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NAS KEY WEST  
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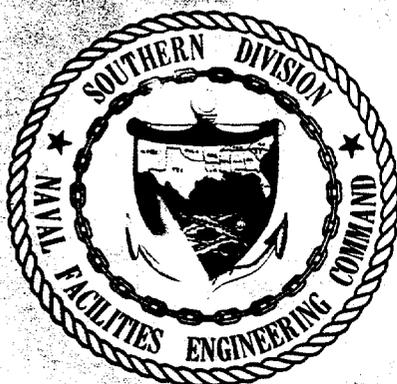
FINAL REMEDIAL INVESTIGATION REPORT PHASE 1 FOR SITE 1, SITE 3, SITE 4, SITE 5,  
SITE 7, SITE 8, SITE 9 AND SITE 10 APPENDIX G VOLUME 4 OF 5 NAS KEY WEST FL  
5/1/1991  
IT CORPORATION

# FINAL REPORT



## REMEDIAL INVESTIGATION - PHASE I FOR SITES 1, 3, 4, 5, 7, 8, 9, AND 10 APPENDIX G VOLUME IV

NAVAL AIR STATION - KEY WEST  
KEY WEST, FLORIDA  
CONTRACT NO. N62467-88-C-0196  
MAY, 1991



Prepared by:  
IT CORPORATION  
8600 HIDDEN RIVER PARKWAY, SUITE 100  
TAMPA, FLORIDA 33637

REMEDIAL INVESTIGATION/PHASE I REPORT  
FOR SITES 1, 3, 4, 5, 7, 8, 9, AND 10  
NAVAL AIR STATION - KEY WEST  
KEY WEST, FLORIDA

APPENDIX G - CERTIFICATES OF ANALYSIS  
VOLUME 4

PREPARED FOR

SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
CHARLESTON, SOUTH CAROLINA  
CONTRACT NUMBER N62467-88-C-0196

PREPARED BY

IT CORPORATION  
8600 HIDDEN RIVER PARKWAY  
SUITE 100  
TAMPA, FLORIDA 33637

IT PROJECT NUMBER 595392  
MAY 1991

RECEIVED

SEP. 24 1990

I.T. CORPORATION  
TAMPA, FLORIDA

**CERTIFICATE OF ANALYSIS**

IT Corporation  
3012 US Highway 301 North, Suite 1000  
Tampa, FL 33619  
ATTN: Mark Hampton

September 19, 1990

Job Number: ITCY 46209 (Appendix IX Data)

P.O. Number: 595392.08

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 07/19/90  
Number of Samples: Two (2)  
Sample Type: Soil

**I. Introduction**

On 07/19/90, two (2) soil samples arrived at the ITAS-Knoxville, Tennessee laboratory from the Naval Air Station, Key West, Florida. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

**II. Analytical Results/Methodology**

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected and the soil results are reported on dry weight basis.

The samples were analyzed for Appendix IX dioxins at the ITAS Special Analysis Laboratory, Knoxville, Tennessee. A copy of their report is included.

The samples were analyzed for Appendix IX organophosphorus pesticides and herbicides at the ITAS-San Jose, California laboratory. A copy of their report is also included.

The samples were analyzed for Appendix IX volatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 2/88 Statement of Work with modification for the analysis of the Appendix IX compounds.

Reviewed and Approved:

  
Alyce Moore  
Laboratory Manager

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

## II. Analytical Results/Methodology (continued)

The samples were analyzed for Appendix IX semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 2/88 Statement of Work with modification for the analysis of the Appendix IX compounds.

The samples were analyzed for Appendix IX organochlorine pesticides and PCB's by gas chromatography/electron capture detection (GC-ECD) in accordance with the EPA CLP 2/88 Statement of Work with modification for the analysis of the Appendix IX compounds.

The samples were analyzed for Appendix IX metals by cold vapor atomic absorption spectroscopy (CVAA) and inductively coupled plasma spectroscopy (ICP) in accordance with the CLP EPA 6/89 Statement of Work.

The samples were analyzed for total cyanide by manual distillation/colorimetric determination in accordance with the CLP EPA 6/89 Statement of Work.

The samples were analyzed for sulfide by iodometric titration based on EPA SW-846 method 9030.

## III. Quality Control

The volatiles analyses were performed on 07/30 and 07/31/90 by purge and trap with a W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The semivolatiles analyses were performed on 08/16, 08/21, 08/22, and 08/23/90 by direct injection of sample extract on a Restek RTX-5 capillary column on a Finnigan 4500 GC/MS/DS. The volatiles runs went well. There were some scheduling difficulties, but all samples were run within the RCRA holding time guideline of 14 days from collection. Standardization was done for all analytes; in the case of isobutanol, pyridine, and dioxane, the search was based on known characteristics from previous standard runs. These compounds tend to soil the system and cause false positives if standards are analyzed prior to sample analysis. The semivolatiles runs proceeded without problems. Standardization was done for all analytes. There were no other problems seen in the final review of the data for either the volatiles or semivolatiles fraction. Associated QC samples were analyzed with ITAS project ITCY 46179, sample 04-01-SED.

The Appendix IX organochlorine pesticide/PCB analyses were performed from 07/31 to 08/31/90 using a mixed phase (SP2250/2401) Varian 3740B and (SPB-5) Varian 3700-F instruments. All soil samples and the associated method blank were treated for sulfur interferences. The samples were analyzed for Appendix IX compounds by CLP methodology; therefore, if endrin aldehyde is present, it will be detected as endrin ketone. The alumina clean-up process causes this conversion. This clean-up was performed on 07/31/90 for the Appendix IX samples. Associated QC samples were analyzed with ITAS project ITCY 46179, sample 04-01-SED. No problems were encountered.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

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### III. Quality Control (continued)

The samples were digested on 08/01/90 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 08/02/90; the GFAA analysis for selenium was performed on 08/23/90; the remaining metals were analyzed by ICP on 08/15 and 08/17/90. All run QC was acceptable. Results for arsenic, lead, and thallium were reported from ICP due to major interferences encountered and adverse effects on the GFAA instrument caused by the sample. In all cases, the best achievable data were reported. Associated QC samples were analyzed with ITAS project ITCY 46179, sample 04-01-SED.

The samples were analyzed for cyanide on 07/30/90. Associated QC samples were analyzed with ITAS project ITCY 46179, sample 04-01-SED. No problems were encountered.

The samples were analyzed for sulfide on 07/24/90. Associated QC samples were analyzed with ITAS project ITCY 46179, sample 04-01-SED. No problems were encountered.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1383

<u>Compound</u>		<u>Compound</u>	
phenol	330 U	bis(2-chloroethoxy)methane	330 U
bis(2-chloroethyl)ether	330 U	2,4-dichlorophenol	330 U
2-chlorophenol	330 U	1,2,4-trichlorobenzene	330 U
1,3-dichlorobenzene	330 U	naphthalene	330 U
1,4-dichlorobenzene	330 U	4-chloroaniline	330 U
benzyl alcohol	330 U	hexachlorobutadiene	330 U
1,2-dichlorobenzene	330 U	4-chloro-3-methylphenol	330 U
2-methylphenol	330 U	2-methylnaphthalene	330 U
bis(2-chloroisopropyl)ether	330 U	hexachlorocyclopentadiene	330 U
4-methylphenol	330 U	2,4,6-trichlorophenol	330 U
m-nitroso-di-n-propylamine	330 U	2,4,5-trichlorophenol	1,600 U
hexachloroethane	330 U	2-chloronaphthalene	330 U
nitrobenzene	330 U	2-nitroaniline	1,600 U
isophorone	330 U	dimethyl phthalate	330 U
2-nitrophenol	330 U	acenaphthylene	330 U
2,4-dimethylphenol	330 U	2,6-dinitrotoluene	330 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1.0

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1383

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	1,600 U	anthracene	330 U
acenaphthene	330 U	di-n-butylphthalate	330 U
2,4-dinitrophenol	1,600 U	fluoranthene	330 U
4-nitrophenol	1,600 U	pyrene	330 U
dibenzofuran	330 U	butylbenzylphthalate	330 U
2,4-dinitrotoluene	330 U	3,3'-dichlorobenzidine	660 U
diethylphthalate	330 U	benzo(a)anthracene	330 U
4-chlorophenyl-phenylether	330 U	chrysene	330 U
fluorene	330 U	bis(2-ethylhexyl)phthalate	330 U
4-nitroaniline	1,600 U	di-n-octylphthalate	330 U
4,6-dinitro-2-methylphenol	1,600 U	benzo(b)fluoranthene	330 U
n-nitrosodiphenylamine <sup>1</sup>	330 U	benzo(k)fluoranthene	330 U
4-bromophenyl-phenylether	330 U	benzo(a)pyrene	330 U
hexachlorobenzene	330 U	indeno(1,2,3-cd)pyrene	330 U
pentachlorophenol	1,600 U	dibenzo(a,h)anthracene	330 U
phenanthrene	330 U	benzo(g,h,i)perylene	330 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1.0



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TECHNOLOGY  
CORPORATION

# ANALYTICAL SERVICES

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SEP 24 1990

I.T. CORPORATION  
TAMPA, FLORIDA

## CERTIFICATE OF ANALYSIS

IT Corporation  
3012 US Highway 301 North, Suite 1000  
Tampa, FL 33619  
ATTN: Mark Hampton

September 19, 1990

Job Number: ITCY 46209 (CLP Data)

P.O. Number: 595392.08

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 07/19/90  
Number of Samples: Eleven (11)  
Sample Type: Soil

### I. Introduction

On 07/19/90, eleven (11) soil samples arrived at the ITAS-Knoxville, Tennessee, laboratory from the Naval Air Station, Key West, Florida. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

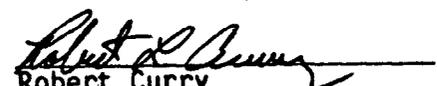
### II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that CLP data are not blank corrected and CLP soil results are reported on a dry weight basis. All other data are blank corrected, i.e., if any compound is found in the corresponding laboratory blank, it is subtracted from the analytical result before it is reported.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 2/88 Statement of Work.

The samples were analyzed for total organic carbon (TOC) at Galbraith Laboratories, Knoxville, Tennessee. The samples were not analyzed at ITAS-Knoxville due to instrument problems. In order to remain within holding times, the samples were analyzed at a backup laboratory. A separate laboratory report for this analysis is included.

Reviewed and Approved:

  
Robert Curry  
Laboratory Systems Manager

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

## II. Analytical Results/Methodology (continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCBs by gas chromatography/electron capture detection (GC/ECD) in accordance with the EPA CLP 2/88 Statement of Work.

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP 6/89 Statement of Work.

The samples were analyzed for total cyanide by manual distillation/colorimetric determination in accordance with the EPA CLP 6/89 Statement of Work.

## III. Quality Control

The volatiles analyses were performed on 07/30 and 07/31/90 by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The semivolatiles analyses were performed on 08/16, 08/21, 08/22, and 08/23/90 by direct injection of sample extract on a Restek RTX-5 capillary column on a Finnigan 4500 GC/MS/DS. The volatiles runs went well except that sample 04-03-SED tended to show a matrix effect in that either one internal standard or surrogate gave variant recovery in duplicate runs. The deviation in each case was only slightly outside limits and did not appear significant. Data from both runs were submitted. There were also some scheduling difficulties, but all samples were run within the RCRA holding time guideline of 14 days from collection. The semivolatiles runs proceeded without problems. In the semivolatiles TICs, several aldol or related carbonyl products (generated most likely during soil extraction) were seen, and were given "A" qualifiers to distinguish them from other species. Bromohexane (tentative) is also probably a carbonyl species from extraction; the spectrum here was ambiguous, but has been seen in soil blanks. Other species seen included poorly matched high molecular weight cyclics, and cholestane or stigmastane derivatives (primarily as late eluting peaks in 04-03-SED, and only marginally distinguishable from column background), and aromatics. There were no other problems seen in final review of the data for either the volatiles or semivolatiles fraction. Associated QC samples were analyzed with ITAS project ITCY 46151, sample 05-SED-U.

The pesticide/PCB analyses were performed from 07/31 to 08/31/90 using a mixed phase (SP2250/2401) Varian 3740B and (SPB-5) Varian 3700-F instruments. The analysis followed the EPA CLP 2/88 Statement of Work. All soil samples and the associated method blank were treated for sulfur interferences. This cleanup was performed on 08/01/90. No problems were encountered. Associated QC samples were analyzed with ITAS project ITCY 46151, sample 05-SED-U.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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### III. Quality Control (continued)

The samples were digested on 08/01/90 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 08/02/90; the GFAA analysis for selenium was performed on 08/23/90; the remaining metals were analyzed by ICP on 08/15 and 08/17/90. All run QC was acceptable. Results for arsenic, lead, and thallium were reported from ICP due to major interferences encountered and adverse effects on the GFAA instrument caused by the sample. In all cases, the best achievable data were reported. No other problems were encountered. Associated QC samples were analyzed with ITAS project ITCY 46151, sample 05-SED-U.

The samples were analyzed for cyanide on 07/30/90. No problems were encountered. Associated QC samples were analyzed with ITAS project ITCY 46151, sample 05-SED-U.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: VB0731

<u>Compound</u>		<u>Compound</u>	
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	5 U	1,1,2-trichloroethane	5 U
acetone	10 U	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

ent Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: VB0731

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-01-SED  
Lab Sample ID: LL3866

<u>Compound</u>		<u>Compound</u>	
chloromethane	11 U	1,2-dichloropropane	5 U
bromomethane	11 U	cis-1,3-dichloropropene	5 U
vinyl chloride	11 U	trichloroethene	5 U
chloroethane	11 U	dibromochloromethane	5 U
methylene chloride	3 J	1,1,2-trichloroethane	5 U
acetone	11 U	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	11 U
1,2-dichloroethene (total)	5 U	2-hexanone	11 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	11 U	toluene	4 J
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	11 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	3 J

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 8

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-01-SED  
Lab Sample ID: LL3866

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-02-SED  
Lab Sample ID: LL3867

<u>Compound</u>		<u>Compound</u>	
chloromethane	11 U	1,2-dichloropropane	5 U
bromomethane	11 U	cis-1,3-dichloropropene	5 U
vinyl chloride	11 U	trichloroethene	5 U
chloroethane	11 U	dibromochloromethane	5 U
methylene chloride	2 J	1,1,2-trichloroethane	5 U
acetone	11 U	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	11 U
1,2-dichloroethene (total)	5 U	2-hexanone	11 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	11 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	11 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 8

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-02-SED  
Lab Sample ID: LL3867

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-03-SED  
Lab Sample ID: LL3868

<u>Compound</u>		<u>Compound</u>	
chloromethane	11 U	1,2-dichloropropane	5 U
bromomethane	11 U	cis-1,3-dichloropropene	5 U
vinyl chloride	11 U	trichloroethene	5 U
chloroethane	11 U	dibromochloromethane	5 U
methylene chloride	3 J	1,1,2-trichloroethane	5 U
acetone	11 U	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	11 U
1,2-dichloroethene (total)	5 U	2-hexanone	11 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	11 U	toluene	2 J
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	11 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 6

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1386

<u>Compound</u>		<u>Compound</u>	
phenol	330 U	bis(2-chloroethoxy)methane	330 U
bis(2-chloroethyl)ether	330 U	2,4-dichlorophenol	330 U
2-chlorophenol	330 U	1,2,4-trichlorobenzene	330 U
1,3-dichlorobenzene	330 U	naphthalene	330 U
1,4-dichlorobenzene	330 U	4-chloroaniline	330 U
benzyl alcohol	330 U	hexachlorobutadiene	330 U
1,2-dichlorobenzene	330 U	4-chloro-3-methylphenol	330 U
2-methylphenol	330 U	2-methylnaphthalene	330 U
s(2-chloroisopropyl)ether	330 U	hexachlorocyclopentadiene	330 U
4-methylphenol	330 U	2,4,6-trichlorophenol	330 U
n-nitroso-di-n-propylamine	330 U	2,4,5-trichlorophenol	1,600 U
hexachloroethane	330 U	2-chloronaphthalene	330 U
nitrobenzene	330 U	2-nitroaniline	1,600 U
isophorone	330 U	dimethyl phthalate	330 U
2-nitrophenol	330 U	acenaphthylene	330 U
2,4-dimethylphenol	330 U	2,6-dinitrotoluene	330 U
benzoic acid	1,600 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1386

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	1,600 U	anthracene	330 U
acenaphthene	330 U	di-n-butylphthalate	330 U
2,4-dinitrophenol	1,600 U	fluoranthene	330 U
4-nitrophenol	1,600 U	pyrene	330 U
dibenzofuran	330 U	butylbenzylphthalate	330 U
2,4-dinitrotoluene	330 U	3,3'-dichlorobenzidine	660 U
diethylphthalate	330 U	benzo(a)anthracene	330 U
4-chlorophenyl-phenylether	330 U	chrysene	330 U
fluorene	330 U	bis(2-ethylhexyl)phthalate	330 U
4-nitroaniline	1,600 U	di-n-octylphthalate	330 U
4,6-dinitro-2-methylphenol	1,600 U	benzo(b)fluoranthene	330 U
n-nitrosodiphenylamine <sup>1</sup>	330 U	benzo(k)fluoranthene	330 U
4-bromophenyl-phenylether	330 U	benzo(a)pyrene	330 U
hexachlorobenzene	330 U	indeno(1,2,3-cd)pyrene	330 U
pentachlorophenol	1,600 U	dibenzo(a,h)anthracene	330 U
phenanthrene	330 U	benzo(g,h,i)perylene	330 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1386

Tentative Identification (1)

Concentration (2)

3-penten-2-one, 4-methyl- unknown (hydroxypentanone?)	340 A 2,400 A
2-pentanone, 4-hydroxy-4-methyl- unknown (C9 saturated hydrocarbon)	29,000 A 240
unknown (C9 saturated hydrocarbon)	190
unknown (C10 saturated hydrocarbon)	200
unknown	1,000 A
hexane, 2-bromo-	280
5-hexen-2-one, 5-methyl-	160 A
3-heptanone, 2,4-dimethyl- unknown	220 A 260

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-01-SED

Lab Sample ID: LL3891

Compound

phenol	1,800 U
bis(2-chloroethyl)ether	1,800 U
2-chlorophenol	1,800 U
1,3-dichlorobenzene	1,800 U
1,4-dichlorobenzene	1,800 U
benzyl alcohol	1,800 U
1,2-dichlorobenzene	1,800 U
2-methylphenol	1,800 U
bis(2-chloroisopropyl)ether	1,800 U
4-methylphenol	1,800 U
n-nitroso-di-n-propylamine	1,800 U
hexachloroethane	1,800 U
nitrobenzene	1,800 U
isophorone	1,800 U
2-nitrophenol	1,800 U
2,4-dimethylphenol	1,800 U
benzoic acid	8,600 U

Compound

bis(2-chloroethoxy)methane	1,800 U
2,4-dichlorophenol	1,800 U
1,2,4-trichlorobenzene	1,800 U
naphthalene	1,800 U
4-chloroaniline	1,800 U
hexachlorobutadiene	1,800 U
4-chloro-3-methylphenol	1,800 U
2-methylnaphthalene	1,800 U
hexachlorocyclopentadiene	1,800 U
2,4,6-trichlorophenol	1,800 U
2,4,5-trichlorophenol	8,600 U
2-chloronaphthalene	1,800 U
2-nitroaniline	8,600 U
dimethyl phthalate	1,800 U
acenaphthylene	1,800 U
2,6-dinitrotoluene	1,800 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90

Date Analyzed: 08/23/90

Dilution Factor: 5

% Moisture: 8

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-01-SED  
Lab Sample ID: LL3891

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	8,600 U	anthracene	1,800 U
acenaphthene	1,800 U	di-n-butylphthalate	1,800 U
2,4-dinitrophenol	8,600 U	fluoranthene	400 J
4-nitrophenol	8,600 U	pyrene	400 J
dibenzofuran	1,800 U	butylbenzylphthalate	1,800 U
2,4-dinitrotoluene	1,800 U	3,3'-dichlorobenzidine	3,600 U
diethylphthalate	1,800 U	benzo(a)anthracene	230 J
4-chlorophenyl-phenylether	1,800 U	chrysene	300 J
fluorene	1,800 U	bis(2-ethylhexyl)phthalate	390 J
-nitroaniline	8,600 U	di-n-octylphthalate	1,800 U
4,6-dinitro-2-methylphenol	8,600 U	benzo(b)fluoranthene	180 J
n-nitrosodiphenylamine <sup>1</sup>	1,800 U	benzo(k)fluoranthene	190 J
4-bromophenyl-phenylether	1,800 U	benzo(a)pyrene	1,800 U
hexachlorobenzene	1,800 U	indeno(1,2,3-cd)pyrene	1,800 U
pentachlorophenol	8,600 U	dibenzo(a,h)anthracene	1,800 U
phenanthrene	220 J	benzo(g,h,i)perylene	1,800 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 5  
% Moisture: 8

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-01-SED  
Lab Sample ID: LL3891

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
unknown (hydroxypentanone?)	5,700 AB
2-pentanone, 4-hydroxy-4-methyl-	66,000 AB
unknown	870 AB
5-hexen-2-one, 5-methyl-	5,000 AB
3-heptanone, 2,4-dimethyl-	8,300 AB
phosphoric acid, tris(3-methylphenyl) ester	880
unknown	1,700 A

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

B - Analyte was found in the blank as well as the sample.

