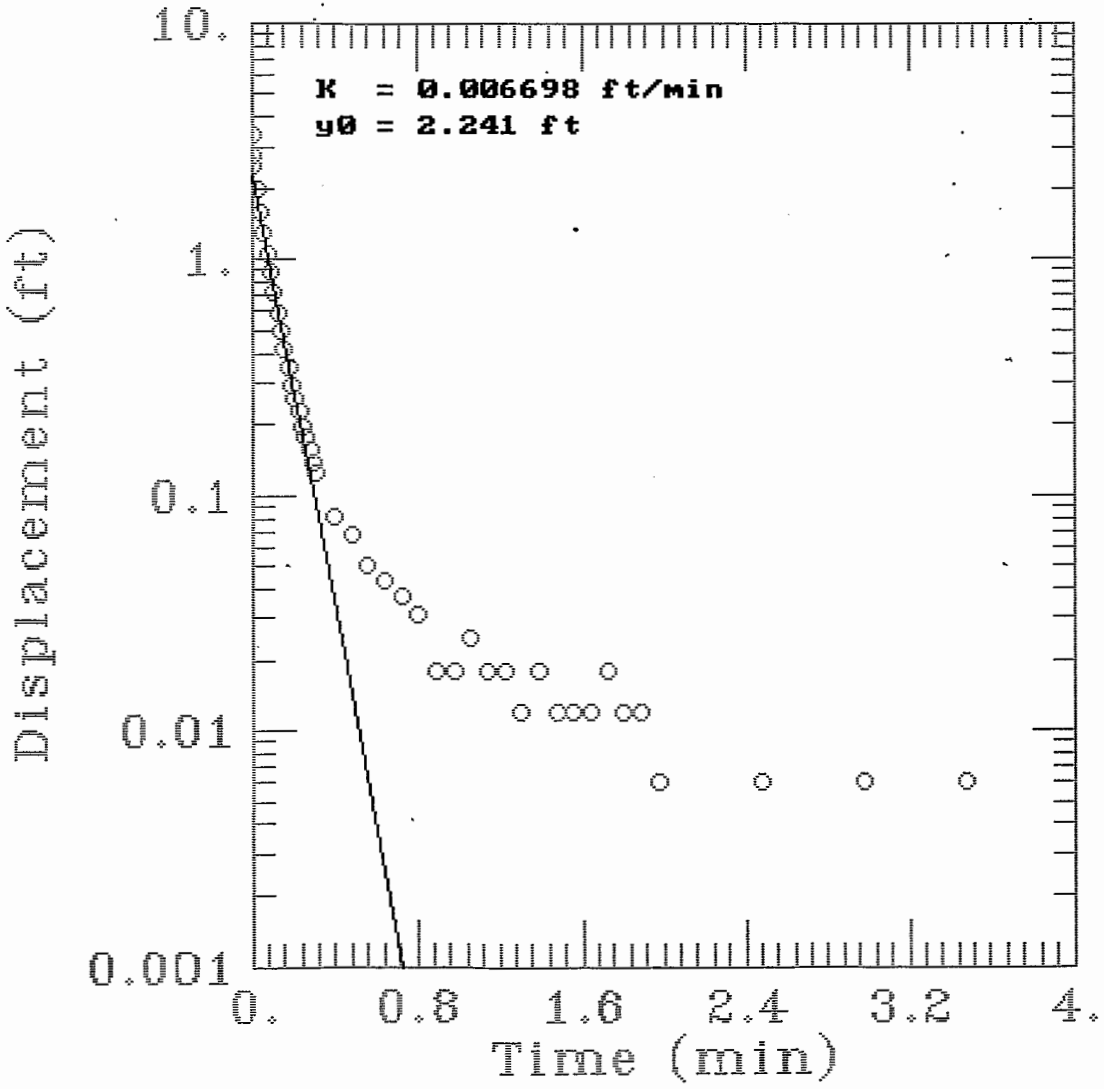
DFSP HANAHAN MW18 RISING HEAD RUN 1



