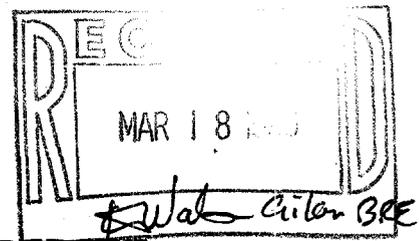


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CONTAMINATION ASSESSMENT REPORT JET ENGINE TEST CELL BUILDING A969 BOCA
CHICA FIELD NAS KEY WEST FL
6/1/1994
ABB ENVIRONMENTAL SERVICES INC

0032



CONTAMINATION ASSESSMENT REPORT

**JET ENGINE TEST CELL, BUILDING A969
BOCA CHICA FIELD, NAVAL AIR STATION
KEY WEST, FLORIDA**

Contract Task Order No. 097

Contract No. N62467-89-D-0317

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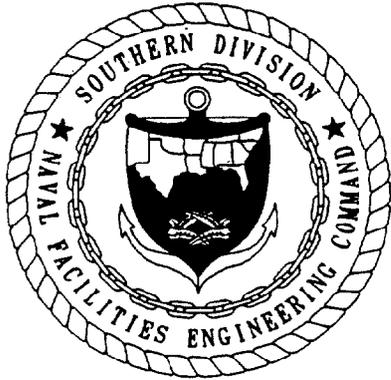
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June 1994



FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments 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, especially 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 the 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 (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 Chapter 17-770, Florida Administrative Code (FAC) (*State Underground Petroleum Environmental Response*) regulations on petroleum contamination in Florida's environment as a result of spills or leaking tanks or piping.

Questions regarding this report should be addressed to the Commanding Officer, Naval Air Station Key West, Boca Chica Field, Key West, Florida, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Gabriel Magwood, Code 1849, at AUTOVON 563-0658 or (803) 743-0658.

EXECUTIVE SUMMARY

The Jet Engine Test Cell site (Building A969) is used to test recently repaired jet engines. Jet engine testing activities are performed under a canopied area located in the central part of the site (see Executive Summary Figure). During testing, jet engines are fueled by a 5,000-gallon JP-5 jet fuel aboveground storage tank (AST) located within a concrete containment berm approximately 70 feet southwest of the canopy. Aboveground fuel piping extends from the northeast end of the berm to the testing area. In January 1989, a filter system leak resulted in the release of approximately 700 gallons of JP-5 jet fuel on the western side of the AST. Approximately 650 gallons of free product were recovered during initial remedial activities. During a site investigation in November 1992, stained soil was observed near the northwest corner of the canopy where lubrication oil had spilled from an overturned drum.

ABB Environmental Services, Inc. (ABB-ES), was contracted by the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) and submit a Contamination Assessment Report (CAR) for the site. The CA was conducted from October 1993 through February 1994 following State guidelines for petroleum assessment and cleanup, which are outlined in Chapter 17-770, Florida Administrative Code. Forty-three soil borings were advanced into the water table and 24 monitoring wells were installed and sampled to assess the extent of soil and groundwater contamination.

The water table was encountered at depths of 1 to 3 feet below land surface (bls). The general groundwater flow direction is toward the inlet that borders the site to the north.

Soil contamination detected at the site appears to be restricted to within 1 foot above the top of the water table, and may be an indication of residual groundwater contamination during low water table elevations.

Benzene, ethylbenzene, xylenes, naphthalenes, total recoverable petroleum hydrocarbons (TRPH), and several chlorinated compounds were identified in groundwater samples. TRPH and total naphthalenes concentrations in groundwater exceed applied State target levels in the vicinity of the jet engine testing area (see Executive Summary Figure). (Note: total naphthalenes are the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene). Concentrations of 1,2-dichloroethene (1,2-DCE) and trichloroethene (TCE) in groundwater exceeded their respective maximum contaminant levels (MCLs) in the northeast part of the site.

The areal extent of TRPH and total naphthalenes in groundwater appears to be restricted to the vicinity of the jet engine testing area. The vertical extent of TRPH and total naphthalenes in groundwater does not appear to exceed 20 feet bls.

The horizontal and vertical extent of 1,2-DCE and TCE in groundwater has not been delineated in the northeast part of the site. The presence of 1,2-DCE and TCE in groundwater does not appear to be associated with petroleum contamination. The source of 1,2-DCE and TCE in groundwater may be associated with cleaning and maintenance activities in the vicinity of the former testing area.

Additional site investigation is needed to assess the horizontal and vertical extent of 1,2-DCE and TCE in groundwater and the source of this contamination. Based on discussions with the Florida Department of Environmental Protection, it is the understanding of ABB-ES that additional site investigation and petroleum cleanup will be conducted as part of the Navy Installation Restoration program.

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GLOSSARY (Continued)

PAHs	polynuclear aromatic hydrocarbons
POA	Plan of Action
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SWDA	Solid Waste Disposal Act
TCE	trichloroethene
TCFM	trichlorofluoromethane
TOC	top of casing
TRPH	total recoverable petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
V	average pore water velocity
VOAs	volatile organic aromatics
VOCs	volatile organic compounds

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), was contracted by the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) and submit a Contamination Assessment Report (CAR) for the Jet Engine Test Cell site (Building A969) at Boca Chica Field, Naval Air Station (NAS), Key West, Florida. The scope of services is described in Contract Task Order (CTO) No. 097, the Plan of Action (POA), and the Contamination Assessment Plan (CAP) and included the following:

- analyzing soil samples in the unsaturated zone to assess the concentrations of volatile organic compounds (VOCs) in soil,
- installing and sampling groundwater monitoring wells to assess the horizontal and vertical extent of groundwater contamination,
- recording groundwater elevations to assess the groundwater flow direction and hydraulic gradient at the site,
- conducting slug tests on selected wells to estimate aquifer characteristics,
- conducting a tidal influence study to assess the effect of tidal fluctuations on groundwater flow direction,
- conducting a potable well inventory within a 0.25-mile radius of the site, and
- reducing and analyzing pertinent data gathered during the CA to complete the CAR.

The CA was conducted following State guidelines for petroleum assessment and cleanup, which are outlined in Chapter 17-770, Florida Administrative Code, (FAC). The CA was conducted in two phases from October 1993 through February 1994.

The first phase was conducted from October 1993 to January 1994, during which soil borings were drilled, monitoring wells were installed and sampled, and aquifer tests were conducted on selected wells. Groundwater analytical results from the first phase indicated the presence of petroleum contamination in groundwater. The compound 1,2-dichloroethene (1,2-DCE) was detected in downgradient monitoring wells. The presence of 1,2-DCE in groundwater was considered to be a concern because 1,2-DCE is not regulated under Chapter 17-770, FAC, guidelines. Furthermore, the presence of 1,2-DCE in groundwater did not appear to be associated with petroleum contamination detected during the first phase of the CA.

ABB-ES met with Florida Department of Environmental Protection (FDEP) representatives to discuss the manner of future site investigation. At the request of FDEP, additional monitoring wells were installed and sampled during the second phase of the CA to assess the horizontal extent of 1,2-DCE in groundwater.

The second phase of the CA was conducted in February 1994. Groundwater sample analyses from the second phase indicate that the extent of 1,2-DCE in groundwater has not been delineated and further site investigation is warranted. Groundwater analytical data were submitted to FDEP, and the investigation was suspended until a decision was made concerning the manner of future site investigation. After discussions with the U.S. Environmental Protection Agency (USEPA), FDEP informed ABB-ES that additional site investigation and remediation would be subject to USEPA guidelines as part of the Navy Installation Restoration (IR) program.

This CAR addresses findings concerning both petroleum contamination and 1,2-DCE contamination in groundwater. This CAR should only be used as a guideline for future investigation and remediation at the site. The following sections of this CAR present the background information, data compilation, field investigative results, and recommendations for further action at the site.

2.0 SITE DESCRIPTION AND HISTORY

NAS Key West, Monroe County, Florida, is located approximately 150 miles southwest of Miami (Figure 2-1). NAS Key West is a complex of activities encompassing approximately 5,000 acres in numerous areas of the lower Florida Keys. The majority of activities are concentrated on Boca Chica Key and Key West. The host activity, Boca Chica Field, is situated on Boca Chica Key and covers approximately 3,250 acres. The mission of NAS Key West is to maintain and operate facilities and provide services and materials to support operations of aviation activities and units designated by the Chief of Naval Operations (CNO).

The Jet Engine Test Cell site (Building A969) is located in the northeast section of Boca Chica Field (Figure 2-1). The facility is used to test recently repaired jet engines. There are no other activities within close proximity to the site.

2.1 SURFACE FEATURES AND SITE ACTIVITIES. The site is bordered on the south by an asphalt road that parallels a concrete runway, on the north by a saltwater inlet, and on the east and west by open, flat-lying grassy areas (Figure 2-2). The surface topography at the site is flat, with a gentle slope toward the saltwater inlet. Ground elevations vary from 0 to 5 feet above mean sea level (msl) (U.S. Geological Survey, 1971).

Jet engine testing activities are performed under a canopied area located in the central part of the site (Figure 2-2). This area is surrounded by a circular concrete pad approximately 60 feet in diameter. The jet engines are fueled from a 5,000-gallon JP-5 jet fuel aboveground storage tank (AST) that has been in operation since 1987. The AST is located within a concrete containment berm approximately 70 feet southwest of the canopy. Aboveground fuel piping extends from the northeast end of the berm to the testing area. Jet engine exhaust is directed toward the inlet north of the canopy and is deflected upward by jet blast deflectors.

Three compressed air tanks are located on top of a 4-foot high concrete pad near the southwest corner of the canopy. A switch house, used for jet engine testing procedures, is located on the same concrete pad and is oriented perpendicular to the air tanks. A high voltage box rests on a concrete pad between the air tanks and the fuel lines.

Building A969 is located approximately 50 feet southeast of the concrete testing area and is used as an office by facility personnel. The two metal storage buildings located northeast of Building A969 are used to store jet engine testing equipment.

The concrete area that extends east of the canopy was the former jet engine testing area. A small metal shed is located at the eastern end of the concrete area and is used for the storage of various oils and jet fuel. Gas path cleaners are also stored in drums along the east side of the shed.

2.2 UNDERGROUND UTILITY LOCATIONS. An electric line, a telephone line, and two water lines are located underground in the southern part of the site (Figure 2-2). The electric and telephone lines extend from the switch house to Building

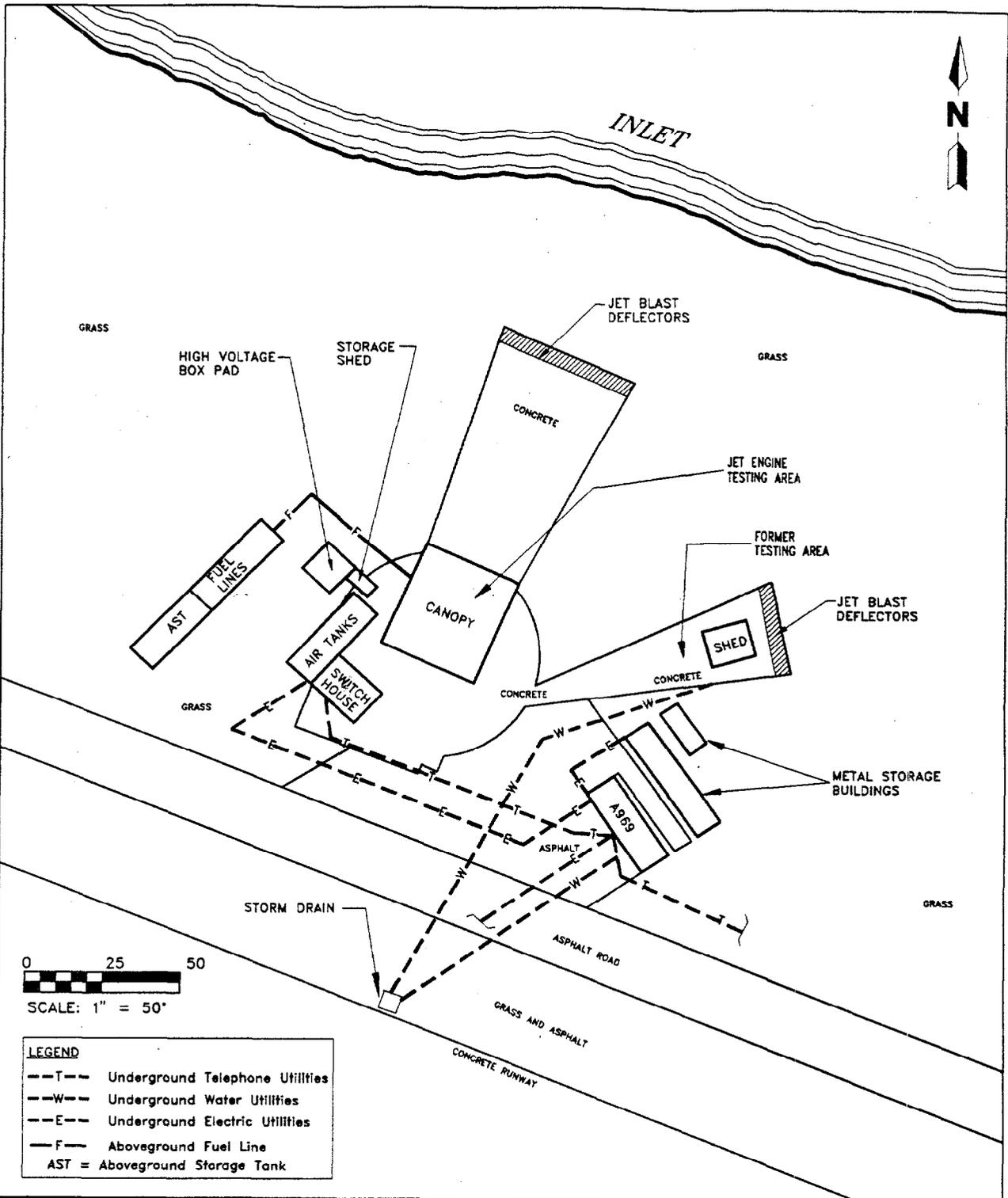
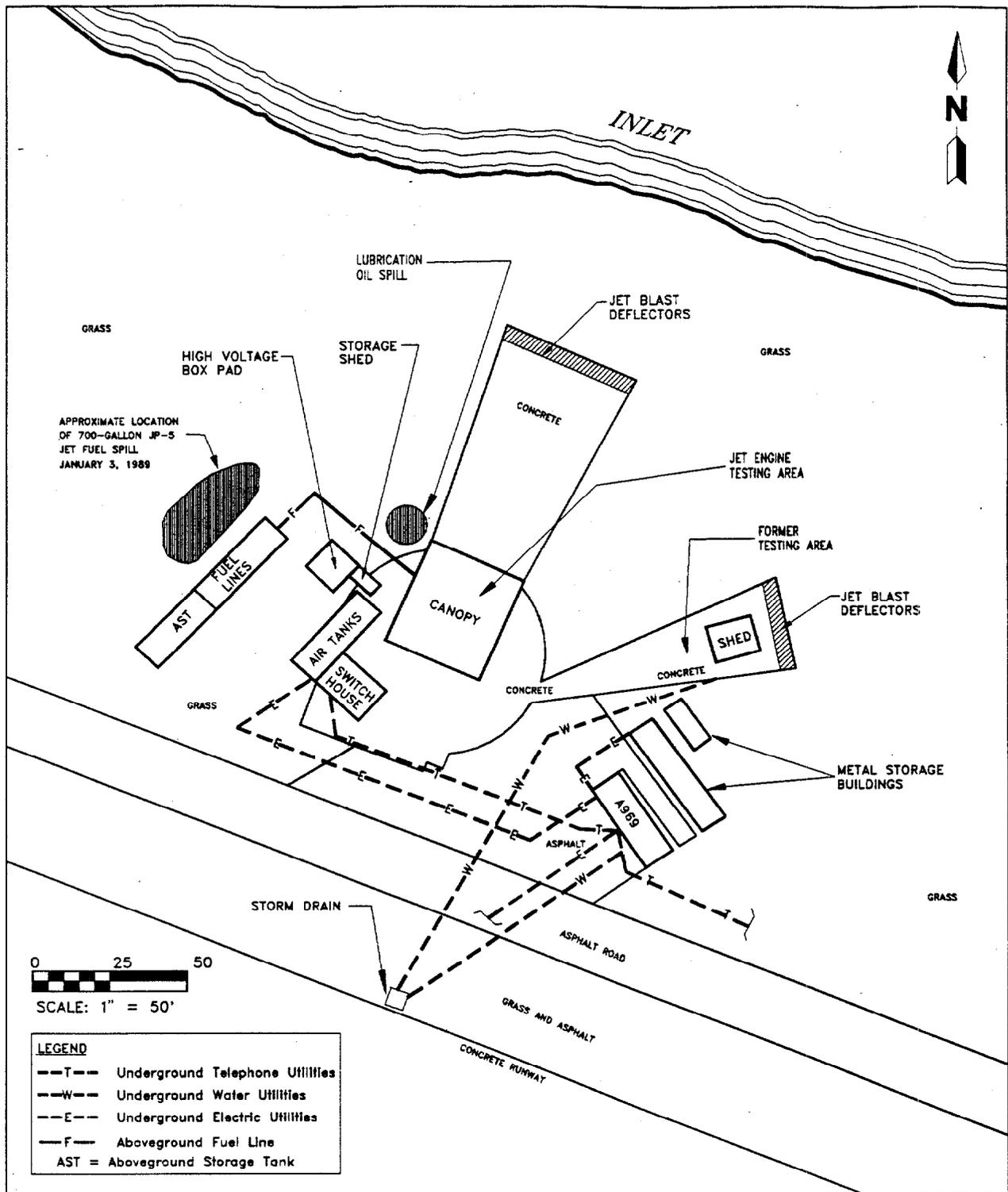


FIGURE 2-2
SITE PLAN AND UTILITY MAP



**CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL**

**BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA**



**FIGURE 2-3
LOCATIONS OF PREVIOUS PETROLEUM
RELEASES**



**CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL**

**BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA**

3.0 REGIONAL AND LOCAL PHYSIOGRAPHY AND HYDROGEOLOGY

3.1 PHYSIOGRAPHY. Florida is divided into three geomorphic zones: the northern or proximal zone, the central or mid-peninsular zone, and the southern or distal zone (White, 1970). Boca Chica Key is part of the Lower Keys and is located entirely within the southern or distal zone. This area is characterized by a sparse veneer of residual soil and surface vegetation overlying eroded limestone. The topography of the Lower Keys is generally smooth and flat in the center of the key and slopes gently toward the shoreline (White, 1970).

3.2 HYDROGEOLOGY. The Lower Keys are underlain by an oolitic member of the Pleistocene Miami Limestone. The Key Largo coral reef limestone underlies the Miami Limestone. Hoffmeister (1974) reported that the Miami Limestone is 27 feet thick and the Key Largo Limestone is greater than 270 feet thick in the western part of Key West. The Key Largo Limestone is generally more porous than the Miami Limestone. Surficial and shallow subsurface features in the area have often been altered by imported fill material.

The surficial aquifer in the Boca Chica area is unconfined and is the principal aquifer of concern in the area. The water table is found at shallow depths in the area, generally occurring from less than 1 foot to 7 feet below land surface (bls). The surficial aquifer is contained within the Miami Limestone, the underlying Key Largo Limestone, and surficial fill materials. The aquifer typically contains brackish or saline water. Recharge to the aquifer is directly from precipitation, and infiltration rates are rapid. Groundwater flow discharge is to surrounding surface waters.

Water quality data indicate that the surficial aquifer is an unlikely source of potable water (McKenzie, 1990). Facility records indicate there are no potable wells on Boca Chica Key. Potable water at Boca Chica Field is imported from mainland Florida through the Florida Keys Aqueduct. For these reasons the surficial aquifer will be treated herein as a Class G-III groundwater source.

4.0 CONTAMINATION ASSESSMENT PROGRAM

Methodologies and equipment used during the field investigation were in conformance with the ABB-ES, FDEP-approved, Comprehensive Quality Assurance Program Plan (CompQAPP). Investigative methodologies and equipment used during the CA are discussed in Appendix B, Investigative Methodologies and Equipment.

4.1 SOIL BORING ADVANCEMENT, SOIL SAMPLING, AND SOIL ASSESSMENT. Forty-three soil borings (designated SB-1 through SB-43) were advanced into the water table with a drill rig to assess the horizontal and vertical extent of petroleum contamination in the unsaturated zone, to characterize the type of subsurface material, and to aid in the placement of groundwater monitoring wells. Soil boring locations are shown on Figure 4-1.

Soil samples were collected from 0 to 2 feet bls and underwent organic vapor analyzer (OVA) headspace analysis to assess the concentration of VOCs in the soil. The results of the soil boring and soil sampling program are discussed in Subsection 5.2.1.

4.2 GROUNDWATER MONITORING WELL INSTALLATION AND SAMPLING PROGRAM. Monitoring wells were installed during two separate phases of the CA. Twenty monitoring wells (KYW-A969-MW-1 through KYW-A969-MW-18, KYW-A969-MW-19D, and KYW-A969-MW-20D) were installed during the first phase of the CA. Monitoring wells KYW-A969-MW-21 through KYW-A969-MW-24 were installed during the second phase. Monitoring well locations are shown in Figure 4-2. For convenience, the prefix "KYW-A969-" is not used in tables, figures, and text throughout this report. Monitoring wells were installed to a depth of 11 feet bls, except for monitoring wells KYW-A969-MW-19D AND KYW-A969-MW-20D, which were installed to depths of 25 feet bls and 20 feet bls, respectively.

Groundwater samples were collected from monitoring wells MW-1 through MW-20D on October 18, 1993. Samples were analyzed for constituents of the kerosene analytical group as defined in Chapter 17-770, FAC. Analyses were performed for volatile organic halocarbons by USEPA Method 601, for volatile organic aromatics (VOAs) and methyl tert-butyl ether (MTBE) by USEPA Method 602, for polynuclear aromatic hydrocarbons (PAHs) by USEPA Method 625, for total recoverable petroleum hydrocarbons (TRPH) by USEPA Method 418.1, for ethylene dibromide (EDB) by USEPA Method 601 Modified, and for lead by USEPA Method 239.2. Monitoring wells MW-14 and MW-15 were resampled on December 1, 1993; January 12, 1994; and February 23, 1994; and analyzed for USEPA Methods 601 and 602 to confirm contaminant levels. Monitoring wells MW-21 through MW-24 were sampled on February 23, 1994, and analyzed for USEPA Methods 601 and 602.

Results of the groundwater sampling and analyses program are discussed in Subsection 5.2.2.

4.3 WATER TABLE ELEVATION MEASUREMENTS. Depth to groundwater was measured and water table elevations were calculated for monitoring wells on October 20, 1993; December 4, 1993; and February 22, 1994. Water table elevation contour maps for

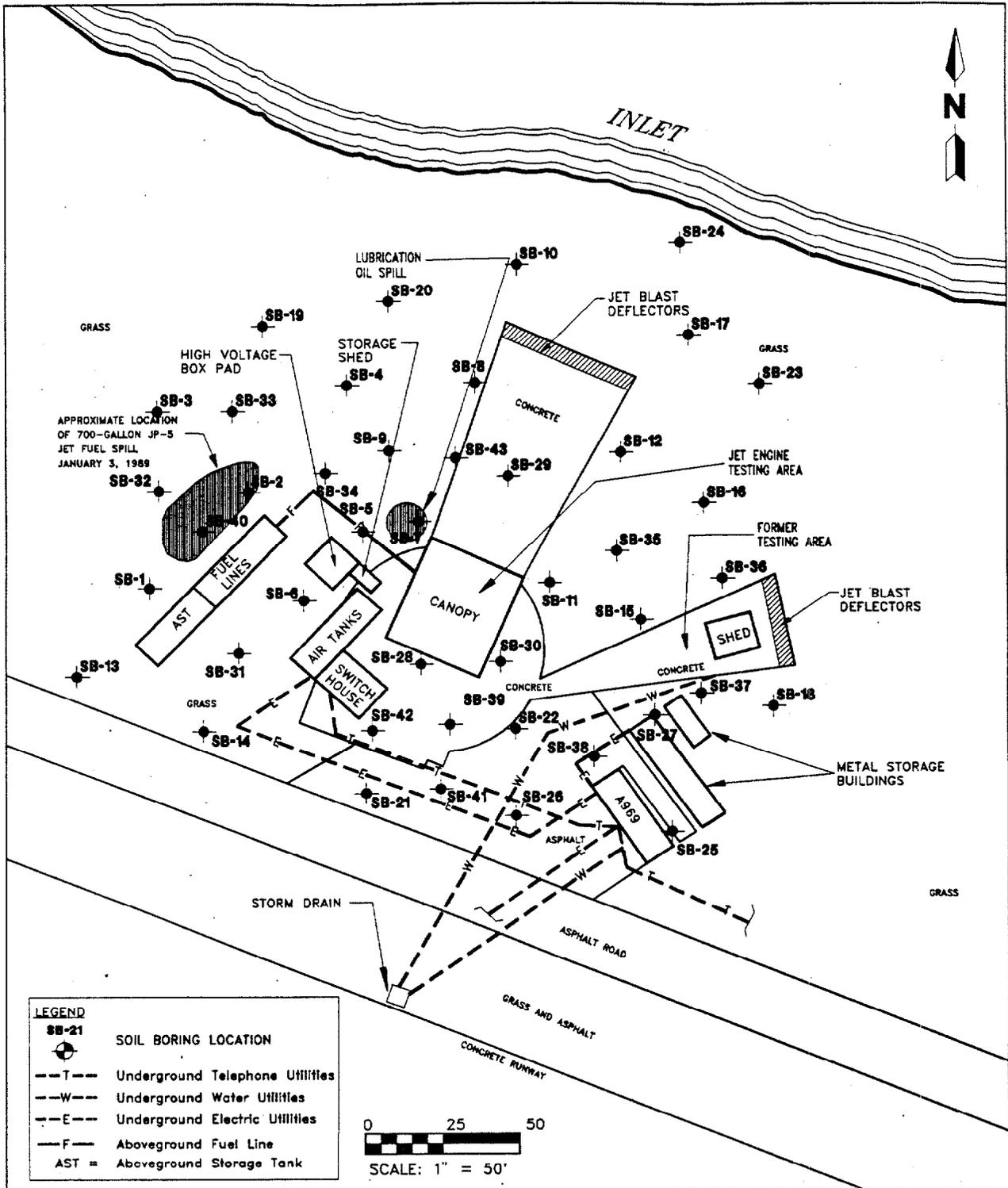
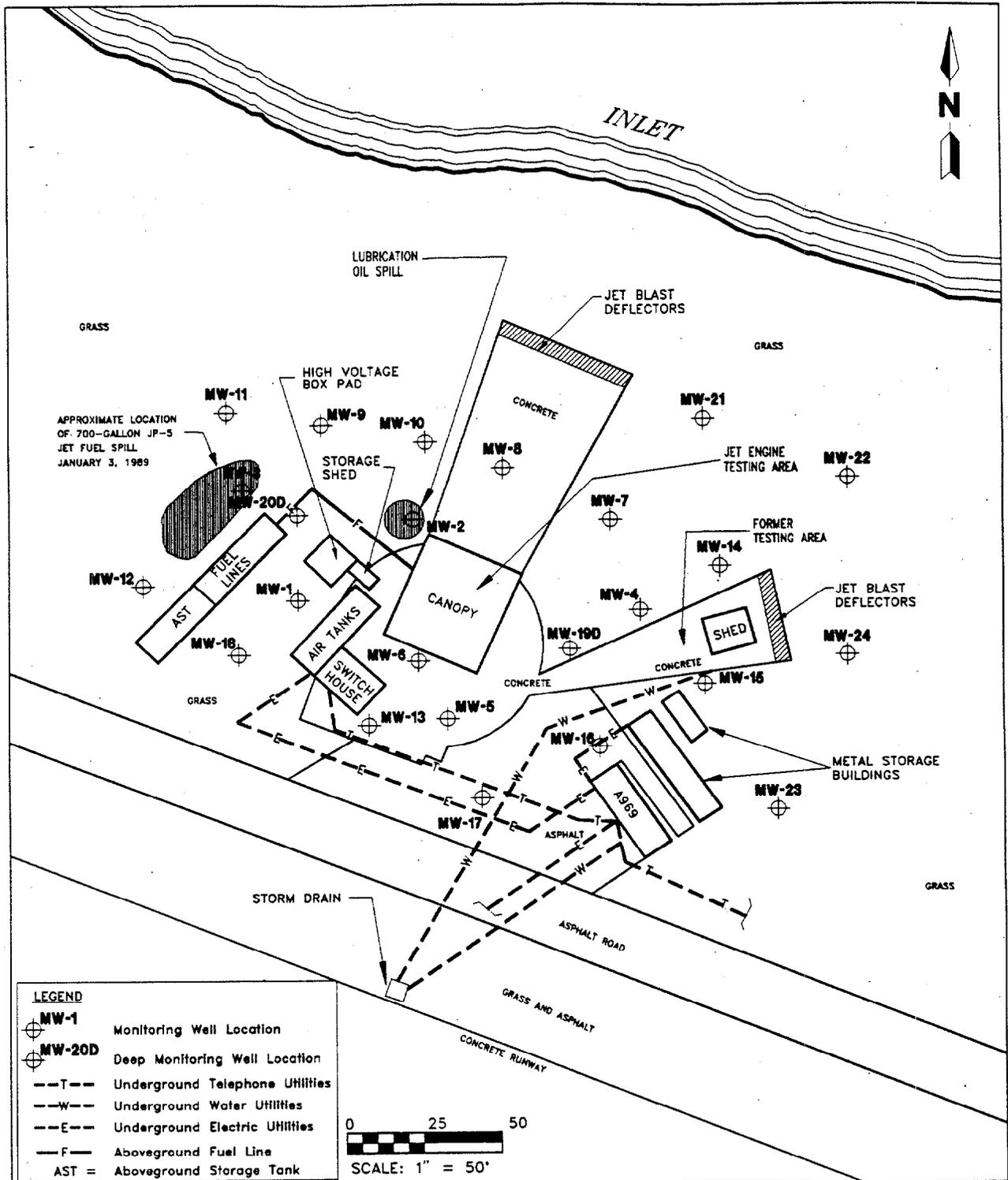


FIGURE 4-1
SOIL BORING LOCATION MAP

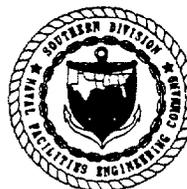


**CONTAMINATION ASSESSMENT
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JET ENGINE TEST CELL**

**BOCA CHICA FIELD
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**FIGURE 4-2
MONITORING WELL LOCATION MAP**



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each date were prepared using this information and are discussed in Subsection 5.1.1.