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-02-SED

Lab Sample ID: LL3892

Compound

phenol	1,400 U
bis(2-chloroethyl)ether	1,400 U
2-chlorophenol	1,400 U
1,3-dichlorobenzene	1,400 U
1,4-dichlorobenzene	1,400 U
benzyl alcohol	1,400 U
1,2-dichlorobenzene	1,400 U
2-methylphenol	1,400 U
bis(2-chloroisopropyl)ether	1,400 U
-methylphenol	1,400 U
n-nitroso-di-n-propylamine	1,400 U
hexachloroethane	1,400 U
nitrobenzene	1,400 U
isophorone	1,400 U
2-nitrophenol	1,400 U
2,4-dimethylphenol	1,400 U
benzoic acid	6,900 U

Compound

bis(2-chloroethoxy)methane	1,400 U
2,4-dichlorophenol	1,400 U
1,2,4-trichlorobenzene	1,400 U
naphthalene	1,400 U
4-chloroaniline	1,400 U
hexachlorobutadiene	1,400 U
4-chloro-3-methylphenol	1,400 U
2-methylnaphthalene	1,400 U
hexachlorocyclopentadiene	1,400 U
2,4,6-trichlorophenol	1,400 U
2,4,5-trichlorophenol	6,900 U
2-chloronaphthalene	1,400 U
2-nitroaniline	6,900 U
dimethyl phthalate	1,400 U
acenaphthylene	1,400 U
2,6-dinitrotoluene	1,400 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/21/90  
Dilution Factor: 4  
% Moisture: 8

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-02-SED

Lab Sample ID: LL3892

Compound

Compound

3-nitroaniline	6,900 U
acenaphthene	1,400 U
2,4-dinitrophenol	6,900 U
4-nitrophenol	6,900 U
dibenzofuran	1,400 U
2,4-dinitrotoluene	1,400 U
diethylphthalate	1,400 U
4-chlorophenyl-phenylether	1,400 U
fluorene	1,400 U
4-nitroaniline	6,900 U
4,6-dinitro-2-methylphenol	6,900 U
n-nitrosodiphenylamine <sup>1</sup>	1,400 U
4-bromophenyl-phenylether	1,400 U
hexachlorobenzene	1,400 U
pentachlorophenol	6,900 U
phenanthrene	160 J

anthracene	1,400 U
di-n-butylphthalate	1,400 U
fluoranthene	350 J
pyrene	320 J
butylbenzylphthalate	1,400 U
3,3'-dichlorobenzidine	2,800 U
benzo(a)anthracene	170 J
chrysene	250 J
bis(2-ethylhexyl)phthalate	480 J
di-n-octylphthalate	1,400 U
benzo(b)fluoranthene	200 J
benzo(k)fluoranthene	200 J
benzo(a)pyrene	180 J
indeno(1,2,3-cd)pyrene	1,400 U
dibenzo(a,h)anthracene	1,400 U
benzo(g,h,i)perylene	1,400 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90

Date Analyzed: 08/21/90

Dilution Factor: 4

% Moisture: 8

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-02-SED  
Lab Sample ID: LL3892

Tentative Identification (1)

Concentration (2)

unknown (hydroxypentanone?)	7,000 AB
2-pentanone, 4-hydroxy-4-methyl-	80,000 AB
unknown	1,000 AB
hexane, 2-bromo-	2,100 B
5-hexen-2-one, 5-methyl-	6,000 AB
3-heptanone, 2,4-dimethyl-	4,300 AB
unknown	2,000 A
unknown (saturated hydrocarbon)	980
unknown (saturated hydrocarbon)	3,300
unknown (saturated hydrocarbon)	2,000

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

B - Analyte was found in the blank as well as the sample.

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Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-03-SED

Lab Sample ID: LL3893

Compound

phenol	690 U
bis(2-chloroethyl)ether	690 U
2-chlorophenol	690 U
1,3-dichlorobenzene	690 U
1,4-dichlorobenzene	690 U
benzyl alcohol	690 U
1,2-dichlorobenzene	690 U
2-methylphenol	690 U
bis(2-chloroisopropyl)ether	690 U
4-methylphenol	690 U
n-nitroso-di-n-propylamine	690 U
hexachloroethane	690 U
nitrobenzene	690 U
isophorone	690 U
2-nitrophenol	690 U
2,4-dimethylphenol	690 U
benzoic acid	3,400 U

Compound

bis(2-chloroethoxy)methane	690 U
2,4-dichlorophenol	690 U
1,2,4-trichlorobenzene	690 U
naphthalene	690 U
4-chloroaniline	690 U
hexachlorobutadiene	690 U
4-chloro-3-methylphenol	690 U
2-methylnaphthalene	690 U
hexachlorocyclopentadiene	690 U
2,4,6-trichlorophenol	690 U
2,4,5-trichlorophenol	3,400 U
2-chloronaphthalene	690 U
2-nitroaniline	3,400 U
dimethyl phthalate	690 U
acenaphthylene	75 J
2,6-dinitrotoluene	690 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/21/90  
Dilution Factor: 2  
% Moisture: 6

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-03-SED

Lab Sample ID: LL3893

Compound

Compound

3-nitroaniline	3,400 U	anthracene	690 U
acenaphthene	690 U	di-n-butylphthalate	690 U
2,4-dinitrophenol	3,400 U	fluoranthene	250 J
4-nitrophenol	3,400 U	pyrene	250 J
dibenzofuran	690 U	butylbenzylphthalate	690 U
2,4-dinitrotoluene	690 U	3,3'-dichlorobenzidine	1,400 U
diethylphthalate	690 U	benzo(a)anthracene	120 J
4-chlorophenyl-phenylether	690 U	chrysene	190 J
fluorene	690 U	bis(2-ethylhexyl)phthalate	430 J
3-nitroaniline	3,400 U	di-n-octylphthalate	690 U
4,6-dinitro-2-methylphenol	3,400 U	benzo(b)fluoranthene	160 J
n-nitrosodiphenylamine <sup>1</sup>	690 U	benzo(k)fluoranthene	160 J
4-bromophenyl-phenylether	690 U	benzo(a)pyrene	130 J
hexachlorobenzene	690 U	indeno(1,2,3-cd)pyrene	690 U
pentachlorophenol	3,400 U	dibenzo(a,h)anthracene	690 U
phenanthrene	110 J	benzo(g,h,i)perylene	690 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90

Date Analyzed: 08/21/90

Dilution Factor: 2

% Moisture: 6

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-03-SED  
Lab Sample ID: LL3893

Tentative Identification (1)

Concentration (2)

unknown (hydroxypentanone?)	4,100 AB
2-pentanone, 4-hydroxy-4-methyl-	50,000 AB
2-cyclohexen-1-one	450
unknown	1,000 AB
hexane, 2-bromo-	2,300 B
5-hexen-2-one, 5-methyl-	4,000 AB
3-heptanone, 2,4-dimethyl-	3,600 AB
unknown	360
unknown	1,100 A
unknown (saturated hydrocarbon)	330
unknown (saturated hydrocarbon)	300

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

B - Analyte was found in the blank as well as the sample.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1487

<u>Compound</u>		<u>Compound</u>		
$\alpha$ -BHC	8.0 U	endosulfan sulfate	16	U
$\beta$ -BHC	8.0 U	4,4'-DDT	16	U
$\delta$ -BHC	8.0 U	methoxychlor	80	U
$\gamma$ -BHC (lindane)	8.0 U	endrin ketone	16	U
heptachlor	8.0 U	$\alpha$ -chlordane	80	U
aldrin	8.0 U	$\gamma$ -chlordane	80	U
heptachlor epoxide	8.0 U	toxaphene	160	U
endosulfan I	8.0 U	Aroclor 1016	80	U
dieldrin	16 U	Aroclor 1221	80	U
4,4'-DDE	16 U	Aroclor 1232	80	U
endrin	16 U	Aroclor 1242	80	U
endosulfan II	16 U	Aroclor 1248	80	U
4,4'-DDD	16 U	Aroclor 1254	160	U
		Aroclor 1260	160	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/24/90  
Date Analyzed: 08/02/90  
Dilution Factor: 1

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-01-SED  
Lab Sample ID: LL3891

<u>Compound</u>		<u>Compound</u>		
$\alpha$ -BHC	8.6 U	endosulfan sulfate	17	U
$\beta$ -BHC	8.6 U	4,4'-DDT	41	
$\delta$ -BHC	8.6 U	methoxychlor	86	U
$\gamma$ -BHC (lindane)	8.6 U	endrin ketone	17	U
heptachlor	8.6 U	$\alpha$ -chlordane	86	U
aldrin	8.6 U	$\gamma$ -chlordane	86	U
heptachlor epoxide	8.6 U	toxaphene	170	U
endosulfan I	8.6 U	Aroclor 1016	86	U
dieldrin	17 U	Aroclor 1221	86	U
4,4'-DDE	40 F	Aroclor 1232	86	U
endrin	17 U	Aroclor 1242	86	U
endosulfan II	17 U	Aroclor 1248	86	U
4,4'-DDD	17 U	Aroclor 1254	210	
		Aroclor 1260	150	J

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

F - Peak offscale and therefore out of linear range.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/09/90  
Dilution Factor: 1  
% Moisture: 8

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-01-SED DL  
Lab Sample ID: LL3891 DL

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	17	U	endosulfan sulfate	35	U
$\beta$ -BHC	17	U	4,4'-DDT	51	D
$\delta$ -BHC	17	U	methoxychlor	170	U
$\gamma$ -BHC (lindane)	17	U	endrin ketone	35	U
heptachlor	17	U	$\alpha$ -chlordane	170	U
aldrin	17	U	$\gamma$ -chlordane	170	U
heptachlor epoxide	17	U	toxaphene	350	U
endosulfan I	17	U	Aroclor 1016	170	U
dieldrin	35	U	Aroclor 1221	170	U
4,4'-DDE	44	D	Aroclor 1232	170	U
endrin	35	U	Aroclor 1242	170	U
endosulfan II	35	U	Aroclor 1248	170	U
4,4'-DDD	35	U	Aroclor 1254	220	DJ
			Aroclor 1260	170	DJ

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

D - Compound analyzed at a secondary dilution factor.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/10/90  
Dilution Factor: 2  
% Moisture: 8

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-02-SED  
Lab Sample ID: LL3892

<u>Compound</u>		<u>Compound</u>		
$\alpha$ -BHC	8.6	U	endosulfan sulfate	17 U
$\beta$ -BHC	20	Z	4,4'-DDT	39
$\delta$ -BHC	8.6	U	methoxychlor	86 U
$\gamma$ -BHC (lindane)	8.6	U	endrin ketone	17 U
heptachlor	8.6	U	$\alpha$ -chlordane	86 U
aldrin	8.6	U	$\gamma$ -chlordane	86 U
heptachlor epoxide	8.6	U	toxaphene	170 U
endosulfan I	8.6	U	Aroclor 1016	86 U
dieldrin	17	U	Aroclor 1221	86 U
4,4'-DDE	35	F	Aroclor 1232	86 U
endrin	39	Z	Aroclor 1242	86 U
endosulfan II	83	ZF	Aroclor 1248	86 U
4,4'-DDD	17	U	Aroclor 1254	170 U
			Aroclor 1260	2,300

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
Z - Elevated CRQL reported due to matrix interferences obscuring the compound of interest.  
F - Peak offscale and therefore out of linear range.

Date Extracted: 07/24/90  
Date Analyzed: 08/13/90  
Dilution Factor: 1  
% Moisture: 8

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-02-SED DL  
Lab Sample ID: LL3892 DL

Compound

$\alpha$ -BHC	86	U
$\beta$ -BHC	86	U
$\delta$ -BHC	86	U
$\gamma$ -BHC (lindane)	86	U
heptachlor	86	U
dieldrin	86	U
heptachlor epoxide	86	U
endosulfan I	86	U
dieldrin	170	U
4,4'-DDE	37	DJ
endrin	170	U
endosulfan II	170	U
4,4'-DDD	170	U

Compound

endosulfan sulfate	170	U
4,4'-DDT	37	DJ
methoxychlor	860	U
endrin ketone	170	U
$\alpha$ -chlordane	860	U
$\gamma$ -chlordane	860	U
toxaphene	1,700	U
Aroclor 1016	860	U
Aroclor 1221	860	U
Aroclor 1232	860	U
Aroclor 1242	860	U
Aroclor 1248	860	U
Aroclor 1254	1,700	U
Aroclor 1260	2,400	D

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

D - Compound analyzed at a secondary dilution factor.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/09/90  
Dilution Factor: 10  
% Moisture: 8

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-03-SED  
Lab Sample ID: LL3893

<u>Compound</u>		<u>Compound</u>		
$\alpha$ -BHC	8.4 U	endosulfan sulfate	17	U
$\beta$ -BHC	8.4 U	4,4'-DDT	14	J
$\delta$ -BHC	8.4 U	methoxychlor	84	U
$\gamma$ -BHC (lindane)	8.4 U	endrin ketone	17	U
heptachlor	8.4 U	$\alpha$ -chlordane	84	U
aldrin	8.4 U	$\gamma$ -chlordane	84	U
heptachlor epoxide	8.4 U	toxaphene	170	U
endosulfan I	8.4 U	Aroclor 1016	84	U
dieldrin	17 U	Aroclor 1221	84	U
4,4'-DDE	32	Aroclor 1232	84	U
endrin	17 U	Aroclor 1242	84	U
endosulfan II	17 U	Aroclor 1248	84	U
4,4'-DDD	17 U	Aroclor 1254	170	U
		Aroclor 1260	170	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/09/90  
Dilution Factor: 1  
% Moisture: 6

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

ent Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>PESTICIDE</u>
	<u>Dibutylchloroendate</u> <u>(20-150%)*</u>
Method Blank	89
01-01-SED	57
01-01-SED DL	65
01-02-SED	74
01-02-SED DL	70
01-03-SED	78
04-03-SED	78
04-04-SED	84
04-04-SED DL	80
04-05-SED	60
04-05-SED DL	70
04-06-SED	84
04-07-SED	34
04-07-SED DL	60

\* - Values in parenthesis represent USEPA advisory QC limits.

DL = Dilution

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

TARGET ANALYTE LIST - INORGANICS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank PBSC4336/C2787/C2792		01-01-SED LL3881		01-02-SED LL3882
aluminum	4.4	B	546		6,170
antimony	3.0	U	3.3	U	3.4
arsenic	3.0	U	4.0		3.9
barium	0.2	U	16.7	B	40.5
beryllium	0.1	U	0.11	U	0.14
cadmium	0.5	U	1.1		0.56
calcium	17.4	B	301,000		156,000
chromium	1.0	U	8.0		6.1
cobalt	2.0	U	2.2	U	2.3
copper	1.0	U	132		18.3
iron	3.9	B	1,790		4,480
lead	3.0	U	134		30.1
magnesium	8.3	B	3,420		21,500
manganese	0.2	U	24.9		295
mercury	0.020	U	0.09		0.06
nickel	2.0	U	2.2	U	4.7
potassium	100.0	U	109	U	958
selenium	0.2	U	1.1	UW	1.1
silver	0.5	U	2.7	U	0.56
sodium	20.0	U	3,510		2,320
thallium	3.0	U	3.3	U	3.4
vanadium	1.0	U	6.7		14.0
zinc	0.5	U	131		24.1
% Solids			92.1		88.6

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than detection limit, but less than contract required quantitation limit.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.

Date Digested: 08/01/90

Date Analyzed: 08/15 and 08/17/90 (ICP); 08/23/90 (GFAA); 08/02/90 (CVAA)



# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

IT Analytical Services  
5815 Middlebrook Pike  
Knoxville, TN 37921  
Kim Laisy

Date: August 13, 1990

Work Order Number: T0-07-195

P.O. Number: 486000.02

This is the Certificate of Analysis for the following samples:

Client Project ID: ITCY 46179 Key West  
Date Received by Lab: 07/20/90  
Number of Samples: 6  
Sample Type: aqueous

### TABLE OF CONTENTS FOR ANALYTICAL RESULTS

<u>PAGES</u>	<u>LABORATORY #</u>	<u>SAMPLE IDENTIFICATION</u>
2	T0-07-195-01	LL3520 09-02GM-GW
3	T0-07-195-02	LL3521 09-05GM-GW
4	T0-07-195-03	LL3522/23/24 09-KWM-9-GW
5	T0-07-195-04	LL3525 09-KWM-21-GW
6	T0-07-195-05	LL3526 09-KWM-21-GWD
7	T0-07-195-06	LL3528 09-KWM-25-EB

Reviewed and Approved

  
David A. Pichette  
Project Manager

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

Company: IT Analytical Services  
Date: 08/13/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-195

TEST NAME: EPA 504

Client ID: LL3520 09-02GM-GW  
Sample Date: 07/15/90  
Lab Sample ID: T007195-01  
Receipt Condition: Cool pH > 2  
Sample Matrix: aqueous  
Extraction Date: 07/31/90  
Analysis Date: 08/06/90

## Results - Micrograms per Liter

Parameter	Detection	
	Limit	Detected
Ethylene Dibromide	0.05	None
Dibromochloropropane	0.05	None

Company: IT Analytical Services  
Date: 08/13/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-195

TEST NAME: EPA 504

Client ID: LL3521 09-05GM-GW  
Sample Date: 07/15/90  
Lab Sample ID: T007195-02  
Receipt Condition: Cool pH > 2  
Sample Matrix: aqueous  
Extraction Date: 07/31/90  
Analysis Date: 08/06/90

Results - Micrograms per Liter

Parameter	Detection	
	Limit	Detected
Ethylene Dibromide	0.05	None
Dibromochloropropane	0.05	None

Page: 4  
Company: IT Analytical Services  
Date: 08/13/90  
Client Work ID: ITCY 46179 Key West

IT ANALYTICAL SERVICES  
SAN JOSE, CA

Work Order: T0-07-195

TEST NAME: EPA 504

Client ID: LL3522/23/24 09-KWM-9-GW  
Sample Date: 07/16/90  
Lab Sample ID: T007195-03  
Receipt Condition: Cool pH > 2  
Sample Matrix: aqueous  
Extraction Date: 07/27/90  
Analysis Date: 08/01/90

Results - Micrograms per Liter

Parameter	Detection Limit	Detected
Ethylene Dibromide	0.05	None
Dibromochloropropane	0.05	None

Company: IT Analytical Services  
Date: 08/13/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-195

TEST NAME: EPA 504

Client ID: LL3525 09-KWM-21-GW  
Sample Date: 07/16/90  
Lab Sample ID: T007195-04  
Receipt Condition: Cool pH > 2  
Sample Matrix: aqueous  
Extraction Date: 07/31/90  
Analysis Date: 08/06/90

Results - Micrograms per Liter

Parameter	Detection Limit	Detected
Ethylene Dibromide	0.05	None
Dibromochloropropane	0.05	None

Company: IT Analytical Services  
Date: 08/13/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-195

TEST NAME: EPA 504

Client ID: LL3526 09-KWM-21-GWD  
Sample Date: 07/16/90  
Lab Sample ID: T007195-05  
Receipt Condition: Cool pH > 2  
Sample Matrix: aqueous  
Extraction Date: 07/31/90  
Analysis Date: 08/07/90

## Results - Micrograms per Liter

Parameter	Detection Limit	Detected
Ethylene Dibromide	0.05	None
Dibromochloropropane	0.1	1.0

Company: IT Analytical Services  
Date: 08/13/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-195

TEST NAME: EPA 504

Client ID: LL3528 09-KWM-25-EB  
Sample Date: 07/16/90  
Lab Sample ID: T007195-06  
Receipt Condition: Cool pH > 2  
Sample Matrix: aqueous  
Extraction Date: 07/31/90  
Analysis Date: 08/07/90

## Results - Micrograms per Liter

Parameter	Detection Limit	Detected
Ethylene Dibromide	0.05	None
Dibromochloropropane	0.05	None

Company: IT Analytical Services  
 Date: 08/13/90  
 Client Work ID: ITCY 46179 Key West

Work Order: T0-07-195

## QUALITY CONTROL REPORT

## Matrix Spike (MS) and Matrix Spike Duplicate (MSD)

Client Sample ID: LL3523 09-KWM-9-MS/LL3524 09-KWM-9-MSD  
 Lab Sample ID: T0-07-195-03MS/MSD  
 Analysis Date: 08/01/90

## Summary of Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

## Results in Micrograms per Liter

Parameter	Amt in Sample	Amt of Spike	MS Result	MSD Result	MS % REC	MSD % REC	% RPD
Ethylene Dibromide	ND<0.05	.186	.181	.204	97.	94.	3.
Dibromochlor- opropane	ND<0.05	.186	.174	.186	110.	100.	10.

RPD=MS-MSD

$$\frac{MS-MSD}{(MS+MSD)/2}$$

Company: IT Analytical Services

Date: 08/13/90

Client Work ID: ITCY 46179 Key West

Work Order: T0-07-195

---

TEST CODE 504      TEST NAME EPA 504

The method of analysis for extractable volatile organics is taken from E.P.A. Method 504. The samples are extracted with solvent and examined by gas chromatography using an electron capture detector.

Sample LL3526-09 require dilution due to levels of unknown compounds and of DBCP, raising the detection limits for DBCP to greater than 0.05 ppb. Apparent interferences could contribute to the concentration of DBCP reported.



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# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

---

IT Corporation  
3012 US Highway 301 North, Suite 1000  
Tampa, FL 33619  
ATTN: Mark Hampton

September 24, 1990

---

Job Number: ITCY 46446

P.O. Number: 595392

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 08/18/90  
Number of Samples: Seven (7)  
Sample Type: Water - one (1), Soil - five (5), Trip Blank - one (1)

---

### I. Introduction

On 08/18/90, one (1) water sample, five (5) soil samples, and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee, laboratory from the Naval Air Station, Key West, Florida. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

### II. Analytical Results/Methodology

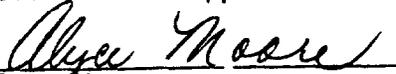
The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that CLP data are not blank corrected and TOC data are blank corrected, i.e., if any compound is found in the corresponding laboratory blank, it is subtracted from the analytical result before it is reported.

The trip blank was placed on hold per client's instructions.

The samples were analyzed for Target Compound List (TCL) semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 2/88 Statement of Work.

The samples were analyzed for total organic carbon (TOC) by wet chemical oxidation/infrared detection based on EPA SW-846 method 9060.

Reviewed and Approved:

  
Alyce Moore  
Laboratory Manager

---

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

IT Corporation  
September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

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### III. Quality Control

The semivolatiles analyses were performed on 08/23/90 by direct injection of sample extract on a Restek RTX-5 capillary column on a Finnigan 4500 GC/MS/DS. The sample and related runs went well. There was a phthalate background, probably attributable to the protective gloves used in extraction, seen in both sample and blank. The peaks were listed in the TICs, but given "B" qualifiers: they were not sample intrinsic. A matrix spike/matrix spike duplicate analysis was done, and all parameters fell within advisory limits, except for one pentachlorophenol comparison: there were no significant outliers. There were no other problems seen in final review of the data.

The samples were analyzed for total organic carbon on 08/23/90. No problems were encountered. A spike/duplicate pair was performed on sample Trumbo Fuel Farm with acceptable results. No problems were encountered.