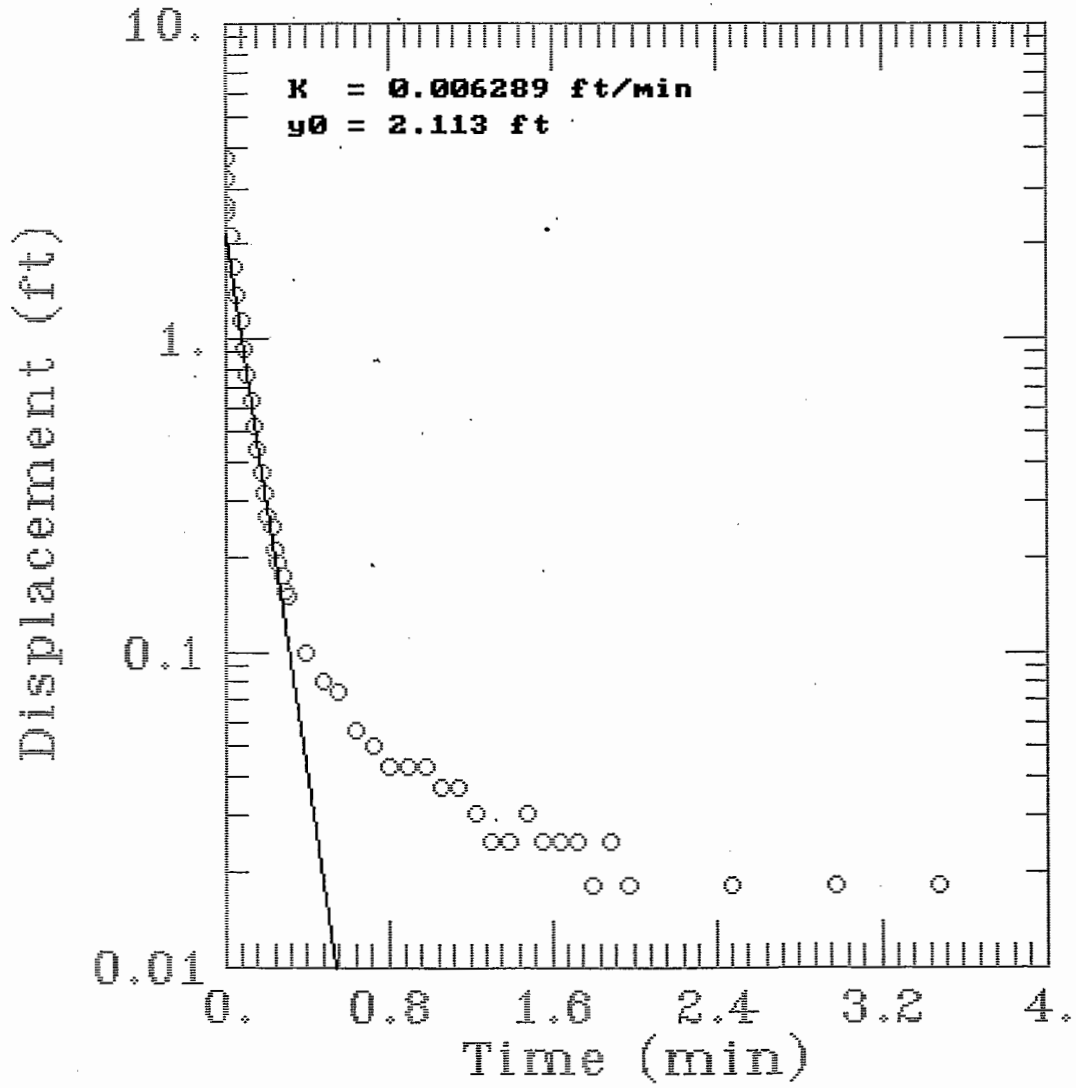
DFSP HANAHAN MW18 RISING HEAD RUN 2