4.4 TIDAL INFLUENCE STUDY. A 38-hour tidal study was conducted from 1645 hours on November 30, 1993, to 0700 hours on December 2, 1993. The purpose of the tidal study was to assess the effects of tidal fluctuations on water table elevations and groundwater flow direction at the site. The study was conducted during a full moon to observe and measure larger than average tidal fluctuations over at least one tidal cycle. Tidal study methodologies and results are discussed in Appendix C, Tidal Influence Study.

4.5 AQUIFER SLUG TESTS. Rising head slug tests were conducted in monitoring wells MW-2 and MW-5 to estimate the hydraulic conductivity (K) of the surficial aquifer. Slug test procedures are described in Appendix B, Methodologies and Equipment. Slug test graphs and calculations are attached in Appendix D, Aquifer Parameter Calculations.

5.0 CONTAMINATION ASSESSMENT RESULTS

5.1 SITE-SPECIFIC AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS. The surficial aquifer was penetrated to a depth of 27 feet bls during the CA. Subsurface material is generally composed of a mixture of oolitic sand, light gray clay, and limestone gravel. The sand is light brown to white, and varies from fine-grained to coarse-grained. Clay content in the soil ranges from 0 to 30 percent, and typically averages 20 percent. The amount of gravel in the samples is typically 10 percent to 20 percent, and generally increases with depth. Minor amounts of limestone pebbles were encountered. Lithologic logs for borings in which monitoring wells were installed are presented in Appendix E, Lithologic Logs.

5.1.1 Depth to Groundwater and Groundwater Flow Direction Groundwater was encountered from approximately 1 to 3 feet bls and is under water table conditions. Depth to water, top of casing, and water table elevation measurements were recorded on October 20, 1993; December 4, 1993; and February 22, 1994; and are presented in Table 5-1. Water table elevation contour maps for each date are shown in Figures 5-1 through 5-3, respectively. (Note: Water table elevations from the two vertical extent wells, MW-19D and MW-20D, were not used in water table elevation contouring because they are screened at deeper intervals than the shallow monitoring wells.)

Groundwater elevations from the shallow monitoring wells indicate a predominantly northerly groundwater flow direction beneath the site. The October 20, 1993, measurements indicate a northerly flow direction except for two small areas. A piezometric "high" in the vicinity of monitoring well MW-6 near the south edge of the canopy results in radial flow in this area. Groundwater flow is westerly in the vicinity of the storage shed on the east side of the site. The December 4, 1993, data indicate a northerly groundwater flow direction beneath most of the site. An easterly flow direction is indicated in the southeast part of the site near Building A969 and the metal buildings. The February 22, 1994, measurements indicate a northerly flow direction except in the vicinity of the piezometric "high" in the vicinity of monitoring well MW-2, which results in radial flow near the northwest corner of the canopy.

The tidal influence study indicates that water table elevations and hydraulic gradients are tidally influenced. The observed, localized variations in groundwater flow direction may be the result of tidal fluctuations; however, tidal fluctuations do not appear to change the predominantly northerly groundwater flow direction (See Appendix C, Tidal Influence Study).

5.1.2 Hydraulic Gradient, Hydraulic Conductivity (K), and Pore Water Velocity (V). The calculated average hydraulic gradient at the site is 1.6×10^{-3} feet per foot (ft/ft). Slug test results indicate an average K value of 7.2×10^{-1} feet per day (ft/day). The calculated pore water velocity (V) is 3.8×10^{-3} ft/day. Equations and calculations used to estimate these values are presented in Appendix D, Aquifer Parameter Calculations.

Table 5-1
Water Table Elevation Data,
October 20, 1993, December 4, 1993, and February 22, 1994

Contamination Assessment Report
 Jet Engine Test Cell Site, Building A969
 Boca Chica Field, NAS Key West
 Key West, Florida

Monitoring Well Number	Total Well Depth ¹	Top of Casing Elevation ¹	October 20, 1993		December 4, 1993		February 22, 1994	
			Depth to Ground-water (from TOC)	Relative Groundwater Elevation ¹	Depth to Ground-water (from TOC)	Relative Groundwater Elevation ¹	Depth to Ground-water (from TOC)	Relative Groundwater Elevation ¹
MW-1	11	5.54	1.85	3.69	1.80	3.74	2.11	3.43
MW-2	11	5.37	1.69	3.68	1.61	3.76	1.91	3.46
MW-3	11	5.11	1.49	3.62	1.45	3.66	1.74	3.37
MW-4	11	5.26	1.61	3.65	1.53	3.73	1.85	3.41
MW-5	11	5.39	1.71	3.68	1.59	3.80	1.97	3.42
MW-6	11	5.50	1.66	3.84	1.70	3.80	2.07	3.43
MW-7	11	5.38	1.78	3.60	1.70	3.68	1.99	3.39
MW-8	11	5.28	1.70	3.58	1.62	3.66	1.93	3.35
MW-9	11	4.81	1.25	3.56	1.24	3.57	1.49	3.32
MW-10	11	5.07	1.52	3.55	1.46	3.61	1.73	3.34
MW-11	11	4.62	1.05	3.57	1.03	3.59	1.27	3.35
MW-12	11	4.99	1.33	3.66	1.27	3.72	1.62	3.37
MW-13	11	5.69	1.96	3.73	1.89	3.80	2.27	3.42
MW-14	11	5.31	1.58	3.73	1.68	3.63	1.89	3.42
MW-15	11	5.40	1.72	3.68	1.73	3.67	2.01	3.39
MW-16	11	5.32	1.61	3.71	1.54	3.78	1.90	3.42
MW-17	11	5.57	1.82	3.75	1.76	3.81	2.15	3.42
MW-18	11	5.50	1.79	3.71	1.74	3.76	2.10	3.40
MW-19D	25	5.40	1.88	3.52	1.60	3.80	2.03	3.37
MW-20D	20	5.04	1.48	3.56	1.28	3.76	1.67	3.37
MW-21	11	4.70	**	**	**	**	1.39	3.31
MW-22	11	4.97	**	**	**	**	1.63	3.34
MW-23	11	5.00	**	**	**	**	1.53	3.47
MW-24	11	4.76	**	**	**	**	1.36	3.40

¹All elevations referenced to an arbitrary benchmark of 10.00 feet above mean sea level (msl).

Notes: TOC = top of casing.

** = monitoring wells MW-21 through MW-24 were not installed at this time.

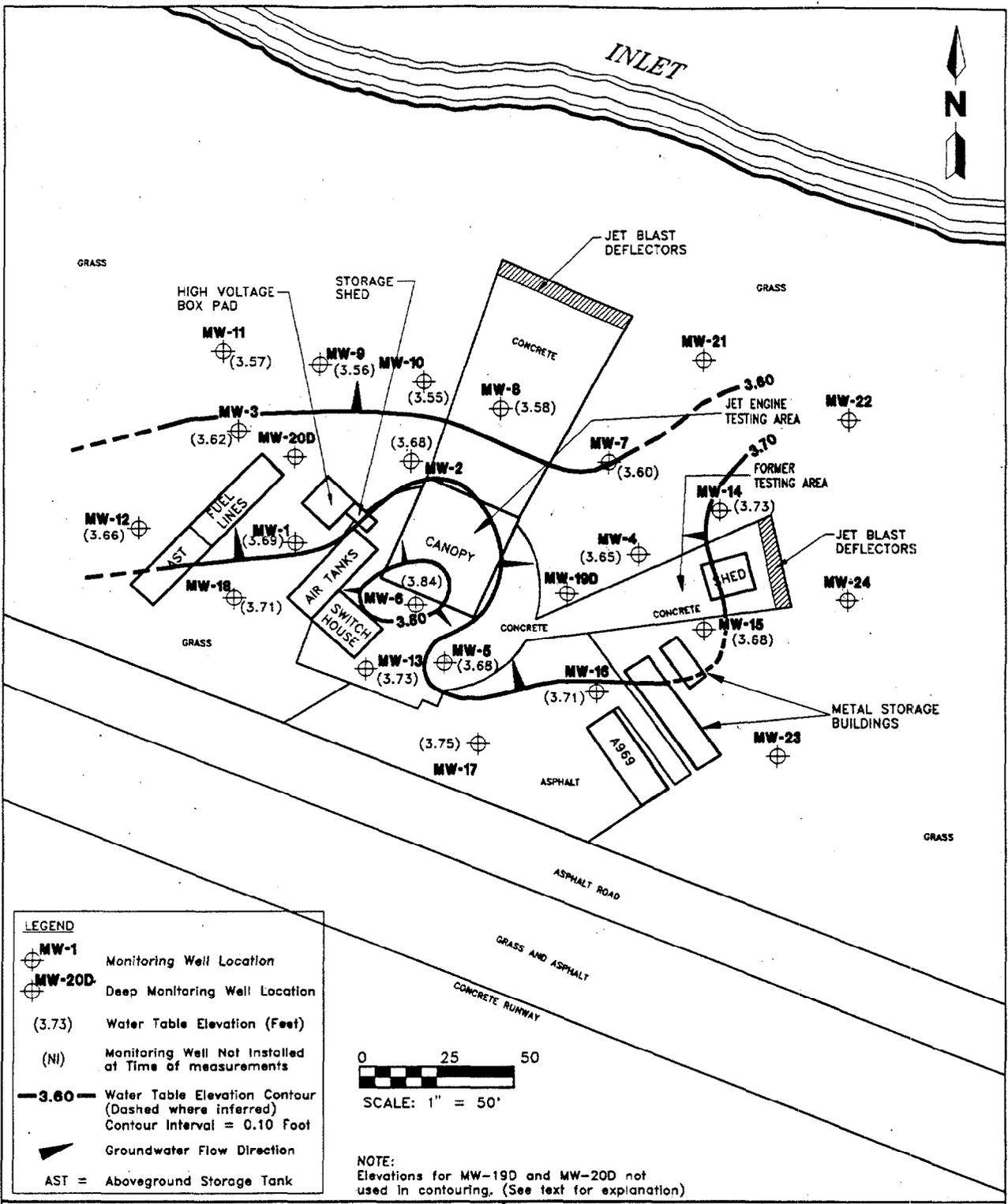


FIGURE 5-1
WATER TABLE ELEVATION CONTOUR MAP,
OCTOBER 20, 1993



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

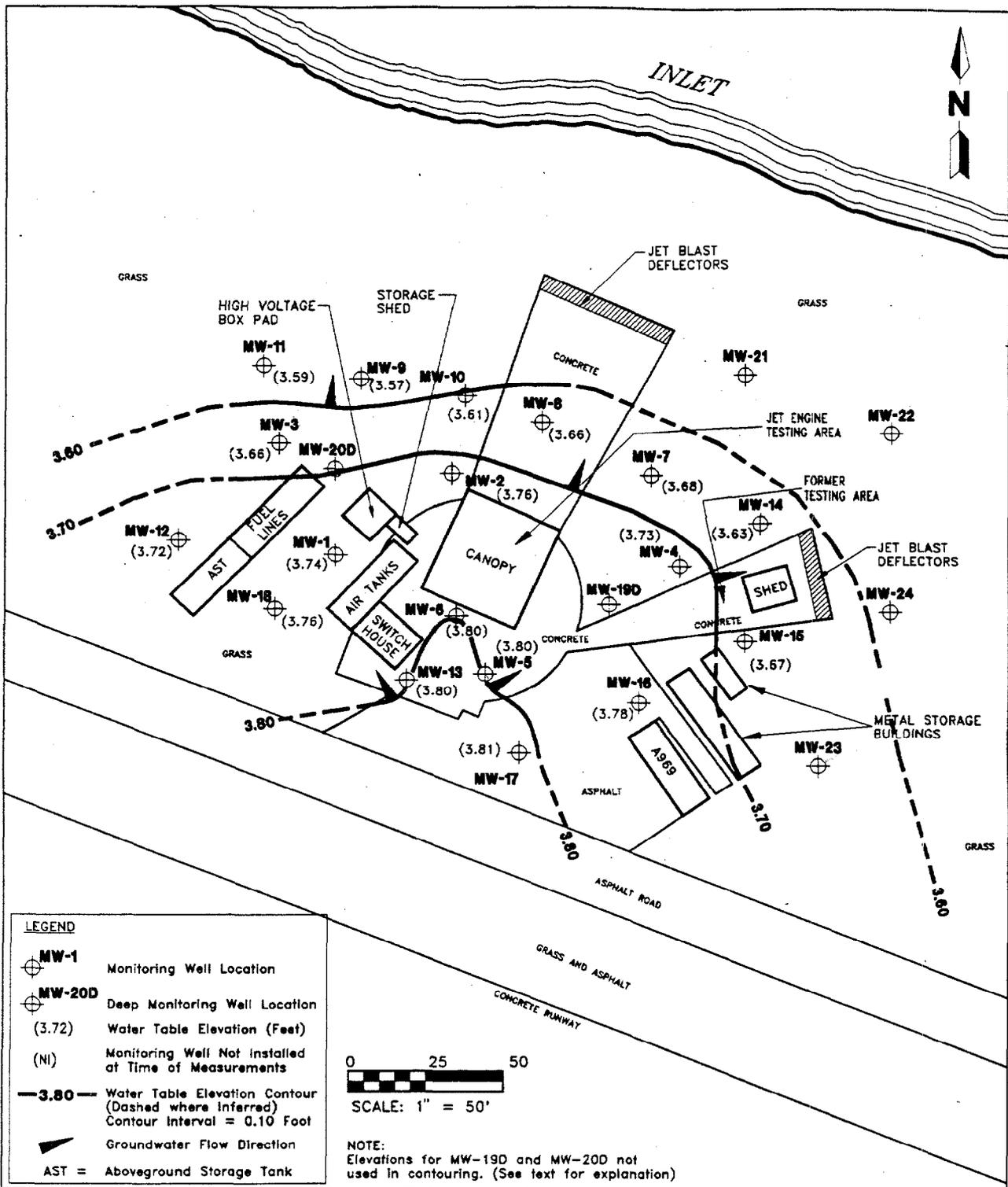


FIGURE 5-2
WATER TABLE ELEVATION CONTOUR MAP,
DECEMBER 4, 1993



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

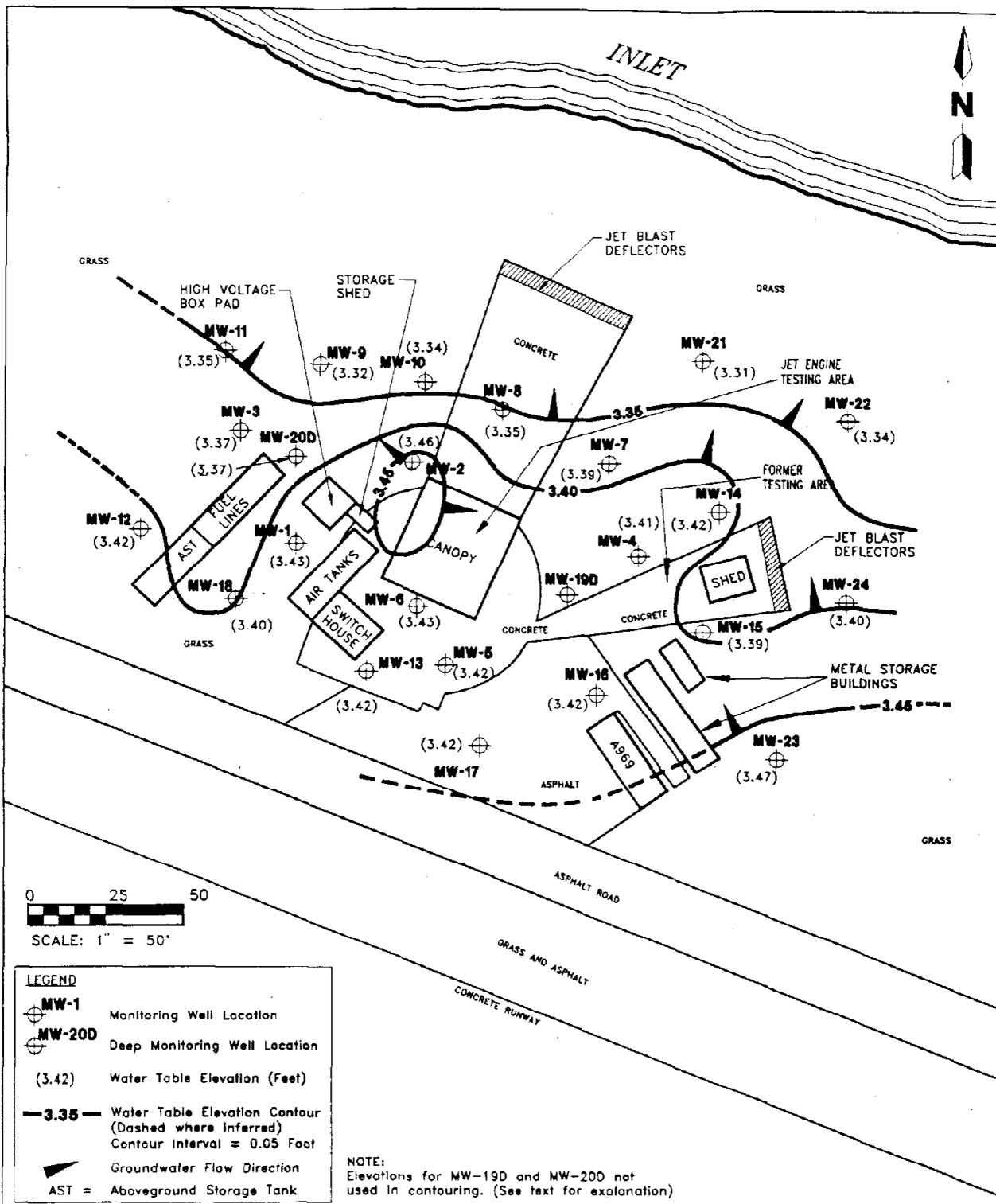


FIGURE 5-3
WATER TABLE ELEVATION CONTOUR MAP,
FEBRUARY 22, 1994



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

5.2 CONTAMINANT PLUME CHARACTERIZATION.

5.2.1 Volatile Organic Compounds (VOCs) in Soil. VOCs in soil, assessed by OVA headspace techniques, are summarized in Table 5-2. Because of the shallow water table at the site, OVA headspace concentrations were recorded for soil samples collected only from 0 to 2 feet bls. For soil contaminated by constituents of the kerosene analytical group, OVA concentrations greater than 10 parts per million (ppm) are defined as "petroleum contaminated". Soil with OVA concentrations greater than 50 ppm is defined as "excessively contaminated" (Florida Department of Environmental Regulation (FDER), 1992).

Two separate areas of petroleum contaminated soil were identified. These areas are outlined by the 10 ppm isoconcentration line (isocon) on Figure 5-4. A small area of contaminated soil was detected in the vicinity of soil boring SB-8 near the jet blast deflectors in the northern part of the site. A larger area extends from the JP-5 jet fuel AST to the shed at the former testing area. Excessively contaminated soil was detected throughout the central part of the site and is shown within the 50 ppm isocon.

5.2.2 Groundwater Assessment Analytical laboratory results for groundwater samples collected October 18, 1993, are presented in Appendix F, Groundwater Analytical Data, and summarized in Table 5-3. Benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, TRPH, 1,4-dichlorobenzene (1,4-DCB), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-dichloroethene (*trans*-1,2-DCE), and trichlorofluoromethane (TCFM) were detected in groundwater samples. Free product was not detected in any monitoring well at the site.

Benzene, total VOAs, and TRPH concentrations are compared to State target levels for Class G-III groundwater (see Section 3.2 for explanation). (Note: Total VOA is the sum of benzene, ethylbenzene, toluene, and xylenes.) Class G-III groundwater target levels have not been established for naphthalenes, 1,4-DCB, 1,2-DCE, and TCFM; therefore, other standards are used. For comparative purposes only, the Class G-II groundwater target level for naphthalenes is applied. Concentrations of 1,4-DCB and 1,2-DCE are compared to State maximum contaminant levels (MCLs) established in Chapter 17-770, FAC. TCFM concentrations are compared to State groundwater guidance concentrations (FDER, 1989).

5.2.2.1 Benzene and Total Volatile Organic Aromatics (VOAs) in Groundwater Benzene was detected in monitoring well samples MW-4 and MW-5, ethylbenzene was detected in samples MW-2 through MW-5, and xylenes were detected in samples MW-3 through MW-5. Benzene and total VOAs concentrations did not exceed the Class G-III groundwater target level of 200 parts per billion (ppb) for any sample collected. The approximate areal extent of benzene and total VOAs in groundwater is shown by the 1 ppb isocons in Figures 5-5 and 5-6, respectively. The highest concentrations appear to be along the eastern side of the canopy. Benzene and total VOAs were not detected in the vertical extent monitoring wells MW-19D and MW-20D.

5.2.2.2 Total Naphthalenes in Groundwater Naphthalenes were detected in monitoring well samples MW-2 through MW-5, and MW-10. Total naphthalenes concentrations exceeded the State Class G-II groundwater target level of 100 ppb in samples MW-2, MW-4, and MW-5. (Note: Total naphthalenes are the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene).

Table 5-2
Soil Sample Organic Vapor Analyzer (OVA) Headspace Analyses,
October 5 through October 12, 1993, and February 22, 1994

Contamination Assessment Report
 Jet Engine Test Cell Site, Building A969
 Boca Chica Field, NAS Key West
 Key West, Florida

Boring Designation	Depth (feet bls)	Concentration	Comments	Boring Designation	Depth (feet bls)	Concentration	Comments
SB1/MW12	0 to 2	6	No odor	SB17	0 to 2	2	Hydrogen sulfide odor
SB2/MW3	0 to 2	390	Petroleum odor	SB18	0 to 2	4	No odor
SB3	0 to 2	<1	No odor	SB19	0 to 2	<1	No odor; wet
SB4	0 to 2	10	No odor	SB20	0 to 2	9	No odor
SB5	0 to 2	170	Petroleum odor	SB21	0 to 2	<1	No odor
SB6/MW1	0 to 2	200	Petroleum odor	SB22	0 to 2	440	Slight petroleum odor
SB7/MW2	0 to 2	320	Petroleum odor	SB23	0 to 2	3	No odor
SB8	0 to 2	18	No odor	SB24	0 to 2	<1	Hydrogen sulfide odor
SB9	0 to 2	1	No odor	SB25	0 to 2	NM	No odor
SB10	0 to 2	<1	No odor	SB26	0 to 2	<1	No odor
SB11	0 to 2	120	Petroleum odor	SB27	0 to 2	34	No odor
SB12	0 to 2	<1	No odor	SB28/MW6	0 to 2	1	No odor
SB13	0 to 2	<1	No odor	SB29/MW8	0 to 2	6	No odor; wet
SB14	0 to 2	<1	No odor	SB30	0 to 2	230	Petroleum odor
SB15/MW4	0 to 2	1,800	Petroleum odor	SB31/MW18	0 to 2	2	No odor
SB16	0 to 2	<1	No odor	SB32	0 to 2	5	No odor

See notes at end of table.

Table 5-2 (Continued)
Soil Sample Organic Vapor Analyzer (OVA) Headspace Analyses,
October 5 through October 12, 1993, and February 22, 1994

Contamination Assessment Report
 Jet Engine Test Cell Site, Building A969
 Boca Chica Field, NAS Key West
 Key West, Florida

Boring Designation	Depth (feet bls)	Concentration	Comments	Boring Designation	Depth (feet bls)	Concentration	Comments
SB33/MW11	0 to 2	3	No odor	MW7	0 to 2	<1	No odor
SB34	0 to 2	350	Petroleum odor	MW9	NM	NM	
SB35	0 to 2	<1	No odor	MW10	0 to 6	12	No odor
SB36/MW14	0 to 2	<1	No odor; wet	MW17	NM	NM	
SB37/MW15	0 to 2	9	No odor	MW19D	0 to 2	400	Strong petroleum odor
SB38/MW16	0 to 2	1	No odor	MW20D	0 to 2	145	Petroleum odor
SB39/MW5	0 to 2	4,200	Petroleum odor	MW21	0 to 1	<1	No odor
SB40	0 to 2	120	Petroleum odor	MW22	0 to 1	<1	No odor
SB41	0 to 2	<1	No odor	MW23	0 to 1	<1	No odor
SB42/MW13	0 to 2	<1	No odor	MW24	0 to 1	<1	No odor
SB43	0 to 2	7	No odor				

Notes: bls = below land surface.
 NM = no measurement recorded

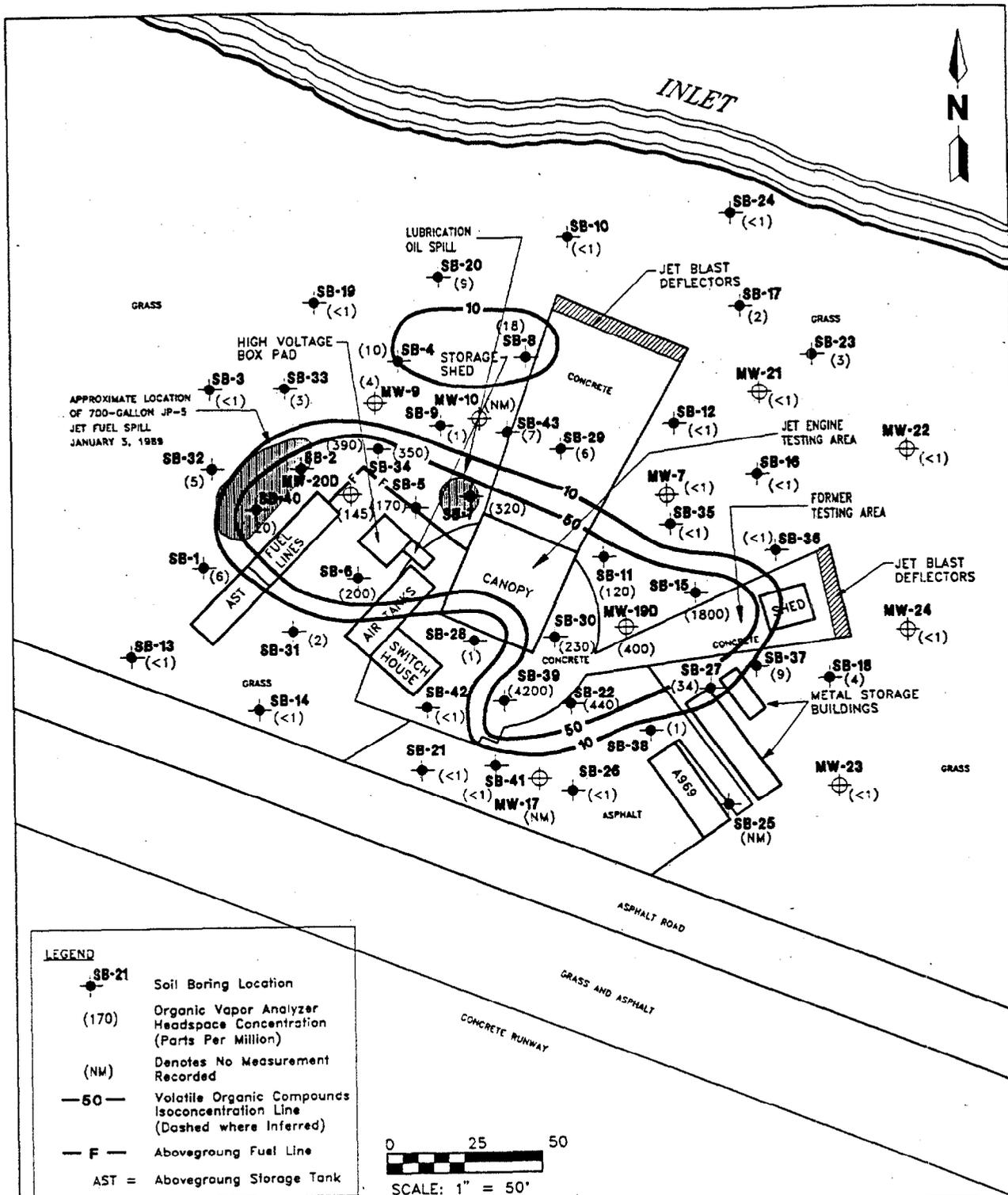


FIGURE 5-4
VOLATILE ORGANIC COMPOUNDS
IN SOIL,
0 TO 2 FEET BELOW LAND SURFACE



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

**Table 5-3
Groundwater Analytical Data,
October 18 1993**

Contamination Assessment Report
Jet Engine Test Cell Site, Building A969
Boca Chica Field, NAS Key West
Key West, Florida

Compound	Applied Standard	MW 1	MW1 DUP	MW 2	MW 3	MW 4	MW4 DUP	MW 5	MW 6	MW 7	MW 8	MW 9
Benzene	¹ 200	<1	<1	<1	<1	2	2	56	<1	<1	<1	<1
Ethylbenzene		<1	<1	33	4	54	54	70	<1	<1	<1	<1
Xylenes		<1	<1	<1	4	2	<1	3	<1	<1	<1	<1
Total VOAs	¹ 200	ND	ND	33	8	56	56	129	ND	ND	ND	ND
Naphthalene		<5	<5	110	<5	79	91	100	<5	<5	<5	<5
1-Methylnaphthalene		<5	<5	59	19	55	56	110	<5	<5	<5	<5
2-Methylnaphthalene		<5	<5	57	<5	53	51	130	<5	<5	<5	<5
Total naphthalenes	² 100	ND	ND	226	19	187	198	340	ND	ND	ND	ND
TRPH	¹ 5	<1	<1	1	2	6	8	46	<1	<1	<1	<1
cis-1,2-DCE	³ 70	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,2-DCE	³ 100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-DCB	³ 75	2	2	<1	1	2	<1	2	<1	<1	<1	<1
Trichlorofluoromethane	⁴ 2,400	<1	<1	<1	3	<1	<1	3	<1	<1	<1	<1
See notes at end of table.												