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September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

SEMIVOLATILE TARGET COMPOUND LIST

Results in ug/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1573

<u>Compound</u>		<u>Compound</u>	
phenol	10 U	bis(2-chloroethoxy)methane	10 U
bis(2-chloroethyl)ether	10 U	2,4-dichlorophenol	10 U
2-chlorophenol	10 U	1,2,4-trichlorobenzene	10 U
1,3-dichlorobenzene	10 U	naphthalene	10 U
1,4-dichlorobenzene	10 U	4-chloroaniline	10 U
benzyl alcohol	10 U	hexachlorobutadiene	10 U
1,2-dichlorobenzene	10 U	4-chloro-3-methylphenol	10 U
2-methylphenol	10 U	2-methylnaphthalene	10 U
bis(2-chloroisopropyl)ether	10 U	hexachlorocyclopentadiene	10 U
4-methylphenol	10 U	2,4,6-trichlorophenol	10 U
n-nitroso-di-n-propylamine	10 U	2,4,5-trichlorophenol	50 U
hexachloroethane	10 U	2-chloronaphthalene	10 U
nitrobenzene	10 U	2-nitroaniline	50 U
isophorone	10 U	dimethyl phthalate	10 U
2-nitrophenol	10 U	acenaphthylene	10 U
2,4-dimethylphenol	10 U	2,6-dinitrotoluene	10 U
benzoic acid	50 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 08/21/90  
Date Analyzed: 08/23/90  
Dilution Factor: 1

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1573

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	50 U	anthracene	10 U
acenaphthene	10 U	di-n-butylphthalate	10 U
2,4-dinitrophenol	50 U	fluoranthene	10 U
4-nitrophenol	50 U	pyrene	10 U
dibenzofuran	10 U	butylbenzylphthalate	10 U
2,4-dinitrotoluene	10 U	3,3'-dichlorobenzidine	20 U
diethylphthalate	10 U	benzo(a)anthracene	10 U
4-chlorophenyl-phenylether	10 U	chrysene	10 U
fluorene	10 U	bis(2-ethylhexyl)phthalate	10 U
4-nitroaniline	50 U	di-n-octylphthalate	10 U
4,6-dinitro-2-methylphenol	50 U	benzo(b)fluoranthene	10 U
n-nitrosodiphenylamine <sup>1</sup>	10 U	benzo(k)fluoranthene	10 U
4-bromophenyl-phenylether	10 U	benzo(a)pyrene	10 U
hexachlorobenzene	10 U	indeno(1,2,3-cd)pyrene	10 U
pentachlorophenol	50 U	dibenzo(a,h)anthracene	10 U
phenanthrene	10 U	benzo(g,h,i)perylene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 08/21/90  
Date Analyzed: 08/23/90  
Dilution Factor: 1

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September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1573

Tentative Identification (1)

Concentration (2)

1,2-benzenedicarboxylic acid  
1,2-benzenedicarboxylic acid  
1,2-benzenedicarboxylic acid  
1,2-benzenedicarboxylic acid

11  
17  
17  
9.6

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

WATER SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	SEMI-VOLATILE					
	Nitro- Benzene-D5 (35-114%)*	2-Fluoro- Biphenyl (43-116%)*	Terphenyl- D14 (33-141%)*	Phenol-D5 (10-94%)*	2-Fluoro- Phenol (21-100%)*	2,4,6 Tribromo- Phenol (10-123%)*
Boca Chica DDT	82	71	85	39	59	75
Boca Chica DDT MS	84	72	79	51	60	56
Boca Chica DDT MSD	83	72	83	58	73	69
Method Blank	88	77	91	36	54	77

\* - Values in parenthesis represent USEPA contract required QC limits.

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September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

TOTAL ORGANIC CARBON ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
Nth Fleming 7-RW	LL5734	6,800
Truman Annex DDT	LL5735	8,700
Boca Chica DDT	LL5736	6,600
Fleming Key RW8	LL5737	5,700
Trumbo Fuel Farm	LL5738	4,900
Method Blank	B0266	1 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 08-28-90

IT Corporation  
September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

MATRIX SPIKE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Trumbo Fuel Farm  
Lab Sample ID: LL5738

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>
total organic carbon	11,000	4,900	18,000	119

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
J - Indicates an estimated value less than the detection limit.

Date Analyzed: 08/28/90

IT Corporation  
September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

DUPLICATE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Trumbo Fuel Farm  
Lab Sample ID: LL5738

<u>Parameter</u>	<u>Original Sample</u>	<u>Duplicate</u>	<u>RPD</u>
total organic carbon	4,900	4,700	4

RPD = Relative Percent Difference

Date Analyzed: 08/28/90



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# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

RECEIVED

IT Corporation  
3012 US Highway 301 North, Suite 1000  
Tampa, FL 33619  
ATTN: Mark Hampton

SEP 21 1990

September 19, 1990

I.T. CORPORATION  
TAMPA, FLORIDA

Job Number: ITCY 46152

P.O. Number: 595392

This is the Certificate of Analysis for the following samples:

Client Project ID:	NAS-Key West
Date Received by Lab:	07/12/90
Number of Samples:	Ten (10)
Sample Type:	Water - nine (9), Trip Blank - one (1)

### I. Introduction

On 07/12/90, nine (9) water samples and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee, laboratory from the Naval Air Station, Key West, Florida. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

### II. Analytical Results/Methodology

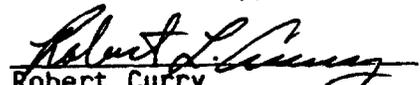
The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that CLP data are not blank corrected. All other data are blank corrected, i.e., if any compound is found in the corresponding laboratory blank, it is subtracted from the analytical result before it is reported.

Samples submitted for the method 504.1 analysis were resampled at a later date and reported under separate cover.

Sample 10-02-ER was extracted and held as instructed.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 2/88 Statement of Work.

Reviewed and Approved:

  
Robert Curry  
Laboratory Systems Manager

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

## II. Analytical Results/Methodology (continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCBs by gas chromatography/electron capture detection (GC/ECD) in accordance with the EPA CLP 2/88 Statement of Work.

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP 6/89 Statement of Work.

The samples were analyzed for total cyanide by manual distillation/colorimetric determination in accordance with the EPA CLP 6/89 Statement of Work.

The samples were analyzed for volatile organic compounds by gas chromatography/photo ionization detection/Hall detection in series based on EPA methods 601 and 602.

The samples were analyzed for polynuclear aromatic hydrocarbons by high performance liquid chromatography (HPLC) using an ultraviolet (UV) detector based on EPA method 610.

The samples were analyzed for lead by graphite furnace atomic absorption spectroscopy (GFAA) based on EPA method 239.2.

## III. Quality Control

The volatiles analyses were performed on 07/18 and 07/19/90 by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The semivolatiles analyses were performed on 07/23 and 07/28/90 by direct injection of sample extract on a Restek RTX-5 capillary column on a VG TRIO-1 GC/MS/DS. The volatiles runs went well, except that in sample 05-01-GWD, which contained high levels of some target analytes, surrogate recoveries were about 50% higher than expected. A diluted sample run had recoveries within limits. We submitted the original run results along with those of the dilution to give some information on lower level species. Sample 05-01-GWD appeared to have high levels as well, and was run as a single dilution. Other samples required no dilutions. In the TICs, some semivolatile target species (i.e., dichlorobenzenes) were seen; these were reported for comparison with the actual target results. The semivolatiles runs went well. The TICs contained some relatively indistinguishable hydrocarbons on the order of C14-C22, among other species. The best reasonable EPA NIST spectral match was reported; where possible, suggested compound type was offered if the match could not be listed. No other problems were encountered. Associated QC samples were analyzed with ITAS projects ITCY 46151, sample 01-03-GM-GW, and ITCY 46180, sample 04-08-GM-GW.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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### III. Quality Control (continued)

The pesticide/PCB analyses were performed from 07/25 to 08/28/90 using a mixed phase (SP2250/2401) Varian 3740B and (SPB-5) Varian 3700-F instruments. All water samples and the associated method blank were treated for sulfur interferences. This cleanup was performed on 07/25/90. No problems were encountered. Associated QC samples were analyzed with ITAS projects ITCY 46151, sample 01-03-GM-GW, and ITCY 46180, sample 04-08-GM-GW.

The samples were digested on 07/19/90 for ICP and 07/18/90 for GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 07/17/90; the GFAA analyses for arsenic, lead, selenium, and thallium were performed from 07/26 to 08/03/90; the remaining metals were analyzed by ICP on 08/03/90. All run QC was acceptable. Elevated detection limits were reported for selenium and thallium for some samples due to extremely high concentrations of calcium, magnesium, potassium, and sodium, native to the samples. No other problems were encountered. Associated QC samples were analyzed with ITAS projects ITCY 46151, sample 01-03-GM-GW, and ITCY 46180, sample 04-08-GM-GW.

The samples were analyzed for cyanide on 07/24/90. No problems were encountered. Associated QC samples were analyzed with ITAS projects ITCY 46151, sample 01-03-GM-GW, and ITCY 46180, sample 04-08-GM-GW.

The samples were analyzed on 07/18 and 07/19/90 for the 601/602 volatile organic compounds. No problems were encountered.

The samples were analyzed for polynuclear aromatic hydrocarbons from 07/24 to 08/14/90. No problems were encountered.

The samples were analyzed for lead on 07/27/90. No problems were encountered.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank 1  
Lab Sample ID: EB07182

<u>Compound</u>		<u>Compound</u>	
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	2 J	1,1,2-trichloroethane	5 U
acetone	10 U	benzene	5 U
carbon disulfide	2 J	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	1 J	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/18/90  
Dilution Factor: 1

This method blank applies to the following samples: 05-01-GWD, 05-01-GWD DL, 05-01-GWO, 10-02-GW, Trip Blank.

DL = Dilution

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank 1  
Lab Sample ID: EB07182

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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IT ANALYTICAL SERVICES  
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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Trip Blank

Lab Sample ID: LL3078

Compound

chloromethane	10 U
bromomethane	10 U
vinyl chloride	10 U
chloroethane	10 U
methylene chloride	3 BJ
acetone	10 U
carbon disulfide	2 BJ
1,1-dichloroethene	5 U
1,1-dichloroethane	5 U
1,2-dichloroethene (total)	5 U
chloroform	5 U
1,2-dichloroethane	5 U
2-butanone	10 U
1,1,1-trichloroethane	5 U
carbon tetrachloride	5 U
vinyl acetate	10 U
bromodichloromethane	5 U

Compound

1,2-dichloropropane	5 U
cis-1,3-dichloropropene	5 U
trichloroethene	5 U
dibromochloromethane	5 U
1,1,2-trichloroethane	5 U
benzene	5 U
trans-1,3-dichloropropene	5 U
bromoform	5 U
4-methyl-2-pentanone	10 U
2-hexanone	10 U
tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U
toluene	5 U
chlorobenzene	5 U
ethylbenzene	5 U
styrene	5 U
total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

B - Analyte was found in the blank as well as the sample.

Date Analyzed: 07/18/90

Dilution Factor: 1

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Trip Blank  
Lab Sample ID: LL3078

Tentative Identification (1)

Concentration (2)

No additional peaks detected

Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank 2

Lab Sample ID: EB0719

<u>Compound</u>		<u>Compound</u>	
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	2 J	1,1,2-trichloroethane	5 U
acetone	10 U	benzene	5 U
carbon disulfide	2 J	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	1 J	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/19/90

Dilution Factor: 1

This method blank applies to the following samples: 07-11-ER, 10-03-GW, 10-19-GW.

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank 2  
Lab Sample ID: EB0719

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 07-11-ER  
Lab Sample ID: LL3077

<u>Compound</u>		<u>Compound</u>	
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	2 BJ	1,1,2-trichloroethane	5 U
acetone	10 U	benzene	5 U
carbon disulfide	2 BJ	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,2-dichloroethene	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

B - Analyte was found in the blank as well as the sample.

Date Analyzed: 07/19/90  
Dilution Factor: 1

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Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 07-11-ER  
Lab Sample ID: LL3077

Tentative Identification (1)

Concentration (2)

2-propanol (ACN)

29

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

WATER SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	VOLATILE		
	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
05-01-GWD	156 **	168 **	144 **
05-01-GWD DL	104	103	92
05-01-GWO	96	100	86
07-11-ER	106	114	100
10-02-GW	94	100	85
10-03-GW	106	107	98
10-19-GW	99	105	88
Trip Blank	95	101	89
Method Blank 1	99	103	94
Method Blank 2	102	104	99

\* - Values in parenthesis represent USEPA contract required QC limits.

\*\* - Values are outside of contract required QC limits.

DL = Dilution

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Client Project ID: NAS-Key West

Job Number: ITCY 46152

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1340

<u>Compound</u>		<u>Compound</u>	
phenol	10 U	bis(2-chloroethoxy)methane	10 U
bis(2-chloroethyl)ether	10 U	2,4-dichlorophenol	10 U
2-chlorophenol	10 U	1,2,4-trichlorobenzene	10 U
1,3-dichlorobenzene	10 U	naphthalene	10 U
1,4-dichlorobenzene	10 U	4-chloroaniline	10 U
benzyl alcohol	10 U	hexachlorobutadiene	10 U
1,2-dichlorobenzene	10 U	4-chloro-3-methylphenol	10 U
2-methylphenol	10 U	2-methylnaphthalene	10 U
is(2-chloroisopropyl)ether	10 U	hexachlorocyclopentadiene	10 U
4-methylphenol	10 U	2,4,6-trichlorophenol	10 U
n-nitroso-di-n-propylamine	10 U	2,4,5-trichlorophenol	50 U
hexachloroethane	10 U	2-chloronaphthalene	10 U
nitrobenzene	10 U	2-nitroaniline	50 U
isophorone	10 U	dimethyl phthalate	10 U
2-nitrophenol	10 U	acenaphthylene	10 U
2,4-dimethylphenol	10 U	2,6-dinitrotoluene	10 U
benzoic acid	50 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/17/90  
Date Analyzed: 07/23/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46152

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1340

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	50 U	anthracene	10 U
acenaphthene	10 U	di-n-butylphthalate	10 U
2,4-dinitrophenol	50 U	fluoranthene	10 U
4-nitrophenol	50 U	pyrene	10 U
dibenzofuran	10 U	butylbenzylphthalate	10 U
2,4-dinitrotoluene	10 U	3,3'-dichlorobenzidine	20 U
diethylphthalate	10 U	benzo(a)anthracene	10 U
4-chlorophenyl-phenylether	10 U	chrysene	10 U
fluorene	10 U	bis(2-ethylhexyl)phthalate	10 U
4-nitroaniline	50 U	di-n-octylphthalate	10 U
4,6-dinitro-2-methylphenol	50 U	benzo(b)fluoranthene	10 U
n-nitrosodiphenylamine <sup>1</sup>	10 U	benzo(k)fluoranthene	10 U
4-bromophenyl-phenylether	10 U	benzo(a)pyrene	10 U
hexachlorobenzene	10 U	indeno(1,2,3-cd)pyrene	10 U
pentachlorophenol	50 U	dibenzo(a,h)anthracene	10 U
phenanthrene	10 U	benzo(g,h,i)perylene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/17/90  
Date Analyzed: 07/23/90  
Dilution Factor: 1

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1340

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

**CERTIFICATE OF ANALYSIS**

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IT Corporation  
3012 US Highway 301 North, Suite 1000  
Tampa, FL 33619  
ATTN: Mark Hampton

September 20, 1990

Job Number: ITCY 46179 (Appendix IX Data)

P.O. Number: 595392.08

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 07/17/90  
Number of Samples: Five (5)  
Sample Type: Water - four (4), Soil - one (1)

---

**I. Introduction**

On 07/17/90, four (4) water samples and one (1) soil sample arrived at the ITAS-Knoxville, Tennessee laboratory from the Naval Air Station, Key West, Florida. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

**II. Analytical Results/Methodology**

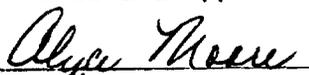
The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected.

The samples were analyzed for Appendix IX dioxins at the ITAS Special Analysis Laboratory, Knoxville, Tennessee. A copy of their report is included.

The samples were analyzed for Appendix IX organophosphorus pesticides and herbicides at the ITAS-San Jose, California laboratory. A copy of their report is also included.

The samples were analyzed for Appendix IX volatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 2/88 Statement of Work with modification for the addition of the Appendix IX analytes.

Reviewed and Approved:

  
Alyce Moore  
Laboratory Manager

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American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

## II. Analytical Results/Methodology (continued)

The samples were analyzed for Appendix IX semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 2/88 Statement of Work with modification for the addition of the Appendix IX analytes.

The samples were analyzed for Appendix IX organochlorine pesticides and PCB's by gas chromatography/electron capture detection (GC-ECD) in accordance with the EPA CLP 2/88 Statement of Work with modification for the addition of the Appendix IX analytes.

The samples were analyzed for Appendix IX metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP 6/89 Statement of Work with modification for the addition of the Appendix IX analytes.

The samples were analyzed for total cyanide by manual distillation/colorimetric determination in accordance with the EPA CLP 6/89 Statement of Work.

The samples were analyzed for sulfide by iodometric titration based on EPA SW-846 method 9030.

## III. Quality Control

The volatiles analyses were performed on 07/25 and 07/26/90 by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The semivolatiles analyses were performed on 08/16, 08/17, 08/19, 08/21, and 08/22/90 by direct injection of the sample extract on a Restek RTX-5 capillary column on a Finnigan 4500 GC/MS/DS. The volatiles runs went well. Standardization for the analysis included initial and continuing calibrations for all TCL compounds, and most other Appendix IX analytes, the exceptions being acetonitrile (daily standard) and pyridine, isobutanol, and dioxane. These latter three compounds tend to saturate the system and cause false positives when standards are run along with samples; therefore, they were searched for based on their known characteristics from earlier periodic standard runs. A volatiles MS/MSD analysis showed all results within CLP criteria. The semivolatiles runs went well. MS/MSD results showed a few values outside CLP advisory limits, but the deviations appeared of minor significance and not unusual considering the matrix (the extract was diluted fourfold before analysis due to its dark appearance). Standardization by initial and continuing calibration was performed for all analytes. There were no other problems seen in final review of the data for either the volatiles or semivolatiles fraction. Associated QC samples for the water matrices were analyzed with ITAS project ITCY 46151, sample 04-04-GW.

The pesticide/PCB analyses were performed from 07/25 to 09/07/90 using mixed phase (SP2250/2401) varian 3740B and (SPB-5) varian 3700-F instruments. All samples and the associated method blank were treated for sulfur interferences. This clean-up was performed on 08/06/90. Matrix interferences were encountered in the samples which

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Job Number: ITCY 46179  
(Appendix IX)

### III. Quality Control (continued)

prevented the determination of spike recoveries in the matrix spike and matrix spike duplicate for some compounds. The best achievable data was reported. No other problems were encountered. Associated QC samples for the water matrix were analyzed with ITAS project ITCY 46151, sample 04-04-GW. Please note that as a result of the CLP extraction method for soils, any endrin aldehyde present in the sample would be converted to and, therefore reported as, endrin ketone.

The samples were digested on 08/01 and 08/03/90 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed from 08/02 to 08/09/90; the GFAA analysis for selenium was performed from 08/23 to 09/11/90; the remaining metals were analyzed by ICP on 08/13 and 08/14/90. All run QC was acceptable. A duplicate/spike pair was prepared using sample number 04-01-SED. Spike recovery (accuracy) results were outside control limits for cadmium, chromium, cobalt, nickel, and thallium. Duplicate RPD (precision) results were outside control limits for cadmium, chromium, and thallium only. A post digestion spike was performed on 04-01-SED, confirming matrix interferences for cadmium, copper, chromium, nickel, and cobalt. Matrix interferences are more than likely due to the high concentration of minerals, namely calcium, magnesium, and sodium. These high concentrations affect the specific gravity of the sample and also interfere spectrally with other elements. No other problems were encountered. Associated QC samples for the water matrix were analyzed with ITAS project ITCY 46151, sample 04-04-GW.

The samples were analyzed for cyanide on 07/27 and 07/30/90. All run QC was acceptable. No problems were encountered. Associated QC samples for the water matrices were analyzed with ITAS project ITCY 46151, sample 04-04-GW. The samples were analyzed for sulfide on 07/24/90. All run QC for both matrices was acceptable. No problems were encountered.

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Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

WATER SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	VOLATILE		
	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
04-01-SW	102	104	87
Method Blank	99	98	86

\* - Asterisked values are outside USEPA control limits.

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX VOLATILE ORGANIC ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: VB0725S

<u>Compound</u>		<u>Compound</u>	
acetone	10 U	1,2-dichloropropane	5 U
acetonitrile	200 U	cis-1,3-dichloropropene	5 U
acrolein	10 U	trans-1,3-dichloropropene	5 U
acrylonitrile	10 U	1,4-dioxane	1,000 U
benzene	5 U	ethyl benzene	5 U
bromodichloromethane	5 U	ethyl cyanide	100 U
bromoform	5 U	2-hexanone	10 U
bromomethane	10 U	iodomethane	5 U
2-butanone	10 U	isobutyl alcohol	2,000 U
carbon disulfide	5 U	methacrylonitrile	10 U
carbon tetrachloride	5 U	methyl methacrylate	10 U
chlorobenzene	5 U	4-methyl-2-pentanone	10 U
chloroethane	10 U	methylene chloride	5 U
3-chloro-1-propene	5 U	pyridine	20,000 U
chloroform	5 U	styrene	5 U
chloromethane	10 U	1,1,1,2-tetrachloroethane	5 U
chloroprene	5 U	1,1,2,2-tetrachloroethane	5 U
1,2-dibromo-3-chloropropane	10 U	tetrachloroethene	5 U
dibromochloromethane	5 U	toluene	5 U
1,2-dibromoethane	5 U	1,1,1-trichloroethane	5 U
dibromomethane	10 U	1,1,2-trichloroethane	5 U
trans-1,4-dichloro-2-butene	20 U	trichloroethene	5 U
dichlorodifluoromethane	20 U	trichlorofluoromethane	5 U
1,1-dichloroethane	5 U	1,2,3-trichloropropane	5 U
1,2-dichloroethane	5 U	vinyl acetate	10 U
1,1-dichloroethene	5 U	vinyl chloride	10 U
trans-1,2-dichloroethene	5 U	xylene (total)	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date of Analysis: 07/25/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>VOLATILE</u>		
	<u>Toluene-D8</u> <u>(81-117%)*</u>	<u>BFB</u> <u>(74-121%)*</u>	<u>1,2 Dichloroethane-D4</u> <u>(70-121%)*</u>
04-01-SED	113	90	89
04-01-SED MS	106	89	80
04-01-SED MSD	103	93	80
Method Blank	99	98	86

\* - Values in parenthesis represent USEPA contract required QC limits.