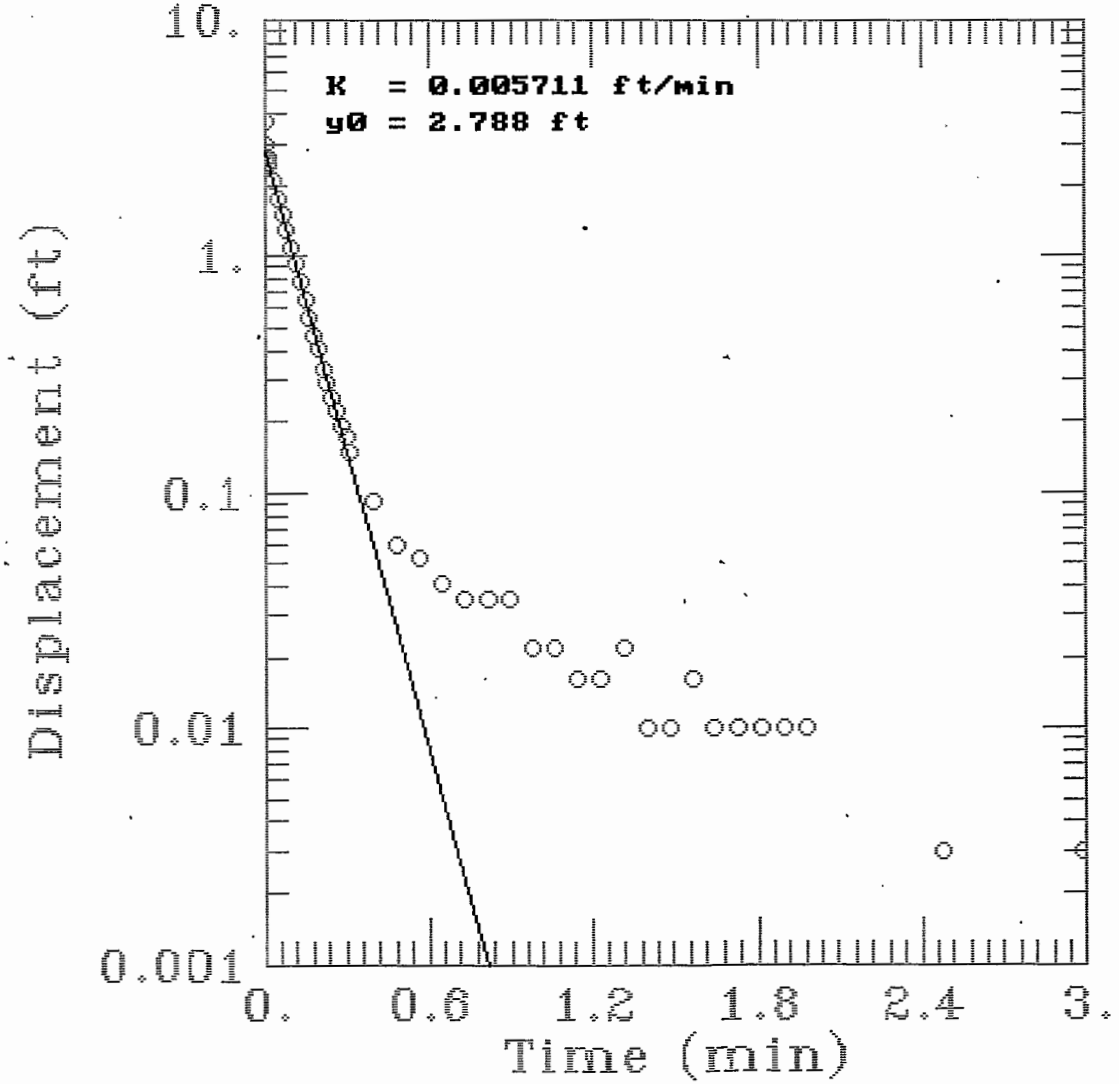
DFSP HANAHAN MW06 RISING HEAD RUN 1



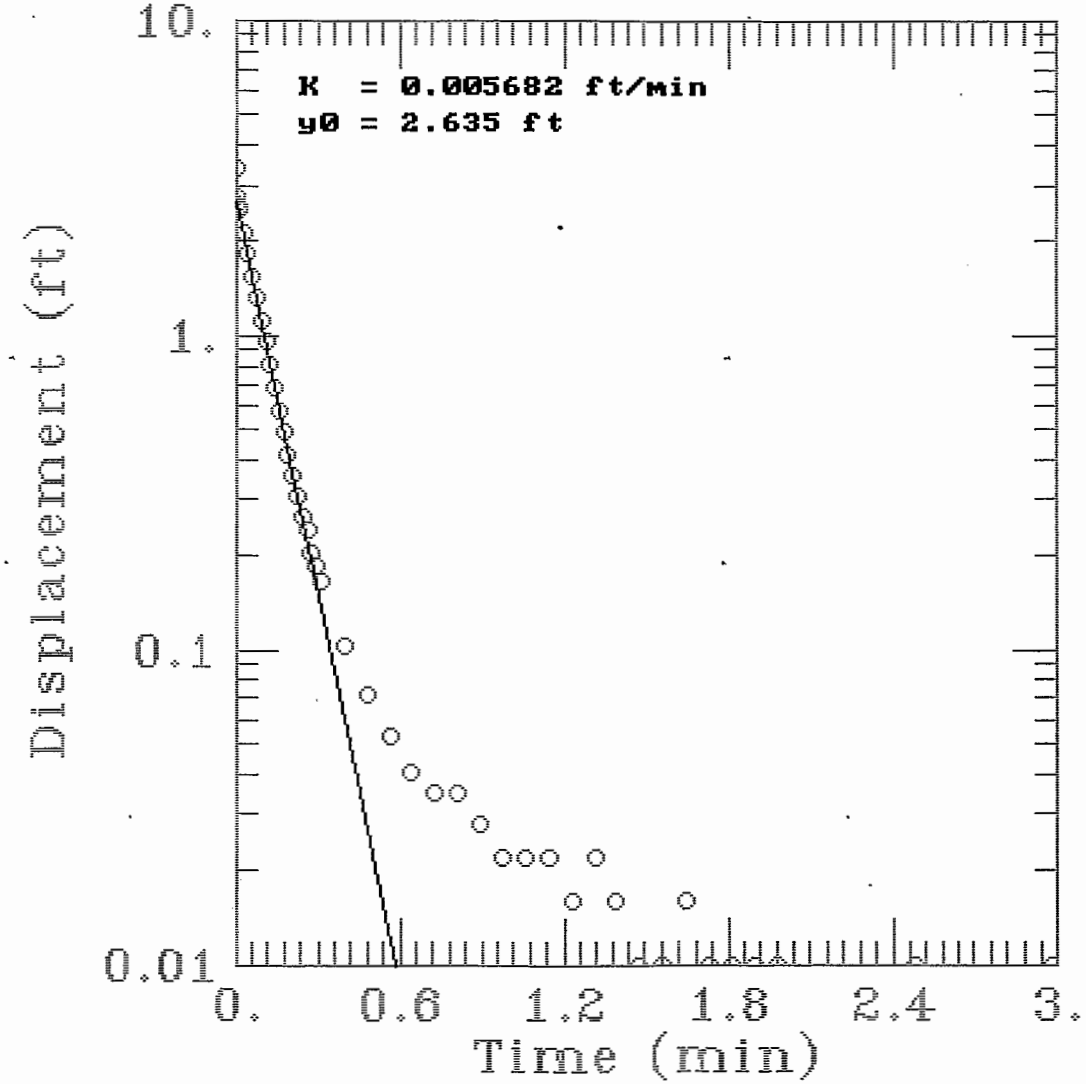