Table 5-3 (Continued)
Groundwater Analytical Data,
October 18, 1993

Contamination Assessment Report
Jet Engine Test Cell Site, Building A969
Boca Chica Field, NAS Key West
Key West, Florida

Compound	Applied Standard	MW 10	MW 11	MW 12	MW 13	MW 14	MW 15	MW 16	MW 17	MW 18	MW 19D	MW 20D
Benzene	¹ 200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total VOAs	¹ 200	ND	ND									
Naphthalene		9	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1-Methylnaphthalene		10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total naphthalenes	² 100	19	ND	ND								
TRPH	¹ 5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-DCE	³ 70	<1	<1	<1	<1	11	9	<1	<1	<1	<1	<1
trans-1,2-DCE	³ 100	<1	<1	<1	<1	24	17	<1	<1	<1	<1	<1
1,4-DCB	³ 75	<1	1	<1	<1	<1	2	2	1	<1	<1	1
Trichlorofluoromethane	⁴ 2,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

¹ State target level for Class G-III groundwater (Chapter 17-770, Florida Administrative Code [FAC]).

² State target level for Class G-II groundwater (Chapter 17-770, FAC).

³ Maximum contaminant level (Chapter 17-550, FAC).

⁴ Groundwater guidance concentration (Florida Department of Environmental Regulation [FDER], February 1989).

Notes: Concentrations are in parts per billion except TRPH, which is reported in parts per million.
Total VOAs = total volatile organic aromatics (the sum of benzene, ethylbenzene, toluene, and xylenes).
Total naphthalenes is the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
TRPH = total recoverable petroleum hydrocarbons.
DCE = dichloroethene.
DCB = dichlorobenzene.
ND = not detected.

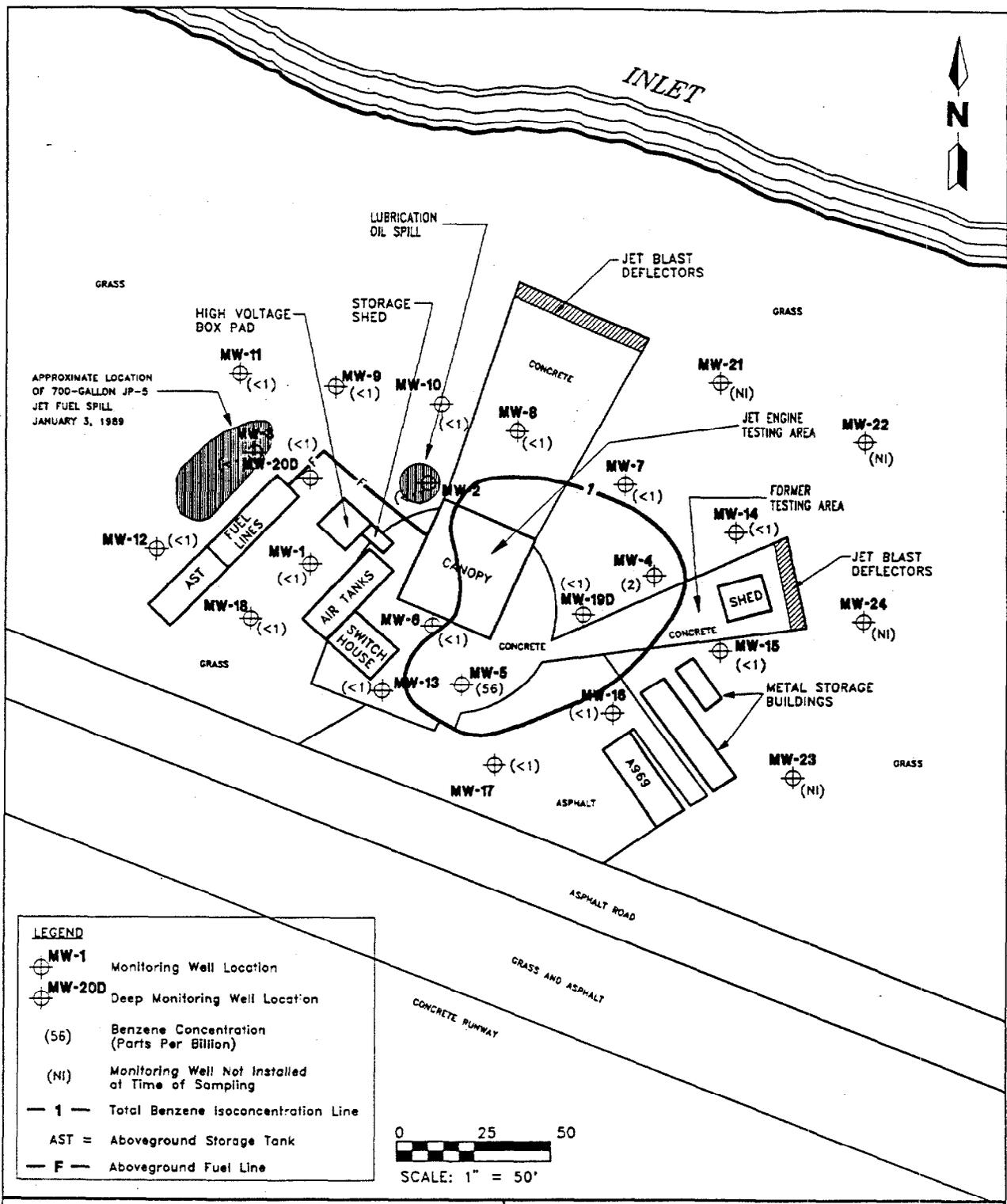
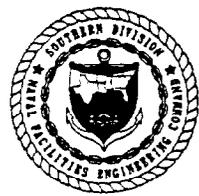


FIGURE 5-5
BENZENE IN GROUNDWATER,
OCTOBER 18, 1993



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JET ENGINE TEST CELL
BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

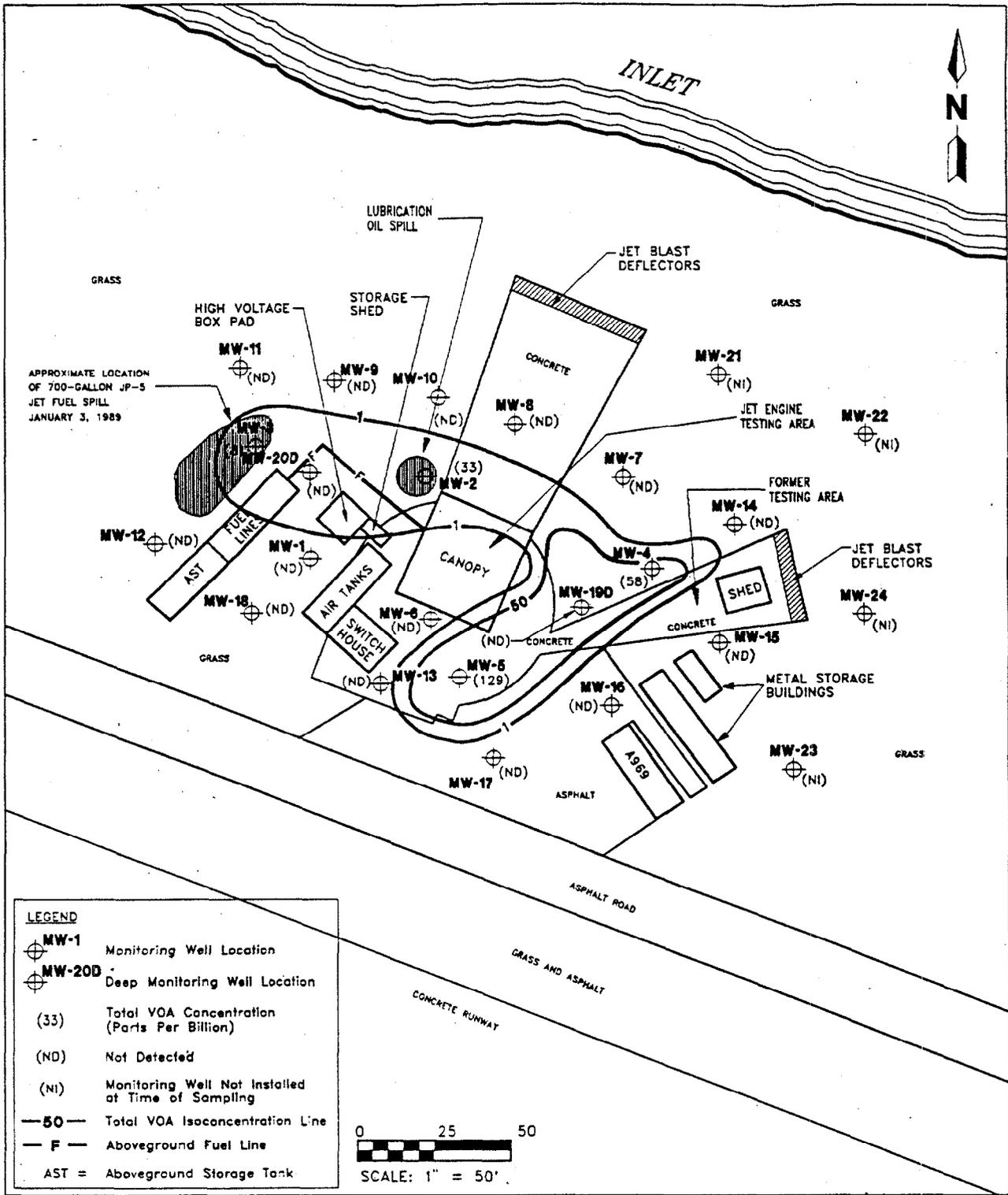


FIGURE 5-6
TOTAL VOLATILE ORGANIC AROMATICS (VOAs)
IN GROUNDWATER,
OCTOBER 18, 1993



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL
BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

The approximate areal extent of total naphthalenes in groundwater is shown by the 1 ppb isocon in Figure 5-7. The area exceeding Class G-II groundwater target levels is approximated by the 100 ppb isocon, and appears to be restricted to the eastern and northern sides of the canopy. Naphthalenes were not detected in the samples from deep monitoring wells MW-19D or MW-20D.

5.2.2.3 **Total Recoverable Petroleum Hydrocarbons (TRPH) in Groundwater** TRPH were detected in monitoring well samples MW-2 through MW-5. TRPH concentrations exceeded the State target level of 5 ppm in only samples MW-4 and MW-5. The areal extent of TRPH concentrations exceeding the State G-III groundwater target level is approximated by the 5 ppm isocon in Figure 5-8, and closely corresponds to the highest benzene, total VOA, and total naphthalenes concentrations detected in groundwater along the southeast side of the canopy (see Figures 5-5 through 5-7, respectively). TRPH were not detected in the samples from deep monitoring wells MW-19D and MW-20D.

5.2.2.4 **Chlorinated Compounds in Groundwater** The chlorinated compounds (*cis*-1,2-DCE, *trans*-1,2-DCE, 1,4-DCB), and TCFM were detected in groundwater samples (Figure 5-9). *Cis*-1,2-DCE and *trans*-1,2-DCE were detected in only monitoring well samples MW-14 and MW-15, located near the storage shed near the former testing area. Concentrations of the *cis* and *trans* isomers were much less than the respective State MCLs of 70 ppb and 100 ppb. (Note: MCL is the maximum permissible level of a contaminant in the public water system [Chapter 17-550, FAC]).

The compound 1,4-DCB was detected in monitoring well samples MW-1, MW-3 through MW-5, and MW-15 through MW-17. The highest concentration detected was 2 ppb, which is much less than the State MCL of 75 ppb.

TCFM was detected in monitoring well samples MW-3 and MW-5. TCFM concentrations in each sample were 3 ppb, which is much less than the State groundwater guidance concentration of 2,400 ppb (FDER, 1989).

Cis-1,2-DCE, *trans*-1,2-DCE, and TCFM were not detected in samples from deep monitoring wells MW-19D or MW-20D. The only chlorinated compound detected in the deep monitoring well samples was 1,4-DCB, which was detected in sample MW-20 at a concentration of 1 ppb.

Additional Sampling of Monitoring Wells MW-14 and MW-15. Although *cis*-1,2-DCE and *trans*-1,2-DCE concentrations in monitoring well samples MW-14 and MW-15 were below State MCLs, their presence is a concern. Monitoring wells MW-14 and MW-15 are located outside the area of petroleum contamination, which suggests that the presence of 1,2-DCE in groundwater is from another source. Furthermore, because monitoring wells had not been installed north and east of monitoring wells MW-14 and MW-15, higher concentrations of 1,2-DCE in groundwater may exist downgradient of the site.

Monitoring wells MW-14 and MW-15 were resampled on December 1, 1993, and January 12, 1994, to confirm the presence of 1,2-DCE in groundwater. Groundwater samples were analyzed using USEPA Methods 601 and 602 for the December 1993 samples and only USEPA Method 601 for the January 1994 samples. Groundwater analytical results for both sampling dates are attached in Appendix F, Groundwater Analytical Data and are summarized in Table 5-4. (Note: For comparison, the October 1993 results for MW-14 and MW-15 are included in Table 5-4).

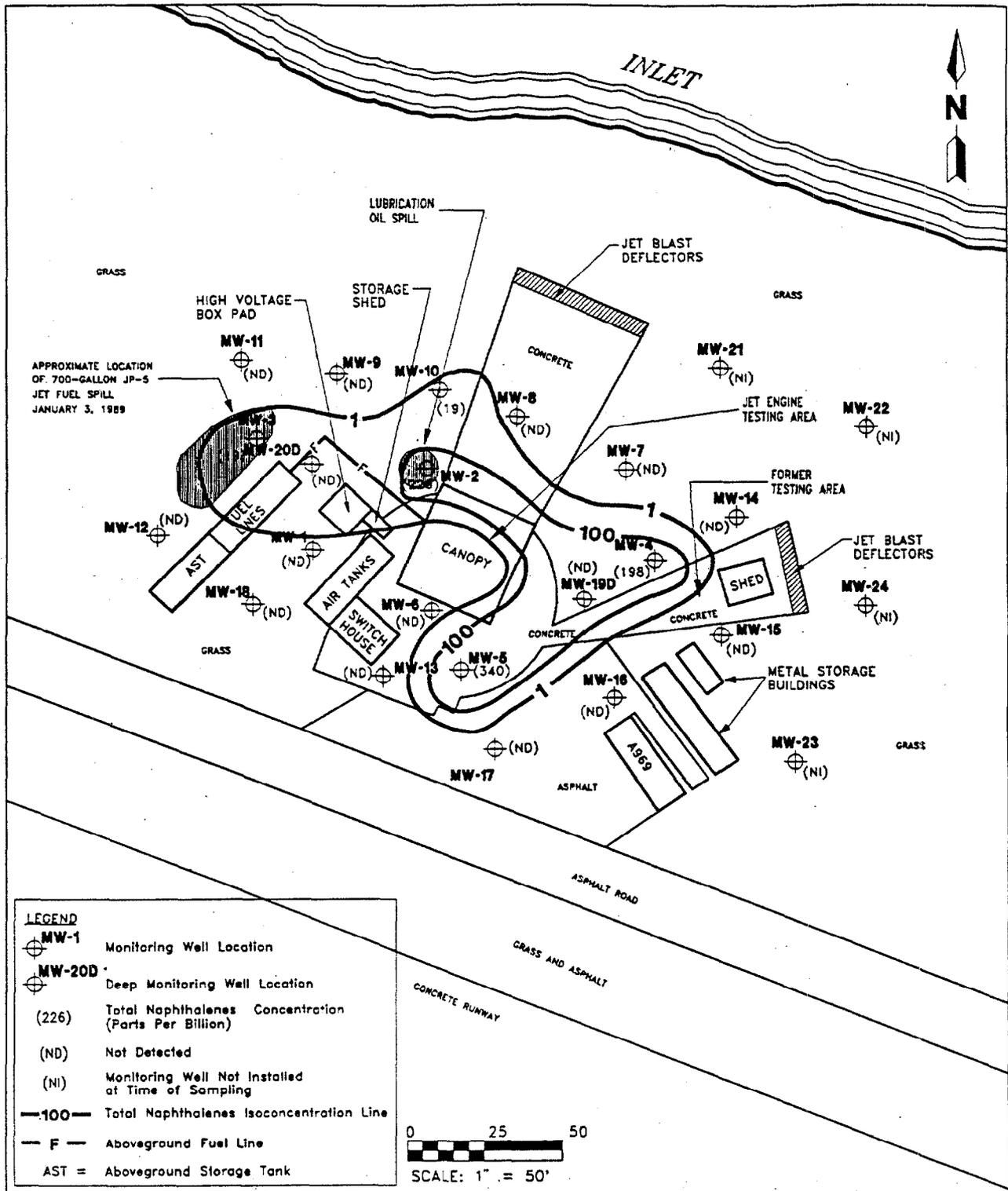


FIGURE 5-7
TOTAL NAPHTHALENES IN GROUNDWATER,
OCTOBER 18, 1993



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JET ENGINE TEST CELL
BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

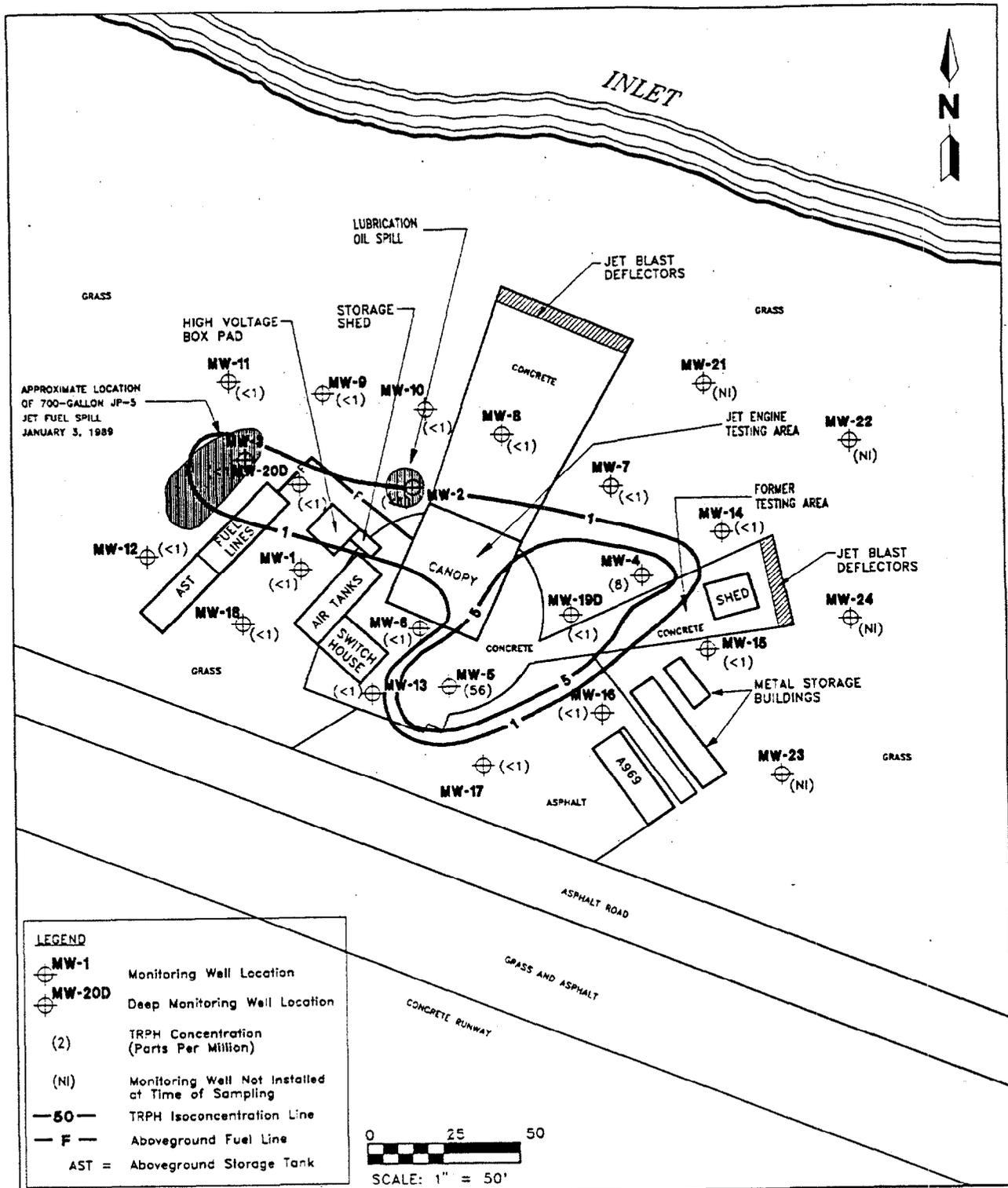


FIGURE 5-8
TOTAL RECOVERABLE PETROLEUM
HYDROCARBONS (TRPH)
IN GROUNDWATER,
OCTOBER 18, 1993



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BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

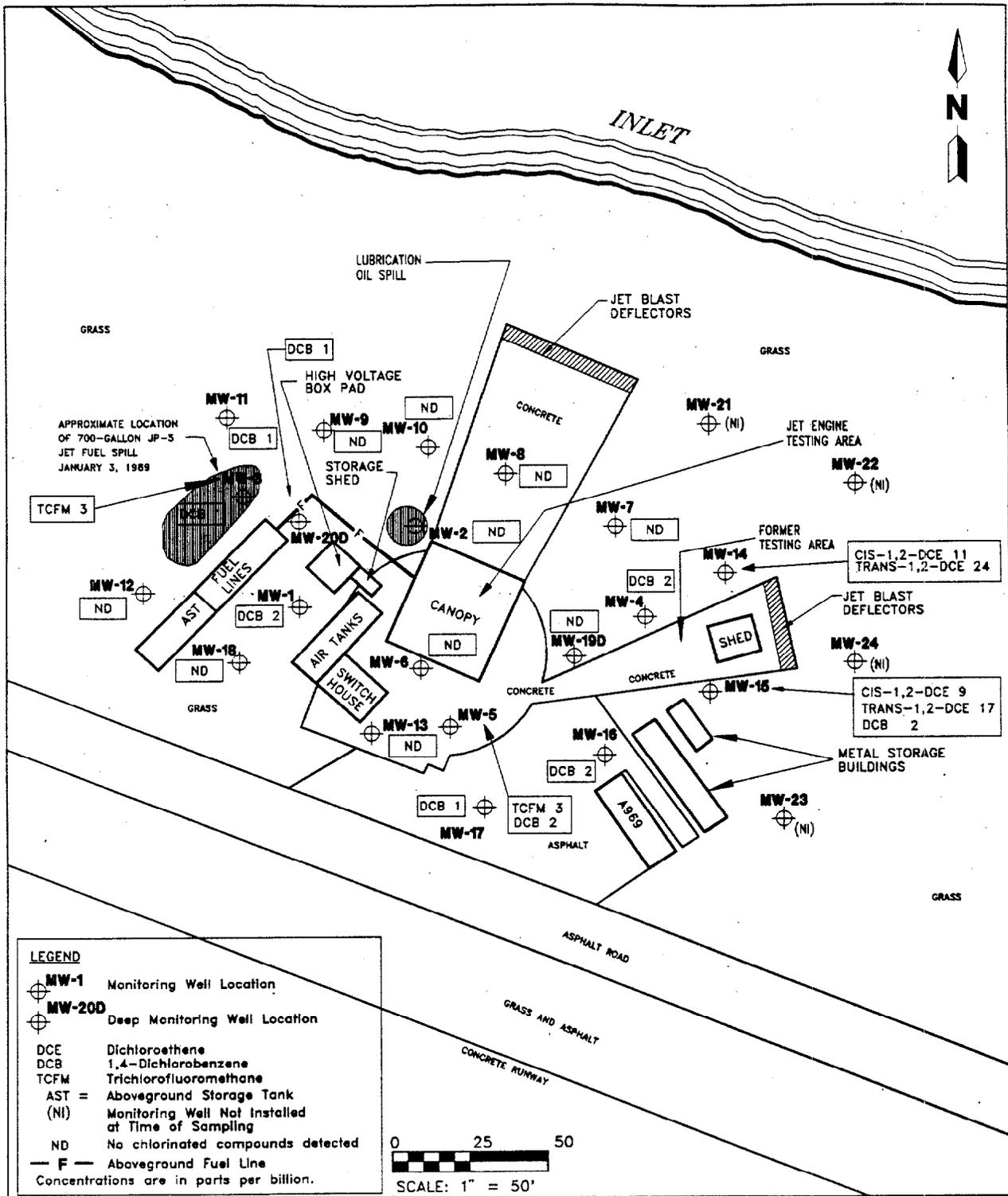


FIGURE 5-9
CHLORINATED COMPOUNDS
IN GROUNDWATER,
OCTOBER 18, 1993



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL
BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

**Table 5-4
Groundwater Analytical Data,
Monitoring Wells MW-14 and MW-15,
October 1993, December 1993, and January 1994**

Contamination Assessment Report
Jet Engine Test Cell Site, Building A969
Boca Chica Field, NAS Key West
Key West, Florida

Compound	Applied Standard	MW-14			MW-15		
		October 1993	December 1993	January 1994	October 1993	December 1993	January 1994
cis-1,2-DCE	¹ 70	11	480	54	9	980	160
trans-1,2-DCE	¹ 100	24	1,400	76	17	2,800	170
1,4-DCB	¹ 75	<1	<1	<1	2	<1	<1
TCE	¹ 3	<1	<1	<1	<1	41	2
1,1,1-TCA	¹ 200	<1	<1	<1	<1	3.9	<1
1,2-DCA	¹ 3	<1	<1	1	<1	<1	3
Benzene	² 200	<1	1.6	NA	<1	9.3	NA

¹ Maximum contaminant level (Chapter 17-550, Florida Administrative Code [FAC]).