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1364R

<u>Compound</u>		<u>Compound</u>	
phenol	10 U	bis(2-chloroethoxy)methane	10 U
bis(2-chloroethyl)ether	10 U	2,4-dichlorophenol	10 U
2-chlorophenol	10 U	1,2,4-trichlorobenzene	10 U
1,3-dichlorobenzene	10 U	naphthalene	10 U
1,4-dichlorobenzene	10 U	4-chloroaniline	10 U
benzyl alcohol	10 U	hexachlorobutadiene	10 U
1,2-dichlorobenzene	10 U	4-chloro-3-methylphenol	10 U
2-methylphenol	10 U	2-methylnaphthalene	10 U
bis(2-chloroisopropyl)ether	10 U	hexachlorocyclopentadiene	10 U
4-methylphenol	10 U	2,4,6-trichlorophenol	10 U
n-nitroso-di-n-propylamine	10 U	2,4,5-trichlorophenol	50 U
hexachloroethane	10 U	2-chloronaphthalene	10 U
nitrobenzene	10 U	2-nitroaniline	50 U
isophorone	10 U	dimethyl phthalate	10 U
2-nitrophenol	10 U	acenaphthylene	10 U
2,4-dimethylphenol	10 U	2,6-dinitrotoluene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/20/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1364R

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	50 U	anthracene	10 U
acenaphthene	10 U	di-n-butylphthalate	10 U
2,4-dinitrophenol	50 U	fluoranthene	10 U
4-nitrophenol	10 U	pyrene	10 U
dibenzofuran	10 U	butylbenzylphthalate	10 U
2,4-dinitrotoluene	10 U	3,3'-dichlorobenzidine	20 U
diethylphthalate	10 U	benzo(a)anthracene	10 U
4-chlorophenyl-phenylether	10 U	chrysene	10 U
fluorene	10 U	bis(2-ethylhexyl)phthalate	6 J
4-nitroaniline	50 U	di-n-octylphthalate	10 U
4,6-dinitro-2-methylphenol	50 U	benzo(b)fluoranthene	10 U
n-nitrosodiphenylamine <sup>1</sup>	10 U	benzo(k)fluoranthene	10 U
4-bromophenyl-phenylether	10 U	benzo(a)pyrene	10 U
hexachlorobenzene	10 U	indeno(1,2,3-cd)pyrene	10 U
pentachlorophenol	50 U	dibenzo(a,h)anthracene	10 U
phenanthrene	10 U	benzo(g,h,i)perylene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/20/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1364R

n-nitrosodimethylamine	10 U	m-dinitrobenzene	10 U
2-picoline	70 U	pentachlorobenzene	20 U
n-nitrosomethylethylamine	10 U	2-naphthylamine	170 U
methyl methanesulfonate	10 U	1-naphthylamine	120 U
n-nitrosodiethylamine	10 U	2,3,4,6-tetrachlorophenol	10 U
ethyl methanesulfonate	10 U	5-nitro-o-toluidine	20 U
aniline	50 U	diphenylamine	10 U
pentachloroethane	20 U	tetraethyl dithiopyropho(3)	10 U
3-methylphenol	10 U	sym-trinitrobenzene	10 U
n-nitrosopyrrolidine	10 U	phenacetin	10 U
acetophenone	10 U	diallate	10 U
n-nitrosomorpholine	10 U	4-aminobiphenyl	50 U
o-toluidine	10 U	pronamide	30 U
n-nitrosopiperidine	10 U	pentachloronitrobenzene	20 U
o,o,o-triethylphosphorot(2)	10 U	dinoseb	20 U
2,6-dichlorophenol	10 U	4-nitroquinoline-1-oxide	10 U
hexachloropropene	20 U	methapyrilene	40 U
a,a-dimethylphenethylamine	10 U	aramite	10 U
n-nitrosodi-n-butylamine	20 U	p-(dimethylamino)azobenzene	30 U
p-phenylenediamine	50 U	3,3'-dimethylbenzidine	80 U
safrole	10 U	2-acetylaminofluorene	10 U
1,2,4,5-tetrachlorobenzene	10 U	7,12-dimethylbenz(a)anth(4)	20 U
isosafrole	10 U	hexachlorophene(5)	500 U
1,4-naphthoquinone	10 U	3-methylcholanthrene	30 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

2 - o,o,o-triethylphosphorothioate

3 - tetraethyl dithiopyrophosphate

4 - 7,12-dimethylbenz(a)anthracene

5 - Quantitation limit for hexachlorophene in soil is ten times that listed.

Date Extracted: 07/20/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

IT Corporation  
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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

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APPENDIX IX SEMIVOLATILE ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1383

<u>Compound</u>		<u>Compound</u>	
phenol	330 U	bis(2-chloroethoxy)methane	330 U
bis(2-chloroethyl)ether	330 U	2,4-dichlorophenol	330 U
2-chlorophenol	330 U	1,2,4-trichlorobenzene	330 U
1,3-dichlorobenzene	330 U	naphthalene	330 U
1,4-dichlorobenzene	330 U	4-chloroaniline	330 U
benzyl alcohol	330 U	hexachlorobutadiene	330 U
1,2-dichlorobenzene	330 U	4-chloro-3-methylphenol	330 U
2-methylphenol	330 U	2-methylnaphthalene	330 U
bis(2-chloroisopropyl)ether	330 U	hexachlorocyclopentadiene	330 U
-methylphenol	330 U	2,4,6-trichlorophenol	330 U
-nitroso-di-n-propylamine	330 U	2,4,5-trichlorophenol	1,600 U
hexachloroethane	330 U	2-chloronaphthalene	330 U
nitrobenzene	330 U	2-nitroaniline	1,600 U
isophorone	330 U	dimethyl phthalate	330 U
2-nitrophenol	330 U	acenaphthylene	330 U
2,4-dimethylphenol	330 U	2,6-dinitrotoluene	330 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1383

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	1,600 U	anthracene	330 U
acenaphthene	330 U	di-n-butylphthalate	330 U
2,4-dinitrophenol	1,600 U	fluoranthene	330 U
4-nitrophenol	330 U	pyrene	330 U
dibenzofuran	330 U	butylbenzylphthalate	330 U
2,4-dinitrotoluene	330 U	3,3'-dichlorobenzidine	660 U
diethylphthalate	330 U	benzo(a)anthracene	330 U
4-chlorophenyl-phenylether	330 U	chrysene	330 U
fluorene	330 U	bis(2-ethylhexyl)phthalate	330 U
1-nitroaniline	1,600 U	di-n-octylphthalate	330 U
4,6-dinitro-2-methylphenol	1,600 U	benzo(b)fluoranthene	330 U
n-nitrosodiphenylamine <sup>1</sup>	330 U	benzo(k)fluoranthene	330 U
4-bromophenyl-phenylether	330 U	benzo(a)pyrene	330 U
hexachlorobenzene	330 U	indeno(1,2,3-cd)pyrene	330 U
pentachlorophenol	1,600 U	dibenzo(a,h)anthracene	330 U
phenanthrene	330 U	benzo(g,h,i)perylene	330 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in ug/kg (ppb)

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3473

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
phenol	8,420	1,700 U	7,260	86
2-chlorophenol	8,420	1,700 U	7,070	84
1,4-dichlorobenzene	4,210	1,700 U	3,970	94
n-nitroso-di-n-propylamine	4,210	1,700 U	3,750	89
1,2,4-trichlorobenzene	4,210	1,700 U	4,090	97
4-chloro-3-methylphenol	8,420	1,700 U	7,090	84
acenaphthene	4,210	1,700 U	4,260	101
4-nitrophenol	8,420	8,100 U	6,670	79
2,4-dinitrotoluene	4,210	1,700 U	4,210	100*
pentachlorophenol	8,420	8,100 U	5,420	64
pyrene	4,210	8,500	12,000	83

	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>RPD</u>
phenol	8,420	7,190	85	1
2-chlorophenol	8,420	7,150	85	-1
1,4-dichlorobenzene	4,210	3,870	92	2
n-nitroso-di-n-propylamine	4,210	3,720	88	1
1,2,4-trichlorobenzene	4,210	3,940	94	3
4-chloro-3-methylphenol	8,420	7,070	84	0
acenaphthene	4,210	4,120	98	3
4-nitrophenol	8,420	6,480	77	3
2,4-dinitrotoluene	4,210	3,820	91*	9
pentachlorophenol	8,420	5,940	71	-10
pyrene	4,210	10,500	48	53*

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

\* - Asterisked values are outside USEPA advisory QC limits.

Date Analyzed: 08/16/90

IT Corporation  
September 20, 1990

Client Project ID: NAS-Key West

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Job Number: ITCY 46179  
(Appendix IX)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	SEMI-VOLATILE					
	Nitro- Benzene-D5 (23-120%)*	2-Fluoro- Biphenyl (30-116%)*	Terphenyl- D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro- Phenol (26-121%)*	2,4,6 Tribromo- Phenol (18-122%)*
04-01-SED	114	98	102	93	90	83
04-01-SED MS	106	90	102	96	99	68
04-01-SED MSD	96	87	97	95	98	78
Method Blank	85	71	86	73	72	75

\* - Values in parenthesis represent USEPA contract required QC limits.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

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(Appendix IX)

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WATER SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>PESTICIDE</u>
	<u>Dibutylchlorodate</u> <u>(24-154%)*</u>
Method Blank	88
04-01-SW	89

\* - Values in parenthesis represent USEPA advisory QC limits.

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Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1387

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	8.0	U	methoxychlor	80	U
$\beta$ -BHC	8.0	U	endrin ketone	16	U
$\delta$ -BHC	8.0	U	$\alpha$ -chlordane	80	U
$\gamma$ -BHC (lindane)	8.0	U	$\gamma$ -chlordane	80	U
heptachlor	8.0	U	toxaphene	160	U
aldrin	8.0	U	Aroclor 1016	80	U
heptachlor epoxide	8.0	U	Aroclor 1221	80	U
endosulfan I	8.0	U	Aroclor 1232	80	U
dieldrin	16	U	Aroclor 1242	80	U
,,4'-DDE	16	U	Aroclor 1248	80	U
endrin	16	U	Aroclor 1254	160	U
endosulfan II	16	U	Aroclor 1260	160	U
4,4'-DDD	16	U	isodrin	0.050	U
endosulfan sulfate	16	U	kepone	0.10	U
4,4'-DDT	16	U	chlorobenzilate	0.50	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/25/90  
Date Analyzed: 08/08/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Client Sample ID: 04-01-SED DL  
Lab Sample ID: LL3473 DL

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
$\gamma$ -BHC (lindane)	33.5	16.8 J	58.7	125
heptachlor	33.5	500 U	41.9	125
aldrin	33.5	500 U	105	313*
dieldrin	83.8	1,000 U	1,000 U	0*
endrin	83.8	1,000 U	214	255*
4,4'-DDT	83.8	1,350	1,330	-24*

	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>% RPD</u>
$\gamma$ -BHC (lindane)	33.5	37.7	62	67*
heptachlor	33.5	29.3	87	36*
aldrin	33.5	71.2	212*	38
dieldrin	83.8	1,000 U	0*	0
endrin	83.8	134	160*	46*
4,4'-DDT	83.8	804	-652*	-186*

DL - Dilution

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

\*Asterisked values are outside USEPA advisory QC limits.

Date Analyzed: 08/08/90

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Client Project ID: NAS-Key West

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Job Number: ITCY 46179  
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SOIL SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>PESTICIDE</u> <u>Dibutylchloroendate</u> <u>(20-150%)*</u>
Method Blank	97
04-01-SED	118
04-01-SED DL	115
04-01-SED MS	76
04-01-SED MSD	62
04-01-SED MSD DL	95
04-01-SED MS DL	95

\* - Values in parenthesis represent USEPA advisory QC limits.

DL - Dilution

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

MATRIX SPIKE RECOVERY

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

	<u>Control Limit</u> <u>% Recovery</u>	<u>Spiked</u> <u>Sample Result</u>	<u>Sample</u> <u>Result</u>	<u>Spike</u> <u>Added</u>	<u>% Recovery</u>
antimony	75-125	65.3978	6.9234 B	67.20	87.0
arsenic	75-125	230.9288	11.3952	268.82	81.7
barium	75-125	404.8011	141.3669	268.82	98.0
beryllium	75-125	5.5833	0.2097 B	6.72	80.0
cadmium	75-125	13.4866	10.5914	13.44	21.5 N
chromium	75-125	65.9906	47.3468	26.88	69.4 N
cobalt	75-125	56.0309	7.3226	67.20	72.5 N
copper		652.0739	593.7608	33.60	173.6
lead		1,381.4852	1,139.5927	67.20	360.0
mercury		5.6989	5.5376	0.13	124.1
nickel	75-125	89.6223	42.3952	67.20	70.3 N
selenium	75-125	220.4274	8.0645 U	268.82	82.0
silver	75-125	10.5753	2.4691	6.72	120.6
thallium	75-125	210.5484	18.0228	268.82	71.6 N
vanadium	75-125	65.4530	8.5565	67.20	84.7
zinc		1,503.8831	1,302.0766	67.20	300.3

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

B - Value greater than instrument detection limit, but less than contract required quantitation limit.

N - Out of USEPA advisory control limits (i.e., 75-125% Recovery)

Date Digested: 08/01/90  
Date Analyzed: 08/13/90 (ICP)  
08/23/90 (GFAA)  
08/02/90 (CVAA)

% Solids: 74.4

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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MATRIX SPIKE RECOVERY

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

	<u>Control Limit</u> <u>% Recovery</u>	<u>Spiked</u> <u>Sample Result</u>	<u>Sample</u> <u>Result</u>	<u>Spike</u> <u>Added</u>	<u>% Recovery</u>
selenium	75-125	1.0282 B	1.3441 U	1.34	76.7

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

B - Value greater than instrument detection limit, but less than contract required quantitation limit.

Date Digested: 08/01/90  
Date Analyzed: 08/13/90 (ICP)  
08/23/90 (GFAA)  
08/02/90 (CVAA)

% Solids: 74.4

IT Corporation  
September 20, 1990

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>	<u>Conc. MSD</u>	<u>% Rec.</u>	<u>RPD</u>
sulfide	1,100	20 U	1,074	98	1,036	94	4.2

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Analysis Date: 07/24/90

**CERTIFICATE OF ANALYSIS**

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IT Corporation  
3012 US Highway 301 North, Suite 1000  
Tampa, FL 33619  
ATTN: Mark Hampton

September 20, 1990

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Job Number: ITCY 46179 (Miscellaneous Data)

P.O. Number: 595392.08

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 07/17/90  
Number of Samples: Six (6)  
Sample Type: Water

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**I. Introduction**

On 07/17/90, six (6) water samples arrived at the ITAS-Knoxville, Tennessee laboratory from the Naval Air Station, Key West, Florida. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

**II. Analytical Results/Methodology**

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that all data are blank corrected, i.e., if any compound is found in the corresponding laboratory blank, it is subtracted from the analytical result before it is reported.

The samples were analyzed for ethylene dibromide and dibromochloropropane at the ITAS-San Jose, California laboratory. A separate laboratory report for this analysis is included.

The samples were analyzed for polynuclear aromatic hydrocarbons (PNA) by high performance liquid chromatography based on EPA method 610.

The samples were analyzed for the halogenated and aromatic volatile organic compounds by gas chromatography based on EPA methods 601 and 602.

Reviewed and Approved:

  
Alyce Moore  
Laboratory Manager

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American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

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## II. Analytical Results/Methodology (continued)

The samples were analyzed for lead by graphite furnace atomic absorption spectroscopy (GFAA) based on EPA method 239.2.

## III. Quality Control

The samples were extracted for PNAs on 07/20/90 and analyzed from 08/15 to 08/20/90. An MS/MSD was prepared using sample 09-KWM-9-GW. After analysis, it was evident that the spiking mix had been inadvertently left out of the extraction process. The client was notified on 08/21/90 and instructed to report original sample without QC. They would attempt a resample at a later date if necessary. Matrix interferences were encountered resulting in necessary dilutions and elevated detection limits. No other problems were encountered.

The samples were analyzed for halogenated and aromatic volatile organic compounds from 07/18 to 07/20/90. For some samples, matrix interferences resulted in elevated detection limits. All run QC was acceptable. No other problems were encountered.

The samples were digested for lead to be analyzed by GFAA on 08/03/90. The samples were analyzed on 09/11/90. All run QC was acceptable. Samples were diluted to avoid adverse effects on the instrument (instrument was blowing graphite tubes due to high levels of minerals), thus the elevated detection limits. No other problems were encountered.

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

POLYNUCLEAR AROMATIC HYDROCARBONS ANALYSIS

Results in ug/liter (ppb)

Sample Matrix: Water

Client Sample ID: Lab Sample ID:	Method Blank BLA1366	09-02GM-GW LL2548	09-05GM-GW LL3549	09-KWM-9-GW LL3550
naphthalene	0.0080 U	0.80 U	0.0080 U	8.4 U
acenaphthylene	0.0080 U	0.80 U	0.0080 U	8.4 U
acenaphthene	0.0080 U	0.80 U	0.0080 U	8.4 U
fluorene	0.0080 U	0.80 U	0.0080 U	8.4 U
phenanthrene	0.0080 U	0.80 U	0.0080 U	8.4 U
anthracene	0.0080 U	0.80 U	0.0080 U	8.4 U
fluoranthene	0.0080 U	0.80 U	0.0080 U	8.4 U
pyrene	0.0080 U	0.80 U	0.0080 U	8.4 U
benzo(a)anthracene	0.0080 U	0.80 U	0.0080 U	8.4 U
chrysene	0.0080 U	23 U*	2.2 U*	18 U*
benzo(b)fluoranthene	0.0080 U	0.80 U	0.015	8.4 U
benzo(k)fluoranthene	0.0080 U	0.80 U	0.0080 U	8.4 U
benzo(a)pyrene	0.0080 U	0.80 U	0.030	8.4 U
dibenzo(a,h)anthracene	0.0080 U	0.80 U	0.0080 U	8.4 U
benzo(g,h,i)perylene	0.0080 U	0.80 U	0.0080 U	8.4 U
indeno(1,2,3-cd)pyrene	0.0080 U	0.80 U	0.0080 U	8.4 U
Analysis Date:	08/15/90	08/17/90	08/15 & 08/17/90	08/17/90
Extraction Date:	07/20/90	07/20/90	07/20/90	07/20/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

\* - Detection limit higher than normal due to sample matrix interference.

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

POLYNUCLEAR AROMATIC HYDROCARBONS ANALYSIS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Lab Sample ID:	09-KWM-21-GW <u>LL3553</u>	09-KWM-21-GWD <u>LL3554</u>	09-KWM-25-EB <u>LL3556</u>
naphthalene	8.0 U	8,000 U*	0.0080 U
acenaphthylene	8.0 U	8,000 U*	0.0080 U
acenaphthene	8.0 U	8,000 U*	0.0080 U
fluorene	8.0 U	8,000 U*	0.0080 U
phenanthrene	8.0 U	8,000 U*	0.0080 U
anthracene	8.0 U	8,000 U*	0.0080 U
fluoranthene	8.0 U	8,000 U*	0.0080 U
pyrene	8.0 U	8,000 U*	0.0080 U
benzo(a)anthracene	8.0 U	8,000 U*	0.0080 U
chrysene	26 U*	8,000 U*	0.0080 U
benzo(b)fluoranthene	8.0 U	8,000 U*	0.0080 U
benzo(k)fluoranthene	8.0 U	8,000 U*	0.026
benzo(a)pyrene	8.0 U	8,000 U*	0.011
dibenzo(a,h)anthracene	8.0 U	8,000 U*	0.0080 U
benzo(g,h,i)perylene	8.0 U	8,000 U*	0.0080 U
indeno(1,2,3-cd)pyrene	8.0 U	8,000 U*	0.0080 U
Analysis Date:	08/17/90	08/20/90	08/17/90
Extraction Date:	07/20/90	07/20/90	07/20/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

\* - Detection limit higher than normal due to sample matrix interference.

IT Corporation  
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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

VOLATILE ORGANIC COMPOUND ANALYSIS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Lab Sample ID:	Method Blank 1 B0170	Method Blank 2 B0173	09-02GM-GW LL3529
dichlorodifluoromethane	1.8 U	1.8 U	15 U*
chloromethane	0.8 U	0.8 U	4.2 U*
vinyl chloride	1.8 U	1.8 U	1.8 U
bromomethane	1.2 U	1.2 U	1.2 U
chloroethane	5.2 U	5.2 U	5.2 U
trichlorofluoromethane	2.0 U	2.0 U	2.0 U
1,1-dichloroethene	1.3 U	1.3 U	1.3 U
methylene chloride (dichloromethane)	2.0 U	2.0 U	2.0 U
trans-1,2-dichloroethene	1.0 U	1.0 U	1.0 U
1,1-dichloroethane	0.7 U	0.7 U	0.7 U
trichloromethane (chloroform)	0.5 U	0.5 U	0.5 U
1,1,1-trichloroethane	0.3 U	0.3 U	0.3 U
carbon tetrachloride	1.2 U	1.2 U	1.2 U
benzene	2.0 U	2.0 U	2.0 U
1,2-dichloroethane	0.3 U	0.3 U	0.3 U
trichloroethene	1.2 U	1.2 U	1.2 U
1,2-dichloropropane	0.4 U	0.4 U	0.4 U
bromodichloromethane	1.0 U	2.0 U	1.0 U
2-chloroethyl vinyl ether	1.3 U	1.3 U	1.3 U
cis-1,3-dichloropropene	3.4 U	3.4 U	3.4 U
toluene	2.0 U	2.0 U	2.0 U
trans-1,3-dichloropropene	2.0 U	2.0 U	2.0 U
1,1,2-trichloroethane	0.2 U	0.2 U	0.2 U
tetrachloroethene	0.3 U	0.3 U	0.3 U
dibromochloromethane	0.9 U	0.9 U	0.9 U
chlorobenzene	2.0 U	2.0 U	2.0 U
ethylbenzene	2.0 U	2.0 U	2.0 U
xylenes	1.0 U	1.0 U	1.0 U
bromoform	2.0 U	2.0 U	2.0 U
1,1,2,2-tetrachloroethane	0.3 U	0.3 U	0.3 U
1,3-dichlorobenzene	3.2 U	3.2 U	3.2 U
1,4-dichlorobenzene	2.4 U	2.4 U	2.4 U
1,2-dichlorobenzene	1.5 U	1.5 U	1.5 U
Date Analyzed:	07/18/90	07/20/90	07/19/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

\* - Elevated detection limits due to matrix interferences.