DFSP HANAHAN MW06 RISING HEAD RUN 2



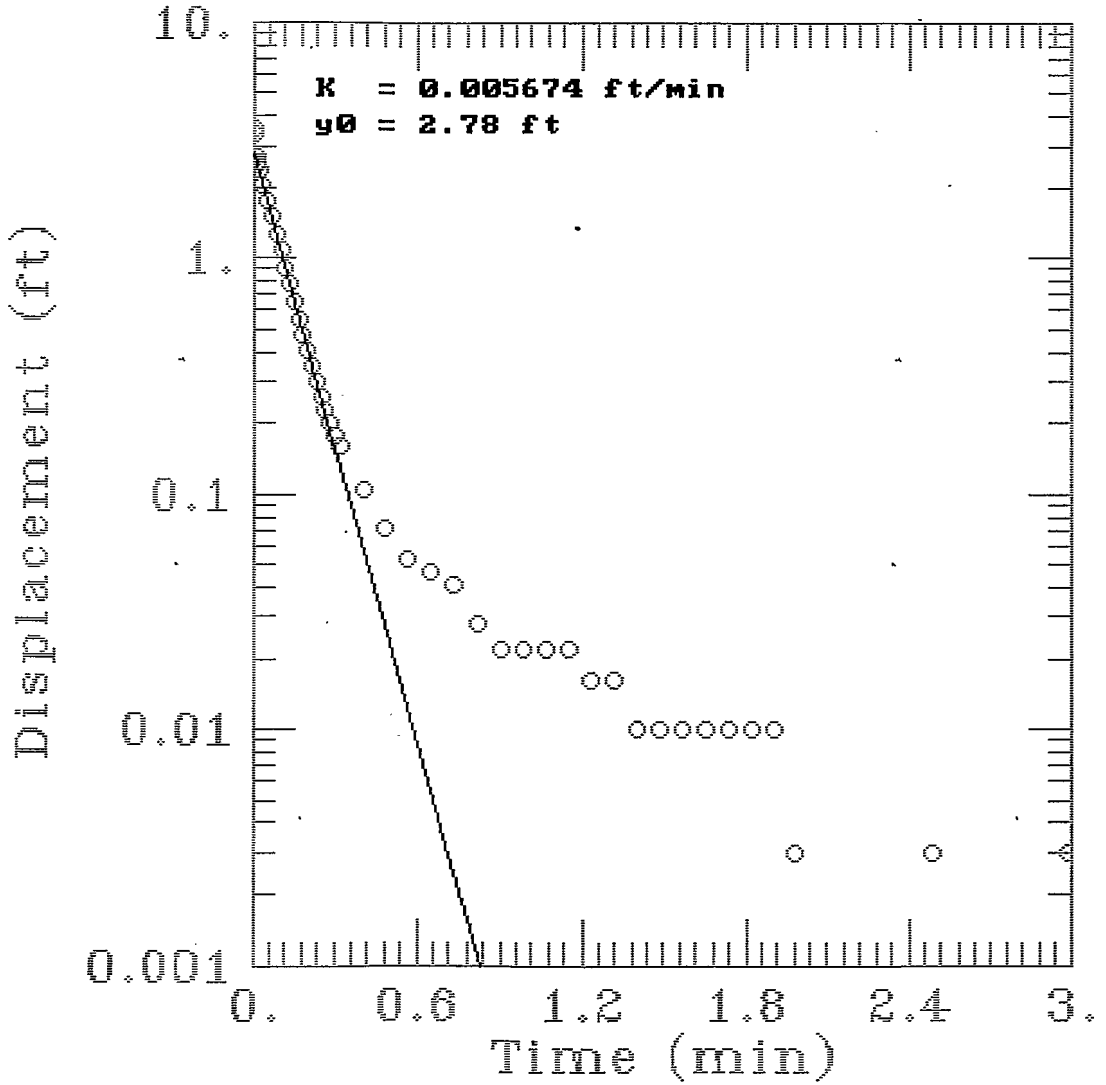