² State target level for G-III groundwater (Chapter 17-770, FAC).

Notes: Concentrations are in parts per billion (ppb).

DCE = dichloroethene.

DCB = dichlorobenzene.

TCE = trichloroethene.

TCA = trichloroethane.

DCA = dichloroethane.

NA = not analyzed.

Cis-1,2-DCE and *trans*-1,2-DCE were detected in samples collected on both dates. Benzene, trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and 1,2-dichloroethane (1,2-DCA) were also detected. These compounds were not detected in the samples collected in October 1993. The compound 1,4-DCB, which was detected in sample MW-15 in October 1993, was not detected in samples collected in December 1993 or January 1994.

Concentrations of *cis*-1,2-DCE and *trans*-1,2-DCE were much greater than the October 1993 concentrations, particularly the December 1993 samples. *Cis*-1,2-DCE and *trans*-1,2-DCE concentrations exceeded State MCLs in samples from both monitoring wells during the December 1993 sampling event, and in the sample from monitoring well MW-15 during the January 1994 event. TCE was detected in only the samples from monitoring well MW-15. TCE concentrations exceeded the State MCL of 3 ppb in the December 1993 sample. Benzene, 1,1,1-TCA, and 1,2-DCA concentrations did not exceed applied standards.

Additional Investigation Downgradient of Monitoring Wells MW-14 and MW-15. Because of the persistence of 1,2-DCE in groundwater in monitoring wells MW-14 and MW-15, ABB-ES met with FDEP representatives in January 1994, to discuss further site assessment. FDEP recommended that additional monitoring wells be installed downgradient and peripheral to monitoring wells MW-14 and MW-15 and sampled for analyses by USEPA Methods 601 and 602.

Monitoring wells MW-21 through MW-24 were installed on February 22, 1994. Groundwater samples were collected from these monitoring wells and monitoring wells MW-14 and MW-15 on February 23, 1994. Groundwater analytical results of samples collected February 23, 1994, are attached in Appendix F, Groundwater Analytical Data, and are summarized in Table 5-5.

Cis-1,2-DCE, *trans*-1,2-DCE, TCE, and benzene were detected in groundwater samples (Figure 5-10). *Cis*-1,2-DCE concentrations exceeded the State MCL of 70 ppb in samples from monitoring wells MW-14, MW-15, MW-21, and MW-24. *Trans*-1,2-DCE concentrations exceeded the State MCL of 100 ppb in samples from monitoring wells MW-14, MW-15, and MW-24. TCE and benzene concentrations did not exceed the State MCL of 3 ppb and Class G-III groundwater target level of 200 ppb, respectively.

The October 1993 data indicate that the upgradient extent of 1,2-DCE in groundwater appears to be well defined to the south and west of monitoring wells MW-14 and MW-15 (Figure 5-9); however, the February 1994 data indicate that the downgradient extent of 1,2-DCE is not defined to the north and east (Figure 5-10).

Possible Source of Chlorinated Compounds in Groundwater. The possible source of chlorinated compounds in groundwater was investigated. The area near monitoring wells MW-14 and MW-15 was formerly used as the jet engine testing area. The shed at the end of the former testing area is used to store recycled fuel oil, hydraulic oil, turbo oils, engine oil, and jet fuel. Gas path cleaners are also stored in drums along the northeast side of the shed.

According to site personnel, three gas path cleaners and degreasers have been used at the site. These solvents are known as B&B TC-100 and B&B 3100 (manufactured by B&B Tritech, Inc., Hialeah, Florida), and Eldorado ED-563 (manufactured by Eldorado Chemical Company, Inc., San Antonio, Texas). B&B 3100

Table 5-5
Groundwater Analytical Data, February 1994

Contamination Assessment Report
Jet Engine Test Cell Site, Building A969
Boca Chica Field, NAS Key West
Key West, Florida

Compound	Applied Standard	Monitoring Well						
		MW-14	MW-14-Dup	MW-15	MW-21	MW-22	MW-23	MW-24
cis-1,2-DCE	¹ 70	74	73	120	73	4.2	<1	770
trans-1,2-DCE	¹ 100	180	190	280	6.6	4.6	<1	890
TCE	¹ 3	<1	<1	1.8	<1	<1	<1	2.4
Benzene	² 200	<1	<1	<1	<1	<1	<1	3.8

¹ Maximum contaminant level (Chapter 17-550, Florida Administrative Code [FAC]).

² State target level for G-III groundwater (Chapter 17-770, FAC).

Notes: Compound concentrations are expressed in parts per billion (ppb).
DCE = dichloroethene.
TCE = trichloroethene.

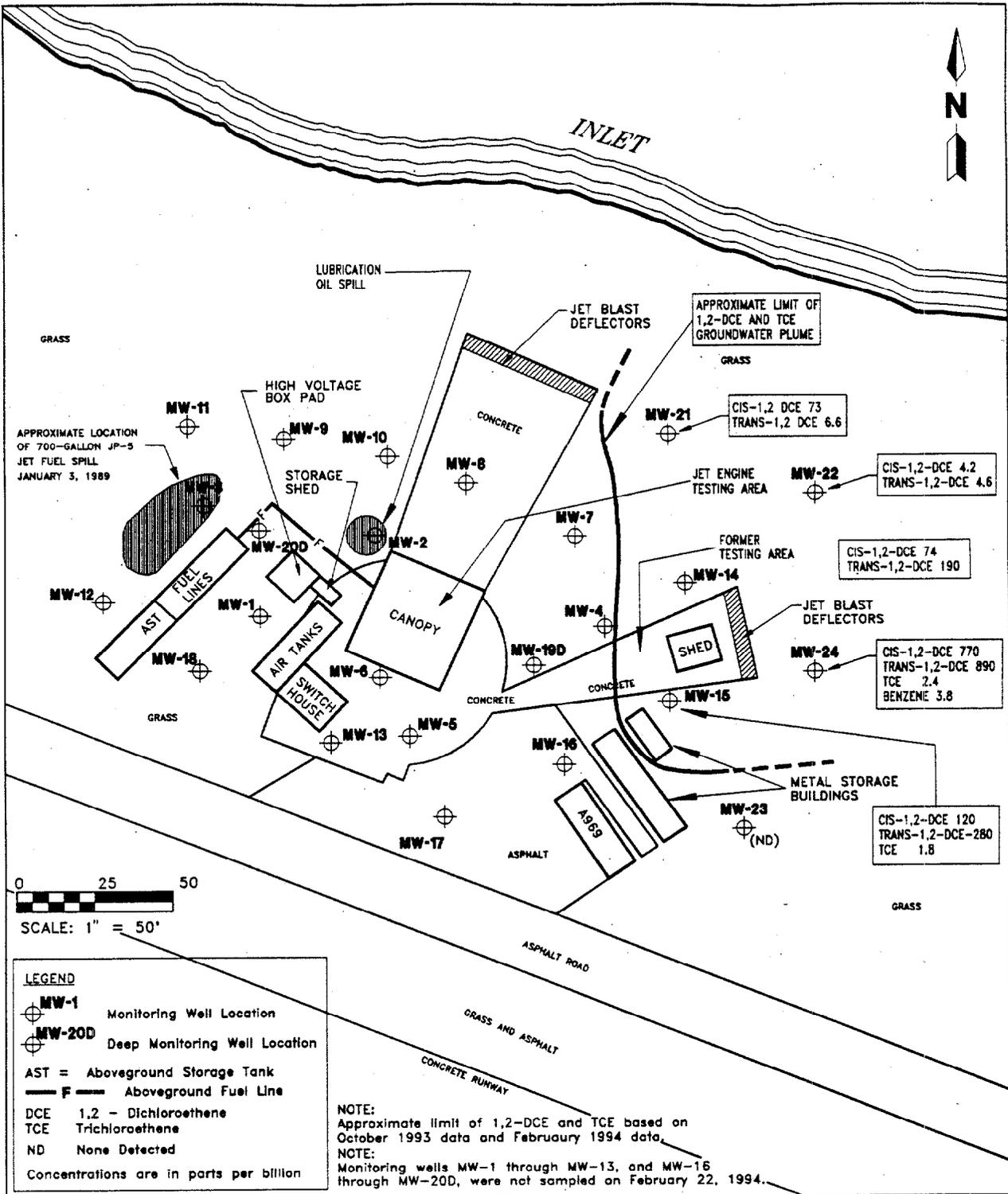


FIGURE 5-10
1,2-DICHLOROETHENE, TRICHLOROETHENE AND
BENZENE IN GROUNDWATER,
FEBRUARY 22, 1994



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

BOCA CHICA FIELD
NAVAL AIR STATION
KEY WEST, FLORIDA

and Eldorado ED-563 were used from approximately 1980 until 1993. B&B TC-100 is currently used at the site.

Material safety data sheets (MSDSs) for each solvent were obtained from the manufacturer and are attached in Appendix G, Material Safety Data Sheets. The MSDS for ED-563 lists naphthenic mineral oil, paraffinic mineral oil, and monobutyl ether ethylene glycol as hazardous ingredients. Compositions of B&B TC-100 and B&B 3100 were withheld as a trade secret per 29CFR1910.1200(i). Verbal communication with B&B Tritech, Inc., indicates that chlorinated compounds are not components of either solvent.

Because B&B-3100, B&B TC-100, and Eldorado ED-563 reportedly contain no chlorinated compounds, the source of chlorinated compounds in groundwater does not appear to be the result of the release of these solvents. Other potential sources were not identified during the CA.

6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1 SUMMARY. Based on the findings of the CA field investigation and laboratory analytical results, the following is a summary of existing conditions at the site.

- The aquifer of concern at the site is the unconfined surficial aquifer. Water quality data indicate that the surficial aquifer in the Key West area is an unlikely source of potable water (McKenzie, 1990); thus, the surficial aquifer is treated herein as a Class G-III groundwater source.
- The surficial aquifer was penetrated to a depth of 27 feet bls during this investigation. Subsurface sediments are generally composed of a mixture of oolitic sand, light gray clay, and limestone gravel.
- The water table at the site was encountered at depths ranging from 1 to 3 feet bls.
- The direction of groundwater flow in the surficial aquifer is variable, but predominantly to the north toward the inlet. A tidal influence study indicates that groundwater elevations are tidally affected; however, the direction of groundwater flow appears to be generally to the north.
- Excessively contaminated soil identified by OVA headspace analyses is present throughout much of the central part of the site (see Figure 5-4).
- No free product was observed in any borings or monitoring wells.
- Benzene, ethylbenzene, xylenes, naphthalenes, and TRPH were detected in groundwater samples. The chlorinated compounds *cis*-1,2-DCE, *trans*-1,2-DCE, TCE, 1,4-DCB, 1,1,1-TCA, 1,2-DCA, and TCFM were also detected. Benzene, total VOAs, and TRPH concentrations in groundwater were compared to Class G-III target levels. Total naphthalenes concentrations in groundwater were compared to Class G-II target levels. Chlorinated compound concentrations in groundwater were compared to State MCLs (Chapter 17-550, FAC) or to groundwater guidance concentrations (FDER, 1989).
- Benzene and total VOAs concentrations in groundwater were less than Class G-III groundwater target levels. TRPH and total naphthalenes concentrations exceeded applied target levels in the area surrounding the canopy in the central part of the site (see Figures 5-7 and 5-8). Concentrations of *cis*-1,2-DCE, *trans*-1,2-DCE, and TCE in the northeast part of the site exceeded State MCLs (see Figure 5-10). Concentrations of other chlorinated compounds in groundwater did not exceed applied standards.
- The compound 1,4-DCB was the only compound detected in samples from vertical extent monitoring wells MW-19D and MW-20D, which are

screened from 20 to 25 feet bls and 15 to 20 feet bls, respectively. The concentration of 1,4-DCB was much less than the State MCL.

- No potable water sources were identified within a 0.25-mile radius of the site. There are no potable water wells on Boca Chica Key.

6.2 CONCLUSIONS. The following conclusions are based on the findings of the CA and existing site conditions.

- Areas of excessively contaminated soil, identified by OVA headspace techniques, may be associated with residual groundwater contamination, not soil contamination. The area of excessive soil contamination generally corresponds to the area of petroleum groundwater contamination. The tidal influence study indicates that significant variations in water table elevations resulting from tidal fluctuations occur at the site. Vertical groundwater movement may cause spreading of soil contamination above and below the water table. The high OVA readings in soil slightly above the water table may result from residual groundwater contamination during periods of low water table elevations.
- The areal extent of total naphthalenes and TRPH in groundwater exceeding applicable (and compared) standards appears to be restricted to the canopied area in the center of the site (Figure 5-7 and 5-8, respectively). The vertical extent of total naphthalenes and TRPH in groundwater does not appear to exceed 20 feet bls.
- The areal and vertical extent of *cis*-1,2-DCE, *trans*-1,2-DCE, and TCE in groundwater has not been adequately assessed in the north and east part of the site (Figure 5-10). These compounds appear to occur in groundwater outside the area of petroleum groundwater contamination.
- The occurrence of 1,4-DCB in groundwater does not appear to be persistent at method detection limits because it was detected in only the October 1993 samples.
- The presence of TCFM in the October 1993 samples from monitoring wells MW-3 and MW-5 does not appear to be a concern because TCFM concentrations were well below applied standards, and TCFM was not detected in other samples.
- The source of chlorinated compounds in groundwater was not identified during the CA.

6.3 RECOMMENDATIONS. ABB-ES recommends conducting an additional site investigation in the northeast part of the site to assess the horizontal and vertical extent and source(s) of chlorinated compounds in groundwater. ABB-ES also recommends groundwater remediation in the vicinity of the canopy to attain compliance with Class G-III groundwater target levels for TRPH and Class G-II groundwater target levels for total naphthalenes.

Based on discussions with FDEP, it is ABB-ES' understanding that additional site investigation and the manner and scope of groundwater remediation will be subject to USEPA guidelines as part of the Navy IR program.

7.0 PROFESSIONAL REVIEW CERTIFICATION

This CAR was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. 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 CAR was developed for the Jet Engine Test Cell, Building A969, at Boca Chica Field, Naval Air Station, Key West, Florida, and should not be construed to apply to any other site.

Roger Durham
Professional Geologist
P.G. No. 1127

Date

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APPENDIX A

INITIAL REMEDIAL ACTION REPORT



DEPARTMENT OF THE NAVY

NAVAL AIR STATION
KEY WEST, FLORIDA 33040-3000

5090

Ser 1883SC/0121

18 January 1989

Florida Department of Environmental Regulation
2269 Bay Street
Fort Myers, Florida 33901-2896

Gentlemen:

In follow-up to the 12 January 1989 telephoned spill report from our Mr. Steve Covell to Mr. Richard J. Heibling of your Marathon office, enclosed is our 'Petroleum Contamination Initial Remedial Action Report Form' (Rule 17-70.006, F.A.C.).

We have recovered approximately 650 gallons of the estimated 700 spilled gallons of JP-5 fuel from our Boca Chica jet engine test cell site. This spill did not flow into wetlands or any surface water body. We anticipate that our cleanup effort will be successfully completed by 15 February 1989, following excavation and weathering treatment for decontamination of the soil and restoration of the site.

Our point of contact concerning this cleanup effort is Mr. Steve Covell, Environmental Coordinator at telephone (305) 292-2194.

Sincerely,

R. A. DEMES
Engineering Director
Public Works Department
By direction of
the Commanding Officer

Encl:

(1) Initial Remedial Action Report

Copy to:
FDER, Marathon

PETROLEUM CONTAMINATION
INITIAL REMEDIAL ACTION REPORT FORM

This report provides written confirmation of initial remedial action (IRA) as required by Florida Administrative Code Chapter 17-70.006.

- I. Facility Name: Naval Air Station Boca Chica (Jet Engine Test Cell)
 Commanding Officer (Code 1883SC)
 Facility Address: NAS Key West, Key West, FL 33040-5000
 DER Facility Number (if applicable): N/A
 Date of Initiation of IRA: 12 Jan 1989
- II. FREE PRODUCT RECOVERY (Please provide brief responses.)
- A. Type of Product Discharged: JP-5 Fuel
- B. Estimated Quantity Lost: 700 spilled gallons
- C. Product Thickness in Wells (boreholes, excavations, utility conduits): Approximate maximum depth of soil penetration observed was 2"
- D. Method of Product Recovery: JP-5 was pumped from puddles standing on surface of ground into metal recovery drums.
- E. Type of Discharge During Product Recovery: No discharge to ground, groundwater, or surface water during recovery
- F. Type of Treatment and Expected Effluent Quality From Any Discharge: No discharge
- G. Quantity and Disposition of Recovered Product: 650 gallons of soil-contaminated JP-5 has been sent to NAS Key West Fire-Fighting Training Area for burning as crash training exercise

III. SOIL EXCAVATION

A. Estimated Volume of Contaminated Soil Excavated: _____

Estimated 10 cu. yd. of soil to be excavated for evaporation/
weathering treatment

B. Type of Product in Soil: JP-5

C. Method Used to Determine Excess Soil Contamination: _____

Sight and smell

D. Method of Treatment or Disposal of Contaminated Soil: _____

Contaminated soil to be excavated, placed onto impervious surface
for evaporation and exposure to sunlight. De-contaminated soil to
be backfilled onto excavated site.

IV. REPORTING

In addition to the information contained in this report, Chapter 17-70.006, F.A.C., requires quarterly status reports of the IRA be submitted to the Department during implementation.

Please submit all reports to:

Bureau of Waste Cleanup
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Steve Covell, Environmental Coordinator
Person Completing Form

NAS Key West (Code 1883SC)
Title, Affiliation

Stephen A. Covell 17 Jan '88
Signature, Date

APPENDIX B
METHODOLOGIES AND EQUIPMENT

Soil Boring Advancement, Soil Sampling, and Organic Vapor Analyzer (OVA) Headspace Analysis.

Soil borings were advanced using a truck-mounted drill rig with rotary drilling and solid-stem augers. Soil samples were collected directly from the flight augers and placed in 16-ounce glass jars, which were sealed with a double layer of aluminum foil. Soil volatile organic compounds (VOCs) concentrations were assessed by OVA headspace analyses following procedures outlined by the Florida Department of Environmental Regulation (FDER) (1992). Samples were analyzed with an OVA equipped with a flame ionization detector (FID).

Monitoring Well Installation and Construction.

Borings for monitoring wells were advanced with a truck-mounted drill rig using rotary drilling techniques with 4.25-inch inside diameter (ID), hollow-stemmed augers. Monitoring wells MW-1 through MW-18 and MW-21 through MW-24 were installed to a depth of 11 feet bls. Monitoring wells MW-19D and MW-20D were installed to depths of 25 feet bls and 20 feet below land surface (bls), respectively.

Typical monitoring well installation details are presented in Figure B-1. The shallow monitoring wells are constructed of 2-inch ID, schedule 40, polyvinyl chloride (PVC) casing with flush-threaded joints and 10 feet of 0.010-inch machine-slotted screen. PVC well casing extends from the top of the screen to land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 0.3 foot above the top of the screened interval. A 0.3-foot-thick bentonite seal was placed on top of the filter pack. The remaining annular space was grouted to surface with a neat cement grout. A protective traffic-bearing vault was installed to complete the well. Monitoring wells are equipped with a locking well cap and a padlock.

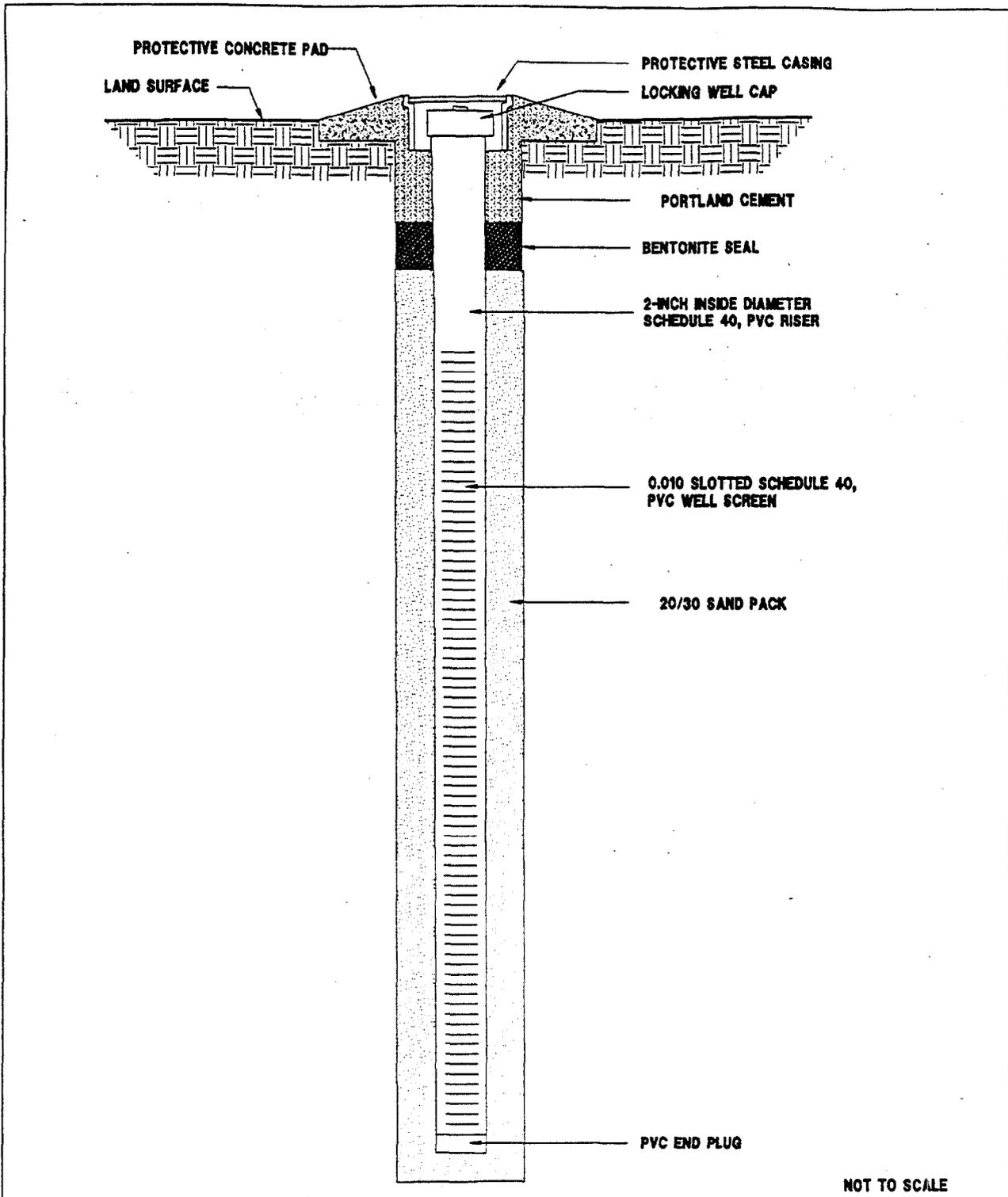
Construction details for the deeper monitoring wells, MW-19D and MW-20D, are identical to those of the shallow monitoring wells, except that 5 feet of well screen were used in each well, the 20/30 grade sand filter pack extends to 2 feet above the screen, and the bentonite seal is 2 feet thick.

Groundwater Elevation Measurements.

Depth to groundwater was measured to the nearest 0.01 foot using an electronic water level indicator. Water table elevations were calculated by subtracting the measured depth to groundwater from the top of casing elevation for each respective well. Top of casing elevations are referenced to a datum point arbitrarily set at an elevation of 10.00 feet above msl.

Groundwater Sampling and Procedures.

Before sample collection, each monitoring well was purged with a dedicated, disposable polyethylene bailer until five well volumes had been removed from the well. Groundwater samples were then collected with the bailer used to purge the well. Groundwater samples



**FIGURE B-1
TYPICAL MONITORING WELL
INSTALLATION DETAIL**



**CONTAMINATION ASSESMENT
REPORT
JET ENGINE TEST CELL
BOCA CHICA FIELD
NAVAL AIR STATION KEY WEST
KEY WEST, FLORIDA**

were placed into appropriate containers, properly preserved, and placed on ice. Groundwater samples were sent by overnight carrier to Wadsworth/ALERT Laboratories, Tampa, Florida, under chain-of-custody procedures. Appropriate quality assurance/quality control (QA/QC) samples were collected and analyzed.

Aquifer Slug Tests.

Rising head slug tests were conducted in selected monitoring wells to assess the hydraulic conductivity (K) of the surficial aquifer using the methods of Bouwer and Rice (1976). Bouwer (1989) recommends using the rising head slug test for wells with screened intervals that are only partially submerged or partially penetrate unconfined aquifers.

The rising head slug test is performed by quickly withdrawing a volume of water (slug) from the well and measuring the subsequent rate of the rising water level in the well. The slug is constructed of 1-inch, outside diameter, PVC pipe, 5 feet in length, filled with sand, and capped watertight at both ends. (Note: no PVC cement or solvents are used to construct the slug.) The water level changes in the monitoring wells were recorded using a data logger and pressure transducer. The pressure transducer probe was suspended near the bottom of the well, and an initial water level was recorded prior to beginning the test. The slug was then lowered into the well to a depth below the water table. Water levels were then recorded until they stabilized at the original level. The slug was quickly removed from the well, and the rate of the rising water level in the well was recorded until the water table had recovered to the initial value at the time of slug removal.

APPENDIX C
TIDAL INFLUENCE STUDY

TIDAL INFLUENCE STUDY

Background. The tide is the periodic rise and fall of the earth's water resulting from gravitational interactions between the sun, moon, and earth. There are generally two high and two low waters in a day. Tides follow the moon more closely than they do the sun, and the lunar or tidal day is about 50 minutes longer than the solar day. When the two high waters and two low waters of each tidal day are approximately equal in height, the tide is said to be semidiurnal. When there is a relatively large diurnal inequality in the high or low waters or both, the tide is said to be mixed. Finally, when there is only one high water and one low water in each tidal day, the tide is said to be diurnal. When water is falling or moving away from a shoreline, the tide is said to be an ebb tide. When water is rising the tide is said to be a flood tide. The time and heights of the rising and falling of the tide can be predicted based on our knowledge of these gravitational interactions. Daily tide predictions in the United States are available and are based upon analyses of tidal observations for periods of at least 1 year. Extreme meteorological conditions are excluded from the analyses and predictions; therefore, the predicted tidal heights are those expected under average weather conditions. Prolonged onshore winds or a low barometric pressure can produce higher tidal levels than predicted. In addition, prolonged offshore winds or a high barometric pressure can produce lower tidal levels than predicted.

Variations in the coastline and in the coastal bathymetry (channels, shoals, etc.) can also make a difference in the times that the tidal wave hits different points along the same coastline.

Exclusive of weather conditions, the astronomical tide is also subject to range variations. Decreased ranges may be expected near the times when the moon is in apogee (farthest from the earth) or in quadrature (angular separation of the moon and sun from the earth is 90 degrees; also called neap tides). Increased ranges may be expected when the moon is in perigee (nearest to earth in its orbit) or in a new or full position (spring tides). A larger diurnal range may also result when the moon is in its maximum declination (tropic tides). The actual tidal range will depend upon the extent to which combinations of these positions reinforce or detract from one another. These range variations based on astronomical conditions are included in the daily tide predictions. Daily predicted tide tables are published by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (U.S. Department of Commerce, 1992). The tide tables predict the high and low water heights based on Mean Lower Low Water (MLLW) datum and times based on a referred meridian. The tidal datum MLLW is an arithmetic mean of the lower low water heights of a mixed tide observed over a specific 19-year Metonic cycle (the national Tidal Datum Epoch). Only the lower low water of each pair of low waters, or the only low water of a tidal day is included in the mean.

Groundwater aquifers that are in hydraulic connection with surface water bodies such as rivers, lakes, oceans, etc., are influenced by fluctuations of the water bodies. These fluctuations may be the result of tidal influences, flooding, rainfall, or the influence of man made control structures such as dams and locks. During high surface water conditions the aquifer may be recharged, whereas, during low surface water conditions the aquifer will usually discharge into the

surface water body. In a groundwater aquifer, the effects of surface water fluctuations will diminish with distance from the source (river, ocean, etc.).

NAS Key West is located on Boca Chica Key. The Lower Keys, including Boca Chica Key, are overlain by an oolitic member of the Pleistocene Miami Limestone, except in those areas where fill material has been imported. The surficial aquifer is contained within this oolitic member. Groundwater at NAS Key West on Boca Chica Key is encountered from 1 to 5 feet bls. Because of the high hydraulic conductivity of this oolite, the groundwater on the entire Key is suspected of experiencing tidal fluctuations, particularly at near extreme high and low tide conditions.