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

VOLATILE ORGANIC COMPOUND ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID:	09-05GM-GW	09-KWM-9-GW
Lab Sample ID:	<u>LL3530</u>	<u>LL3531</u>
dichlorodifluoromethane	1.8 U	9 U
chloromethane	0.8 U	4 U
vinyl chloride	1.8 U	9 U
bromomethane	1.2 U	6 U
chloroethane	5.2 U	15 U
trichlorofluoromethane	2.0 U	5 U
1,1-dichloroethene	1.3 U	5 U
methylene chloride (dichloromethane)	2.0 U	5 U
trans-1,2-dichloroethene	1.0 U	5 U
1,1-dichloroethane	0.7 U	3.5 U
trichloromethane (chloroform)	0.5 U	2.5 U
1,1,1-trichloroethane	0.3 U	1.5 U
carbon tetrachloride	1.2 U	5 U
benzene	2.0 U	780
1,2-dichloroethane	0.3 U	1.5 U
trichloroethene	1.2 U	5 U
1,2-dichloropropane	0.4 U	2.0 U
bromodichloromethane	1.0 U	5 U
2-chloroethyl vinyl ether	1.3 U	5 U
cis-1,3-dichloropropene	3.4 U	5 U
toluene	2.0 U	39
trans-1,3-dichloropropene	2.0 U	5 U
1,1,2-trichloroethane	0.2 U	1.0 U
tetrachloroethene	0.3 U	1.5 U
dibromochloromethane	0.9 U	4.5 U
chlorobenzene	2.0 U	5 U
ethylbenzene	2.0 U	33
xylenes	1.0 U	11
bromoform	2.0 U	5 U
1,1,2,2-tetrachloroethane	0.3 U	1.5 U
1,3-dichlorobenzene	3.2 U	5 U
1,4-dichlorobenzene	2.4 U	5 U
1,2-dichlorobenzene	1.5 U	5 U
Date Analyzed:	07/19/90	07/20/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Please note: Elevated detection limits due to necessary dilution factors.

IT Corporation  
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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 09-KWM-9-GW  
Lab Sample ID: LL3531

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>	<u>Conc. MSD</u>	<u>% Rec.</u>	<u>RPD</u>
vinyl chloride	500	9 U	450	90	440	88	2.2
1,1-dichloroethylene	500	5 U	480	96	450	90	6.5
chloroform	500	2.5 U	390	78	380	76	2.6
1,1,1-trichloroethane	500	1.5 U	400	80	360	72	11
carbon tetrachloride	500	5 U	420	84	360	72	15
benzene	500	780	1,300	104	1,300	104	0
1,2-dichloroethane	500	1.5 U	420	84	370	74	13
trichloroethylene	500	5 U	380	76	360	72	5.4
bromodichloromethane	500	5 U	410	82	340	68	19
bromoform	500	5 U	420	84	380	76	10
1,4-dichlorobenzene	500	5 U	340	68	310	62	9.2

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 07/20/90

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

VOLATILE ORGANIC COMPOUND ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID:	09-KWM-21-GW	09-KWM-21-GWD
Lab Sample ID:	<u>LL3534</u>	<u>LL3535</u>
dichlorodifluoromethane	1.8 U	3.0 U*
chloromethane	1.8 U*	0.8 U
vinyl chloride	1.8 U	1.8 U
bromomethane	1.2 U	1.2 U
chloroethane	5.2 U	5.2 U
trichlorofluoromethane	2.0 U	2.0 U
1,1-dichloroethene	1.3 U	1.3 U
methylene chloride (dichloromethane)	2.0	2.0 U
trans-1,2-dichloroethene	1.0 U	1.0 U
1,1-dichloroethane	0.7 U	0.7 U
trichloromethane (chloroform)	0.5 U	0.5 U
1,1,1-trichloroethane	0.3 U	0.3 U
carbon tetrachloride	1.2 U	1.2 U
benzene	9.6	8.9
1,2-dichloroethane	0.3 U	0.3 U
trichloroethene	1.2 U	1.2 U
1,2-dichloropropane	0.4 U	0.4 U
bromodichloromethane	1.0 U	1.0 U
2-chloroethyl vinyl ether	1.3 U	1.3 U
cis-1,3-dichloropropene	3.4 U	3.4 U
toluene	2.0 U	2.0 U
trans-1,3-dichloropropene	2.0 U	2.0 U
1,1,2-trichloroethane	0.2 U	0.2 U
tetrachloroethene	0.3 U	0.3 U
dibromochloromethane	0.9 U	0.9 U
chlorobenzene	2.0 U	2.0 U
ethylbenzene	2.0 U	2.0 U
xylene	1.0 U	1.0 U
bromoform	2.0 U	2.0 U
1,1,2,2-tetrachloroethane	0.3 U	0.3 U
1,3-dichlorobenzene	3.2 U	3.2 U
1,4-dichlorobenzene	2.4 U	2.4 U
1,2-dichlorobenzene	1.5 U	1.5 U
Date Analyzed:	07/19/90	07/20/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

\* - Elevated detection limits due to matrix interferences.

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IT ANALYTICAL SERVICES  
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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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VOLATILE ORGANIC COMPOUND ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID:	09-KWM-25-EB	Trip Blank
Lab Sample ID:	<u>LL3537</u>	<u>LL3538</u>
dichlorodifluoromethane	1.8 U	1.8 U
chloromethane	0.8 U	0.8 U
vinyl chloride	1.8 U	1.8 U
bromomethane	1.2 U	1.2 U
chloroethane	5.2 U	5.2 U
trichlorofluoromethane	2.0 U	2.7
1,1-dichloroethene	1.3 U	1.3 U
methylene chloride (dichloromethane)	2.0 U	2.0 U
trans-1,2-dichloroethene	1.0 U	1.0 U
1,1-dichloroethane	0.7 U	0.7 U
trichloromethane (chloroform)	0.5 U	0.5 U
1,1,1-trichloroethane	0.3 U	0.3 U
carbon tetrachloride	1.2 U	1.2 U
benzene	2.0 U	2.0 U
1,2-dichloroethane	0.3 U	0.3 U
trichloroethene	1.2 U	1.2 U
1,2-dichloropropane	0.4 U	0.4 U
bromodichloromethane	1.0 U	1.0 U
2-chloroethyl vinyl ether	1.3 U	1.3 U
cis-1,3-dichloropropene	3.4 U	3.4 U
toluene	2.0 U	2.0 U
trans-1,3-dichloropropene	2.0 U	2.0 U
1,1,2-trichloroethane	0.2 U	0.2 U
tetrachloroethene	0.3 U	0.3 U
dibromochloromethane	0.9 U	0.9 U
chlorobenzene	2.0 U	2.0 U
ethylbenzene	2.0 U	2.0 U
xylenes	1.0 U	1.0 U
bromoform	2.0 U	2.0 U
1,1,2,2-tetrachloroethane	0.3 U	0.3 U
1,3-dichlorobenzene	3.2 U	3.2 U
1,4-dichlorobenzene	2.4 U	2.4 U
1,2-dichlorobenzene	1.5 U	1.5 U
Date Analyzed:	07/19/90	07/19/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

WATER SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>VOLATILE</u>		
	<u>bromochloromethane</u>	<u>ortho- chlorofluorobenzene</u>	<u>fluorobenzene</u>
09-02GM-GW	97	93	104
09-05GM-GW	90	84	95
09-KWM-9-GW	65	62	78
09-KWM-9-GW MS	84	79	89
09-KWM-9-GW MSD	79	69	81
09-KWM-21-GW	91	79	102
09-KWM-21-GWD	62	62	69
09-KWM-25-EB	92	91	99
Trip Blank	93	93	100
Method Blank 1	75	87	100
Method Blank 2	90	92	94
09-KWM-9-GW DL	72	72	76

DL - Dilution

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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LEAD ANALYSIS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
Method Blank	PBWC2816	2.0 U
09-02GM-GW	LL3539	30.0 U
09-05GM-GW	LL3540	30.0 U
09-KWM-9-GW	LL3541	32.2

Date Digested: 08/03/90  
Date Analyzed: 09/11/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

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Client Project ID: NAS-Key West

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Job Number: ITCY 46179  
(Miscellaneous Data)

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MATRIX SPIKE RECOVERY

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 09-KWM-9-GW  
Lab Sample ID: LL3541

	<u>Control Limit</u> <u>% Recovery</u>	<u>Spiked</u> <u>Sample Result</u>	<u>Sample</u> <u>Result</u>	<u>Spike</u> <u>Added</u>	<u>% Recovery</u>
Lead	75-125	51.9000	32.2500	20.00	98.2

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Digested: 08/03/90  
Date Analyzed: 09/11/90

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Miscellaneous Data)

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DUPLICATE ANALYSIS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 09-KWM-9-GW  
Lab Sample ID: LL3541

<u>Parameter</u>	<u>Original Sample</u>	<u>Duplicate</u>	<u>RPD</u>
Lead	32.2500	32.1000	0.5

RPD = Relative Percent Difference

Date Digested: 08/03/90  
Date Analyzed: 09/11/90

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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LEAD ANALYSIS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
09-KWM-21-GW	LL3544	30.0 U
09-KWM-21-GWD	LL3545	30.0 U
09-KWM-25-EB	LL3547	30.0 U

Date Digested: 08/03/90  
Date Analyzed: 09/11/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX VOLATILE ORGANIC ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: VB07302

<u>Compound</u>		<u>Compound</u>	
acetone	10 U	1,2-dichloropropane	5 U
acetonitrile	100 U	cis-1,3-dichloropropene	5 U
acrolein	10 U	trans-1,3-dichloropropene	5 U
acrylonitrile	10 U	1,4-dioxane	1,000 U
benzene	5 U	ethyl benzene	5 U
bromodichloromethane	5 U	ethyl cyanide	100 U
bromoform	5 U	ethyl methacrylate	10 U
bromomethane	10 U	2-hexanone	10 U
2-butanone	10 U	iodomethane	5 U
carbon disulfide	5 U	isobutyl alcohol	2,000 U
carbon tetrachloride	5 U	methacrylonitrile	10 U
chlorobenzene	5 U	methyl methacrylate	10 U
chloroethane	10 U	4-methyl-2-pentanone	10 U
-chloro-1-propene	5 U	methylene chloride	5 U
chloroform	5 U	pyridine	20,000 U
chloromethane	10 U	styrene	5 U
chloroprene	5 U	1,1,1,2-tetrachloroethane	5 U
1,2-dibromo-3-chloropropane	10 U	1,1,2,2-tetrachloroethane	5 U
dibromochloromethane	5 U	tetrachloroethene	5 U
1,2-dibromoethane	5 U	toluene	5 U
dibromomethane	10 U	1,1,1-trichloroethane	5 U
trans-1,4-dichloro-2-butene	20 U	1,1,2-trichloroethane	5 U
dichlorodifluoromethane	20 U	trichloroethene	5 U
1,1-dichloroethane	5 U	trichlorofluoromethane	5 U
1,2-dichloroethane	5 U	1,2,3-trichloropropane	5 U
1,1-dichloroethene	5 U	vinyl acetate	10 U
trans-1,2-dichloroethene	5 U	vinyl chloride	10 U
		xylenes (total)	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date of Analysis: 07/30/90  
Dilution Factor: 1

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IT ANALYTICAL SERVICES  
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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX VOLATILE ORGANIC ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 10-MW01-SS  
Lab Sample ID: LL3864

<u>Compound</u>		<u>Compound</u>	
acetone	12 U	1,2-dichloropropane	6 U
acetonitrile	120 U	cis-1,3-dichloropropene	6 U
acrolein	12 U	trans-1,3-dichloropropene	6 U
acrylonitrile	12 U	1,4-dioxane	1,200 U
benzene	6 U	ethyl benzene	6 U
bromodichloromethane	6 U	ethyl cyanide	120 U
bromoform	6 U	ethyl methacrylate	12 U
bromomethane	12 U	2-hexanone	12 U
2-butanone	12 U	iodomethane	6 U
carbon disulfide	6 U	isobutyl alcohol	2,400 U
carbon tetrachloride	6 U	methacrylonitrile	12 U
chlorobenzene	6 U	methyl methacrylate	12 U
chloroethane	12 U	4-methyl-2-pentanone	12 U
3-chloro-1-propene	6 U	methylene chloride	5 J
chloroform	6 U	pyridine	24,000 U
chloromethane	12 U	styrene	6 U
chloroprene	6 U	1,1,1,2-tetrachloroethane	6 U
1,2-dibromo-3-chloropropane	12 U	1,1,2,2-tetrachloroethane	6 U
dibromochloromethane	6 U	tetrachloroethene	6 U
1,2-dibromoethane	6 U	toluene	2 J
dibromomethane	12 U	1,1,1-trichloroethane	6 U
trans-1,4-dichloro-2-butene	24 U	1,1,2-trichloroethane	6 U
dichlorodifluoromethane	24 U	trichloroethene	6 U
1,1-dichloroethane	6 U	trichlorofluoromethane	6 U
1,2-dichloroethane	6 U	1,2,3-trichloropropane	6 U
1,1-dichloroethene	6 U	vinyl acetate	12 U
trans-1,2-dichloroethene	6 U	vinyl chloride	12 U
		xylene (total)	6 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date of Analysis: 07/30/90  
Dilution Factor: 1  
% Moisture: 16

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX VOLATILE ORGANIC ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-MW-SS  
Lab Sample ID: LL3865

<u>Compound</u>		<u>Compound</u>	
acetone	19 U	1,2-dichloropropane	9 U
acetonitrile	190 U	cis-1,3-dichloropropene	9 U
acrolein	19 U	trans-1,3-dichloropropene	9 U
acrylonitrile	19 U	1,4-dioxane	1,900 U
benzene	9 U	ethyl benzene	9 U
bromodichloromethane	9 U	ethyl cyanide	190 U
bromoform	9 U	ethyle methacrylate	19 U
bromomethane	19 U	2-hexanone	19 U
2-butanone	19 U	iodomethane	9 U
carbon disulfide	9 U	isobutyl alcohol	3,800 U
carbon tetrachloride	9 U	methacrylonitrile	19 U
chlorobenzene	9 U	methyl methacrylate	19 U
chloroethane	19 U	4-methyl-2-pentanone	19 U
1-chloro-1-propene	9 U	methylene chloride	10
chloroform	9 U	pyridine	38,000 U
chloromethane	19 U	styrene	9 U
chloroprene	9 U	1,1,1,2-tetrachloroethane	9 U
1,2-dibromo-3-chloropropane	19 U	1,1,2,2-tetrachloroethane	9 U
dibromochloromethane	9 U	tetrachloroethene	9 U
1,2-dibromoethane	9 U	toluene	9 U
dibromomethane	19 U	1,1,1-trichloroethane	9 U
trans-1,4-dichloro-2-butene	38 U	1,1,2-trichloroethane	9 U
dichlorodifluoromethane	38 U	trichloroethene	9 U
1,1-dichloroethane	9 U	trichlorofluoromethane	9 U
1,2-dichloroethane	9 U	1,2,3-trichloropropane	9 U
1,1-dichloroethene	9 U	vinyl acetate	19 U
trans-1,2-dichloroethene	9 U	vinyl chloride	19 U
		xylenes (total)	9 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date of Analysis: 07/30/90  
Dilution Factor: 1  
% Moisture: 47

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	VOLATILE		
	<u>Toluene-D8</u> (81-117%)*	<u>BFB</u> (74-121%)*	<u>1,2 Dichloroethane-D4</u> (70-121%)*
04-05-MW-SS	111	88	77
10-MW01-SS	100	89	78
Method Blank	97	99	83

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1383

n-nitrosodimethylamine	330 U	m-dinitrobenzene	330 U
2-picoline	2,300 U	pentachlorobenzene	670 U
n-nitrosomethylethylamine	330 U	2-naphthylamine	5,700 U
methyl methanesulfonate	330 U	1-naphthylamine	4,000 U
n-nitrosodiethylamine	330 U	2,3,4,6-tetrachlorophenol	330 U
ethyl methanesulfonate	330 U	5-nitro-o-toluidine	670 U
aniline	1,700 U	diphenylamine	330 U
pentachloroethane	670 U	tetraethyl dithiopyropho(3)	330 U
3-methylphenol	330 U	sym-trinitrobenzene	330 U
n-nitrosopyrrolidine	330 U	phenacetin	330 U
acetophenone	330 U	diallate	330 U
n-nitrosomorpholine	330 U	4-aminobiphenyl	1,700 U
o-toluidine	330 U	pronamide	1,000 U
n-nitrosopiperidine	330 U	pentachloronitrobenzene	670 U
o,o,o-triethylphosphorot(2)	330 U	dinoseb	670 U
2,6-dichlorophenol	330 U	4-nitroquinoline-1-oxide	330 U
hexachloropropene	670 U	methapyrilene	1,300 U
a,a-dimethylphenethylamine	330 U	aramite	330 U
n-nitrosodi-n-butylamine	670 U	p-(dimethylamino)azobenzene	1,000 U
p-phenylenediamine	1,700 U	3,3'-dimethylbenzidine	2,700 U
safrole	330 U	2-acetylaminofluorene	330 U
1,2,4,5-tetrachlorobenzene	330 U	7,12-dimethylbenz(a)anth(4)	670 U
isosafrole	330 U	hexachlorophene(5)	1,700 U
1,4-naphthoquinone	330 U	3-methylcholanthrene	1,000 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

2 - o,o,o-triethylphosphorothioate

3 - tetraethyl dithiopyrophosphate

4 - 7,12-dimethylbenz(a)anthracene

5 - Quantitation limit for hexachlorophene in soil is ten times that listed.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1.0

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 10-MW01-SS  
Lab Sample ID: LL3889

<u>Compound</u>		<u>Compound</u>	
phenol	780 U	bis(2-chloroethoxy)methane	780 U
bis(2-chloroethyl)ether	780 U	2,4-dichlorophenol	780 U
2-chlorophenol	780 U	1,2,4-trichlorobenzene	780 U
1,3-dichlorobenzene	780 U	naphthalene	780 U
1,4-dichlorobenzene	780 U	4-chloroaniline	780 U
benzyl alcohol	780 U	hexachlorobutadiene	780 U
1,2-dichlorobenzene	780 U	4-chloro-3-methylphenol	780 U
2-methylphenol	780 U	2-methylnaphthalene	780 U
bis(2-chloroisopropyl)ether	780 U	hexachlorocyclopentadiene	780 U
4-methylphenol	780 U	2,4,6-trichlorophenol	780 U
n-nitroso-di-n-propylamine	780 U	2,4,5-trichlorophenol	3,800 U
hexachloroethane	780 U	2-chloronaphthalene	780 U
nitrobenzene	780 U	2-nitroaniline	3,800 U
isophorone	780 U	dimethyl phthalate	780 U
2-nitrophenol	780 U	acenaphthylene	780 U
2,4-dimethylphenol	780 U	2,6-dinitrotoluene	780 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/24/90  
Date Analyzed: 08/22/90  
Dilution Factor: 2.0  
% Moisture: 16

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 10-MW01-SS  
Lab Sample ID: LL3889

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	3,800 U	anthracene	780 U
acenaphthene	780 U	di-n-butylphthalate	780 U
2,4-dinitrophenol	3,800 U	fluoranthene	780 U
4-nitrophenol	3,800 U	pyrene	780 U
dibenzofuran	780 U	butylbenzylphthalate	780 U
2,4-dinitrotoluene	780 U	3,3'-dichlorobenzidine	1,600 U
diethylphthalate	780 U	benzo(a)anthracene	780 U
4-chlorophenyl-phenylether	780 U	chrysene	780 U
fluorene	780 U	bis(2-ethylhexyl)phthalate	440 J
4-nitroaniline	3,800 U	di-n-octylphthalate	780 U
2,6-dinitro-2-methylphenol	3,800 U	benzo(b)fluoranthene	780 U
4-nitrosodiphenylamine <sup>1</sup>	780 U	benzo(k)fluoranthene	780 U
4-bromophenyl-phenylether	780 U	benzo(a)pyrene	780 U
hexachlorobenzene	780 U	indeno(1,2,3-cd)pyrene	780 U
pentachlorophenol	3,800 U	dibenzo(a,h)anthracene	780 U
phenanthrene	780 U	benzo(g,h,i)perylene	780 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/22/90  
Dilution Factor: 2.0  
% Moisture: 16

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 10-MW01-SS  
Lab Sample ID: LL3889

n-nitrosodimethylamine	780 U	m-dinitrobenzene	780 U
2-picoline	5,400 U	pentachlorobenzene	1,600 U
n-nitrosomethylethylamine	780 U	2-naphthylamine	14,000 U
methyl methanesulfonate	780 U	1-naphthylamine	9,500 U
n-nitrosodiethylamine	780 U	2,3,4,6-tetrachlorophenol	780 U
ethyl methanesulfonate	780 U	5-nitro-o-toluidine	1,600 U
aniline	4,000 U	diphenylamine	780 U
pentachloroethane	1,600 U	tetraethyl dithiopyropho(3)	780 U
3-methylphenol	780 U	sym-trinitrobenzene	780 U
n-nitrosopyrrolidine	780 U	phenacetin	780 U
acetophenone	780 U	diallate	780 U
n-nitrosomorpholine	780 U	4-aminobiphenyl	4,000 U
o-toluidine	780 U	pronamide	2,400 U
n-nitrosopiperidine	780 U	pentachloronitrobenzene	1,600 U
o,o,o-triethylphosphorot(2)	780 U	dinoseb	1,600 U
2,6-dichlorophenol	780 U	4-nitroquinoline-1-oxide	780 U
hexachloropropene	1,600 U	methapyrilene	3,200 U
a,a-dimethylphenethylamine	780 U	aramite	780 U
n-nitrosodi-n-butylamine	1,600 U	p-(dimethylamino)azobenzene	2,400 U
p-phenylenediamine	4,000 U	3,3'-dimethylbenzidine	6,400 U
safrole	780 U	2-acetylaminofluorene	780 U
1,2,4,5-tetrachlorobenzene	780 U	7,12-dimethylbenz(a)anth(4)	1,600 U
isosafrole	780 U	hexachlorophene(5)	4,000 U
1,4-naphthoquinone	780 U	3-methylcholanthrene	2,400 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

2 - o,o,o-triethylphosphorothioate

3 - tetraethyl dithiopyrophosphate

4 - 7,12-dimethylbenz(a)anthracene

5 - Quantitation limit for hexachlorophene in soil is ten times that listed.