DFSP HANAHAN MW04 RISING HEAD RUN 1



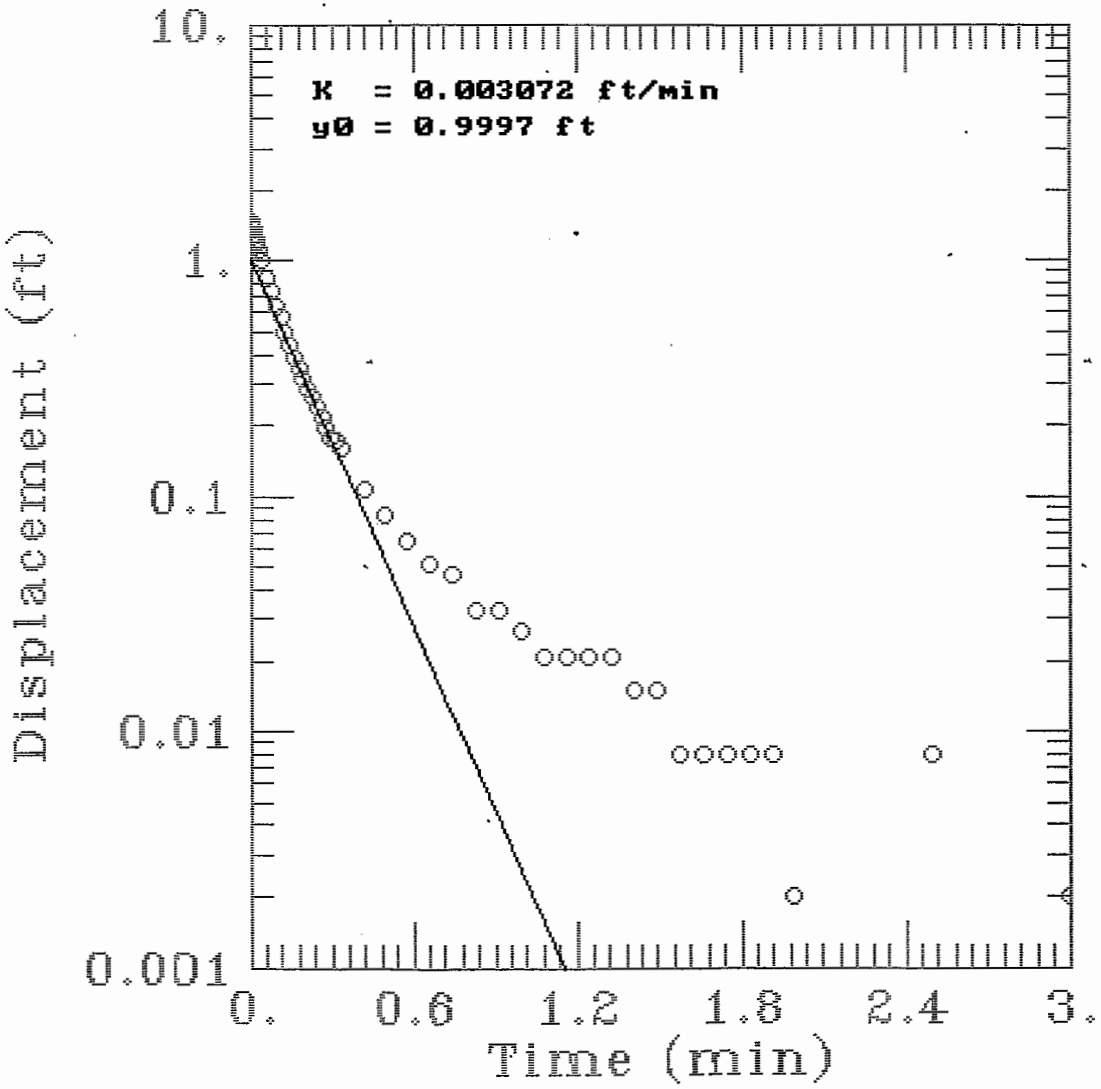