Tidal Study Methodologies. The tidal study was conducted at the Jet Engine Test Cell site from 1645 hours on November 30, 1993, to 0700 hours on December 2, 1993. Initially, water levels were measured from a temporary surface water gauge located in the lagoon north of the site, and in monitoring wells MW-1, MW-10, and MW-18. During the study, water levels were recorded from these stations every 15 minutes using a Hermit™ data logger and pressure transducer probes.

The monitoring well stations were surveyed to a reference benchmark located at MW-11 that has an arbitrarily assigned elevation of 10.00 feet. The water level data from the monitoring wells are compared to the predicted tide levels in the Key West area (U.S. Department of Commerce, 1992).

Tidal Study Results. The study period was scheduled to take place within 3 days of a full Moon (November 29, 1993) so that near maximum water level fluctuations, as a result of the tide, could be observed. Comparisons of the water level fluctuations in the monitoring wells to the predicted tide levels in the Key West area indicated that local bathymetry and the location of the site (convergence of the Atlantic Ocean and the Gulf of Mexico) greatly impact the arrival time and levels of the tides in the area.

Predicted tide arrivals and levels at the Key West station, located at Truman Annex on the west side of Key West, are compared to the Boca Chica Channel Bridge station, located approximately 6.5 miles east of the Key West station. These data show the tide occurs 1.5 hours later at the Boca Chica Channel Bridge and there is an approximately 60 percent reduction in tidal levels. The Key West station is located approximately 8.5 miles west of the study site, whereas the Boca Chica Channel Bridge station is only 2 miles west of the study site. For tidal stations closer to the study site, the delay in the predicted tide arrivals and levels are even more pronounced. Data from these stations are compared to the Jet Engine Test Cell site and are presented in Table C-1.

The closest predicted tide station to the study site (Rockland Key Channel Bridge) was used in comparing the monitoring well data to the predicted tides. The information in Table C-1 shows that the high and low tides at Rockland Key occur between 5 and 6 hours after they occur at the western end of Key West. The variation in water levels during high and low tides is 0.76 to 0.88 times those of Key West. The comparison of the tidal fluctuations with time between the Rockland Key and the Key West stations is presented on Figure C-1. A comparison of the groundwater level fluctuations at the Jet Engine Test Cell site to the tidal fluctuations at Rockland Key is presented on Figure C-2. Figure C-2 shows maximum water level fluctuations at the site of approximately 0.40 foot in MW-1, 0.55 foot in MW-10, and 0.33 foot in MW-18.

**Table C-1
Tidal Influence Study
Tidal Differences Between Stations in the Key West Area**

Contamination Assessment Report
Jet Engine Test Cell Site, Building A-969
Naval Air Station Key West
Boca Chica Field, Key West, Florida

Place	Differences						Distance from Jet Engine Test Cell
	High Water		Low Water		High Water ¹	Low Water ¹	
	h	m	h	m	feet	feet	
Key West, Truman Annex	0	0	0	0	1.0	1.0	8.5 miles W.
Boca Chica Channel Bridge	+1	23	+1	29	0.57	0.67	2 miles W.
Boca Chica Key, Long Point	+3	54	+5	22	0.94	0.71	2 miles NW
Rockland Key, Rockland Channel Bridge	+5	02	+6	06	0.76	0.88	1 mile NE

¹ The water level values of the Key West station for high or low water must be multiplied by this number to obtain the correct tidal levels for the station.

Notes: h = hour.
m = minute.
W = west.
NW = northwest.
NE = northeast.

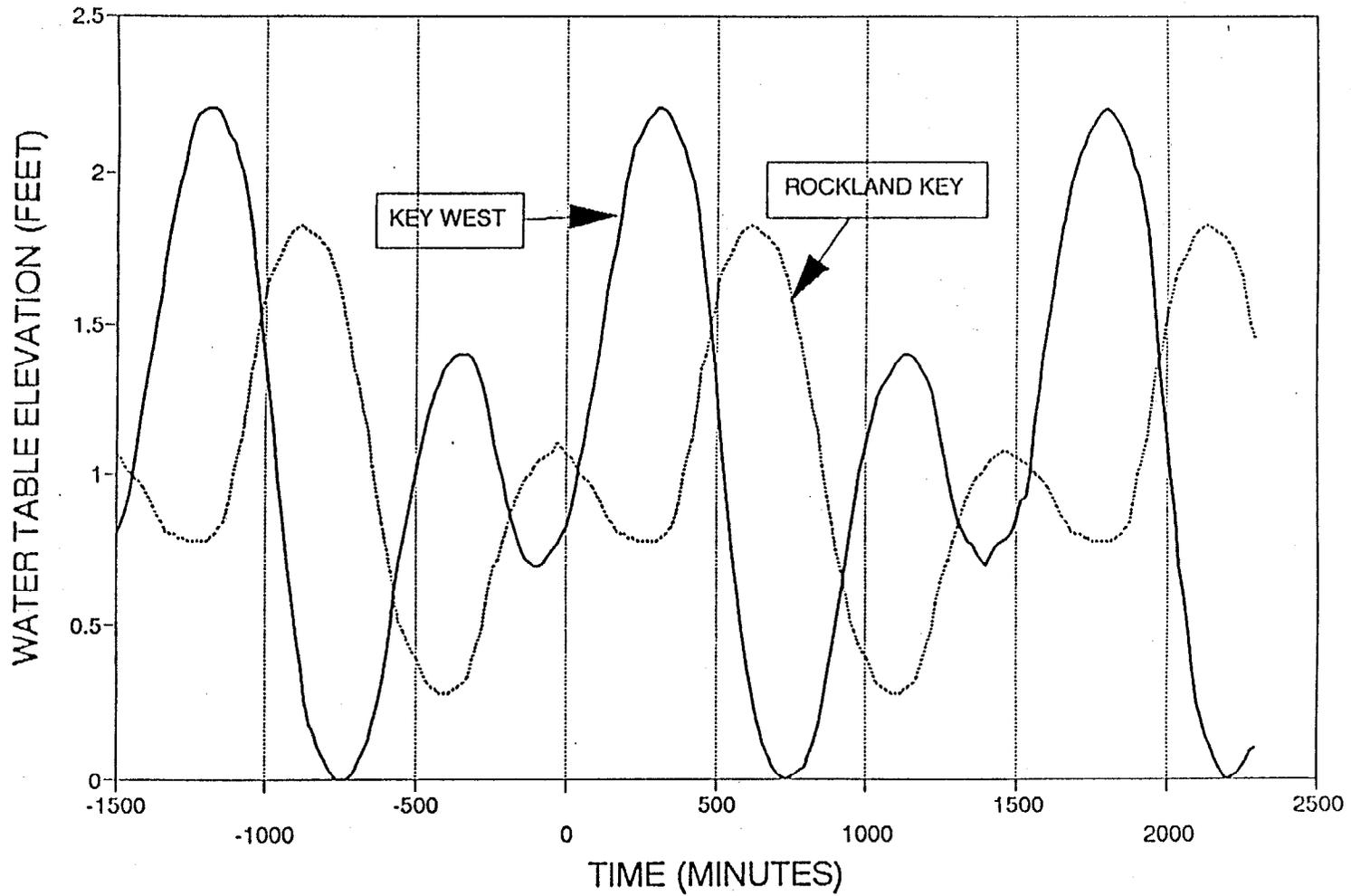
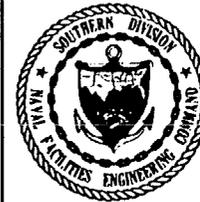
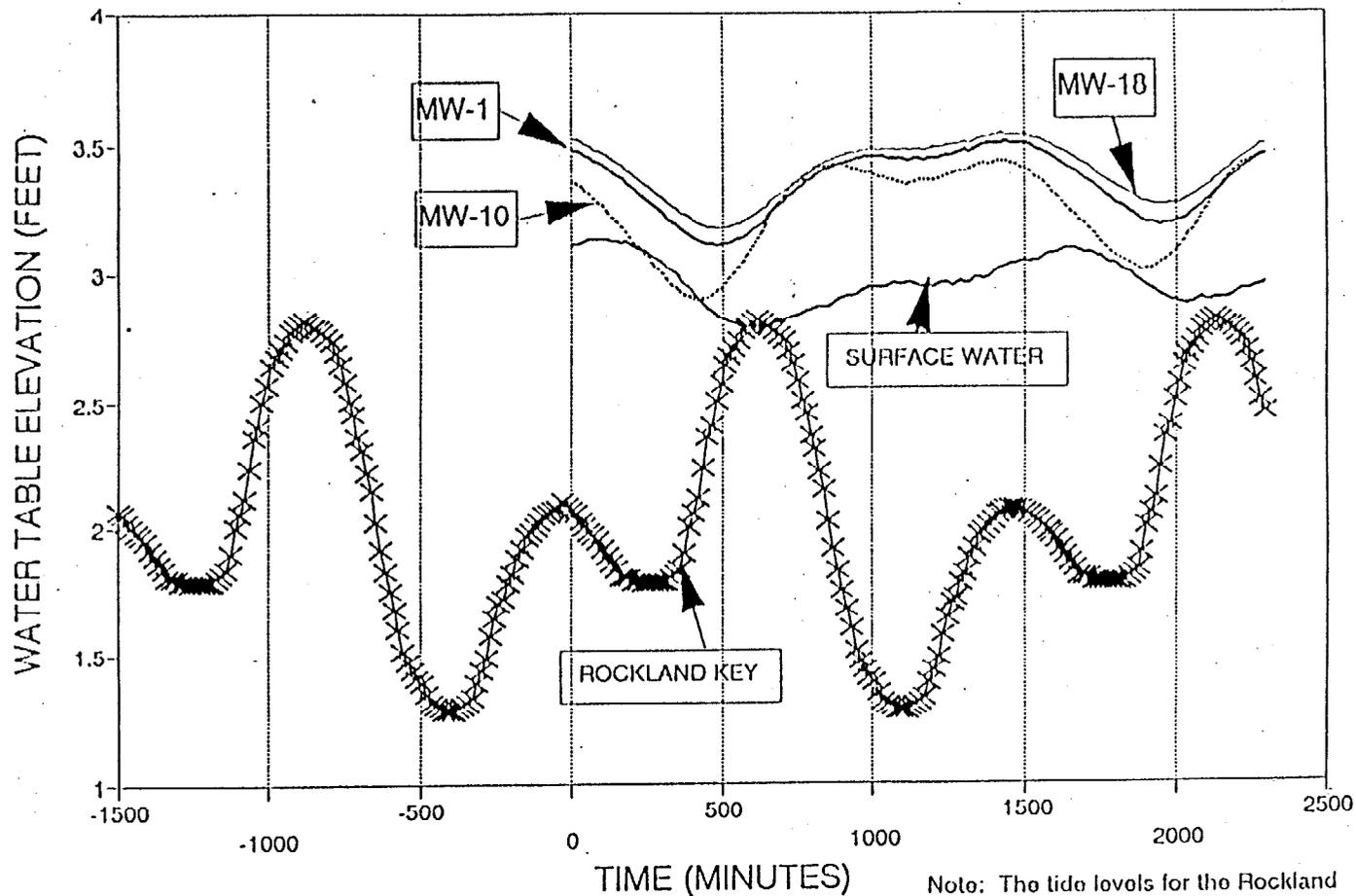


FIGURE C-1
TIDAL INFLUENCE STUDY
PREDICTED AREA TIDAL FLUCTUATIONS



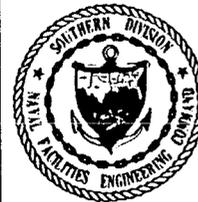
CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

NAS KEY WEST,
KEY WEST, FLORIDA



Note: The tide levels for the Rockland Key station have been increased by 1 foot for graphic purposes.

FIGURE C-2
TIDAL INFLUENCE STUDY
NOVEMBER 30 THROUGH DECEMBER 2, 1993



CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

NAS KEY WEST,
KEY WEST, FLORIDA

Because the groundwater fluctuations at the site show a tidal pattern and the site is located in the central section of Boca Chica Key, it can be inferred that all groundwater at Boca Chica Key is influenced by the tide, especially during extreme tidal events.

Tidal fluctuations result in a temporary change in the water table gradient; however, these fluctuations are not expected to cause any noticeable horizontal migration of the contaminant plume. The duration of these fluctuations and their resulting gradient changes (in relationship to the hydraulic conductivity of the material at the site) do not suggest any significant lateral movement of water at the site. Vertical groundwater movement resulting from tidal fluctuations may cause spreading of soil contamination directly above and below the groundwater table.

APPENDIX D

AQUIFER PARAMETER CALCULATIONS

Aquifer Parameter Calculations

Hydraulic gradient

Water table elevations recorded on October 20, 1993, were used to calculate hydraulic gradients at the site. The hydraulic gradient was calculated by subtracting the difference in groundwater elevation (in feet) between two points, along a line oriented perpendicular to equipotential lines (see Figure 5-1). The elevation difference was divided by the horizontal distance between the two points to obtain a resulting gradient in feet per foot (ft/ft). Traverses were made perpendicular to equipotential contour lines from monitoring wells MW-10 to MW-17, from monitoring wells MW-9 to MW-17, and from monitoring wells MW-10 to MW-13 (see Figure 5-1), to calculate an average hydraulic gradient. For each traverse, the hydraulic gradient was calculated as follows:

$$i = (h_1 - h_2) / d \quad (1)$$

where

- i = hydraulic gradient (ft/ft);
- h_1 = water table elevation, upgradient (feet);
- h_2 = water table elevation, downgradient (feet); and
- d = horizontal distance (feet) between h_1 and h_2 along a flow line.

Hydraulic gradients calculated in this manner vary from 1.4×10^{-3} ft/ft to 1.8×10^{-3} ft/ft. The average calculated hydraulic gradient at the site is 1.6×10^{-3} ft/ft.

Hydraulic conductivity

Hydraulic conductivity (K) from slug test data was calculated following the methods of Bouwer and Rice (1976) and Bouwer (1989) for partially penetrating wells screened in unconfined aquifers. The following well information was used to calculate the hydraulic conductivity:

- radius of well casing (r_c),
- r_w = radius of borehole (r_c plus radius of the sand pack surrounding the well screen),
- length of screened interval below the water table (L_s),
- effective well radius (r_e),
- depth of well below the water table (L_w),
- depth to confining unit or bottom of aquifer below the static water table (H), and
- plot of time versus the logarithm of y , where y is the difference between the static water level outside the well and the water level inside the well.

Figure D-1 is a well diagram depicting the aquifer and well parameters of interest. Calculations were made assuming that $L_w < H$. K was calculated as follows:

$$K = [R_c^2 \ln(\frac{r_e}{r_w}) - 2L_e] [\frac{1}{t} \ln(\frac{y_0}{y_t})] \quad (2)$$

where

y_0 = y at time zero, and
 y_t = y at time t.

The effective well radius, r_e , and the term $[(1/t)\ln(y_0/y_t)]$ were derived by using the computer program AQTESOLV™ (Geraghty & Miller, 1989). This computer program follows procedures and assumptions outlined by Bouwer (1989).

Slug test graphs are attached at the end of this appendix. Values of y were calculated for a particular time, t, and plotted on the graph. The computer program selects a "best-fit" line through the data points by linear regression along a "straight-line" portion of the graph. The slope of the "best-fit" line is used to calculate the hydraulic conductivity, K.

Two slug tests each were performed inside monitoring well MW-2 and one slug test was performed inside monitoring well MW-5. K is reported in feet per minute (ft/min) on the slug test graphs and was recalculated to feet per day (ft/day). The average K from the data collected from monitoring well MW-2 is 8.6×10^{-1} ft/day. K calculated from the data collected from monitoring well MW-5 is 5.7×10^{-1} ft/day. The average K value from the data collected from both monitoring wells is 7.2×10^{-1} ft/day.

Average pore water velocity

Estimates of average pore water velocity were obtained using the following formula:

$$V = (K \cdot i) / n \quad (3)$$

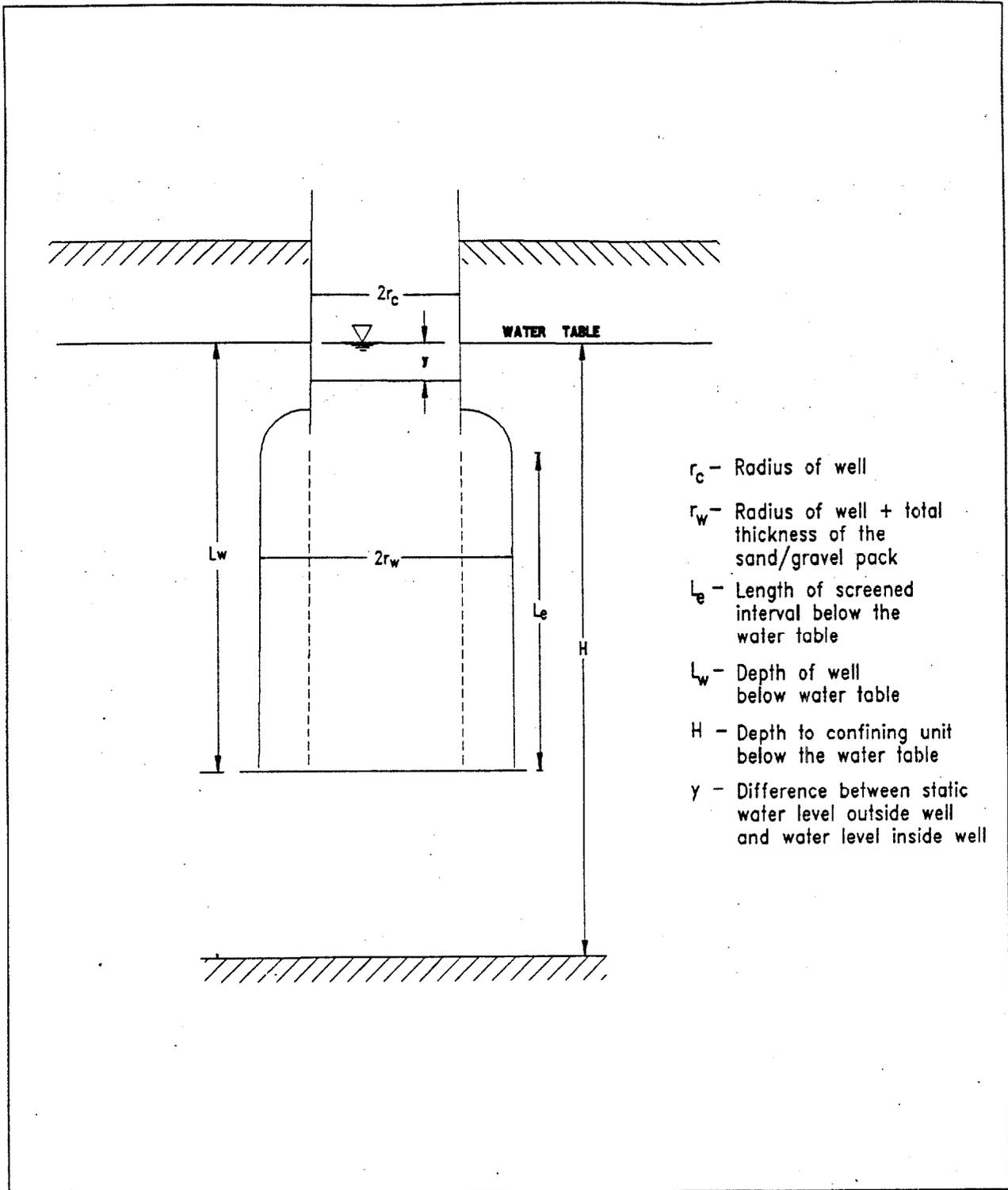
where

V = seepage velocity in ft/day,
 K = hydraulic conductivity in ft/day,
 i = hydraulic gradient, and
 n = estimated porosity.

Assuming an estimated porosity of 30 percent for weathered to oolitic limestone (Davis and Deweist, 1966), an average hydraulic gradient of 1.6×10^{-3} ft/ft, and an average hydraulic conductivity of 7.2×10^{-1} ft/day, the average pore water velocity is calculated as follows:

$$V = (7.2 \times 10^{-1} \text{ ft/day} * 1.6 \times 10^{-3} \text{ ft/ft}) / 0.30$$

$$V = 3.8 \times 10^{-3} \text{ ft/day.}$$



- r_c - Radius of well
- r_w - Radius of well + total thickness of the sand/gravel pack
- L_e - Length of screened interval below the water table
- L_w - Depth of well below water table
- H - Depth to confining unit below the water table
- y - Difference between static water level outside well and water level inside well

FIGURE D-1
DEFINITIONS OF SLUG TEST
PARAMETERS (From Bouwer, 1989)



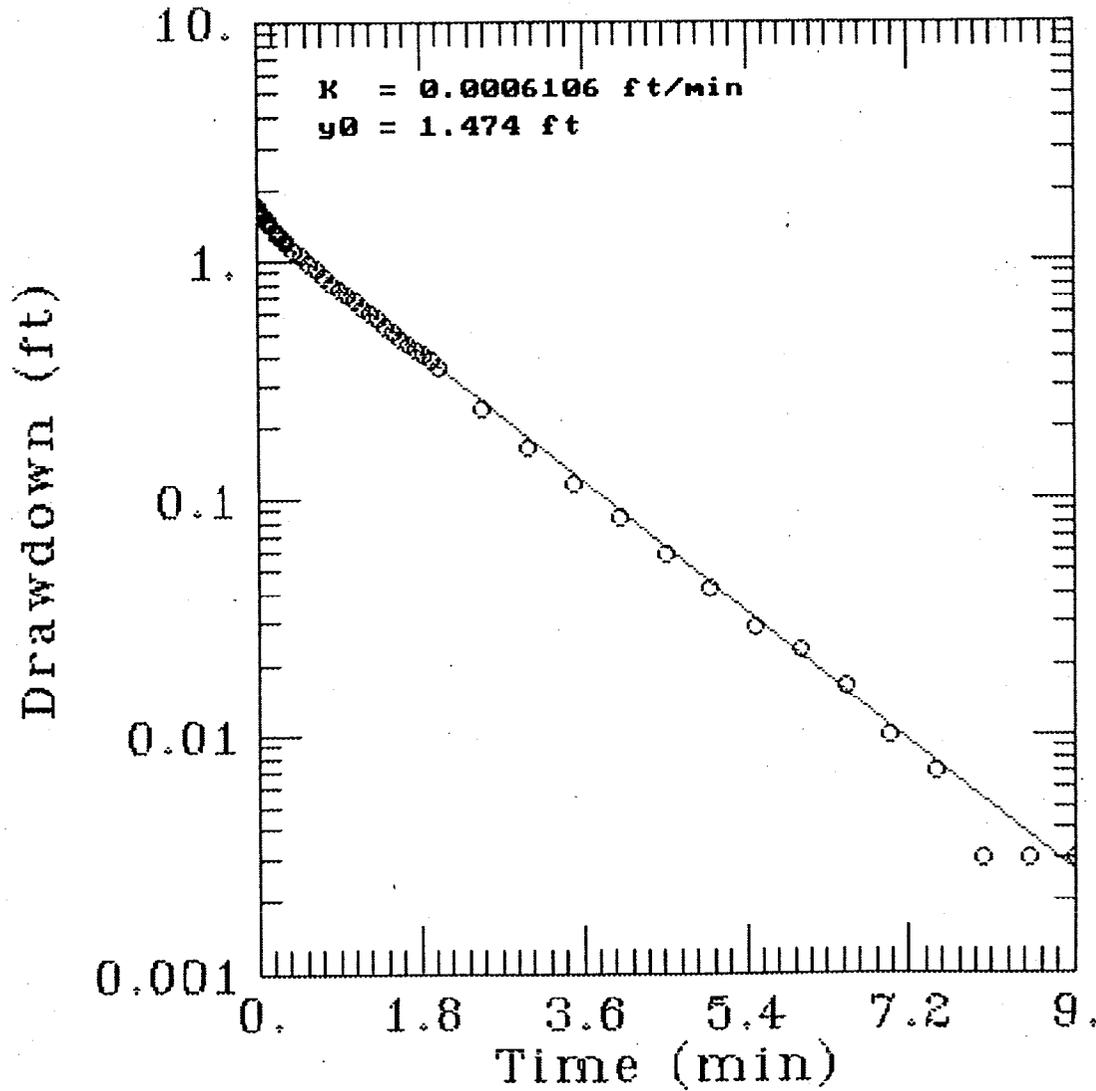
CONTAMINATION ASSESSMENT
REPORT
JET ENGINE TEST CELL

BUILDING A-969
NAS KEY WEST,
KEYWEST, FLORIDA

KEYWEST/D-1/KGP/06/22/93

SLUG TEST GRAPHS

KYW-JTC-MW2 RUN#1

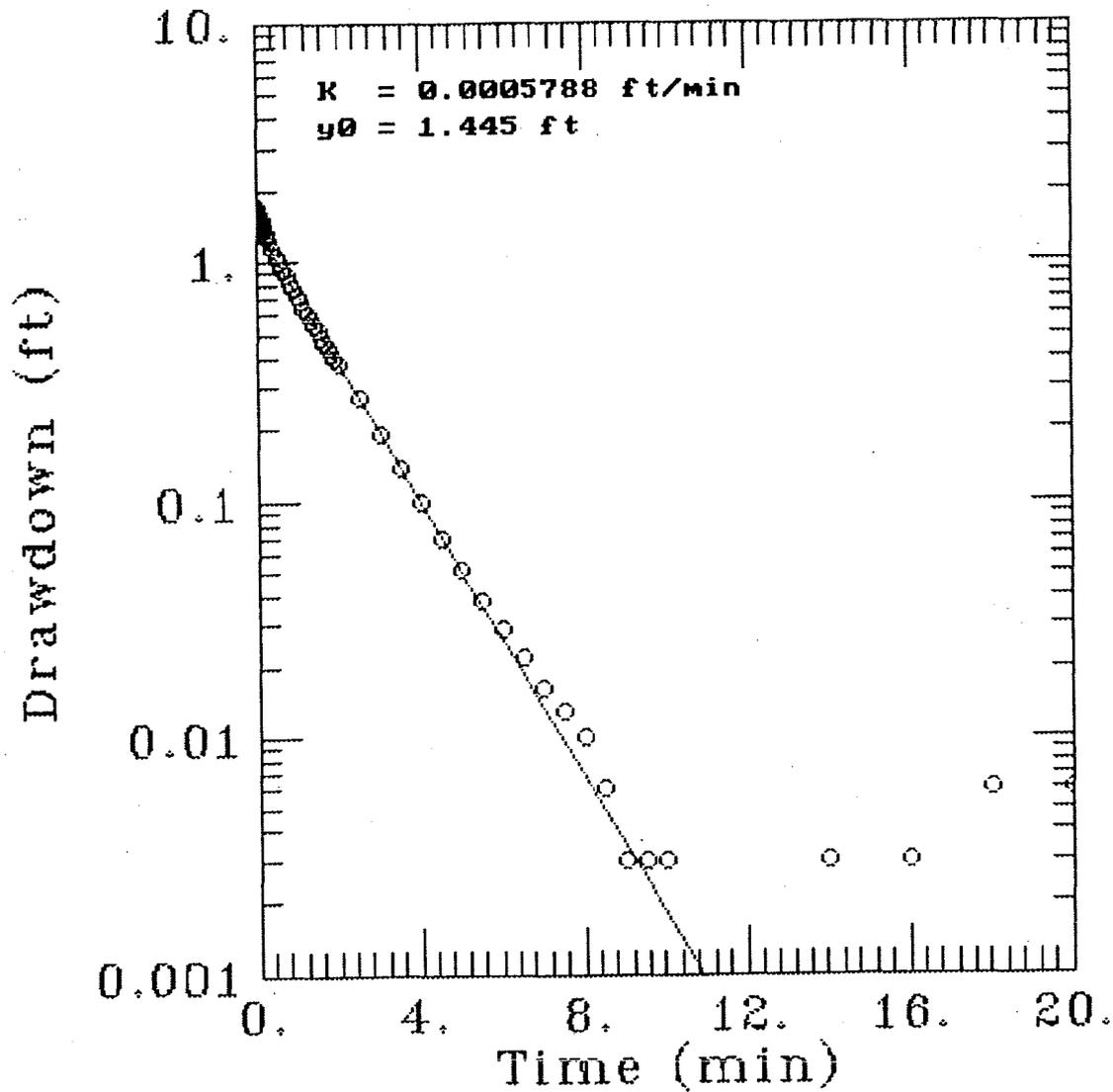


AQTESOLV



Modeling Group

KYW-JTC-MW2 RUN#2



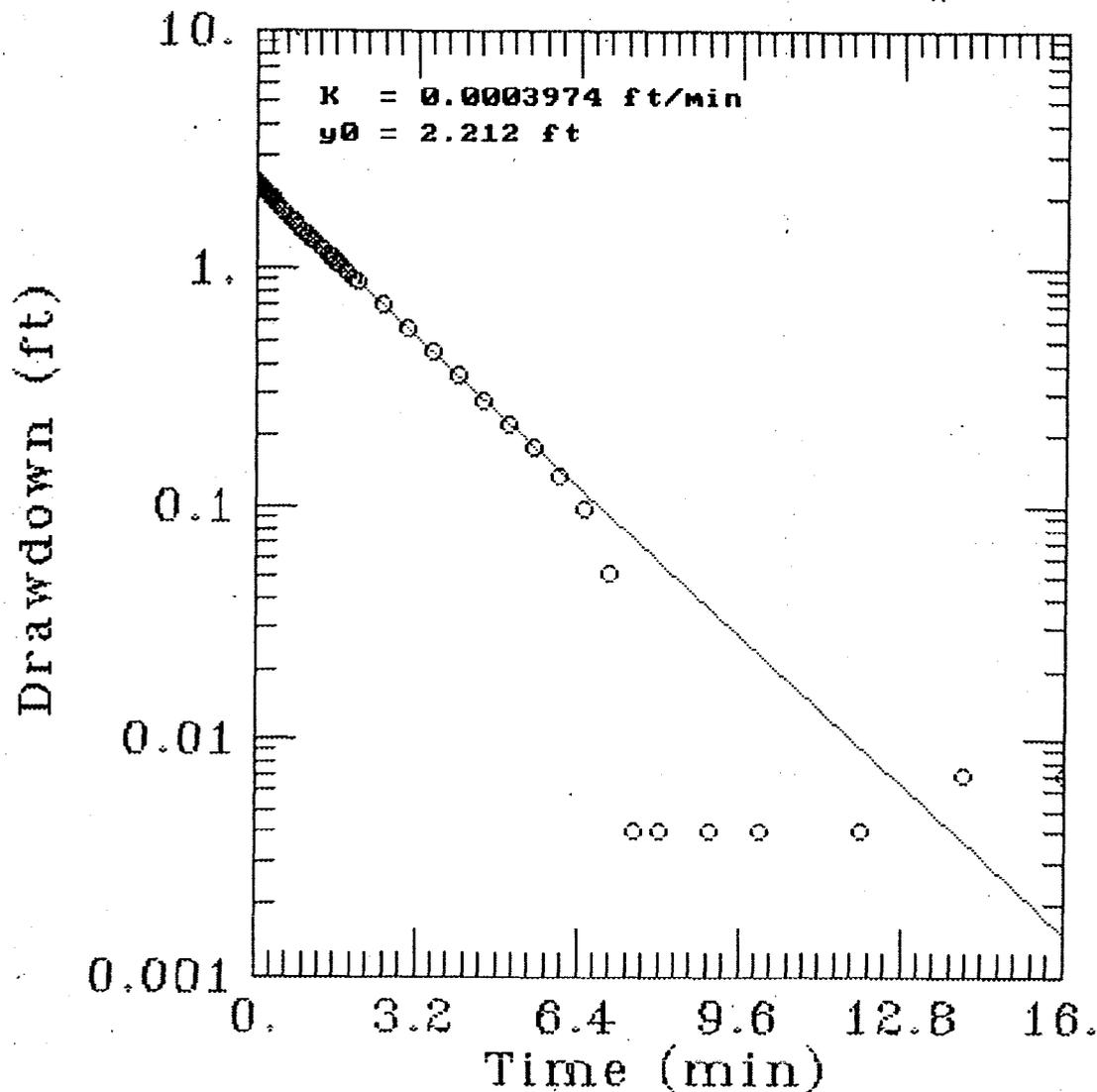
AQTESOLV



GERAGHTY
& MILLER, INC.