Date Extracted: 07/24/90  
Date Analyzed: 08/22/90  
Dilution Factor: 2.0  
% Moisture: 16

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-MW-SS  
Lab Sample ID: LL3890

<u>Compound</u>		<u>Compound</u>	
phenol	1,200 U	bis(2-chloroethoxy)methane	1,200 U
bis(2-chloroethyl)ether	1,200 U	2,4-dichlorophenol	1,200 U
2-chlorophenol	1,200 U	1,2,4-trichlorobenzene	1,200 U
1,3-dichlorobenzene	1,200 U	naphthalene	1,200 U
1,4-dichlorobenzene	1,200 U	4-chloroaniline	1,200 U
benzyl alcohol	1,200 U	hexachlorobutadiene	1,200 U
1,2-dichlorobenzene	1,200 U	4-chloro-3-methylphenol	1,200 U
2-methylphenol	1,200 U	2-methylnaphthalene	1,200 U
bis(2-chloroisopropyl)ether	1,200 U	hexachlorocyclopentadiene	1,200 U
4-methylphenol	1,200 U	2,4,6-trichlorophenol	1,200 U
n-nitroso-di-n-propylamine	1,200 U	2,4,5-trichlorophenol	6,000 U
hexachloroethane	1,200 U	2-chloronaphthalene	1,200 U
nitrobenzene	1,200 U	2-nitroaniline	6,000 U
isophorone	1,200 U	dimethyl phthalate	1,200 U
2-nitrophenol	1,200 U	acenaphthylene	1,200 U
2,4-dimethylphenol	1,200 U	2,6-dinitrotoluene	1,200 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/24/90  
Date Analyzed: 08/22/90  
Dilution Factor: 2.0  
% Moisture: 47

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-MW-SS  
Lab Sample ID: LL3890

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	6,000 U	anthracene	1,200 U
acenaphthene	1,200 U	di-n-butylphthalate	1,200 U
2,4-dinitrophenol	6,000 U	fluoranthene	1,200 U
4-nitrophenol	6,000 U	pyrene	1,200 U
dibenzofuran	1,200 U	butylbenzylphthalate	1,200 U
2,4-dinitrotoluene	1,200 U	3,3'-dichlorobenzidine	2,500 U
diethylphthalate	1,200 U	benzo(a)anthracene	1,200 U
4-chlorophenyl-phenylether	1,200 U	chrysene	1,200 U
fluorene	1,200 U	bis(2-ethylhexyl)phthalate	550 J
4-nitroaniline	6,000 U	di-n-octylphthalate	1,200 U
2,6-dinitro-2-methylphenol	6,000 U	benzo(b)fluoranthene	1,200 U
n-nitrosodiphenylamine <sup>1</sup>	1,200 U	benzo(k)fluoranthene	1,200 U
4-bromophenyl-phenylether	1,200 U	benzo(a)pyrene	1,200 U
hexachlorobenzene	1,200 U	indeno(1,2,3-cd)pyrene	1,200 U
pentachlorophenol	6,000 U	dibenzo(a,h)anthracene	1,200 U
phenanthrene	1,200 U	benzo(g,h,i)perylene	1,200 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/22/90  
Dilution Factor: 2.0  
% Moisture: 47

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-MW-SS  
Lab Sample ID: LL3890

n-nitrosodimethylamine	1,200 U	m-dinitrobenzene	1,200 U
2-picoline	8,600 U	pentachlorobenzene	2,500 U
n-nitrosomethylethylamine	1,200 U	2-naphthylamine	21,000 U
methyl methanesulfonate	1,200 U	1-naphthylamine	15,000 U
n-nitrosodiethylamine	1,200 U	2,3,4,6-tetrachlorophenol	1,200 U
ethyl methanesulfonate	1,200 U	5-nitro-o-toluidine	2,500 U
aniline	6,400 U	diphenylamine	1,200 U
pentachloroethane	2,500 U	tetraethyl dithiopyropho(3)	1,200 U
3-methylphenol	1,200 U	sym-trinitrobenzene	1,200 U
n-nitrosopyrrolidine	1,200 U	phenacetin	1,200 U
acetophenone	1,200 U	diallate	1,200 U
n-nitrosomorpholine	1,200 U	4-aminobiphenyl	6,300 U
o-toluidine	1,200 U	pronamide	3,800 U
-nitrosopiperidine	1,200 U	pentachloronitrobenzene	2,500 U
o,o,o-triethylphosphorot(2)	1,200 U	dinoseb	2,500 U
2,6-dichlorophenol	1,200 U	4-nitroquinoline-1-oxide	1,200 U
hexachloropropene	2,500 U	methapyrilene	5,000 U
a,a-dimethylphenethylamine	1,200 U	aramite	1,200 U
n-nitrosodi-n-butylamine	2,500 U	p-(dimethylamino)azobenzene	3,800 U
p-phenylenediamine	6,300 U	3,3'-dimethylbenzidine	10,000 U
safrole	1,200 U	2-acetylaminofluorene	1,200 U
1,2,4,5-tetrachlorobenzene	1,200 U	7,12-dimethylbenz(a)anth(4)	2,500 U
isosafrole	1,200 U	hexachlorophene(5)	6,400 U
1,4-naphthoquinone	1,200 U	3-methylcholanthrene	3,800 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

2 - o,o,o-triethylphosphorothioate

3 - tetraethyl dithiopyrophosphate

4 - 7,12-dimethylbenz(a)anthracene

5 - Quantitation limit for hexachlorophene in soil is ten times that listed.

Date Extracted: 07/24/90  
Date Analyzed: 08/22/90  
Dilution Factor: 2.0  
% Moisture: 47

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	SEMI-VOLATILE					
	Nitro- Benzene-D5 (23-120%)*	2-Fluoro- Biphenyl (30-116%)*	Terphenyl- D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro- Phenol (26-121%)*	2,4,6 Tribromo- Phenol (18-122%)*
04-05-MW-SS	94	83	98	92	95	75
10-MW01-SS	99	87	103	90	89	54
Method Blank	85	71	86	73	72	75

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-MW-SS  
Lab Sample ID: LL3890

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	15	U	methoxychlor	150	U
$\beta$ -BHC	15	U	endrin ketone	30	U
$\delta$ -BHC	15	U	chlordane	150	U
$\gamma$ -BHC (lindane)	15	U	toxaphene	300	U
heptachlor	15	U	Aroclor 1016	150	U
aldrin	15	U	Aroclor 1221	150	U
heptachlor epoxide	15	U	Aroclor 1232	150	U
endosulfan I	15	U	Aroclor 1242	150	U
dieldrin	30	U	Aroclor 1248	150	U
4,4'-DDE	30	U	Aroclor 1254	300	U
drin	30	U	Aroclor 1260	300	U
endosulfan II	30	U	isodrin	15	U
4,4'-DDD	30	U	kepone	30	U
endosulfan sulfate	30	U	chlorobenzilate	150	U
4,4'-DDT	30	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/25/90  
Date Analyzed: 08/02/90  
Dilution Factor: 1.0  
% Moisture: 47

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

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SOIL SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>PESTICIDE</u>
	<u>Dibutylchlorodate</u> <u>(20-150%)*</u>
Method Blank	97
04-05-MW-SS	106
10-MW01-SS	56

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
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TARGET ANALYTE LIST - INORGANICS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: PBSC2787/C2792/C4337

antimony	3	U
arsenic	3	U
barium	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
cobalt	2	U
copper	1	U
lead	3	U
mercury	0.02	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	3	U
vanadium	1	U
zinc	0.5	U
tin	2	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Digested: 08/01/90  
Date Analyzed: 08/15 and 08/17/90 (ICP)  
08/23/90 (GFAA)  
08/02/90 (CVAA)

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

TARGET ANALYTE LIST - INORGANICS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: 10-MW01-SS  
Lab Sample ID: LL3879

antimony	3.4	U
arsenic	3.4	U
barium	9.9	B
beryllium	0.11	U
cadmium	0.56	U
chromium	4.7	
cobalt	2.2	U
copper	32.9	
lead	14.4	
mercury	0.02	U
nickel	3.3	B
selenium	1.1	UW
silver	2.8	U
thallium	3.4	U
vanadium	1.8	B
zinc	54.3	
tin	3.1	

% Solids 89.4

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
B - Value greater than instrument detection limit, but less than contract required quantitation limit.  
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.

Date Digested: 08/01/90  
Date Analyzed: 08/15 and 08/17/90 (ICP)  
08/23/90 (GFAA)  
08/02/90 (CVAA)

IT Corporation  
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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1387

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	8.0	U	methoxychlor	80	U
$\beta$ -BHC	8.0	U	endrin ketone	16	U
$\delta$ -BHC	8.0	U	chlordane	80	U
$\gamma$ -BHC (lindane)	8.0	U	toxaphene	160	U
heptachlor	8.0	U	Aroclor 1016	80	U
aldrin	8.0	U	Aroclor 1221	80	U
heptachlor epoxide	8.0	U	Aroclor 1232	80	U
endosulfan I	8.0	U	Aroclor 1242	80	U
dieldrin	16	U	Aroclor 1248	80	U
4,4'-DDE	16	U	Aroclor 1254	160	U
endrin	16	U	Aroclor 1260	160	U
endosulfan II	16	U	isodrin	8.0	U
4,4'-DDD	16	U	kepone	16	U
endosulfan sulfate	16	U	chlorobenzilate	160	U
4,4'-DDT	16	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/25/90  
Date Analyzed: 08/08/90  
Dilution Factor: 1.0

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
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APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 10-MW01-SS  
Lab Sample ID: LL3889

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	9.5	U	methoxychlor	95	U
$\beta$ -BHC	9.5	U	endrin ketone	19	U
$\delta$ -BHC	9.5	U	chlordane	95	U
$\gamma$ -BHC (lindane)	9.5	U	toxaphene	190	U
heptachlor	9.5	U	Aroclor 1016	95	U
aldrin	9.5	U	Aroclor 1221	95	U
heptachlor epoxide	9.5	U	Aroclor 1232	95	U
endosulfan I	9.5	U	Aroclor 1242	95	U
dieldrin	19	U	Aroclor 1248	95	U
4,4'-DDE	19	U	Aroclor 1254	190	U
endrin	19	U	Aroclor 1260	190	U
endosulfan II	19	U	isodrin	9.5	U
4,4'-DDD	19	U	kepone	19	U
endosulfan sulfate	19	U	chlorobenzilate	95	U
4,4'-DDT	19	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/25/90  
Date Analyzed: 08/02/90  
Dilution Factor: 1.0  
% Moisture: 16

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

TARGET ANALYTE LIST - INORGANICS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-MW-SS  
Lab Sample ID: LL3880

antimony	5.3	U
arsenic	6.4	
barium	9.7	B
beryllium	0.18	U
cadmium	0.88	U
chromium	9.7	
cobalt	3.5	U
copper	26.8	
lead	27.1	
mercury	0.15	
nickel	5.9	B
selenium	1.8	U
silver	0.88	U
thallium	5.3	U
vanadium	9.1	
zinc	53.8	
tin	6.1	

% Solids 56.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

B - Value greater than instrument detection limit, but less than contract required quantitation limit.

Date Digested: 08/01/90  
Date Analyzed: 08/15 and 08/17/90 (ICP)  
08/23/90 (GFAA)  
08/02/90 (CVAA)

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September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209  
(Appendix IX)

CLASSICAL PARAMETERS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>cyanide</u>	<u>sulfide</u>
Method Blank	P1370/P1356	0.50 U	20 U
10-MW01-SS	LL3879	0.50 U	20 U
04-05-MW-SS	LL3880	0.50 U	280

Date of Analysis:

07/30/90

07/24/90

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 01-03-SED

Lab Sample ID: LL3868

Tentative Identification (1)

Concentration (2)

No additional peaks detected

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED  
Lab Sample ID: LL3869

<u>Compound</u>		<u>Compound</u>	
chloromethane	11 U	1,2-dichloropropane	5 U
bromomethane	11 U	cis-1,3-dichloropropene	5 U
vinyl chloride	11 U	trichloroethene	5 U
chloroethane	11 U	dibromochloromethane	5 U
methylene chloride	10	1,1,2-trichloroethane	5 U
acetone	17	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	2 J	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	11 U
1,2-dichloroethene (total)	5 U	2-hexanone	11 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	3 J	toluene	5 J
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	11 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 7

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED  
Lab Sample ID: LL3869

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED RE  
Lab Sample ID: LL3869

<u>Compound</u>		<u>Compound</u>	
chloromethane	11 U	1,2-dichloropropane	5 U
bromomethane	11 U	cis-1,3-dichloropropene	5 U
vinyl chloride	11 U	trichloroethene	5 U
chloroethane	11 U	dibromochloromethane	5 U
methylene chloride	15	1,1,2-trichloroethane	5 U
acetone	16	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	2 J	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	11 U
1,2-dichloroethene (total)	5 U	2-hexanone	11 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	1 J	toluene	3 J
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	11 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 7

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED RE  
Lab Sample ID: LL3869

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-04-SED  
Lab Sample ID: LL3870

Compound

chloromethane	12 U
bromomethane	12 U
vinyl chloride	12 U
chloroethane	12 U
methylene chloride	9
acetone	5 J
carbon disulfide	6 U
1,1-dichloroethene	6 U
1,1-dichloroethane	6 U
1,2-dichloroethene (total)	6 U
chloroform	6 U
1,2-dichloroethane	6 U
2-butanone	12 U
1,1,1-trichloroethane	6 U
carbon tetrachloride	6 U
vinyl acetate	12 U
bromodichloromethane	6 U

Compound

1,2-dichloropropane	6 U
cis-1,3-dichloropropene	6 U
trichloroethene	6 U
dibromochloromethane	6 U
1,1,2-trichloroethane	6 U
benzene	6 U
trans-1,3-dichloropropene	6 U
bromoform	6 U
4-methyl-2-pentanone	12 U
2-hexanone	12 U
tetrachloroethene	6 U
1,1,2,2-tetrachloroethane	6 U
toluene	1 J
chlorobenzene	6 U
ethylbenzene	6 U
styrene	6 U
total xylenes	6 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 16

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-04-SED  
Lab Sample ID: LL3870

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-SED  
Lab Sample ID: LL3871

<u>Compound</u>		<u>Compound</u>	
chloromethane	12 U	1,2-dichloropropane	6 U
bromomethane	12 U	cis-1,3-dichloropropene	6 U
vinyl chloride	12 U	trichloroethene	6 U
chloroethane	12 U	dibromochloromethane	6 U
methylene chloride	6 J	1,1,2-trichloroethane	6 U
acetone	3 J	benzene	6 U
carbon disulfide	6 U	trans-1,3-dichloropropene	6 U
1,1-dichloroethene	6 U	bromoform	6 U
1,1-dichloroethane	6 U	4-methyl-2-pentanone	12 U
1,2-dichloroethene (total)	6 U	2-hexanone	12 U
chloroform	6 U	tetrachloroethene	6 U
1,2-dichloroethane	6 U	1,1,2,2-tetrachloroethane	6 U
2-butanone	12 U	toluene	2 J
1,1,1-trichloroethane	6 U	chlorobenzene	6 U
carbon tetrachloride	6 U	ethylbenzene	6 U
vinyl acetate	12 U	styrene	6 U
bromodichloromethane	6 U	total xylenes	6 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 17

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-SED  
Lab Sample ID: LL3871

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-06-SED  
Lab Sample ID: LL3872

Compound

Compound

chloromethane	12 U
bromomethane	12 U
vinyl chloride	12 U
chloroethane	12 U
methylene chloride	8
acetone	12 U
carbon disulfide	6 U
1,1-dichloroethene	6 U
1,1-dichloroethane	6 U
1,2-dichloroethene (total)	6 U
chloroform	6 U
1,2-dichloroethane	6 U
2-butanone	12 U
1,1,1-trichloroethane	6 U
carbon tetrachloride	6 U
vinyl acetate	12 U
bromodichloromethane	6 U

1,2-dichloropropane	6 U
cis-1,3-dichloropropene	6 U
trichloroethene	6 U
dibromochloromethane	6 U
1,1,2-trichloroethane	6 U
benzene	6 U
trans-1,3-dichloropropene	6 U
bromoform	6 U
4-methyl-2-pentanone	12 U
2-hexanone	12 U
tetrachloroethene	6 U
1,1,2,2-tetrachloroethane	6 U
toluene	6 U
chlorobenzene	6 U
ethylbenzene	6 U
styrene	6 U
total xylenes	6 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 14

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-06-SED  
Lab Sample ID: LL3872

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-07-SED  
Lab Sample ID: LL3873

<u>Compound</u>		<u>Compound</u>	
chloromethane	14 U	1,2-dichloropropane	7 U
bromomethane	14 U	cis-1,3-dichloropropene	7 U
vinyl chloride	14 U	trichloroethene	7 U
chloroethane	14 U	dibromochloromethane	7 U
methylene chloride	8	1,1,2-trichloroethane	7 U
acetone	4 J	benzene	7 U
carbon disulfide	7 U	trans-1,3-dichloropropene	7 U
1,1-dichloroethene	7 U	bromoform	7 U
1,1-dichloroethane	7 U	4-methyl-2-pentanone	14 U
1,2-dichloroethene (total)	7 U	2-hexanone	14 U
chloroform	7 U	tetrachloroethene	7 U
1,2-dichloroethane	7 U	1,1,2,2-tetrachloroethane	7 U
2-butanone	14 U	toluene	3 J
1,1,1-trichloroethane	7 U	chlorobenzene	7 U
carbon tetrachloride	7 U	ethylbenzene	7 U
vinyl acetate	14 U	styrene	7 U
bromodichloromethane	7 U	total xylenes	2 J

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/31/90  
Dilution Factor: 1  
% Moisture: 28

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Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-07-SED  
Lab Sample ID: LL3873

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	VOLATILE		
	<u>Toluene-D8</u> (81-117%)*	<u>BFB</u> (74-121%)*	<u>1,2 Dichloroethane-D4</u> (70-121%)*
01-01-SED	104	92	89
01-02-SED	103	84	83
01-03-SED	97	87	79
04-03-SED	117	73 **	80
04-03-SED RE	107	75	74
04-04-SED	107	86	81
04-05-SED	97	86	76
04-06-SED	100	88	76
04-07-SED	103	86	70
Method Blank	97	97	88

\* - Values in parenthesis represent USEPA contract required QC limits.

\*\* - Values are outside of contract required QC limits.

RE = Reanalyzed

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED

Lab Sample ID: LL3894

<u>Compound</u>		<u>Compound</u>	
phenol	3,500 U	bis(2-chloroethoxy)methane	3,500 U
bis(2-chloroethyl)ether	3,500 U	2,4-dichlorophenol	3,500 U
2-chlorophenol	3,500 U	1,2,4-trichlorobenzene	3,500 U
1,3-dichlorobenzene	3,500 U	naphthalene	3,500 U
1,4-dichlorobenzene	3,500 U	4-chloroaniline	3,500 U
benzyl alcohol	3,500 U	hexachlorobutadiene	3,500 U
1,2-dichlorobenzene	3,500 U	4-chloro-3-methylphenol	3,500 U
2-methylphenol	3,500 U	2-methylnaphthalene	3,500 U
bis(2-chloroisopropyl)ether	3,500 U	hexachlorocyclopentadiene	3,500 U
methylphenol	3,500 U	2,4,6-trichlorophenol	3,500 U
n-nitroso-di-n-propylamine	3,500 U	2,4,5-trichlorophenol	17,000 U
hexachloroethane	3,500 U	2-chloronaphthalene	3,500 U
nitrobenzene	3,500 U	2-nitroaniline	17,000 U
isophorone	3,500 U	dimethyl phthalate	3,500 U
2-nitrophenol	3,500 U	acenaphthylene	920 J
2,4-dimethylphenol	3,500 U	2,6-dinitrotoluene	3,500 U
benzoic acid	17,000 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 10  
% Moisture: 7

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Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED  
Lab Sample ID: LL3894

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	17,000 U	anthracene	460 J
acenaphthene	3,500 U	di-n-butylphthalate	3,500 U
2,4-dinitrophenol	17,000 U	fluoranthene	940 J
4-nitrophenol	17,000 U	pyrene	2,500 J
dibenzofuran	3,500 U	butylbenzylphthalate	3,500 U
2,4-dinitrotoluene	3,500 U	3,3'-dichlorobenzidine	7,000 U
diethylphthalate	3,500 U	benzo(a)anthracene	520 J
4-chlorophenyl-phenylether	3,500 U	chrysene	1,800 J
fluorene	3,500 U	bis(2-ethylhexyl)phthalate	3,500 U
4-nitroaniline	17,000 U	di-n-octylphthalate	3,500 U
4,6-dinitro-2-methylphenol	17,000 U	benzo(b)fluoranthene	790 J
n-nitrosodiphenylamine <sup>1</sup>	3,500 U	benzo(k)fluoranthene	830 J
4-bromophenyl-phenylether	3,500 U	benzo(a)pyrene	560 J
hexachlorobenzene	3,500 U	indeno(1,2,3-cd)pyrene	510 J
pentachlorophenol	17,000 U	dibenzo(a,h)anthracene	3,500 U
phenanthrene	3,500 U	benzo(g,h,i)perylene	700 J

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 10  
% Moisture: 7

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED  
Lab Sample ID: LL3894

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
unknown (hydroxypentanone?)	6,600 AB
2-pentanone, 4-hydroxy-4-methyl-	96,000 AB
5-hexen-2-one, 5-methyl-	6,700 AB
3-heptanone, 2,4-dimethyl-	3,800 AB
unknown (saturated hydrocarbon)	1,600
unknown (saturated hydrocarbon)	4,400
unknown	2,100
unknown aromatic	2,500
unknown	2,300
unknown (cholestane?)	4,600
unknown	1,700
unknown	6,500
unknown (cyclic?)	7,400
unknown (cyclic?)	4,300
unknown (cyclic?)	2,700

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

B - Analyte was found in the blank as well as the sample.