DFSP HANAHAN MW04 RISING HEAD RUN 2



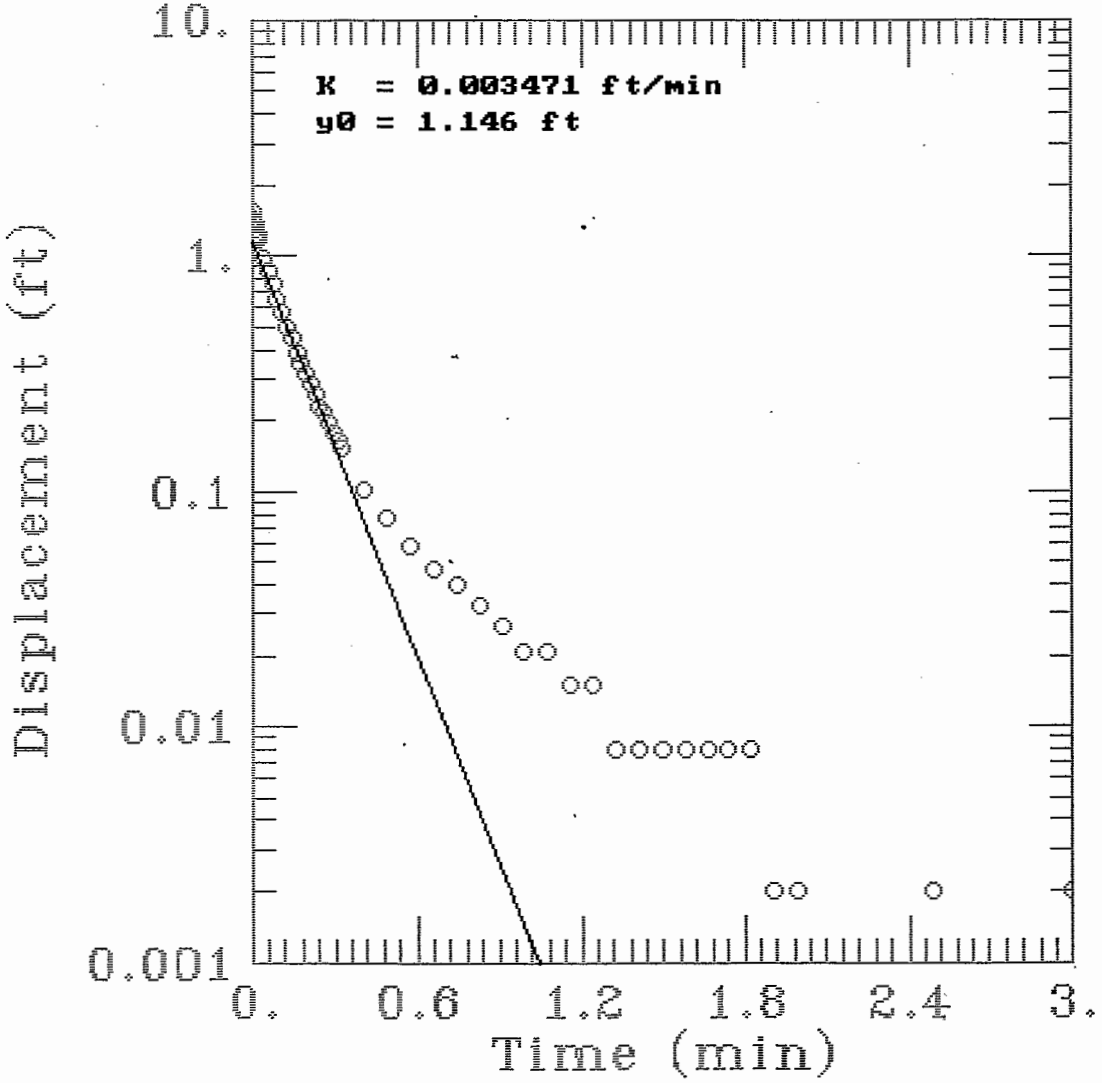