Modeling Group

KYW-JTC-MW5 RUN#1



AQTESOLV

 GERAGHTY
& MILLER, INC.

 Modeling Group

APPENDIX E
LITHOLOGIC LOGS

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-1	BORING NO. SB6
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 3507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/8/93	COMPLTD: 10/8/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.54 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO \bar{x} 1.85 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/8/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
200				SAND: clayey, calcareous, light brown to white, fine- to medium- grained with gravel. <i>Strong petroleum odor.</i>		GC		
20				As above.				
21				As above.				
5								
10								
15								

TITLE: NAS Key west, Jet Engine Test Cell		LOG of WELL: KYW-4969-2	BORING NO. SBT
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/8/93	COMPLTD: 10/8/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: C
TOC ELEV.: 5.37 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO $\frac{1}{2}$ 1.69 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/8/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				52	As above.		SC		
				150	As above.				
				320	SAND: clayey, calcareous, light brown to medium gray to white, fine- to coarse-grained. <i>Strong petroleum odor.</i>				

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-3	BORING NO. SB2
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/8/93	COMPLTD: 10/8/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.11 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO \bar{g} 1.49 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/8/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
390				SAND: clayey, calcareous, light brown to white, fine- to medium- grained. <i>Strong petroleum odor.</i>		SC		
310				SAND: clayey, calcareous, light brown to white, fine- to coarse- grained with gravel. <i>Petroleum odor.</i>		GC		
190				As above.				
5								
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-4	BORING NO. SB15
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/8/93	COMPLTD: 10/8/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: C
TOC ELEV.: 5.26 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO ∇ : 1.61 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/8/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5			900	As above.		SC		
			1300	As above.				
			1800	SAND: clayey, calcareous, light brown to gray to white, fine- to coarse-grained with gravel. <i>Strong petroleum odor.</i>				

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-5	BCRING NO. SB39
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/17/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: 0
TOC ELEV.: 5.39 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO ∇ : 171 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
4200				SAND: clayey, calcareous, fill material, fine- to coarse-grained with gravel, dark brown to light brown to white. <i>Strong petroleum odor.</i>		GC		
2350				SAND: clayey, calcareous, light brown to white, fine- to coarse- grained with gravel. <i>Strong petroleum odor.</i>				
5								
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-6	BORING NO. SB28
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.50 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT.	DPTH TO ∇ 1.66 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0				SAND: clayey, calcareous, light brown to white, fine- to coarse- grained. <i>No odor.</i>		SC		
1				As above.				
2			N/A					
3				As above.				
4			N/A					
5								
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-7	BORING NO. N/A
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.38 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO \bar{z} : 1.78 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			<1	SAND: clayey, calcareous, light brown to gray to white, fine- to coarse-grained with gravel. <i>No odor.</i>		GC		
			N/A	As above.				
5			N/A	As above.				
10								
15								

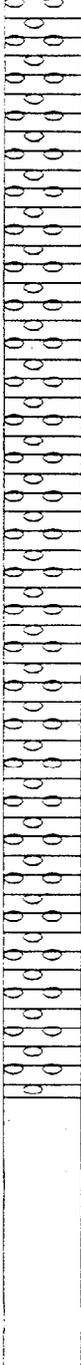
TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-8	BORING NO. SB29
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.28 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO ∇ 170 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0				SAND: clayey, calcareous, light brown to gray to white, fine- to coarse-grained with gravel. <i>No odor.</i>		GC		
6				As above.				
9				As above.				
13								
15								

TITLE: NAS Key west, Jet Engine Test Cell		LOG of WELL: KYW-A969-9	BORING NO. N/A
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 4.81 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO ∇ 1.25 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			SAND: clayey, calcareous, light brown to gray to white, fine- to coarse-grained with gravel.		GC		
			As above.				
5			As above.				
10							
15							

TITLE: NAS Key west, Jet Engine Test Cell		LOG of WELL: KYW-4969-10	BORING NO: N/A
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: 0
TOC ELEV.: 5.07 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO \bar{g} : 1.52 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH F.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN.	WELL DATA
0						GC		
5				SAND; clayey, calcareous, light brown to gray to white, fine- to coarse-grained with gravel. <i>No odor.</i>				
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-11	BORING NO. SB-33
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: C
TOC ELEV.: 4.62 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT.	DPTH TO ∇ 1.05 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
3				SAND: clayey, calcareous, light brown to gray to white, fine- to coarse-grained with gravel. <i>No odor.</i>		GC		
13				As above.				
5				As above.				
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-4969-12	BORING NO. SB1
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: B
TOC ELEV.: 4.99 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT.	DPTH TO ∇ 1.33 FT
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
6					SAND: clayey, calcareous, light brown to white, medium- to coarse- grained. <i>No odor.</i>		GC		
3					SAND: clayey, calcareous, light brown to white, fine- to medium- grained with gravel. <i>No odor.</i>				
0					SAND: clayey, calcareous, light brown to white, fine- to coarse- grained. <i>No odor.</i>				

TITLE: NAS Key west, Jet Engine Test Cell		LOG of WELL: KYW-A969-13	BORING NO. SB42
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/11/93	COMPLTD: 10/11/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.69 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO \bar{z} 1.96 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/11/93		SITE: Jet Engine Test Cell

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0			0	SAND: clayey, calcareous, light brown to gray to white, fine- to medium-grained. <i>No odor.</i>		SC		
0			0	SAND: clayey, calcareous, light brown to white, fine- to coarse- grained with gravel. <i>No odor.</i>		GC		
5								
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A989-14	BORING NO. SB36
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/12/93	COMPLTD: 10/12/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 1/2 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.31 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT.	DPTH TO ∇ 1.58 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/12/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0					SAND: clayey, calcareous, light brown to white, fine- to coarse- grained with gravel. <i>No odor.</i>		GC		
1					As above.				
7					As above.				
5									
10									
15									

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-15	BORING NO. SB37
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/12/93	COMPLTD: 10/12/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.40 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT.	DPTH TO ∇ 1.72 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/12/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0				SAND: clayey, calcareous, light brown to white, fine- to coarse-grained with gravel. <i>No odor.</i>		GC		
5				As above.				
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-16	BORING NO. SB33
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/12/93	COMPLTD: 10/12/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.32 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT	DPTH TO 1st 161 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/12/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/5-IN	WELL DATA
0				SAND: clayey, calcareous, light brown to white, fine- to medium- grained with gravel. <i>No odor.</i>		GC		
1				As above.				
5								
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-17	BORING NO. N/A
CLIENT: SOUTHNAVFACENCOM			PROJECT NO: 8507-30
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/12/93	COMPLTD: 10/12/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.57 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT.	DPTH TO ∇ 1.82 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/12/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5						SC		
10				SAND: clayey, calcareous, light brown to white, fine- to coarse- grained. <i>No odor.</i>				
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-18	BORING NO. S83'
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/12/93	COMPLTD: 10/12/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 5.50 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO \bar{z} 1.79 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/12/93		SITE: Jet Engine Test Cell

DEPTH F T	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
2				SAND: clayey, calcareous, light brown to gray to white, fine- to coarse-grained with gravel. <i>No odor.</i>		GC		
0				As above.				
0				As above.				

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-19D	BORING NO. N/A
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/12/93	COMPLTD: 10/12/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 20 - 25 FT.	PROTECTION LEVEL: 0
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 27FT.	DPTH TO ∇ 1.88 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/13/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
400				SAND: clayey, calcareous, gray, fine- to coarse-grained with gravel. <i>Strong petroleum odor.</i>		GC		
320				SAND: clayey, calcareous, light brown to white, fine- to coarse- grained with gravel. <i>Rotten egg odor.</i>				
20				As above, with limestone pebbles.				
6				As above. <i>Slight odor.</i>				
4				As above. <i>Slight odor.</i>				

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-20D	BORING NO. N/A
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 10/12/93	COMPLTD: 10/12/93
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 15 - 20 FT.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 20FT.	DPTH TO ∇ 1.48 FT.
LOGGED BY: J. Koch	WELL DEVELOPMENT DATE: 10/13/93		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
145				SAND: clayey, calcareous, light brown, white, gray, fine- to coarse- grained with gravel. <i>Petroleum odor.</i>		GC		
2				SAND: clayey, calcareous, light brown to white, fine- to coarse- grained with gravel. <i>No odor.</i>				
1				As above, with limestone pebbles.				
2				As above.				

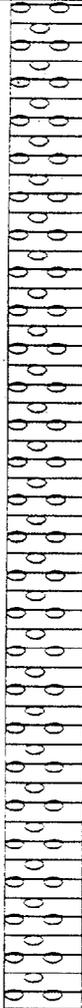
TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-22	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 2/22/94	COMPLTD: 2/22/94
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 4.97 FT.	MONITOR INST.: OVA	TOT DPTH: 11FT.	DPTH TO ∇ 1.63 FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 2/22/94		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			<1	SAND: clayey, dark brown to gray; moist. <i>No odor.</i>		SC		
5				SAND: silty to coarse; 15% limestone gravel; wet; very pale orange. <i>Very slight sulfur odor.</i>		GC		
10								
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-21	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 2/22/94	COMPLTD: 2/22/94
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: D
TOC ELEV.: 4.70 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO ∇ 1.39 FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 2/22/94		SITE: Jet Engine Test Cell

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0								
0.5				SAND: clayey, 20% limestone gravel; dark brown; moist. <i>No odor.</i>		GC		
5								
10				SAND: calcareous; medium to coarse; 15% limestone gravel; wet; very pale orange. <i>No odor.</i>				
15								

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-23	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 2/22/94	COMPLTD: 2/22/94
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: 0
TOC ELEV.: 5.00 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO ∇ 1.53 FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 2/22/94		SITE: Jet Engine Test Cell

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				<1	SAND: silty to coarse; 15% limestone gravel; fine; brown to gray; moist. <i>No odor.</i>		GC		
10					SAND: silty to coarse; 15% limestone gravel; wet; very pale orange. <i>No odor.</i>				
15									

TITLE: NAS Key West, Jet Engine Test Cell		LOG of WELL: KYW-A969-24	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 8507-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 2/22/94	COMPLTD: 2/22/94
METHOD: 4.25" HSA	CASE SIZE: 2 inch	SCREEN INT.: 1 - 11 FT.	PROTECTION LEVEL: C
TOC ELEV.: 5.00 FT.	MONITOR INST.: OVA	TOT DPTH: 11 FT.	DPTH TO ∇ 136 FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 2/22/94	SITE: Jet Engine Test Cell	

DEPTH FT	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0			<1	SAND: clayey; dark brown; minor limestone gravel; <i>No odor.</i>		GC		
5				SAND: silty to coarse; 10% limestone gravel; wet. <i>Slight sulfur odor.</i>				
10								
15								

APPENDIX F
GROUNDWATER ANALYTICAL DATA



ENSECO-WADSWORTH/ Laboratories
Division of Corning Lab Services, Inc.

5910 Breckenridge Parkway, Suite H 813-621-0784
Tampa, FL 33610 FAX 813-623-6021

ANALYTICAL REPORT

NAS KEY WEST/JET ENGINE TEST

20 OCTOBER 1993

Presented to:

ROGER DURHAM

ABB ENVIRONMENTAL SERVICES, INC.

ENSECO-WADSWORTH/ALERT LABORATORIES

**Chris Amstutz
Project Manager**

**Randall C. Grubbs
Laboratory Director - Florida**

November 11, 1993



ENSECO-WADSWORTH/ALERT
Laboratories

INVOLVEMENT

This report summarizes the analytical results of the NAS Key West/Jet Engine Test site submitted by ABB Environmental Services, Inc. to Enseco-Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Roger Durham. The samples were accepted into Wadsworth's Florida facility on 20 October 1993, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.

Laboratory ID #

Narrative

3J2006-13,17

Due to suspected matrix interference, the surrogate recovery for bromoform for the ethylene dibromide analysis for these samples was outside established laboratory control limits. A second sample preparation and analysis confirmed the interferences and the original data is presented in this report.



ENSECO-WADSWORTH/
Laboratories

ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER	METHOD
ORGANICS	
Volatile Organics	** EPA Method 601/2
Ethylene Dibromide	** EPA Method 601 Mod.
Polynuclear Aromatic Hydrocarbons	** EPA Method 625
METALS	
Lead	** EPA Method 239.2
MISCELLANEOUS	
Total Dissolved Solids	** EPA Method 160.1
Tot. Rec. Petroleum Hydrocarbons	** EPA Method 418.1

NOTE: ** Indicates usage of this method to obtain results for this report.

(D)	Indicates draft version of this method was used
EPA Methods	Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-79-020, March, 1983. July, 1982
Std. Methods	Drinking Waters USEPA, 600/4-88/039, December, 1988.
USEPA Methods	Standard Methods for the Examination of Water and Waste-water, APHA, 16th edition, 1985.
SW846 Methods	From 40CFR Part 136, published in Federal Register on October 26, 1984.
ASTM Methods	Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986.
NIOSH Method	American Society for Testing and Materials.
	NIOSH Manual of Analytical Methods, National Institute for Occupational Safety and Health, 2nd Edition, April 1977.



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-1
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 1

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	2	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	83	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/ LAB
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-1
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 1 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	93



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-1
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 1

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	70	(22-135)	(10-155)
Fluorobiphenyl	68	(34-140)	(12-153)
Terphenyl-d14	35	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-1
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 1

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-1
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 1

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-22
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: DUPLICATE 2 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	2	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	94	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-22
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: DUPLICATE 2 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	102



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-22
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: DUPLICATE 2 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	67	(22-135)	(10-155)
Fluorobiphenyl	61	(34-140)	(12-153)
Terphenyl-d14	34	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-22
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : DUPLICATE 2 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-22
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : DUPLICATE 2 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	11/ 1/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ TEST
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-2
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 2

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	33
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	86	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-2
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 2 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
 J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	95



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-2
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 2

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(ghi)perylene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenz(a,h)anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
1-Methylnaphthalene	59
2-Methylnaphthalene	57
Naphthalene	110
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	72	(22-135)	(10-155)
Fluorobiphenyl	80	(34-140)	(12-153)
Terphenyl-d14	29	(10-132)	(13-140)



ENSECO-WADSWORTH/ EBT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-2
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 2

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	1	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-3
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 3

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	4
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	1	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	3
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	4
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	87	(78-122)
Trifluorotoluene (PID)	102	(73-131)



ENSECO-WADSWORTH/
 Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
 LAB #: 3J2006-3
 MATRIX: WATER

DATE RECEIVED: 10/20/93
 DATE EXTRACTED: NA
 DATE ANALYZED: 10/27/93

SAMPLE ID: MW 3

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
 HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
 J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	102



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-3
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 3

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	19
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	77	(22-135)	(10-155)
Fluorobiphenyl	70	(34-140)	(12-153)
Terphenyl-d14	36	(10-132)	(13-140)



ENSECO-WADSWORTH/ TEST
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-3
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 3

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-3
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 3

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	2	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-4
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 4 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	2	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	54
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	2	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	2
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	97	(78-122)
Trifluorotoluene (PID)	106	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-4
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 4

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	95



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-4
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 4

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	55
2-Methylnaphthalene	53
Naphthalene	79
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	74	(22-135)	(10-155)
Fluorobiphenyl	56	(34-140)	(12-153)
Terphenyl-d14	27	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-4
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 4

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-4
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 4

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	6	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-21
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: DUPLICATE 1 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	2	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	54
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	81	(78-122)
Trifluorotoluene (PID)	105	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-21
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: DUPLICATE 1 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	103



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-21
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: DUPLICATE 1 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	56
2-Methylnaphthalene	51
Naphthalene	91
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	72	(22-135)	(10-155)
Fluorobiphenyl	59	(34-140)	(12-153)
Terphenyl-d14	42	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-21
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : DUPLICATE 1 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-21
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : DUPLICATE 1 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	11/ 1/93	8	5 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-5
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 5 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	56	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	70
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	2	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	3
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	3
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	108	(78-122)
Trifluorotoluene (PID)	106	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-5
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 5

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	92



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-5
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 5

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS

HRS84297

METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(ghi)perylene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenz(a,h)anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
1-Methylnaphthalene	110
2-Methylnaphthalene	130
Naphthalene	100
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	86	(22-135)	(10-155)
Fluorobiphenyl	64	(34-140)	(12-153)
Terphenyl-d14	27	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-16
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 16

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS

HRS84297

METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	63	(22-135)	(10-155)
Fluorobiphenyl	58	(34-140)	(12-153)
Terphenyl-d14	40	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-16
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 16

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-16
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 16

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Total Dissolved Solids	10/20-10/21/93	750	5	mg/L
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-17
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 17

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	1	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	96	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-17
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 17 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	250



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-17
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 17

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS

HRS84297

METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(ghi)perylene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenz(a,h)anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	64	(22-135)	(10-155)
Fluorobiphenyl	62	(34-140)	(12-153)
Terphenyl-d14	43	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-17
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 17 NAS KEY WEST/JET ENGINE TEST CELL
METALS ANALYTICAL REPORT CERTIFICATION #: E84059
SELECTED LIST HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-17
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 17 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-18
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 18

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	97	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-18
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 18 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	103



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-18
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 18

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS

HRS84297

METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	67	(22-135)	(10-155)
Fluorobiphenyl	66	(34-140)	(12-153)
Terphenyl-d14	38	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-18
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 18

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-18
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 18 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-19
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 19D NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	100	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-19
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 19D NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	123



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-19
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 19D

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS

HRS84297

METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	68	(22-135)	(10-155)
Fluorobiphenyl	67	(34-140)	(12-153)
Terphenyl-d14	50	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-19
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 19D

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT
SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-19
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 19D NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-20
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 20D NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	1	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	105	(78-122)
Trifluorotoluene (PID)	98	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-20
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 20D NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	97



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-20
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 20D NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	63	(22-135)	(10-155)
Fluorobiphenyl	64	(34-140)	(12-153)
Terphenyl-d14	58	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-20
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 20D NAS KEY WEST/JET ENGINE TEST CELL

METALS ANALYTICAL REPORT
SELECTED LIST

CERTIFICATION #: E84059
HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-20
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 20D NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Total Dissolved Solids	10/21-10/22/93	3,600	5	mg/L
Tot Recoverable Pet Hydrocarbons	11/ 1/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-23
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: EQUIPMENT BLANK

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

VOLATILE ORGANICS
METHOD 601/602 - GC

HRS84297

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	103	(78-122)
Trifluorotoluene (PID)	98	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-23
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: EQUIPMENT BLANK NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	106



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-23
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: EQUIPMENT BLANK

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	71	(22-135)	(10-155)
Fluorobiphenyl	69	(34-140)	(12-153)
Terphenyl-d14	79	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-12
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 12

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	103	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-12
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 12 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	90



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-12
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 12

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	56	(22-135)	(10-155)
Fluorobiphenyl	56	(34-140)	(12-153)
Terphenyl-d14	31	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-12
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 12 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-12
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 12

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-13
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 13

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	114	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-13
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 13

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	280



ENSECQ-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-13
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 13

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	59	(22-135)	(10-155)
Fluorobiphenyl	57	(34-140)	(12-153)
Terphenyl-d14	38	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-13
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 13

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-13
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 13

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-14
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 14

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	35
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	99	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-14
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 14 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	100



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-14
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 14

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	66	(22-135)	(10-155)
Fluorobiphenyl	65	(34-140)	(12-153)
Terphenyl-d14	36	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-14
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 14

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-14
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 14 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-15
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 15

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	25
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	2	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	99	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-15
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 15 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	101



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-15
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 15

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	56	(22-135)	(10-155)
Fluorobiphenyl	53	(34-140)	(12-153)
Terphenyl-d14	48	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-15
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 15

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-15
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 15

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-16
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 16

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	2	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	94	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-16
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 16 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	123



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-5
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 5 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-5
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 5

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	46	25	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-6
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 6

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	78	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-6
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 6

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	93



ENSECO-WADSWORTH/ LRT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-6
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 6

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	70	(22-135)	(10-155)
Fluorobiphenyl	70	(34-140)	(12-153)
Terphenyl-d14	46	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-6
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 6

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-6
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 6

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-7
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 7

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	105	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-7
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 7

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	93



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-7
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 7

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	70	(22-135)	(10-155)
Fluorobiphenyl	67	(34-140)	(12-153)
Terphenyl-d14	54	(10-132)	(13-140)



ENSECO-WADSWORTH/VERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-7
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 7

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-7
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 7

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-8
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 8

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	98	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-8
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: MW 8

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	94



ENSECO-WADSWORTH/ JET
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-8
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 8

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	72	(22-135)	(10-155)
Fluorobiphenyl	67	(34-140)	(12-153)
Terphenyl-d14	45	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-8
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 8

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Lead	11/ 4-11/ 5/93	ND	5	ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-8
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 8

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-9
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 9 NAS KEY WEST/JET ENGINE TEST CELL
CERTIFICATION #: E84059
VOLATILE ORGANICS HRS84297
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	113	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-9
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 9 NAS KEY WEST/JET ENGINE TEST CELL
CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	78



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-9
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 9

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	70	(22-135)	(10-155)
Fluorobiphenyl	68	(34-140)	(12-153)
Terphenyl-d14	48	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-9
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 9

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-9
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 9

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-10
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 10

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	103	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-10
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 10 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	82



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-10
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 10

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS

HRS84297

METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	10
2-Methylnaphthalene	ND
Naphthalene	9
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	66	(22-135)	(10-155)
Fluorobiphenyl	66	(34-140)	(12-153)
Terphenyl-d14	51	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-10
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 10 NAS KEY WEST/JET ENGINE TEST CELL
METALS ANALYTICAL REPORT CERTIFICATION #: E84059
SELECTED LIST HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-10
MATRIX : WATER

DATE RECEIVED: 10/20/93

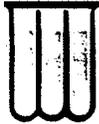
SAMPLE ID : MW 10 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-11
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: MW 11

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	1	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	105	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-11
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 11 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	89



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-11
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/28/93

SAMPLE ID: MW 11

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	71	(22-135)	(10-155)
Fluorobiphenyl	68	(34-140)	(12-153)
Terphenyl-d14	60	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-11
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 11 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-11
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : MW 11 NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-23
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : EQUIPMENT BLANK

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-23
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : EQUIPMENT BLANK

NAS KEY WEST/JET ENGINE TEST CELL

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	11/ 1/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-24
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: TRIP BLANK

NAS KEY WEST/JET ENGINE TEST CELL
CERTIFICATION #: E84059
HRS84297
VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	84	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/ LLC
Laboratories

QUALITY CONTROL SECTION

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



ENSECO-WADSWORTH/
Laboratories

QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY

Wadsworth/ALERT Laboratories 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.

<u>Volatiles</u>	<u>Semi-volatiles</u>	<u>Metals</u>
Methylene chloride	Dimethyl phthalate	Calcium
Toluene	Diethyl 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.



ENSECO-WADSWORTH/
Laboratories

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	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.



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-BK
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/26/93

SAMPLE ID: LABORATORY BLANK

VOLATILE ORGANICS
METHOD 601/602 - GC

CERTIFICATION #: E84059
HRS84297

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	91	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3J2006-BK
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	98	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-BK
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/27/93

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	90



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-BK
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: NA
DATE ANALYZED: 10/28/93

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

SELECTED ORGANIC COMPOUNDS ANALYTICAL REPORT

PARAMETER	RESULT (ug/L)	DETECTION LIMIT
Ethylene dibromide	ND	0.02

NOTE: ND (None Detected) as rec'd
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
Bromoform (ECD)	(41-152)	(41-152)	93



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-BK
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/22/93
DATE ANALYZED: 10/28/93

SAMPLE ID: LABORATORY BLANK

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

CERTIFICATION #: E84059
HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	60	(22-135)	(10-155)
Fluorobiphenyl	64	(34-140)	(12-153)
Terphenyl-d14	70	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3J2006-BK
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE EXTRACTED: 10/21/93
DATE ANALYZED: 10/26/93

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	81	(22-135)	(10-155)
Fluorobiphenyl	88	(34-140)	(12-153)
Terphenyl-d14	96	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-BK
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-BK
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Lead	11/ 4-11/ 5/93	ND	5 ug/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-BK
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	10/29/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601/2
RUN ID : 1A7109/1B7109

DATE EXTRACTED: N/A
DATE ANALYZED : 10/27/93.