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Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-04-SED  
Lab Sample ID: LL3895

<u>Compound</u>		<u>Compound</u>	
phenol	1,900 U	bis(2-chloroethoxy)methane	1,900 U
bis(2-chloroethyl)ether	1,900 U	2,4-dichlorophenol	1,900 U
2-chlorophenol	1,900 U	1,2,4-trichlorobenzene	1,900 U
1,3-dichlorobenzene	1,900 U	naphthalene	1,900 U
1,4-dichlorobenzene	1,900 U	4-chloroaniline	1,900 U
benzyl alcohol	1,900 U	hexachlorobutadiene	1,900 U
1,2-dichlorobenzene	1,900 U	4-chloro-3-methylphenol	1,900 U
2-methylphenol	1,900 U	2-methylnaphthalene	1,900 U
bis(2-chloroisopropyl)ether	1,900 U	hexachlorocyclopentadiene	1,900 U
4-methylphenol	1,900 U	2,4,6-trichlorophenol	1,900 U
n-nitroso-di-n-propylamine	1,900 U	2,4,5-trichlorophenol	9,400 U
hexachloroethane	1,900 U	2-chloronaphthalene	1,900 U
nitrobenzene	1,900 U	2-nitroaniline	9,400 U
isophorone	1,900 U	dimethyl phthalate	1,900 U
2-nitrophenol	1,900 U	acenaphthylene	1,900 U
2,4-dimethylphenol	1,900 U	2,6-dinitrotoluene	1,900 U
benzoic acid	9,400 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 5  
% Moisture: 16

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-04-SED  
Lab Sample ID: LL3895

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	9,400 U	anthracene	1,900 U
acenaphthene	1,900 U	di-n-butylphthalate	1,900 U
2,4-dinitrophenol	9,400 U	fluoranthene	240 J
4-nitrophenol	9,400 U	pyrene	350 J
dibenzofuran	1,900 U	butylbenzylphthalate	1,900 U
2,4-dinitrotoluene	1,900 U	3,3'-dichlorobenzidine	3,900 U
diethylphthalate	1,900 U	benzo(a)anthracene	1,900 U
4-chlorophenyl-phenylether	1,900 U	chrysene	330 J
fluorene	1,900 U	bis(2-ethylhexyl)phthalate	360 J
-nitroaniline	9,400 U	di-n-octylphthalate	1,900 U
4,6-dinitro-2-methylphenol	9,400 U	benzo(b)fluoranthene	210 J
n-nitrosodiphenylamine <sup>1</sup>	1,900 U	benzo(k)fluoranthene	250 J
4-bromophenyl-phenylether	1,900 U	benzo(a)pyrene	1,900 U
hexachlorobenzene	1,900 U	indeno(1,2,3-cd)pyrene	1,900 U
pentachlorophenol	9,400 U	dibenzo(a,h)anthracene	1,900 U
phenanthrene	1,900 U	benzo(g,h,i)perylene	210 J

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 5  
% Moisture: 16

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-04-SED  
Lab Sample ID: LL3895

Tentative Identification (1)

Concentration (2)

unknown (hydroxypentanone?)	5,400 AB
2-pentanone, 4-hydroxy-4-methyl-	67,000 AB
unknown	940 AB
5-hexen-2-one, 5-methyl-	4,900 AB
3-heptanone, 2,4-dimethyl-	4,200 AB
unknown	1,300 A
unknown	840

Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.  
B - Analyte was found in the blank as well as the sample.

Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-SED  
Lab Sample ID: LL3896

<u>Compound</u>		<u>Compound</u>	
phenol	2,000 U	bis(2-chloroethoxy)methane	2,000 U
bis(2-chloroethyl)ether	2,000 U	2,4-dichlorophenol	2,000 U
2-chlorophenol	2,000 U	1,2,4-trichlorobenzene	2,000 U
1,3-dichlorobenzene	2,000 U	naphthalene	2,000 U
1,4-dichlorobenzene	2,000 U	4-chloroaniline	2,000 U
benzyl alcohol	2,000 U	hexachlorobutadiene	2,000 U
1,2-dichlorobenzene	2,000 U	4-chloro-3-methylphenol	2,000 U
methylphenol	2,000 U	2-methylnaphthalene	2,000 U
(2-chloroisopropyl)ether	2,000 U	hexachlorocyclopentadiene	2,000 U
4-methylphenol	2,000 U	2,4,6-trichlorophenol	2,000 U
n-nitroso-di-n-propylamine	2,000 U	2,4,5-trichlorophenol	9,600 U
hexachloroethane	2,000 U	2-chloronaphthalene	2,000 U
nitrobenzene	2,000 U	2-nitroaniline	9,600 U
isophorone	2,000 U	dimethyl phthalate	2,000 U
2-nitrophenol	2,000 U	acenaphthylene	320 J
2,4-dimethylphenol	2,000 U	2,6-dinitrotoluene	2,000 U
benzoic acid	9,600 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 5  
% Moisture: 17

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-SED  
Lab Sample ID: LL3896

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	9,600 U	anthracene	2,000 U
acenaphthene	2,000 U	di-n-butylphthalate	2,000 U
2,4-dinitrophenol	9,600 U	fluoranthene	400 J
4-nitrophenol	9,600 U	pyrene	730 J
dibenzofuran	2,000 U	butylbenzylphthalate	2,000 U
2,4-dinitrotoluene	2,000 U	3,3'-dichlorobenzidine	4,000 U
diethylphthalate	2,000 U	benzo(a)anthracene	240 J
4-chlorophenyl-phenylether	2,000 U	chrysene	510 J
fluorene	2,000 U	bis(2-ethylhexyl)phthalate	390 J
4-nitroaniline	9,600 U	di-n-octylphthalate	2,000 U
4,6-dinitro-2-methylphenol	9,600 U	benzo(b)fluoranthene	250 J
n-nitrosodiphenylamine <sup>1</sup>	2,000 U	benzo(k)fluoranthene	310 J
4-bromophenyl-phenylether	2,000 U	benzo(a)pyrene	250 J
hexachlorobenzene	2,000 U	indeno(1,2,3-cd)pyrene	2,000 U
pentachlorophenol	9,600 U	dibenzo(a,h)anthracene	2,000 U
phenanthrene	2,000 U	benzo(g,h,i)perylene	2,000 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/23/90  
Dilution Factor: 5  
% Moisture: 17

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-SED  
Lab Sample ID: LL3896

Tentative Identification (1)

Concentration (2)

unknown (hydroxypentanone?)	6,100 AB
2-pentanone, 4-hydroxy-4-methyl-	68,000 AB
unknown	910 AB
5-hexen-2-one, 5-methyl-	5,200 AB
3-heptanone, 2,4-dimethyl-	4,000 AB
unknown	1,600 A

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

B - Analyte was found in the blank as well as the sample.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-06-SED

Lab Sample ID: LL3897

<u>Compound</u>		<u>Compound</u>	
phenol	760 U	bis(2-chloroethoxy)methane	760 U
bis(2-chloroethyl)ether	760 U	2,4-dichlorophenol	760 U
2-chlorophenol	760 U	1,2,4-trichlorobenzene	760 U
1,3-dichlorobenzene	760 U	naphthalene	760 U
1,4-dichlorobenzene	760 U	4-chloroaniline	760 U
benzyl alcohol	760 U	hexachlorobutadiene	760 U
1,2-dichlorobenzene	760 U	4-chloro-3-methylphenol	760 U
2-methylphenol	760 U	2-methylnaphthalene	760 U
bis(2-chloroisopropyl)ether	760 U	hexachlorocyclopentadiene	760 U
4-methylphenol	760 U	2,4,6-trichlorophenol	760 U
n-nitroso-di-n-propylamine	760 U	2,4,5-trichlorophenol	3,700 U
hexachloroethane	760 U	2-chloronaphthalene	760 U
nitrobenzene	760 U	2-nitroaniline	3,700 U
isophorone	760 U	dimethyl phthalate	760 U
2-nitrophenol	760 U	acenaphthylene	760 U
2,4-dimethylphenol	760 U	2,6-dinitrotoluene	760 U
benzoic acid	3,700 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/21/90  
Dilution Factor: 2  
% Moisture: 14

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-06-SED

Lab Sample ID: LL3897

Compound

3-nitroaniline	3,700 U
acenaphthene	760 U
2,4-dinitrophenol	3,700 U
4-nitrophenol	3,700 U
dibenzofuran	760 U
2,4-dinitrotoluene	760 U
diethylphthalate	760 U
4-chlorophenyl-phenylether	760 U
fluorene	760 U
nitroaniline	3,700 U
4,6-dinitro-2-methylphenol	3,700 U
n-nitrosodiphenylamine <sup>1</sup>	760 U
4-bromophenyl-phenylether	760 U
hexachlorobenzene	760 U
pentachlorophenol	3,700 U
phenanthrene	760 U

Compound

anthracene	760 U
di-n-butylphthalate	760 U
fluoranthene	760 U
pyrene	760 U
butylbenzylphthalate	760 U
3,3'-dichlorobenzidine	1,500 U
benzo(a)anthracene	760 U
chrysene	760 U
bis(2-ethylhexyl)phthalate	360 J
di-n-octylphthalate	760 U
benzo(b)fluoranthene	760 U
benzo(k)fluoranthene	760 U
benzo(a)pyrene	760 U
indeno(1,2,3-cd)pyrene	760 U
dibenzo(a,h)anthracene	760 U
benzo(g,h,i)perylene	760 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90

Date Analyzed: 08/21/90

Dilution Factor: 2

% Moisture: 14

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-06-SED  
Lab Sample ID: LL3897

Tentative Identification (1)

Concentration (2)

unknown (hydroxypentanone?)	4,700 AB
2-pentanone, 4-hydroxy-4-methyl-	52,000 AB
unknown	1,100 AB
hexane, 2-bromo-	490 B
5-hexen-2-one, 5-methyl-	3,900 AB
3-heptanone, 2,4-dimethyl-	3,100 AB
unknown	320 A
unknown	1,400 A

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

B - Analyte was found in the blank as well as the sample.

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-07-SED  
Lab Sample ID: LL3898

<u>Compound</u>		<u>Compound</u>	
phenol	4,600 U	bis(2-chloroethoxy)methane	4,600 U
bis(2-chloroethyl)ether	4,600 U	2,4-dichlorophenol	4,600 U
2-chlorophenol	4,600 U	1,2,4-trichlorobenzene	4,600 U
1,3-dichlorobenzene	4,600 U	naphthalene	4,600 U
1,4-dichlorobenzene	4,600 U	4-chloroaniline	4,600 U
benzyl alcohol	4,600 U	hexachlorobutadiene	4,600 U
1,2-dichlorobenzene	4,600 U	4-chloro-3-methylphenol	4,600 U
2-methylphenol	4,600 U	2-methylnaphthalene	4,600 U
bis(2-chloroisopropyl)ether	4,600 U	hexachlorocyclopentadiene	4,600 U
4-methylphenol	4,600 U	2,4,6-trichlorophenol	4,600 U
n-nitroso-di-n-propylamine	4,600 U	2,4,5-trichlorophenol	22,000 U
hexachloroethane	4,600 U	2-chloronaphthalene	4,600 U
nitrobenzene	4,600 U	2-nitroaniline	22,000 U
isophorone	4,600 U	dimethyl phthalate	4,600 U
2-nitrophenol	4,600 U	acenaphthylene	13,000
2,4-dimethylphenol	4,600 U	2,6-dinitrotoluene	4,600 U
benzoic acid	22,000 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/24/90  
Dilution Factor: 10  
% Moisture: 28

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-07-SED  
Lab Sample ID: LL3898

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	22,000 U	anthracene	6,300
acenaphthene	4,600 U	di-n-butylphthalate	4,600 U
2,4-dinitrophenol	22,000 U	fluoranthene	8,300
4-nitrophenol	22,000 U	pyrene	18,000
dibenzofuran	560 J	butylbenzylphthalate	4,600 U
2,4-dinitrotoluene	4,600 U	3,3'-dichlorobenzidine	9,100 U
diethylphthalate	4,600 U	benzo(a)anthracene	7,500
4-chlorophenyl-phenylether	4,600 U	chrysene	16,000
fluorene	1,400 J	bis(2-ethylhexyl)phthalate	1,100 J
4-nitroaniline	22,000 U	di-n-octylphthalate	4,600 U
4,6-dinitro-2-methylphenol	22,000 U	benzo(b)fluoranthene	7,600
n-nitrosodiphenylamine <sup>1</sup>	4,600 U	benzo(k)fluoranthene	10,000
4-bromophenyl-phenylether	4,600 U	benzo(a)pyrene	8,300
hexachlorobenzene	3,300 J	indeno(1,2,3-cd)pyrene	7,000
pentachlorophenol	22,000 U	dibenzo(a,h)anthracene	3,100 J
phenanthrene	1,800 J	benzo(g,h,i)perylene	8,600

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/24/90  
Dilution Factor: 10  
% Moisture: 28

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-07-SED  
Lab Sample ID: LL3898

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
unknown (hydroxypentanone?)	8,200 AB
2-pentanone, 4-hydroxy-4-methyl-	120,000 AB
5-hexen-2-one, 5-methyl-	11,000 AB
3-heptanone, 2,4-dimethyl-	6,100 AB
naphthalene, 2-ethenyl-	5,200
anthracene, 1-methyl-	5,600
phenanthrene, 2,5-dimethyl-	6,200
phenanthrene, 2,7-dimethyl-	4,600
1H-benzo[a]fluorene	4,200
pyrene, 4-methyl-	5,900
pyrene, 4-methyl-	7,700
pyrene, 4-methyl-	8,700
pyrene, 4-methyl-	8,200
1,1':2',1''-terphenyl	5,000
unknown (aromatic?)	6,800
naphthacene, 5,12-dihydro-	4,500
chrysene, 3-methyl-	6,300
benz[a]anthracene, 9-methyl-	5,800
unknown	6,300
benzo[j]fluoranthene	14,000

Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

A - Suspected aldol condensation product.

B - Analyte was found in the blank as well as the sample.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMI-VOLATILE

<u>Sample No.</u>	<u>Nitro- Benzene-D5 (23-120%)*</u>	<u>2-Fluoro- Biphenyl (30-116%)*</u>	<u>Terphenyl- D14 (18-137%)*</u>	<u>Phenol-D5 (24-113%)*</u>	<u>2-Fluoro- Phenol (26-121%)*</u>	<u>2,4,6 Tribromo- Phenol (18-122%)*</u>
01-01-SED	93	86	95	82	79	54
01-02-SED	102	83	94	95	102	76
01-03-SED	91	75	89	92	96	69
04-03-SED	102	93	112	89	92	90
04-04-SED	90	82	94	78	81	68
04-05-SED	91	82	88	78	79	56
04-06-SED	85	70	82	85	89	63
04-07-SED	96	88	103	81	83	77
Method Blank	85	69	85	75	80	92

\* - Values in parenthesis represent USEPA contract required QC limits.

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September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-03-SED

Lab Sample ID: LL3894

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	8.5 U	endosulfan sulfate	17 U
$\beta$ -BHC	8.5 U	4,4'-DDT	30 U
$\delta$ -BHC	8.5 U	methoxychlor	85 U
$\gamma$ -BHC (lindane)	8.5 U	endrin ketone	17 U
heptachlor	8.5 U	$\alpha$ -chlordane	85 U
aldrin	8.5 U	$\gamma$ -chlordane	85 U
heptachlor epoxide	8.5 U	toxaphene	170 U
endosulfan I	8.5 U	Aroclor 1016	85 U
dieldrin	17 U	Aroclor 1221	85 U
4,4'-DDE	18	Aroclor 1232	85 U
endrin	17 U	Aroclor 1242	85 U
endosulfan II	17 U	Aroclor 1248	85 U
4,4'-DDD	29	Aroclor 1254	170 U
		Aroclor 1260	170 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/24/90  
Date Analyzed: 08/15/90  
Dilution Factor: 1  
% Moisture: 7

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-04-SED  
Lab Sample ID: LL3895

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	47	U	endosulfan sulfate	94	U
$\beta$ -BHC	47	U	4,4'-DDT	68	J
$\delta$ -BHC	47	U	methoxychlor	470	U
$\gamma$ -BHC (lindane)	47	U	endrin ketone	94	U
heptachlor	47	U	$\alpha$ -chlordane	470	U
aldrin	47	U	$\gamma$ -chlordane	470	U
heptachlor epoxide	47	U	toxaphene	940	U
endosulfan I	47	U	Aroclor 1016	470	U
dieldrin	94	U	Aroclor 1221	470	U
4,4'-DDE	750	F	Aroclor 1232	470	U
endrin	94	U	Aroclor 1242	470	U
endosulfan II	94	U	Aroclor 1248	470	U
4,4'-DDD	300	F	Aroclor 1254	940	U
			Aroclor 1260	940	D

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

F - Peak offscale and therefore out of linear range.

Date Extracted: 07/24/90  
Date Analyzed: 08/10/90  
Dilution Factor: 5  
% Moisture: 16

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-04-SED DL  
Lab Sample ID: LL3895 DL

<u>Compound</u>			<u>Compound</u>		
α-BHC	470	U	endosulfan sulfate	940	U
β-BHC	470	U	4,4'-DDT	71	DJ
δ-BHC	470	U	methoxychlor	4,700	U
γ-BHC (lindane)	470	U	endrin ketone	940	U
heptachlor	470	U	α-chlordane	4,700	U
aldrin	470	U	γ-chlordane	4,700	U
heptachlor epoxide	470	U	toxaphene	9,400	U
endosulfan I	470	U	Aroclor 1016	4,700	U
dieldrin	940	U	Aroclor 1221	4,700	U
4,4'-DDE	840	DJ	Aroclor 1232	4,700	U
endrin	940	U	Aroclor 1242	4,700	U
endosulfan II	940	U	Aroclor 1248	4,700	U
4,4'-DDD	310	DJ	Aroclor 1254	9,400	U
			Aroclor 1260	9,400	U

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
D - Compound analyzed at a secondary dilution factor.  
J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/10/90  
Dilution Factor: 50  
% Moisture: 16

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-SED  
Lab Sample ID: LL3896

<u>Compound</u>		<u>Compound</u>		
$\alpha$ -BHC	9.6 U	endosulfan sulfate	19	U
$\beta$ -BHC	9.6 U	4,4'-DDT	32	
$\delta$ -BHC	9.6 U	methoxychlor	96	U
$\gamma$ -BHC (lindane)	9.6 U	endrin ketone	19	U
heptachlor	9.6 U	$\alpha$ -chlordane	96	U
dieldrin	9.6 U	$\gamma$ -chlordane	96	U
heptachlor epoxide	9.6 U	toxaphene	190	U
endosulfan I	9.6 U	Aroclor 1016	96	U
dieldrin	19 U	Aroclor 1221	96	U
4,4'-DDE	71 F	Aroclor 1232	96	U
endrin	19 U	Aroclor 1242	96	U
endosulfan II	19 U	Aroclor 1248	96	U
4,4'-DDD	46	Aroclor 1254	190	U
		Aroclor 1260	190	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

F - Peak offscale and therefore out of linear range.

Date Extracted: 07/24/90  
Date Analyzed: 08/14/90  
Dilution Factor: 1  
% Moisture: 17

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-05-SED DL  
Lab Sample ID: LL3896 DL

<u>Compound</u>			<u>Compound</u>		
α-BHC	48	U	endosulfan sulfate	96	U
β-BHC	48	U	4,4'-DDT	48	DJ
δ-BHC	48	U	methoxychlor	480	U
γ-BHC (lindane)	48	U	endrin ketone	96	U
heptachlor	48	U	α-chlordane	480	U
dieldrin	48	U	γ-chlordane	480	U
heptachlor epoxide	48	U	toxaphene	960	U
endosulfan I	48	U	Aroclor 1016	480	U
dieldrin	96	U	Aroclor 1221	480	U
4,4'-DDE	110	D	Aroclor 1232	480	U
endrin	96	U	Aroclor 1242	480	U
endosulfan II	96	U	Aroclor 1248	480	U
4,4'-DDD	58	DJ	Aroclor 1254	960	U
			Aroclor 1260	960	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

D - Compound analyzed at a secondary dilution factor.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/14/90  
Dilution Factor: 5  
% Moisture: 17

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-06-SED  
Lab Sample ID: LL3897

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	9.2 U	endosulfan sulfate	18 U
$\beta$ -BHC	9.2 U	4,4'-DDT	18 U
$\delta$ -BHC	9.2 U	methoxychlor	92 U
$\gamma$ -BHC (lindane)	9.2 U	endrin ketone	18 U
heptachlor	9.2 U	$\alpha$ -chlordane	92 U
aldrin	9.2 U	$\gamma$ -chlordane	92 U
heptachlor epoxide	9.2 U	toxaphene	180 U
endosulfan I	9.2 U	Aroclor 1016	92 U
dieldrin	18 U	Aroclor 1221	92 U
4,4'-DDE	18 U	Aroclor 1232	92 U
endrin	18 U	Aroclor 1242	92 U
endosulfan II	18 U	Aroclor 1248	92 U
4,4'-DDD	18 U	Aroclor 1254	180 U
		Aroclor 1260	180 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/24/90  
Date Analyzed: 08/14/90  
Dilution Factor: 1  
% Moisture: 14

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

ent Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-07-SED  
Lab Sample ID: LL3898

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	55	U	endosulfan sulfate	110	U
$\beta$ -BHC	55	U	4,4'-DDT	780	F
$\delta$ -BHC	69	Z	methoxychlor	550	U
$\gamma$ -BHC (lindane)	55	U	endrin ketone	110	U
heptachlor	55	U	$\alpha$ -chlordane	550	U
dieldrin	84	Z	$\gamma$ -chlordane	550	U
heptachlor epoxide	71	Z	toxaphene	1,100	U
endosulfan I	55	U	Aroclor 1016	550	U
dieldrin	110	U	Aroclor 1221	550	U
4,4'-DDE	450	F	Aroclor 1232	550	U
endrin	110	U	Aroclor 1242	550	U
endosulfan II	110	U	Aroclor 1248	550	U
4,4'-DDD	920	F	Aroclor 1254	1,100	U
			Aroclor 1260	1,100	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Z - Elevated CRQL reported due to matrix interferences obscuring the compound of interest.

F - Peak offscale and therefore out of linear range.

Date Extracted: 07/24/90  
Date Analyzed: 08/14/90  
Dilution Factor: 5  
% Moisture: 28

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in  $\mu\text{g}/\text{kg}$  (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: 04-07-SED DL  
Lab Sample ID: LL3898 DL

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	550	U	endosulfan sulfate	1,100	U
$\beta$ -BHC	550	U	4,4'-DDT	800	DJ
$\delta$ -BHC	550	U	methoxychlor	5,500	U
$\gamma$ -BHC (lindane)	550	U	endrin ketone	1,100	U
heptachlor	550	U	$\alpha$ -chlordane	5,500	U
aldrin	550	U	$\gamma$ -chlordane	5,500	U
heptachlor epoxide	550	U	toxaphene	11,000	U
endosulfan I	550	U	Aroclor 1016	5,500	U
dieldrin	1,100	U	Aroclor 1221	5,500	U
4,4'-DDE	490	DJ	Aroclor 1232	5,500	U
endrin	1,100	U	Aroclor 1242	5,500	U
endosulfan II	1,100	U	Aroclor 1248	5,500	U
4,4'-DDD	1,200	D	Aroclor 1254	11,000	U
			Aroclor 1260	11,000	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

D - Compound analyzed at a secondary dilution factor.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 50  
% Moisture: 28

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

TARGET ANALYTE LIST - INORGANICS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	01-03-SED LL3883	04-03-SED LL3884	04-04-SED LL3885
aluminum	1,960	1,440	2,650
antimony	3.2 U	3.2 U	3.6 U
arsenic	3.2 U	3.2 U	3.6 U
barium	20.1 B	15.5 B	13.3 B
beryllium	0.11 U	0.11 U	0.12 U
cadmium	0.53 U	0.54 U	0.60 U
calcium	206,000	91,600	313,000
chromium	9.0	12.2	10
cobalt	2.1 U	2.1 U	2.4 U
copper	72.5	51.9	17.4
iron	1,860	6,520	7,430
lead	43.1	99.4	63.3
magnesium	12,500	15,900	14,400
manganese	146	116	40.7
mercury	0.15	0.06	0.05
nickel	2.1 U	11.1	4.9
potassium	106 U	1,720	667
selenium	1.1 UW	1.1 U	1.2 UW
silver	0.53 U	0.54 U	3.0 U
sodium	1,010	23,800	17,300
thallium	3.2 U	3.2 U	3.6 U
vanadium	4.3 B	7.7	7.1
zinc	45.9	150	61.8
% Solids	94.1	93.1	83.3

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than detection limit, but less than contract required quantitation limit.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.