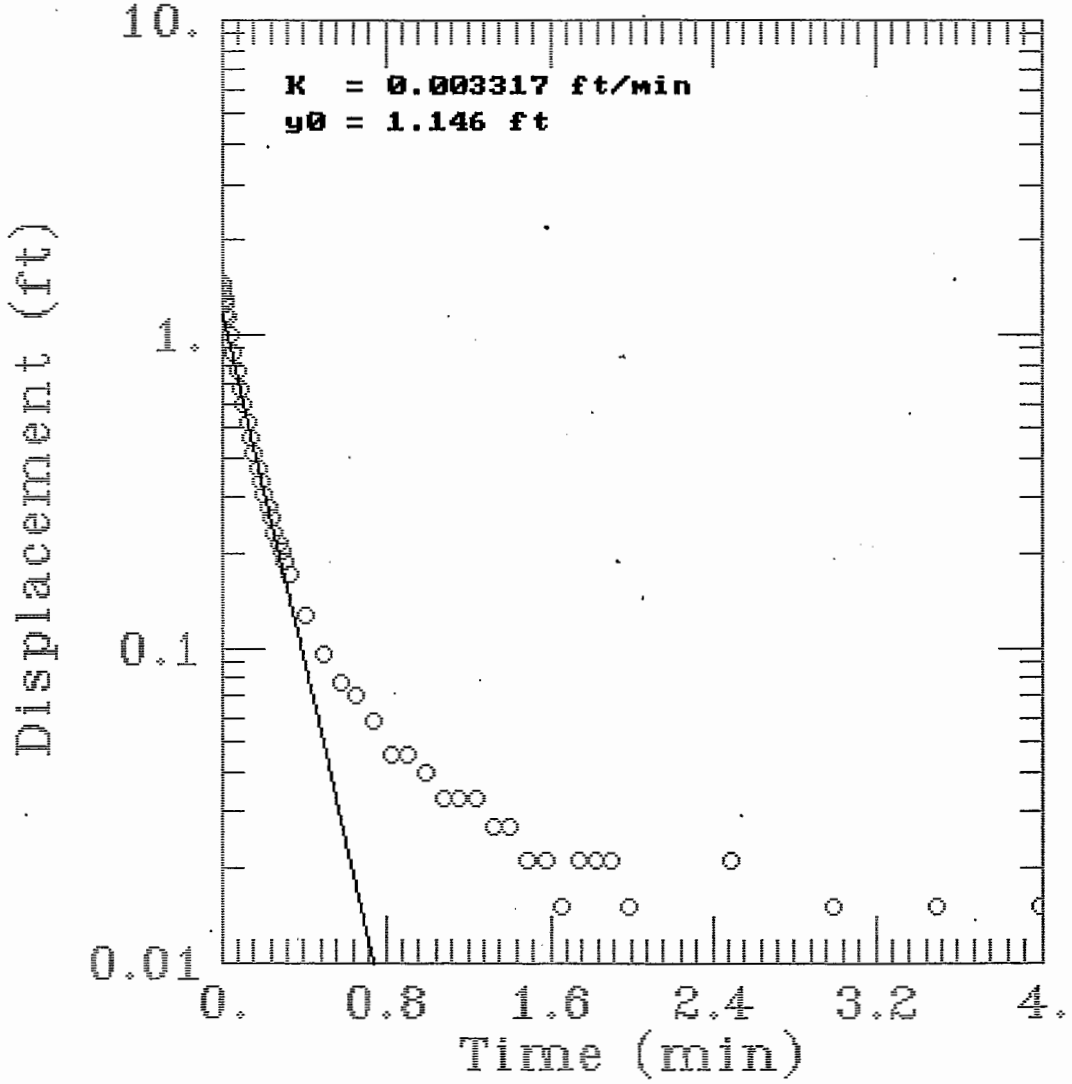
DFSP HANAHAN MW04 RISING HEAD RUN 3



DFSP HANAHAN MW13 RISING HEAD RUN I



DFSP HANAHAN MW13 RISING HEAD RUN 2



DFSP HANAHAN MW13 RISING HEAD RUN 3