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
Benzene	1A7109/1B7109	92	21	80-123
Toluene		92	19	80-119
Chlorobenzene		90	23	71-118
1,1-Dichloroethene		71	42	61-144
Trichloroethene		74	30	69-129
Dichlorobromomethane		99	40	54-134



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601/2
RUN ID : 1A7079/1B7079

DATE EXTRACTED: N/A
DATE ANALYZED : 10/26/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
Benzene	1A7079/1B7079	104	21 80-123
Toluene		106	19 80-119
Chlorobenzene		101	23 71-118
1,1-Dichloroethene		86	42 61-144
Trichloroethene		107	30 69-129
Dichlorobromomethane		104	40 54-134



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601 Mod.
RUN ID : EDB2380

DATE EXTRACTED: N/A
DATE ANALYZED : 10/27/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
Ethylene Dibromide	EDB2380	98	33 62-129



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601 Mod.
RUN ID : EDB2405

DATE EXTRACTED: N/A
DATE ANALYZED : 10/28/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
Ethylene Dibromide	EDB2405	105	33 2-129



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601 Mod.
RUN ID : EDB2429

DATE EXTRACTED: N/A
DATE ANALYZED : 10/29/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
Ethylene Dibromide	EDB2429	113	33 62-129



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 625
RUN ID : J0610

DATE EXTRACTED: 10/22/93
DATE ANALYZED : 10/28/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
Naphthalene	J0610	75	36	32-140
1-Methylnaphthalene		74	26	41-119
Acenaphthene		73	36	35-146
Fluorene		69	27	36-120
Pyrene		73	32	32-130
Chrysene		72	30	29-120



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 625
RUN ID : J0590

DATE EXTRACTED: 10/21/93
DATE ANALYZED : 10/27/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
Naphthalene	J0590	75	36	32-140
1-Methylnaphthalene		74	26	41-119
Acenaphthene		72	36	35-146
Fluorene		67	27	36-120
Pyrene		74	32	32-130
Chrysene		73	30	29-120



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS

MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS
METALS

ELEMENT	DATE	DATE	LCS	QC LIMITS		LCS
	PREPARED	ANALYZED	%REC	RPD	%REC	
Lead (furnace)	11/04/93	11/05/93	97	28	70-126	
Lead (furnace)	11/04/93	11/05/93	98	28	70-126	



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS

MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS
WET CHEMISTRY

PARAMETER	DATE	DATE	LCS	QC LIMITS		
	PREPARED	ANALYZED	%REC	RPD	%REC	
TRPH (IR)	11/01/93	11/01/93	89	24	75-123	LC
TRPH (IR)	10/29/93	10/29/93	86	24	75-123	



ENSECO-WADSWORTH/
Laboratories

LAB ID : 3J2006-1
MATRIX : WATER
METHOD : 601/2
RUN ID : 1A7112/1B7112

DATE RECEIVED : 10/20/93
DATE PREPARED : N/A
DATE ANALYZED : 10/27/93

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	RPD	QC LIMITS	
		%REC	%REC		RPD	%REC
Benzene	1A7112/1B7112	93	96	3	15	70-117
Toluene		93	97	4	16	70-117
Chlorobenzene		92	95	3	24	58-133
1,1-Dichloroethene		60	53	12	28	43-131
Trichloroethene		93	66	34	47	49-143
Dichlorobromomethane		96	78	21	22	61-133

* = Diluted Out



ENSECO-WADSWORTH/
Laboratories

LAB ID : 3J2006-1
MATRIX : WATER
METHOD : 601 Mod.
RUN ID : EDB2394

DATE RECEIVED : 10/20/93
DATE PREPARED : N/A
DATE ANALYZED : 10/27/93

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	RPD	QC LIMITS	
		%REC	%REC		RPD	%REC
Ethylene Dibromide	EDB2394	101	107	6	25	81-135

* = Diluted Out



ENSECO-WADSWORTH/ BERT
Laboratories

LAB ID : 3J2006-20
MATRIX : WATER
METHOD : 601 Mod.
RUN ID : EDB2423

DATE RECEIVED : 10/20/93
DATE PREPARED : N/A
DATE ANALYZED : 10/28/93

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
Ethylene Dibromide	EDB2423	108	103	5	25 81-135

* = Diluted Out



ENSECO-WADSWORTH/
Laboratories

LAB ID : 3J2006-20
MATRIX : WATER
METHOD : 625
RUN ID : KMSA062/KMSA063

DATE RECEIVED : 10/20/93
DATE PREPARED : 10/22/93
DATE ANALYZED : 11/05/93

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	RPD	QC LIMITS	
		%REC	%REC		RPD	%REC
Naphthalene	KMSA062/KMSA063	140	115	20	23	25-97
1-Methylnaphthalene		183	171	7	24	48-101
Acenaphthene		106	84	23	24	57-104
Fluorene		104	85	20	28	34-118
Pyrene		114	87	27	30	58-148
Chrysene		104	84	21	36	48-118

* = Diluted Out



ENSECO-WADSWORTH/ALERT
Laboratories

LAB ID : 3J2006-20
MATRIX : WATER
METHOD : 625
RUN ID : J0636/J0637

DATE RECEIVED : 10/20/93
DATE PREPARED : 10/22/93
DATE ANALYZED : 10/29/93

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	RPD	QC LIMITS	
		%REC	%REC		RPD	%REC
Naphthalene	J0636/J0637	70	69	1	23	25-97
1-Methylnaphthalene		70	69	1	24	48-101
Acenaphthene		69	69	0	24	57-104
Fluorene		62	65	5	28	34-118
Pyrene		73	73	0	30	58-148
Chrysene		69	69	0	36	48-118

* = Diluted Out



ENSECO-WADSWORTH/
Laboratories

LAB ID : 3J2006-11
MATRIX : WATER

DATE RECEIVED : 10/20/93

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
INORGANIC PARAMETERS - METALS

ELEMENT	DATE PREPARED	DATE ANALYZED	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC	LAB ID
Lead (furnace)	11/04/93	11/05/93	98	95	3	24 76-124	3J2006-1

* = Diluted out



ENSECO-WADSWORTH/ INT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3J2006-BK
MATRIX : WATER

DATE RECEIVED: 10/20/93

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Total Dissolved Solids	10/21-10/22/93	ND	5	mg/L
Tot Recoverable Pet Hydrocarbons	11/ 1/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS

MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS
WET CHEMISTRY

PARAMETER	DATE	DATE	LCS	QC LIMITS		LC
	PREPARED	ANALYZED	%REC	RPD	%REC	
Total Dissolved Solids	10/21/93	10/22/93	101	15	80-112	



ENSECO-WADSWORTH/ALERT
Laboratories

LAB ID: 3J2006-20
MATRIX: WATER

DATE RECEIVED: 10/20/93
DATE PREP'D: 10/21/93
DATE ANALYZED: 10/22/93

DUPLICATE

COMPOUND	SAMPLE	DUPLICATE	RPD
Total Dissolved Solids	3600	3500	3

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

Client: ABB Project Name/Number: NAS Key West
 Samples Received By: Carol McNulty Date Received: 10/20/93
 (Signature)
 Sample Evaluation Form By: Carol McNulty LAB No: 7997/3J2006
 (Signature)

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

Cooler # Temp 3 °C Cooler # Temp 4 °C 4°C
 Cooler # Temp 3 °C Cooler # Temp 4 °C

Comments: _____

ENSECO WADSWORTH/ALERT LABORATORIES No. 32903

DIVISION OF CORNING LAB SERVICES, INC.

CLIENT CODE _____

QUOTE / SAR NUMBER _____

Chain-of Custody Record

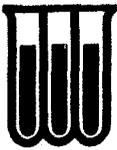
1) ENSECO-WADSWORTH/ALERT LABORATORIES
 DIVISION OF CORNING LAB SERVICES, INC.
 4101 SHUFFEL DR. N.W.
 NORTH CANTON, OHIO 44720
 PHONE (216) 497-9396 FAX (216) 497-0772

2) ENSECO-WADSWORTH/ALERT LABORATORIES
 DIVISION OF CORNING LAB SERVICES, INC.
 450 WILLIAM PITT WAY
 PITTSBURGH, PA 15238
 PHONE (412) 826-5477 FAX (412) 826-5571

3) ENSECO-WADSWORTH/ALERT LABORATORIES
 DIVISION OF CORNING LAB SERVICES, INC.
 5910 BRECKENRIDGE PKWY., STE. H
 TAMPA, FL 33610
 PHONE (813) 621-0784 FAX (813) 623-6021

PROJ. NO. ABB-FS		PROJECT NAME/LOCATION NAS Key West Job: Engine Test Cell				NO. OF CONTAINERS	PARAMETER						REMARKS
SAMPLERS: (Signature) <i>Rysz Del...</i>							<div style="display: flex; justify-content: space-around;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">CO₂/CO₂</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">F₂B</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">D₂H</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">T₂H</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">P₂B</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TDS</div> </div>						
STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION								
	11/18/93	1150		X	EQUIPMENT SLURRY	8	2	2	2	1	1		
	11/18/93	1200		X	MW 14	8	2	2	2	1	1		
	11/18/93	1210		X	MW 4	8	2	2	2	1	1		
	11/18/93	1215		X	MW 7	8	2	2	2	1	1		
	11/18/93	—		X	DUPLICATE 1	8	2	2	2	1	1		
	11/18/93	1235		X	MW 2	8	2	2	2	1	1		
	11/18/93	1250		X	MW 19D	8	2	2	2	1	1		
	11/18/93	1255		X	MW 15	8	2	2	2	1	1		
	11/18/93	1300		X	MW 10	8	2	2	2	1	1		
	11/18/93	1310		X	MW 1	8	2	2	2	1	1		
	11/18/93	—		X	DUPLICATE 2	8	2	2	2	1	1		
	11/18/93	1520		X	MW 9	8	2	2	2	1	1		
	11/18/93	1535		X	MW 5	8	2	2	2	1	1		
	11/18/93	1540		X	MW 20D	8	2	2	2	1	1		
	11/18/93	1555		X	MW 3	8	2	2	2	1	1		

Relinquished by: (Signature) <i>Rysz Del...</i>	Date / Time 11/18/93 1500	Received by: (Signature) <i>Carol McHarty</i>	Date / Time 11/20/93	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks 11/20/93 Received by HCB 11/18/93 PH ... By ... to ...		



W. S. WORTH/ALERT
L. DRATORIES
 Sampling, testing, mobile labs

5910 Breckenridge Pkwy.
 Suite H
 Tampa, FL 33610

Chain of Custody Record
 (813) 621-0784
 Fax (813) 623-6021

Record _____ of _____
 # **0777**

Client:		Project Name / Location			No. Of CONTAINERS	Parameter						Remarks	
Sampler(s)		Project #:				VOC-	PAH-	METALS-	TRPH-	EDB-			
Item #	Date	Time	MATRIX	Sample Location									
1	11/15	11:15	11-0	11-11	1	1	2	1	1	1			
2	11/15	11:20	11-0	11-12	1			1	1	2	1		
3	11/15	11:30	11-0	11-17									
4	11/15	11:35	11-0	11-18				1	1				
5	11/15	11:40	11-0	11-19	1			1					
6	11/15	11:45	11-0	11-20	1			1	1				
7	11/15	11:50	11-0	11-21	1			1	1				
8	11/15	11:55	11-0	11-13	1	1	2			2			
9	11/15	12:01	11-0	11-22	1								
10			11-0										
11													

Total Containers **13**

Number of Coolers in Shipment **5**

Bailers **1**

Report To:	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments: 11/15/15 11-11 11-12 11-17 11-18 11-19 11-20 11-21 11-22	1		11/15/15	11/15/15	11/15/15	11:15
	2					
	3					
	4					
	5					
	6					

Original Accompanies Shipment



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-14 KEY WEST-NAS

WO #: I0973201
LAB #: B3L020011-001
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----
1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Bromodichloromethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Bromoform	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Bromomethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Carbon tetrachloride	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Chlorobenzene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Dibromochloromethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Chloroethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
2-Chloroethyl vinyl ether	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Chloroform	ND	100	USEPA 601/2	12/09-12/10/93	3347
Chloromethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichlorobenzene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,3-Dichlorobenzene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,4-Dichlorobenzene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Dichlorodifluoromethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloroethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
cis-1,2-Dichloroethene	480	100	USEPA 601/2	12/09-12/10/93	3347106
trans-1,2-Dichloroethene	1,400	100	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloropropane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
cis-1,3-Dichloropropene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
trans-1,3-Dichloropropene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	118	(78 - 122)			
Trifluorotoluene	100	(73 - 131)			

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-14 KEY WEST-NAS

WO #: I0973201
LAB #: B3L020011-001
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylbenzene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Trichlorofluoromethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Methylene chloride	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,1,2,2-Tetrachloroethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Tetrachloroethene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Toluene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,1,1-Trichloroethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
1,1,2-Trichloroethane	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Trichloroethene	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Vinyl chloride	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Xylenes, Total	ND	100	USEPA 601/2	12/09-12/10/93	3347106
Methyl tert-butyl ether	ND	100	USEPA 601/2	12/09-12/10/93	3347106

SURROGATE RECOVERY

±

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

118
100

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-15 KEY WEST-NAS

WO #: I0975101
LAB #: B3L020011-002
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----					
PARAMETER	1 OF 2		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
Benzene	9.3	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromodichloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromoform	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromomethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Carbon tetrachloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Dibromochloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chloroform	ND	1.0	USEPA 601/2	12/09-12/10/93	3347
Chloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
cis-1,2-Dichloroethene	1,300 E	1.0	USEPA 601/2	12/09-12/10/93	3347106
trans-1,2-Dichloroethene	1,700 E	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloropropane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
SURROGATE RECOVERY					
		$\frac{1}{2}$	ACCEPTABLE LIMITS		
Bromochloromethane	202*		(78 - 122)		
Trifluorotoluene	100		(73 - 131)		

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT

* SURROGATES OUT OF CONTROL

E ESTIMATED RESULT. CONCENTRATION EXCEEDS CALIBRATION RANGE.



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-15 KEY WEST-NAS

WO #: I0975101
LAB #: B3L020011-002
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylbenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Trichlorofluoromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Methylene chloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Tetrachloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Toluene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,1-Trichloroethane	3.9	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Trichloroethene	44	1.0	USEPA 601/2	12/09-12/10/93	3347106
Vinyl chloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Xylenes, Total	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

202*
100

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT
• SURROGATES OUT OF CONTROL



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-15 KEY WEST-NAS

WO #: I0975201
LAB #: B3L020011-002
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----
1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Bromodichloromethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Bromoform	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Bromomethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Carbon tetrachloride	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Chlorobenzene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Dibromochloromethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Chloroethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
2-Chloroethyl vinyl ether	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Chloroform	ND	20	USEPA 601/2	12/09-12/10/93	3347
Chloromethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichlorobenzene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,3-Dichlorobenzene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,4-Dichlorobenzene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Dichlorodifluoromethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloroethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
cis-1,2-Dichloroethene	980	20	USEPA 601/2	12/09-12/10/93	3347106
trans-1,2-Dichloroethene	2,800	20	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloropropane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
cis-1,3-Dichloropropene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
trans-1,3-Dichloropropene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
<u>SURROGATE RECOVERY</u>					
	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	139*	(78 - 122)			
Trifluorotoluene	100	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT

* SURROGATES OUT OF CONTROL



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-15 KEY WEST-NAS

WO #: I0975201
LAB #: B3L020011-002
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylbenzene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Trichlorofluoromethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Methylene chloride	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,1,2,2-Tetrachloroethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Tetrachloroethene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Toluene	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,1,1-Trichloroethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
1,1,2-Trichloroethane	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Trichloroethene	41	20	USEPA 601/2	12/09-12/10/93	3347106
Vinyl chloride	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Xylenes, Total	ND	20	USEPA 601/2	12/09-12/10/93	3347106
Methyl tert-butyl ether	ND	20	USEPA 601/2	12/09-12/10/93	3347106

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

139*
100

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT
* SURROGATES OUT OF CONTROL



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

EQUIPMENT BLANK KEY WEST-NAS

WO #: I0976101
LAB #: B3L020011-003
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----					
PARAMETER	RESULT	REPORTING	METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	(ug/L)	LIMIT			
Benzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromodichloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromoform	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromomethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Carbon tetrachloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Dibromochloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chloroform	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloropropane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
SURROGATE RECOVERY					
	%	ACCEPTABLE LIMITS			
Bromochloromethane	103	(78 - 122)			
Trifluorotoluene	100	(73 - 131)			

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

EQUIPMENT BLANK KEY WEST-NAS

WO #: I0976101
LAB #: B3L020011-003
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----

2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylbenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Trichlorofluoromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Methylene chloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Tetrachloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Toluene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Trichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Vinyl chloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Xylenes, Total	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

103
100

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

TRIP BLANK KEY WEST-NAS

WO #: I0978101
LAB #: B3L020011-004
MATRIX: WATER

DATE SAMPLED: 11/30/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----					
PARAMETER	1 OF 2		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
Benzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromodichloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromoform	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Bromomethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Carbon tetrachloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Dibromochloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Chloroform	ND	1.0	USEPA 601/2	12/09-12/10/93	3347
Chloromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1-Dichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,2-Dichloropropane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	119	(78 - 122)			
Trifluorotoluene	100	(73 - 131)			

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

TRIP BLANK KEY WEST-NAS

WO #: I0978101
LAB #: B3L020011-004
MATRIX: WATER

DATE SAMPLED: 11/30/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylbenzene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Trichlorofluoromethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Methylene chloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Tetrachloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Toluene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Trichloroethene	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Vinyl chloride	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Xylenes, Total	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	12/09-12/10/93	3347106

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

Bromochloromethane	119	(78 - 122)
Trifluorotoluene	100	(73 - 131)

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



ENSECO-WADSWORTH/
Laboratories

QUALITY CONTROL SECTION

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



ENSECO-WADSWORTH/
Laboratories

**QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY**

Wadsworth/ALERT Laboratories 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

Methylene chloride
Toluene
2-Butanone
Acetone

Semi-volatiles

Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate

Metals

Calcium
Magnesium
Sodium

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.



ENSECO-WADSWORTH/
Laboratories

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	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.



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B3L130000-091

MATRIX: WATER

----- GC VOLATILES -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	12/08/93	3347091
Bromodichloromethane	ND	1.0	12/08/93	3347091
Bromoform	ND	1.0	12/08/93	3347091
Bromomethane	ND	1.0	12/08/93	3347091
Carbon tetrachloride	ND	1.0	12/08/93	3347091
Chlorobenzene	ND	1.0	12/08/93	3347091
Dibromochloromethane	ND	1.0	12/08/93	3347091
Chloroethane	ND	1.0	12/08/93	3347091
2-Chloroethyl vinyl ether	ND	1.0	12/08/93	3347091
Chloroform	ND	1.0	12/08/93	3347091
Chloromethane	ND	1.0	12/08/93	3347091
1,2-Dichlorobenzene	ND	1.0	12/08/93	3347091
1,3-Dichlorobenzene	ND	1.0	12/08/93	3347091
1,4-Dichlorobenzene	ND	1.0	12/08/93	3347091
Dichlorodifluoromethane	ND	1.0	12/08/93	3347091
1,1-Dichloroethane	ND	1.0	12/08/93	3347091
1,2-Dichloroethane	ND	1.0	12/08/93	3347091
1,1-Dichloroethene	ND	1.0	12/08/93	3347091
cis-1,2-Dichloroethene	ND	1.0	12/08/93	3347091
trans-1,2-Dichloroethene	ND	1.0	12/08/93	3347091
1,2-Dichloropropane	ND	1.0	12/08/93	3347091
cis-1,3-Dichloropropene	ND	1.0	12/08/93	3347091
trans-1,3-Dichloropropene	ND	1.0	12/08/93	3347091
Ethylbenzene	ND	1.0	12/08/93	3347091

SURROGATE RECOVERY

±

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

103
99

(78 - 122)
(73 - 131)

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B3L130000-091
MATRIX: WATER

----- GC VOLATILES -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	12/08/93	3347091
Methylene chloride	ND	1.0	12/08/93	3347091
1,1,2,2-Tetrachloroethane	ND	1.0	12/08/93	3347091
Tetrachloroethene	ND	1.0	12/08/93	3347091
Toluene	ND	1.0	12/08/93	3347091
1,1,1-Trichloroethane	ND	1.0	12/08/93	3347091
1,1,2-Trichloroethane	ND	1.0	12/08/93	3347091
Trichloroethene	ND	1.0	12/08/93	3347091
Vinyl chloride	ND	1.0	12/08/93	3347091
Xylenes, Total	ND	1.0	12/08/93	3347091
Methyl tert-butyl ether	ND	1.0	12/08/93	3347091

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

103
99

(78 - 122)
(73 - 131)

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ERT
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B3L130000-106

MATRIX: WATER

----- GC VOLATILES -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	12/09-12/10/93	3347106
Bromodichloromethane	ND	1.0	12/09-12/10/93	3347106
Bromoform	ND	1.0	12/09-12/10/93	3347106
Bromomethane	ND	1.0	12/09-12/10/93	3347106
Carbon tetrachloride	ND	1.0	12/09-12/10/93	3347106
Chlorobenzene	ND	1.0	12/09-12/10/93	3347106
Dibromochloromethane	ND	1.0	12/09-12/10/93	3347106
Chloroethane	ND	1.0	12/09-12/10/93	3347106
2-Chloroethyl vinyl ether	ND	1.0	12/09-12/10/93	3347106
Chloroform	ND	1.0	12/09-12/10/93	3347106
Chloromethane	ND	1.0	12/09-12/10/93	3347106
1,2-Dichlorobenzene	ND	1.0	12/09-12/10/93	3347106
1,3-Dichlorobenzene	ND	1.0	12/09-12/10/93	3347106
1,4-Dichlorobenzene	ND	1.0	12/09-12/10/93	3347106
Dichlorodifluoromethane	ND	1.0	12/09-12/10/93	3347106
1,1-Dichloroethane	ND	1.0	12/09-12/10/93	3347106
1,2-Dichloroethane	ND	1.0	12/09-12/10/93	3347106
1,1-Dichloroethene	ND	1.0	12/09-12/10/93	3347106
cis-1,2-Dichloroethene	ND	1.0	12/09-12/10/93	3347106
trans-1,2-Dichloroethene	ND	1.0	12/09-12/10/93	3347106
1,2-Dichloropropane	ND	1.0	12/09-12/10/93	3347106
cis-1,3-Dichloropropene	ND	1.0	12/09-12/10/93	3347106
trans-1,3-Dichloropropene	ND	1.0	12/09-12/10/93	3347106
Ethylbenzene	ND	1.0	12/09-12/10/93	3347106

SURROGATE RECOVERY

†

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

111
100

(78 - 122)
(73 - 131)

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B3L130000-106
MATRIX: WATER

----- GC VOLATILES -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	12/09-12/10/93	3347106
Methylene chloride	ND	1.0	12/09-12/10/93	3347106
1,1,2,2-Tetrachloroethane	ND	1.0	12/09-12/10/93	3347106
Tetrachloroethene	ND	1.0	12/09-12/10/93	3347106
Toluene	ND	1.0	12/09-12/10/93	3347106
1,1,1-Trichloroethane	ND	1.0	12/09-12/10/93	3347106
1,1,2-Trichloroethane	ND	1.0	12/09-12/10/93	3347106
Trichloroethene	ND	1.0	12/09-12/10/93	3347106
Vinyl chloride	ND	1.0	12/09-12/10/93	3347106
Xylenes, Total	ND	1.0	12/09-12/10/93	3347106
Methyl tert-butyl ether	ND	1.0	12/09-12/10/93	3347106

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	111	(78 - 122)
Trifluorotoluene	100	(73 - 131)

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ ENT
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 3347091
LAB #: B3L130000-091 C
MATRIX: WATER

PREPARATION DATE: 12/08/93
DATE ANALYZED: 12/08/93

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Chlorobenzene	99	(58-133)
1,3-Dichlorobenzene	99	(81-115)
1,4-Dichlorobenzene	100	(84-115)
1,2-Dichlorobenzene	97	(85-119)
Dichlorodifluoromethane	73	(58-156)
Chloromethane	83	(61-129)
Vinyl chloride	98	(65-146)
Bromomethane	82	(44-153)
Chloroethane	98	(64-163)
Trichlorofluoromethane	88	(69-129)
1,1-Dichloroethene	89	(61-144)
Methylene chloride	99	(82-122)
trans-1,2-Dichloroethene	92	(73-139)
1,1-Dichloroethane	96	(64-124)
cis-1,2-Dichloroethene	91	(65-113)
Chloroform	112	(65-138)
1,1,1-Trichloroethane	101	(81-125)
Carbon tetrachloride	100	(80-134)
1,2-Dichloroethane	93	(76-119)
Trichloroethene	93	(75-123)
1,2-Dichloropropane	92	(80-131)
Bromodichloromethane	98	(61-133)
2-Chloroethyl vinyl ether	80	(24-158)
cis-1,3-Dichloropropene	86	(66-117)
trans-1,3-Dichloropropene	86	(83-146)
1,1,2-Trichloroethane	99	(81-133)
Tetrachloroethene	97	(71-137)
Dibromochloromethane	104	(87-130)
Bromoform	97	(58-138)
1,1,2,2-Tetrachloroethane	95	(70-126)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 3347091
LAB #: B3L130000-091 C
MATRIX: WATER

PREPARATION DATE: 12/08/93
DATE ANALYZED: 12/08/93

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Methyl tert-butyl ether	87	(70-133)
Benzene	98	(80-123)
Toluene	99	(80-119)
Chlorobenzene	100	(58-133)
Ethylbenzene	100	(89-120)
Xylenes, Total	99	(61-142)
1,3-Dichlorobenzene	95	(81-115)
1,4-Dichlorobenzene	95	(84-115)
1,2-Dichlorobenzene	95	(85-119)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 3347106
LAB #: B3L130000-106 C
MATRIX: WATER

PREPARATION DATE: 12/09/93
DATE ANALYZED: 12/09/93

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Chlorobenzene	103	(58-133)
1,3-Dichlorobenzene	94	(81-115)
1,4-Dichlorobenzene	95	(84-115)
1,2-Dichlorobenzene	90	(85-119)
Dichlorodifluoromethane	75	(58-156)
Chloromethane	85	(61-129)
Vinyl chloride	100	(65-146)
Bromomethane	70	(44-153)
Chloroethane	97	(64-163)
Trichlorofluoromethane	91	(69-129)
1,1-Dichloroethene	92	(61-144)
Methylene chloride	98	(82-122)
trans-1,2-Dichloroethene	94	(73-139)
1,1-Dichloroethane	100	(64-124)
cis-1,2-Dichloroethene	94	(65-113)
Chloroform	111	(65-138)
1,1,1-Trichloroethane	102	(81-125)
Carbon tetrachloride	102	(80-134)
1,2-Dichloroethane	97	(76-119)
Trichloroethene	108	(75-123)
1,2-Dichloropropane	96	(80-131)
Bromodichloromethane	108	(61-133)
2-Chloroethyl vinyl ether	89	(24-158)
cis-1,3-Dichloropropene	87	(66-117)
trans-1,3-Dichloropropene	86	(83-146)
1,1,2-Trichloroethane	102	(81-133)
Tetrachloroethene	99	(71-137)
Dibromochloromethane	112	(87-130)
Bromoform	102	(58-138)
1,1,2,2-Tetrachloroethane	82	(70-126)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 3347106
LAB #: B3L130000-106 C
MATRIX: WATER

PREPARATION DATE: 12/09/93
DATE ANALYZED: 12/09/93

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Methyl tert-butyl ether	90	(70-133)
Benzene	98	(80-123)
Toluene	99	(80-119)
Chlorobenzene	99	(58-133)
Ethylbenzene	100	(89-120)
Xylenes, Total	100	(61-142)
1,3-Dichlorobenzene	93	(81-115)
1,4-Dichlorobenzene	93	(84-115)
1,2-Dichlorobenzene	94	(85-119)



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

QC BATCH: 3347106
LAB #: B3L020011-001 S
MATRIX: WATER

WO #: I0973
PREPARATION DATE: 12/09/93
DATE ANALYZED: 12/10/93

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
Methyl tert-butyl ether	91	87	(75-108)	5	(0- 16)
Benzene	99	95	(70-117)	4	(0- 15)
Toluene	101	97	(70-117)	4	(0- 16)
Chlorobenzene	101	97	(58-133)	4	(0- 24)
Ethylbenzene	102	98	(84-106)	4	(0- 10)
Xylenes, Total	102	98	(84-128)	4	(0- 21)
1,3-Dichlorobenzene	95	91	(81-115)	4	(0- 17)
1,4-Dichlorobenzene	95	92	(84-115)	4	(0- 15)
1,2-Dichlorobenzene	96	93	(85-119)	4	(0- 17)
Dichlorodifluoromethane	74	71	(40-160)	3	(0- 20)
Chloromethane	84	79	(75-131)	7	(0- 21)
Vinyl chloride	99	95	(44-176)	5	(0- 22)
Bromomethane	79	80	(37-145)	1	(0- 18)
Chloroethane	100	95	(82-121)	5	(0- 23)
Trichlorofluoromethane	88	86	(87-131)	3	(0- 14)
1,1-Dichloroethene	90	86	(43-131)	5	(0- 28)
Methylene chloride	101	96	(82-122)	5	(0- 19)
trans-1,2-Dichloroethene	93	89	(81-115)	4	(0- 17)
1,1-Dichloroethane	97	95	(83-117)	3	(0- 17)
cis-1,2-Dichloroethene	97	91	(70-130)	7	(0- 20)
Chloroform	111	107	(85-109)	4	(0- 12)
1,1,1-Trichloroethane	99	92	(81-125)	8	(0- 14)
Carbon tetrachloride	98	94	(81-129)	4	(0- 16)
1,2-Dichloroethane	95	89	(75-139)	7	(0- 16)
Trichloroethene	89	94	(75-123)	5	(0- 13)
1,2-Dichloropropane	96	94	(75-123)	3	(0- 15)
Bromodichloromethane	106	97	(61-133)	9	(0- 22)
2-Chloroethyl vinyl ether	56	55	(50-156)	2	(0- 21)
cis-1,3-Dichloropropene	86	80	(78-122)	7	(0- 14)
trans-1,3-Dichloropropene	87	82	(65-128)	6	(0- 21)
1,1,2-Trichloroethane	103	97	(81-133)	5	(0- 17)
Tetrachloroethene	96	92	(75-127)	4	(0- 13)
Dibromochloromethane	95	98	(87-130)	4	(0- 21)
Bromoform	94	90	(75-125)	5	(0- 14)
1,1,2,2-Tetrachloroethane	102	94	(70-126)	8	(0- 19)

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



WORTH/ALERT
LABORATORIES
Sampling, testing, mobile labs

5910 Breckenridge Pkwy.
Suite H
Tampa, FL 33610

Chain of Custody Record

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

Record _____ of _____
1535

Client: AMS-ES			Project Name / Location: Key West LAB		No. Of CON-TAINERS	Parameter										Remarks	
Sampler(s): R. Durham			Project #: JTI - Palm			VOC - 6/1/02	PAH -	METALS -	TRPH -	EDB -							
Item #	Date	Time	MATRIX	Sample Location													
1	12/1/03	1508	GW	Florida Power Plant	3	3											
2	12/1/03	1511	↓	row 11	3	3											
3	12/1/03	1530		row 15	3	3											
4						3	3										
5						3	3										
6						3	3										
7						3	3										
8	11/3/03	240PM		H ₂ O	Temp 62.0	3	3										
9																	
10																	
11																	

Total Containers **24** Number of Coolers in Shipment **01** Bailers **0**

Report To:	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments: Blot 11/4/03/11/1/03 4/5/07	1	1-8	Earl Q. Eber	Fred Sy	11/3/03	1500
	2		R. Durham / AMS		12/1/03	1511
	3			Carol McHerty	12-1-03	1000
	4					
	5					
	6					

Original Accompanies Shipment

ENCO LABORATORIES
 REPORT # : 5695
 DATE REPORTED: January 18, 1994
 REFERENCE : NAS Key West

PAGE 3 OF 6

RESULTS OF ANALYSIS

EPA METHOD 8010 - VOLATILE HALOCARBONS	MW-14 93-42*	MW-15 94-07*	Units
Dichlorodifluoromethane	1 U	1 U	µg/L
Chloromethane	1 U	1 U	µg/L
Vinyl Chloride	1 U	1 U	µg/L
Bromomethane	1 U	1 U	µg/L
Chloroethane	1 U	1 U	µg/L
Trichlorofluoromethane	1 U	1 U	µg/L
1,1-Dichloroethene	1 U	1 U	µg/L
Methylene Chloride	1 U	1 U	µg/L
t-1,2-Dichloroethene	70	170	µg/L
1,1-Dichloroethane	1 U	1 U	µg/L
Chloroform	1 U	1 U	µg/L
1,1,1-Trichloroethane	1 U	1 U	µg/L
Carbon Tetrachloride	1 U	1 U	µg/L
1,2-Dichloroethane	1	3	µg/L
1,2-Dichloropropane	1 U	1 U	µg/L
Trichloroethene	1 U	2	µg/L
Bromodichloromethane	1 U	1 U	µg/L
c-1,3-Dichloropropene	1 U	1 U	µg/L
t-1,3-Dichloropropene	1 U	1 U	µg/L
1,1,2-Trichloroethane	1 U	1 U	µg/L
Tetrachloroethene	1 U	1 U	µg/L

* = Analyte values confirmed by multiple sample analyses
 ** = Analyte values determined from a 1:25000 dilution of the sample; presence of strong foaming agent prevents analysis at lower dilutions
 U = Analyte not detected to indicated level

ENCO LABORATORIES
 REPORT # : 5695
 DATE REPORTED: January 18, 1994
 REFERENCE : NAS Key West

PAGE 4 OF 6

RESULTS OF ANALYSIS

EPA METHOD 8010 - VOLATILE HALOCARBONS	MW-14 93-42*	MW-15 94-07*	units
Dibromochloromethane	1 U	1 U	µg/L
Chlorobenzene	1 U	1 U	µg/L
Bromoform	1 U	1 U	µg/L
1,1,2,2-Tetrachloroethane	1 U	1 U	µg/L
1,3-Dichlorobenzene	1 U	1 U	µg/L
1,4-Dichlorobenzene	1 U	1 U	µg/L
1,2-Dichlorobenzene	1 U	1 U	µg/L
<i>cis</i> -1,2-Dichloroethane/ 2,2-Dichloropropane ***	54	160	µg/L
Surrogates:	% Recov	% Recov	Limits
Bromofluorobenzene	97	98	44-149
Date Analyzed	01/14/94	01/14/94	

* = Analyte values confirmed by multiple sample analyses
 * = Analyte values determined from a 1:25000 dilution of the sample; presence of strong foaming agent prevents analysis at lower dilutions
 *** = Additional parameters detected which are not part of EPA Method 8010 list
 U = Analyte not detected to indicated level

ENCO LABORATORIES

REPORT # : 5695

DATE REPORTED: January 18, 1994

REFERENCE : NAS Key West

PAGE 5 OF 6

RESULTS OF ANALYSIS

<u>EPA METHOD 8010 - VOLATILE HALOCARBONS</u>	<u>Laboratory Blank</u>	<u>units</u>
Dichlorodifluoromethane	5 U	µg/kg
Chloromethane	5 U	µg/kg
Vinyl Chloride	5 U	µg/kg
Bromomethane	5 U	µg/kg
Chloroethane	5 U	µg/kg
Trichlorofluoromethane	5 U	µg/kg
1,1-Dichloroethene	5 U	µg/kg
Methylene Chloride	5 U	µg/kg
t-1,2-Dichloroethene	5 U	µg/kg
1,1-Dichloroethane	5 U	µg/kg
Chloroform	5 U	µg/kg
1,1,1-Trichloroethane	5 U	µg/kg
Carbon Tetrachloride	5 U	µg/kg
1,2-Dichloroethane	5 U	µg/kg
1,2-Dichloropropane	5 U	µg/kg
Trichloroethene	5 U	µg/kg
Bromodichloromethane	5 U	µg/kg
c-1,3-Dichloropropene	5 U	µg/kg
t-1,3-Dichloropropene	5 U	µg/kg
1,1,2-Trichloroethane	5 U	µg/kg
Tetrachloroethane	5 U	µg/kg
Dibromochloromethane	5 U	µg/kg
Chlorobenzene	5 U	µg/kg
Bromoform	5 U	µg/kg
1,1,2,2-Tetrachloroethane	5 U	µg/kg
1,3-Dichlorobenzene	5 U	µg/kg
1,4-Dichlorobenzene	5 U	µg/kg
1,2-Dichlorobenzene	5 U	µg/kg

<u>Surrogate:</u>	<u>% Recov</u>	<u>Limits</u>
Bromofluorobenzene	104	44-149
Date Analyzed	01/14/94	

U = Analyte not detected to indicated level

ENCO LABORATORIES

REPORT # : 5695
 DATE REPORTED: January 18, 1994
 REFERENCE : NAS Key West

PAGE 6 OF 6

QUALITY CONTROL DATA

<u>Parameter</u>	<u>% Recovery MB/M&D/LCS</u>	<u>% Recovery Limits</u>	<u>RPD</u>	<u>RPD Limit</u>
<u>EPA 8010</u>				
Methylene Chloride	110/104/ 92	57-156	6	35
Chloroform	113/ 99/ 96	53-161	13	26
Carbon Tetrachloride	129/108/105	55-157	18	33
Trichloroethene	112/ 98/ 91	60-154	13	31
Tetrachloroethene	109/103/ 93	56-153	6	23
Chlorobenzene	102/106/ 97	61-135	4	28
<u>TCLP METALS</u>				
Lead, 7420	98/ 94/ 90	63-135	4	23



ENSECO-WADSWORTH/ Laboratories
Division of Corning Lab Services, Inc

5910 Breckenridge Parkway, Suite H Tampa, FL 33610
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ANALYTICAL REPORT

KEY WEST NAS-JET ENG. TEST CELL

ROGER DURHAM

ABB ENVIRONMENTAL SERVICES

ENSECO-WADSWORTH/ALERT LABORATORIES
Certification Numbers: E84059, HRS84297
FDEP CompQAP: 870270G

Chris Amstutz
Project Manager

Randall C. Grubbs
Laboratory Director - Florida

December 14, 1993



ENSECO-WADSWORTH/ 117
Laboratories

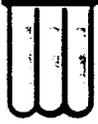
CASE NARRATIVE

LABORATORY ID NUMBER: B3L020011

ORGANICS

Volatile Organic Compounds by GC

Due to suspected matrix interference, surrogate recoveries for bromochloromethane for the volatile organic compound analyses for sample numbers B3L020011-001, 002 were outside laboratory established control limits. A second sample preparation and analysis was performed at a dilution in order to confirm the analytical results.



ENSECO-WADSWORTH/
Laboratories

ANALYTICAL METHODS SUMMARY

Enseco-Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

Parameters

Methods

Volatile Organics

USEPA 601/2

References:

USEPA Longbottom, J. and Lichtenberg, J., Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water
EMSL: Cincinnati, OH, July 1982 and its updates.



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-14 KEY WEST-NAS

WO #: I0973101
LAB #: B3L020011-001
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

PARAMETER	GC Volatiles		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	1 OF RESULT (ug/L)	2 REPORTING LIMIT			
Benzene	1.6	1.0	USEPA 601/2	12/09/93	3347091
Bromodichloromethane	ND	1.0	USEPA 601/2	12/09/93	3347091
Bromoform	ND	1.0	USEPA 601/2	12/09/93	3347091
Bromomethane	ND	1.0	USEPA 601/2	12/09/93	3347091
Carbon tetrachloride	ND	1.0	USEPA 601/2	12/09/93	3347091
Chlorobenzene	ND	1.0	USEPA 601/2	12/09/93	3347091
Dibromochloromethane	ND	1.0	USEPA 601/2	12/09/93	3347091
Chloroethane	ND	1.0	USEPA 601/2	12/09/93	3347091
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	12/09/93	3347091
Chloroform	ND	1.0	USEPA 601/2	12/09/93	33470
Chloromethane	ND	1.0	USEPA 601/2	12/09/93	3347091
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09/93	3347091
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09/93	3347091
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	12/09/93	3347091
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	12/09/93	3347091
1,1-Dichloroethane	ND	1.0	USEPA 601/2	12/09/93	3347091
1,2-Dichloroethane	ND	1.0	USEPA 601/2	12/09/93	3347091
1,1-Dichloroethene	ND	1.0	USEPA 601/2	12/09/93	3347091
cis-1,2-Dichloroethene	950 E	1.0	USEPA 601/2	12/09/93	3347091
trans-1,2-Dichloroethene	1,300 E	1.0	USEPA 601/2	12/09/93	3347091
1,2-Dichloropropane	ND	1.0	USEPA 601/2	12/09/93	3347091
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09/93	3347091
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	12/09/93	3347091
<u>SURROGATE RECOVERY</u>		<u>%</u>	<u>ACCEPTABLE LIMITS</u>		
Bromochloromethane	187*		(78 - 122)		
Trifluorotoluene	102		(73 - 131)		

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT

* SURROGATES OUT OF CONTROL

E ESTIMATED RESULT. CONCENTRATION EXCEEDS CALIBRATION RANGE.



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW-14 KEY WEST-NAS

WO #: I0973101
LAB #: B3L020011-001
MATRIX: WATER

DATE SAMPLED: 12/01/93
DATE RECEIVED: 12/02/93

----- GC Volatiles -----

2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylbenzene	ND	1.0	USEPA 601/2	12/09/93	3347091
Trichlorofluoromethane	ND	1.0	USEPA 601/2	12/09/93	3347091
Methylene chloride	ND	1.0	USEPA 601/2	12/09/93	3347091
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	12/09/93	3347091
Tetrachloroethene	ND	1.0	USEPA 601/2	12/09/93	3347091
Toluene	ND	1.0	USEPA 601/2	12/09/93	3347091
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	12/09/93	3347091
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	12/09/93	3347091
Trichloroethene	1.5	1.0	USEPA 601/2	12/09/93	3347091
Vinyl chloride	ND	1.0	USEPA 601/2	12/09/93	3347091
Xylenes, Total	ND	1.0	USEPA 601/2	12/09/93	3347091
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	12/09/93	3347091

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	187*	(78 - 122)
Trifluorotoluene	102	(73 - 131)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT
* SURROGATES OUT OF CONTROL



ENSECO-WADSWORTH/ Laboratories
Division of Corning Lab Services, Inc.

5910 Breckenridge Parkway, Suite H 813-621-0784
Tampa, FL 33610 FAX 813-623-6021

ANALYTICAL REPORT

KEY WEST NAS - JET TEST CELL

ROGER DURHAM

ABB ENVIRONMENTAL SERVICES

ENSECO-WADSWORTH/ALERT LABORATORIES
Certification Numbers: E84059, HRS84297
FDEP CompQAP: 870270G

Chris Amstutz

Chris Amstutz
Project Manager

March 2, 1994



ENSECO-WADSWORTH/
Laboratories

EXECUTIVE SUMMARY - Detection Highlights

B4B240018

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNIT</u>	
MW 14				
cis-1,2-Dichloroethene	74	1.0	ug/L	USEPA 601/2
trans-1,2-Dichloroethene	180	1.0	ug/L	USEPA 601/2
MW 15				
cis-1,2-Dichloroethene	120	1.0	ug/L	USEPA 601/2
trans-1,2-Dichloroethene	280	1.0	ug/L	USEPA 601/2
Trichloroethene	1.8	1.0	ug/L	USEPA 601/2
MW 21				
cis-1,2-Dichloroethene	73	1.0	ug/L	USEPA 601/2
trans-1,2-Dichloroethene	6.6	1.0	ug/L	USEPA 601/2
MW 22				
cis-1,2-Dichloroethene	4.2	1.0	ug/L	USEPA 601/2
Trichloroethene	4.6	1.0	ug/L	USEPA 601/2
MW 24				
Benzene	3.8	1.0	ug/L	USEPA 601/2
cis-1,2-Dichloroethene	410E	1.0	ug/L	USEPA 601/2
trans-1,2-Dichloroethene	390E	1.0	ug/L	USEPA 601/2
Trichloroethene	2.4	1.0	ug/L	USEPA 601/2
cis-1,2-Dichloroethene	770	10	ug/L	USEPA 601/2
trans-1,2-Dichloroethene	890	10	ug/L	USEPA 601/2
DUPLICATE				
cis-1,2-Dichloroethene	73	1.0	ug/L	USEPA 601/2
trans-1,2-Dichloroethene	190	1.0	ug/L	USEPA 601/2



ENSECO-WADSWORTH/
Laboratories

ANALYTICAL METHODS SUMMARY

Enseco-Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

Parameters

Methods

Volatile Organics

USEPA 601/2

References:

USEPA Longbottom, J. and Lichtenberg, J., Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water
EML: Cincinnati, OH, July 1982 and its updates.



ENSECO-WADSWORTH/
Laboratories

SAMPLE SUMMARY

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

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
K4156	B4B240018-001	MW 14
K4157	B4B240018-002	MW 15
K4159	B4B240018-003	MW 21
K4160	B4B240018-004	MW 22
K4161	B4B240018-005	MW 23
K4162	B4B240018-006	MW 24
K4163	B4B240018-007	DUPLICATE
K4164	B4B240018-008	EQUIPMENT BLANK
K4165	B4B240018-009	TRIP BLANK



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 14

WO #: K4156101
LAB #: B4B240018-001
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----					
PARAMETER	1 OF 2		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	74	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	180	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	98	(78 - 122)			
Trifluorotoluene	96	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 14

WO #: K4156101
LAB #: B4B240018-001
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	40600
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

98
96

(78 - 122)
(73 - 131)

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 15

WO #: K4157101
LAB #: B4B240018-002
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

PARAMETER	GC Volatiles		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	1 OF RESULT (ug/L)	2 REPORTING LIMIT			
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	120	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	280	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	103	(78 - 122)			
Trifluorotoluene	96	(73 - 131)			

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 15

WO #: K4157101
LAB #: B4B240018-002
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	1.8	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	40600
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

103
96

(78 - 122)
(73 - 131)

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 21

WO #: K4159101
LAB #: B4B240018-003
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----					
1 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	73	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	6.6	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	109	(78 - 122)			
Trifluorotoluene	96	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 21

WO #: K4159101
LAB #: B4B240018-003
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	4060077
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

109
96

(78 - 122)
(73 - 131)

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



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MW 22

WO #: K4160101
LAB #: B4B240018-004
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	4.2	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	101	(78 - 122)			
Trifluorotoluene	96	(73 - 131)			

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 22

WO #: K4160101
LAB #: B4B240018-004
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	4.6	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	40600
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

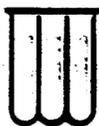
Bromochloromethane
Trifluorotoluene

101
96

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 23

WO #: K4161101
LAB #: B4B240018-005
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----					
PARAMETER	RESULT	REPORTING	METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	(ug/L)	LIMIT			
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
SURROGATE RECOVERY					
	$\%$	ACCEPTABLE LIMITS			
Bromochloromethane	91	(78 - 122)			
Trifluorotoluene	96	(73 - 131)			

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 23

WO #: K4161101
LAB #: B4B240018-005
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----

2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	40600
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	91	(78 - 122)
Trifluorotoluene	96	(73 - 131)

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 24

WO #: K4162101
LAB #: B4B240018-006
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----					
1 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	3.8	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	410E	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	390E	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	118	(78 - 122)			
Trifluorotoluene	97	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT

E ESTIMATED RESULT. CONCENTRATION EXCEEDS CALIBRATION RANGE.



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 24

WO #: K4162101
LAB #: B4B240018-006
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	2.4	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	4060077
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

118
97

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 24

WO #: K4162201
LAB #: B4B240018-006
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----					
PARAMETER	1 OF 2		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
Benzene	ND	10	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	10	USEPA 601/2	02/28/94	4060077
Bromoform	ND	10	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	10	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	10	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	10	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	10	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	10	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	10	USEPA 601/2	02/28/94	4060077
Chloroform	ND	10	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	10	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	10	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	10	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	10	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	10	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	10	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	10	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	10	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	770	10	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	890	10	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	10	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	10	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	10	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	10	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>		<u>%</u>	<u>ACCEPTABLE LIMITS</u>		
Bromochloromethane	93		(78 - 122)		
Trifluorotoluene	97		(73 - 131)		

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MW 24

WO #: K4162201
LAB #: B4B240018-006
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> ($\mu\text{g/L}$)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	10	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	10	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	10	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	10	USEPA 601/2	02/28/94	4060077
Toluene	ND	10	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	10	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	10	USEPA 601/2	02/28/94	4060077
Trichloroethene	ND	10	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	10	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	10	USEPA 601/2	02/28/94	4060077
Methyl tert-butyl ether	ND	10	USEPA 601/2	02/28/94	4060077

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	93	(78 - 122)
Trifluorotoluene	97	(73 - 131)

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

DUPLICATE

WO #: K4163101
LAB #: B4B240018-007
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

PARAMETER	GC Volatiles		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
		1 OF 2			
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	73	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	190	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	99	(78 - 122)			
Trifluorotoluene	95	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

DUPLICATE

WO #: K4163101
LAB #: B4B240018-007
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	40600
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

99
95

(78 - 122)
(73 - 131)

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

EQUIPMENT BLANK

WO #: K4164101
LAB #: B4B240018-008
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----					
PARAMETER	1 OF 2		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	97	{ 78 - 122)			
Trifluorotoluene	96	{ 73 - 131)			

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



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

EQUIPMENT BLANK

WO #: K4164101
LAB #: B4B240018-008
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	40600
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	406007.

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

97
96

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

TRIP BLANK

WO #: K4165101
LAB #: B4B240018-009
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----					
PARAMETER	RESULT	REPORTING	METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	(ug/L)	LIMIT			
Benzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromodichloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromoform	ND	1.0	USEPA 601/2	02/28/94	4060077
Bromomethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Carbon tetrachloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Chlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dibromochloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloroform	ND	1.0	USEPA 601/2	02/28/94	4060077
Chloromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,2-Dichloropropane	ND	1.0	USEPA 601/2	02/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	02/28/94	4060077
Ethylbenzene	ND	1.0	USEPA 601/2	02/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	95	(78 - 122)			
Trifluorotoluene	96	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

TRIP BLANK

WO #: K4165101
LAB #: B4B240018-009
MATRIX: WATER

DATE SAMPLED: 2/23/94
DATE RECEIVED: 2/24/94

----- GC Volatiles -----

2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Methylene chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Tetrachloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Toluene	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	02/28/94	4060077
Trichloroethene	ND	1.0	USEPA 601/2	02/28/94	4060077
Vinyl chloride	ND	1.0	USEPA 601/2	02/28/94	4060077
Xylenes, Total	ND	1.0	USEPA 601/2	02/28/94	4060
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	02/28/94	4060077

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

95
96

(78 - 122)
(73 - 131)

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



ENSECO-WADSWORTH/
Laboratories

QUALITY CONTROL SECTION

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



ENSECO-WADSWORTH/ALERT

Laboratories

QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY

Wadsworth/ALERT Laboratories 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.

<u>Volatiles</u>	<u>Semi-volatiles</u>	<u>Metals</u>
Methylene chloride	Dimethyl phthalate	Calcium
Toluene	Diethyl 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.



ENSECO-WADSWORTH/ALERT

Laboratories

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	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.



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4C010000-077

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	2/28/94	4060077
Bromodichloromethane	ND	1.0	2/28/94	4060077
Bromoform	ND	1.0	2/28/94	4060077
Bromomethane	ND	1.0	2/28/94	4060077
Carbon tetrachloride	ND	1.0	2/28/94	4060077
Chlorobenzene	ND	1.0	2/28/94	4060077
Dibromochloromethane	ND	1.0	2/28/94	4060077
Chloroethane	ND	1.0	2/28/94	4060077
2-Chloroethyl vinyl ether	ND	1.0	2/28/94	4060077
Chloroform	ND	1.0	2/28/94	4060077
Chloromethane	ND	1.0	2/28/94	4060077
1,2-Dichlorobenzene	ND	1.0	2/28/94	4060077
1,3-Dichlorobenzene	ND	1.0	2/28/94	4060077
1,4-Dichlorobenzene	ND	1.0	2/28/94	4060077
Dichlorodifluoromethane	ND	1.0	2/28/94	4060077
1,1-Dichloroethane	ND	1.0	2/28/94	4060077
1,2-Dichloroethane	ND	1.0	2/28/94	4060077
1,1-Dichloroethene	ND	1.0	2/28/94	4060077
cis-1,2-Dichloroethene	ND	1.0	2/28/94	4060077
trans-1,2-Dichloroethene	ND	1.0	2/28/94	4060077
1,2-Dichloropropane	ND	1.0	2/28/94	4060077
cis-1,3-Dichloropropene	ND	1.0	2/28/94	4060077
trans-1,3-Dichloropropene	ND	1.0	2/28/94	4060077
Ethylbenzene	ND	1.0	2/28/94	4060077
Trichlorofluoromethane	ND	1.0	2/28/94	4060077
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>		
Bromochloromethane	95	(78 - 122)		
Trifluorotoluene	96	(73 - 131)		

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/LENT
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4C010000-077

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Methylene chloride	ND	1.0	2/28/94	4060077
1,1,2,2-Tetrachloroethane	ND	1.0	2/28/94	4060077
Tetrachloroethene	ND	1.0	2/28/94	4060077
Toluene	ND	1.0	2/28/94	4060077
1,1,1-Trichloroethane	ND	1.0	2/28/94	4060077
1,1,2-Trichloroethane	ND	1.0	2/28/94	4060077
Trichloroethene	ND	1.0	2/28/94	4060077
Vinyl chloride	ND	1.0	2/28/94	4060077
Xylenes, Total	ND	1.0	2/28/94	4060077
Methyl tert-butyl ether	ND	1.0	2/28/94	4060077

SURROGATE RECOVERY
Bromochloromethane
Trifluorotoluene

%
95
96

ACCEPTABLE LIMITS
(78 - 122)
(73 - 131)

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4060077
LAB #: B4C010C00-077 C

PREPARATION DATE: 2/28/94
DATE ANALYZED: 2/28/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Chlorobenzene	102	(58-133)
1,3-Dichlorobenzene	98	(81-115)
1,4-Dichlorobenzene	106	(84-115)
1,2-Dichlorobenzene	198	(85-119)
Dichlorodifluoromethane	85	(58-156)
Chloromethane	78	(61-129)
Vinyl chloride	104	(65-146)
Bromomethane	81	(44-153)
Chloroethane	98	(64-163)
Trichlorofluoromethane	86	(69-129)
1,1-Dichloroethene	97	(61-144)
Methylene chloride	99	(82-122)
trans-1,2-Dichloroethene	89	(73-139)
1,1-Dichloroethane	89	(64-124)
cis-1,2-Dichloroethene	99	(65-113)
Chloroform	109	(65-138)
1,1,1-Trichloroethane	100	(81-125)
Carbon tetrachloride	98	(80-134)
1,2-Dichloroethane	106	(76-119)
Trichloroethene	94	(75-123)
1,2-Dichloropropane	104	(80-131)
Bromodichloromethane	95	(61-133)
2-Chloroethyl vinyl ether	95	(24-158)
cis-1,3-Dichloropropene	80	(66-117)
trans-1,3-Dichloropropene	94	(83-146)
1,1,2-Trichloroethane	104	(81-133)
Tetrachloroethene	113	(71-137)
Dibromochloromethane	102	(87-130)
Bromoform	90	(58-138)
1,1,2,2-Tetrachloroethane	106	(70-126)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4060077
LAB #: B4C010000-077 C

PREPARATION DATE: 2/28/94
DATE ANALYZED: 2/28/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Methyl tert-butyl ether	98	(70-133)
Benzene	109	(80-123)
Toluene	111	(80-119)
Chlorobenzene	106	(58-133)
Ethylbenzene	114	(89-120)
Xylenes, Total	109	(61-142)
1,3-Dichlorobenzene	100	(81-115)
1,4-Dichlorobenzene	98	(84-115)
1,2-Dichlorobenzene	96	(85-119)

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

Client: ABB Project Name/Number: NAS Key West Flying Club
 Samples Received By: Carol McHulty Date Received: 2/24/94
 (Signature)
 Sample Evaluation Form By: Carol McHulty LAB No: _____
 (Signature)

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

Cooler # _____ Temp 2 °C Cooler # _____ Temp _____ °C
 Cooler # _____ Temp _____ °C Cooler # _____ Temp _____ °C

Comments: _____



**SWORTH/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
2724

Client: ABB-ES		Project Name / Location NAS Request for Gray Creek			No. OF CONTAINERS	Parameter										Remarks
Sampler(s)		Project #:				VOC - GUL/BUL	PAH -	METALS -	TRPH -	EDB -						
Item #	Date	Time	MATRIX	Sample Location												
1			GW		30	30										
2	2-23-94	1159	1120	mon 14	2	2										
3	7-23-94	1305	1120	mon 15	2	2										
4	7-23-94	1310	1120	mon 21	2	2										
5	7-23-94	1311	1120	mon 22	2	2										
6	7-23-94	1319	1120	mon 23	2	2										
7	7-23-94	1325	1120	mon 24	2	2										
8	7-23-94	1329	1120	Blank	2	2										
9	7-23-94		1120	Blank	2	2										
10	7-23-94		1120	Blank		3										
11			1120	Blank	1											

Total Containers

30

20

Number of Coolers in Shipment

01

Bailers

1

Report To:	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments: Blot AD11894 HCP Q/ST 1886	1	1-1	Earl Q Felder	Feld Sy	2/18/94	1400
	2		Ryan W	Ten Sy	2/23/94	1500
	3			Winn (Mc) Hultey	1-4/94	0930
	4					
	5					
	6					

Original Accompanies Shipment