Date Digested: 08/01/90

Date Analyzed: 08/15 and 08/17/90 (ICP); 08/23/90 (GFAA); 08/02/90 (CVAA)

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

TARGET ANALYTE LIST - INORGANICS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	04-05-SED LL3886	04-06-SED LL3887	04-07-SED LL3888
aluminum	3,710	1,380	12,700
antimony	3.6 U	3.8 U	9.4
arsenic	3.6 U	4.4	18.2
barium	27.9	7.9 B	384
beryllium	0.12 U	0.13 U	0.14 U
cadmium	0.59 U	0.64 U	10.6
calcium	331,000	298,000	183,000
chromium	10.5	6.9	118
cobalt	2.4 U	2.6 U	17.3
copper	36.0	6.9	589
iron	3,840	846	141,000
lead	103	4.6	2,040
magnesium	18,100	4,190	29,100
manganese	52.3	12.6	1,080
mercury	0.30	0.03 U	2.7
nickel	3.8 B	2.6 U	89.3
potassium	806	166 B	1,090
selenium	1.2 UW	1.3 UW	1.4 UW
silver	3.3	3.2 U	3.9
sodium	17,800	2,890	25,300
thallium	3.6 U	3.8 U	74.3
vanadium	7.3	3.6 B	11.5
zinc	119	26.9	2,610
% Solids	84.1	78.1	71.6

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than detection limit, but less than contract required quantitation limit.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.

Date Digested: 08/01/90

Date Analyzed: 08/15 and 08/17/90 (ICP); 08/23/90 (GFAA); 08/02/90 (CVAA)

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46209 (CLP Data)

CYANIDE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
Method Blank	P1370	0.50 U
01-01-SED	LL3881	0.50 U
01-02-SED	LL3882	0.50 U
01-03-SED	LL3883	0.50 U
04-03-SED	LL3884	0.50 U
04-04-SED	LL3885	0.50 U
04-05-SED	LL3886	0.50 U
04-06-SED	LL3887	0.50 U
04-07-SED	LL3888	0.50 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 07/30/90

# GALBRAITH

*Laboratories, Inc.*

QUANTITATIVE MICROANALYSES  
ORGANIC - INORGANIC  
615/546-1335

P.O. BOX 51610  
KNOXVILLE, TN 37950-1610

2323 SYCAMORE DR.  
KNOXVILLE, TN 37921-1750

Ms. Kim Laisy  
IT Corporation  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921

August 16, 1990

Received: Aug. 2nd  
PO#: 531376;ITCY46209

Dear Ms. Laisy:

Analysis of your compounds gave the following results:

Your #,	Our #,	Analyses,	
LL3874 01-MW01-SS	M-8897	% Total Organic Carbon Date Prepped & Analyzed: Total Carbon Inorganic Carbon	1.96  8/3/90 8/6/90
LL3875 04-05S	M-8898	% Total Organic Carbon Date Prepped & Analyzed: Total Carbon Inorganic Carbon	1.04  8/3/90 8/6/90
LL3876, 3877, 3878 10-5S	M-8899	% Total Organic Carbon % Spike Recovery for Inorganic Carbon % Spike Recovery for Total Carbon Date Prepped & Analyzed: Total Carbon Spike Total Carbon Inorganic Carbon Spike Inorganic Carbon	0.73 100.25 100.29  8/7/90 8/7/90 8/6/90 8/6/90

Sincerely yours,

**GALBRAITH LABORATORIES, INC.**

*Gail R. Hutchens/Ben*

Gail R. Hutchens,  
Exec. Vice-President

GRH:ew

IT Corporation  
September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

SEMIVOLATILE TARGET COMPOUND LIST

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Boca Chica DDT  
Lab Sample ID: LL5741

<u>Compound</u>		<u>Compound</u>	
phenol	10 U	bis(2-chloroethoxy)methane	10 U
bis(2-chloroethyl)ether	10 U	2,4-dichlorophenol	10 U
2-chlorophenol	10 U	1,2,4-trichlorobenzene	10 U
1,3-dichlorobenzene	10 U	naphthalene	10 U
1,4-dichlorobenzene	10 U	4-chloroaniline	10 U
benzyl alcohol	10 U	hexachlorobutadiene	10 U
1,2-dichlorobenzene	10 U	4-chloro-3-methylphenol	10 U
2-methylphenol	10 U	2-methylnaphthalene	10 U
bis(2-chloroisopropyl)ether	10 U	hexachlorocyclopentadiene	10 U
4-methylphenol	10 U	2,4,6-trichlorophenol	10 U
n-nitroso-di-n-propylamine	10 U	2,4,5-trichlorophenol	50 U
hexachloroethane	10 U	2-chloronaphthalene	10 U
nitrobenzene	10 U	2-nitroaniline	50 U
isophorone	10 U	dimethyl phthalate	10 U
2-nitrophenol	10 U	acenaphthylene	10 U
2,4-dimethylphenol	10 U	2,6-dinitrotoluene	10 U
benzoic acid	50 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 08/21/90  
Date Analyzed: 08/23/90  
Dilution Factor: 1

IT Corporation  
September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Boca Chica DDT  
Lab Sample ID: LL5741

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	50 U	anthracene	10 U
acenaphthene	10 U	di-n-butylphthalate	10 U
2,4-dinitrophenol	50 U	fluoranthene	10 U
4-nitrophenol	50 U	pyrene	10 U
dibenzofuran	10 U	butylbenzylphthalate	10 U
2,4-dinitrotoluene	10 U	3,3'-dichlorobenzidine	20 U
diethylphthalate	10 U	benzo(a)anthracene	10 U
4-chlorophenyl-phenylether	10 U	chrysene	10 U
fluorene	10 U	bis(2-ethylhexyl)phthalate	10 U
4-nitroaniline	50 U	di-n-octylphthalate	10 U
4,6-dinitro-2-methylphenol	50 U	benzo(b)fluoranthene	10 U
n-nitrosodiphenylamine <sup>1</sup>	10 U	benzo(k)fluoranthene	10 U
4-bromophenyl-phenylether	10 U	benzo(a)pyrene	10 U
hexachlorobenzene	10 U	indeno(1,2,3-cd)pyrene	10 U
pentachlorophenol	50 U	dibenzo(a,h)anthracene	10 U
phenanthrene	10 U	benzo(g,h,i)perylene	10 U

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
J - Indicates an estimated value less than the detection limit.  
1 - Detected as diphenylamine.

Date Extracted: 08/21/90  
Date Analyzed: 08/23/90  
Dilution Factor: 1

IT Corporation  
September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: Boca Chica DDT  
Lab Sample ID: LL5741

Tentative Identification (1)

Concentration (2)

caprolactam	11
1,2-benzenedicarboxylic acid	8.8 B
1,2-benzenedicarboxylic acid	9.0 B
1,2-benzenedicarboxylic acid	8.0 B
1,2-benzenedicarboxylic acid	12 B
1,2-benzenedicarboxylic acid	17 B
1,2-benzenedicarboxylic acid	19 B
1,2-benzenedicarboxylic acid	11 B

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

B - Analyte was found in the blank as well as the sample.

IT Corporation  
September 24, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46446

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in  $\mu\text{g/liter}$  (ppb)

Client Sample ID: Boca Chica DDT  
Lab Sample ID: LL5741

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
phenol	400	10 U	192	48
2-chlorophenol	400	10 U	269	67
1,4-dichlorobenzene	200	10 U	164	82
n-nitroso-di-n-propylamine	200	10 U	144	72
1,2,4-trichlorobenzene	200	10 U	161	80
4-chloro-3-methylphenol	400	10 U	275	69
acenaphthene	200	10 U	167	84
4-nitrophenol	400	50 U	153	38
2,4-dinitrotoluene	200	10 U	169	84
pentachlorophenol	400	50 U	116	29
pyrene	200	10 U	169	84

	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>RPD</u>
phenol	400	220	55	-14
2-chlorophenol	400	317	79	-16
1,4-dichlorobenzene	200	160	80	2
n-nitroso-di-n-propylamine	200	143	72	0
1,2,4-trichlorobenzene	200	162	81	-1
4-chloro-3-methylphenol	400	297	74	-7
acenaphthene	200	170	85	-1
4-nitrophenol	400	190	48	-23
2,4-dinitrotoluene	200	167	84	0
pentachlorophenol	400	218	54	-60 *
pyrene	200	165	82	2

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

\* - Asterisked values are outside USEPA advisory QC limits.

Date Extracted: 08/21/90  
Date Analyzed: 08/23/90

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 05-01-GWD  
Lab Sample ID: LL3069

<u>Compound</u>		<u>Compound</u>	
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	3 J
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	2 BJ	1,1,2-trichloroethane	5 U
acetone	16	benzene	90
carbon disulfide	10 B	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	4 J	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	1,800 D	2-hexanone	10 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	16
1,1,1-trichloroethane	5 U	chlorobenzene	210 E
carbon tetrachloride	5 U	ethylbenzene	38
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	76

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
J - Indicates an estimated value less than the detection limit.  
B - Analyte was found in the blank as well as the sample.  
D - Compound analyzed at a secondary dilution factor.  
E - Compound exceeded CLP calibration range, but was within instrument's linear range.

Date Analyzed: 07/18/90  
Dilution Factor: 1

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 05-01-GWD  
Lab Sample ID: LL3069

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
unknown (ethylmethylbenzene?)	6
benzene, 1,3-dichloro-	9
benzene, 1,4-dichloro-	14
unknown	5
benzene, 1,2-dichloro-	12
benzene, methylpropyl-	9 Y
benzene, ethyldimethyl-	19 Y
unknown (alkylbenzene?)	8

Remarks: (1) Identification is based on computer search of N.B.S. Library.

(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

Y - Indistinguishable tentatively identified isomer.

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 05-01-GW0  
Lab Sample ID: LL3070

<u>Compound</u>		<u>Compound</u>	
chloromethane	500 U	1,2-dichloropropane	250 U
bromomethane	500 U	cis-1,3-dichloropropene	250 U
vinyl chloride	500 U	trichloroethene	250 U
chloroethane	500 U	dibromochloromethane	250 U
methylene chloride	120 BJ	1,1,2-trichloroethane	250 U
acetone	170 J	benzene	250 U
carbon disulfide	110 BJ	trans-1,3-dichloropropene	250 U
1,1-dichloroethene	250 U	bromoform	250 U
1,1-dichloroethane	250 U	4-methyl-2-pentanone	500 U
1,2-dichloroethene (total)	1,500	2-hexanone	500 U
chloroform	250 U	tetrachloroethene	250 U
1,2-dichloroethane	250 U	1,1,2,2-tetrachloroethane	250 U
2-butanone	500 U	toluene	250 U
1,1,1-trichloroethane	250 U	chlorobenzene	250 U
carbon tetrachloride	250 U	ethylbenzene	250 U
vinyl acetate	500 U	styrene	250 U
bromodichloromethane	250 U	total xylenes	71 J

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

B - Analyte was found in the blank as well as the sample.

Date Analyzed: 07/18/90  
Dilution Factor: 50

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 05-01-GWO  
Lab Sample ID: LL3070

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 10-02-GW

Lab Sample ID: LL3073

Compound

Compound

chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	2 BJ	1,1,2-trichloroethane	5 U
acetone	46	benzene	5 U
carbon disulfide	4 BJ	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

B - Analyte was found in the blank as well as the sample.

Date Analyzed: 07/19/90

Dilution Factor: 1

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 10-02-GW  
Lab Sample ID: LL3073

Tentative Identification (1)

Concentration (2)

2-propanol (ACN)

17

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 10-03-GW

Lab Sample ID: LL3074

Compound

chloromethane	10 U
bromomethane	10 U
vinyl chloride	10 U
chloroethane	10 U
methylene chloride	2 BJ
acetone	10 U
carbon disulfide	4 BJ
1,1-dichloroethene	5 U
1,2-dichloroethene	5 U
1,2-dichloroethene (total)	5 U
chloroform	5 U
1,2-dichloroethane	5 U
2-butanone	10 U
1,1,1-trichloroethane	5 U
carbon tetrachloride	5 U
vinyl acetate	10 U
bromodichloromethane	5 U

Compound

1,2-dichloropropane	5 U
cis-1,3-dichloropropene	5 U
trichloroethene	5 U
dibromochloromethane	5 U
1,1,2-trichloroethane	5 U
benzene	5 U
trans-1,3-dichloropropene	5 U
bromoform	5 U
4-methyl-2-pentanone	10 U
2-hexanone	10 U
tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U
toluene	5 U
chlorobenzene	5 U
ethylbenzene	5 U
styrene	5 U
total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

B - Analyte was found in the blank as well as the sample.

Date Analyzed: 07/19/90

Dilution Factor: 1

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 10-03-GW  
Lab Sample ID: LL3074

Tentative Identification (1)

Concentration (2)

No additional peaks detected

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

Client Project ID: NAS-Key West

Job Number: ITCY 46152

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 10-19-GW

Lab Sample ID: LL3075

<u>Compound</u>		<u>Compound</u>	
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	2 BJ	1,1,2-trichloroethane	5 U
acetone	9 J	benzene	5 U
carbon disulfide	3 BJ	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	total xylenes	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

B - Analyte was found in the blank as well as the sample.

Date Analyzed: 07/19/90

Dilution Factor: 1

IT Corporation  
September 19, 1990

Job Number: ITCY 46152

Client Project ID: NAS-Key West

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 10-19-GW  
Lab Sample ID: LL3075

Tentative Identification (1)

Concentration (2)

2-propanol (ACN)	16
unknown hydrocarbon	10
unknown hydrocarbon	12
unknown hydrocarbon	7

- Remarks: (1) Identification is based on computer search of N.B.S. Library.  
(2) Concentration is based on a response factor of 1.00 relative to the internal standard.

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September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 05-01-GWD

Lab Sample ID: LL3095

Compound

phenol	10 U
bis(2-chloroethyl)ether	10 U
2-chlorophenol	10 U
1,3-dichlorobenzene	6 J
1,4-dichlorobenzene	7 J
benzyl alcohol	10 U
1,2-dichlorobenzene	3 J
2-methylphenol	10 U
bis(2-chloroisopropyl)ether	10 U
4-methylphenol	10 U
n-nitroso-di-n-propylamine	10 U
hexachloroethane	10 U
nitrobenzene	10 U
isophorone	10 U
2-nitrophenol	10 U
2,4-dimethylphenol	10 U
benzoic acid	4 J

Compound

bis(2-chloroethoxy)methane	10 U
2,4-dichlorophenol	10 U
1,2,4-trichlorobenzene	16
naphthalene	40
4-chloroaniline	10 U
hexachlorobutadiene	10 U
4-chloro-3-methylphenol	10 U
2-methylnaphthalene	52
hexachlorocyclopentadiene	10 U
2,4,6-trichlorophenol	10 U
2,4,5-trichlorophenol	52 U
2-chloronaphthalene	10 U
2-nitroaniline	52 U
dimethyl phthalate	10 U
acenaphthylene	10 U
2,6-dinitrotoluene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/17/90

Date Analyzed: 07/28/90

Dilution Factor: 1

IT Corporation  
September 19, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46152

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 05-01-GWD  
Lab Sample ID: LL3095

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	52 U	anthracene	10 U
acenaphthene	10 U	di-n-butylphthalate	10 U
2,4-dinitrophenol	52 U	fluoranthene	10 U
4-nitrophenol	52 U	pyrene	10 U
dibenzofuran	10 U	butylbenzylphthalate	10 U
2,4-dinitrotoluene	10 U	3,3'-dichlorobenzidine	21 U
diethylphthalate	10 U	benzo(a)anthracene	10 U
4-chlorophenyl-phenylether	10 U	chrysene	10 U
fluorene	10 U	bis(2-ethylhexyl)phthalate	2 J
4-nitroaniline	52 U	di-n-octylphthalate	10 U
4,6-dinitro-2-methylphenol	52 U	benzo(b)fluoranthene	10 U
n-nitrosodiphenylamine <sup>1</sup>	10 U	benzo(k)fluoranthene	10 U
4-bromophenyl-phenylether	10 U	benzo(a)pyrene	10 U
hexachlorobenzene	10 U	indeno(1,2,3-cd)pyrene	10 U
pentachlorophenol	52 U	dibenzo(a,h)anthracene	10 U
phenanthrene	10 U	benzo(g,h,i)perylene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

1 - Detected as diphenylamine.

Date Extracted: 07/17/90  
Date Analyzed: 07/28/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: VB0725W

<u>Compound</u>		<u>Compound</u>	
acetone	10 U	1,2-dichloropropane	5 U
acetonitrile	200 U	cis-1,3-dichloropropene	5 U
acrolein	10 U	trans-1,3-dichloropropene	5 U
acrylonitrile	10 U	1,4-dioxane	1,000 U
benzene	5 U	ethyl benzene	5 U
bromodichloromethane	5 U	ethyl cyanide	100 U
bromoform	5 U	2-hexanone	10 U
bromomethane	10 U	iodomethane	5 U
2-butanone	10 U	isobutyl alcohol	2,000 U
carbon disulfide	5 U	methacrylonitrile	10 U
carbon tetrachloride	5 U	methyl methacrylate	10 U
chlorobenzene	5 U	4-methyl-2-pentanone	10 U
chloroethane	10 U	methylene chloride	5 U
3-chloro-1-propene	5 U	pyridine	20,000 U
chloroform	5 U	styrene	5 U
chloromethane	10 U	1,1,1,2-tetrachloroethane	5 U
chloroprene	5 U	1,1,2,2-tetrachloroethane	5 U
1,2-dibromo-3-chloropropane	10 U	tetrachloroethene	5 U
dibromochloromethane	5 U	toluene	5 U
1,2-dibromoethane	5 U	1,1,1-trichloroethane	5 U
dibromomethane	10 U	1,1,2-trichloroethane	5 U
trans-1,4-dichloro-2-butene	20 U	trichloroethene	5 U
dichlorodifluoromethane	20 U	trichlorofluoromethane	5 U
1,1-dichloroethane	5 U	1,2,3-trichloropropane	5 U
1,2-dichloroethane	5 U	vinyl acetate	10 U
1,1-dichloroethene	5 U	vinyl chloride	10 U
trans-1,2-dichloroethene	5 U	xylenes (total)	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date of Analysis: 07/25/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 04-01-SW  
Lab Sample ID: LL3516

<u>Compound</u>		<u>Compound</u>	
acetone	10 U	1,2-dichloropropane	5 U
acetonitrile	200 U	cis-1,3-dichloropropene	5 U
acrolein	10 U	trans-1,3-dichloropropene	5 U
acrylonitrile	10 U	1,4-dioxane	1,000 U
benzene	5 U	ethyl benzene	5 U
bromodichloromethane	5 U	ethyl cyanide	100 U
bromoform	5 U	2-hexanone	10 U
bromomethane	10 U	iodomethane	5 U
2-butanone	10 U	isobutyl alcohol	2,000 U
carbon disulfide	5 U	methacrylonitrile	10 U
carbon tetrachloride	5 U	methyl methacrylate	10 U
chlorobenzene	5 U	4-methyl-2-pentanone	10 U
chloroethane	10 U	methylene chloride	5 U
3-chloro-1-propene	5 U	pyridine	20,000 U
chloroform	5 U	styrene	5 U
chloromethane	10 U	1,1,1,2-tetrachloroethane	5 U
chloroprene	5 U	1,1,2,2-tetrachloroethane	5 U
1,2-dibromo-3-chloropropane	10 U	tetrachloroethene	5 U
dibromochloromethane	5 U	toluene	5 U
1,2-dibromoethane	5 U	1,1,1-trichloroethane	5 U
dibromomethane	10 U	1,1,2-trichloroethane	5 U
trans-1,4-dichloro-2-butene	20 U	trichloroethene	5 U
dichlorodifluoromethane	20 U	trichlorofluoromethane	5 U
1,1-dichloroethane	5 U	1,2,3-trichloropropane	5 U
1,2-dichloroethane	5 U	vinyl acetate	10 U
1,1-dichloroethene	5 U	vinyl chloride	10 U
trans-1,2-dichloroethene	5 U	xylene (total)	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date of Analysis: 07/25/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX VOLATILE ORGANIC ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3470

<u>Compound</u>		<u>Compound</u>	
acetone	13 U	1,2-dichloropropane	6 U
acetonitrile	250 U	cis-1,3-dichloropropene	6 U
acrolein	13 U	trans-1,3-dichloropropene	6 U
acrylonitrile	13 U	1,4-dioxane	1,300 U
benzene	6 U	ethyl benzene	6 U
bromodichloromethane	6 U	ethyl cyanide	130 U
bromoform	6 U	2-hexanone	13 U
bromomethane	13 U	iodomethane	6 U
2-butanone	13 U	isobutyl alcohol	2,500 U
carbon disulfide	6 U	methacrylonitrile	13 U
carbon tetrachloride	6 U	methyl methacrylate	13 U
chlorobenzene	6 U	4-methyl-2-pentanone	13 U
chloroethane	13 U	methylene chloride	6 U
3-chloro-1-propene	6 U	pyridine	25,000 U
chloroform	6 U	styrene	6 U
chloromethane	13 U	1,1,1,2-tetrachloroethane	6 U
chloroprene	6 U	1,1,2,2-tetrachloroethane	6 U
1,2-dibromo-3-chloropropane	13 U	tetrachloroethene	6 U
dibromochloromethane	6 U	toluene	6 U
1,2-dibromoethane	6 U	1,1,1-trichloroethane	6 U
dibromomethane	13 U	1,1,2-trichloroethane	6 U
trans-1,4-dichloro-2-butene	25 U	trichloroethene	6 U
dichlorodifluoromethane	25 U	trichlorofluoromethane	6 U
1,1-dichloroethane	6 U	1,2,3-trichloropropane	6 U
1,2-dichloroethane	6 U	vinyl acetate	13 U
1,1-dichloroethene	6 U	vinyl chloride	13 U
trans-1,2-dichloroethene	6 U	xylene (total)	6 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date of Analysis: 07/25/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3470

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
1,1-dichloroethene	63.3	6 U	59.1	93
trichloroethene	63.3	6 U	51.8	82
benzene	63.3	6 U	50.5	80
toluene	63.3	6 U	56.8	90
chlorobenzene	63.3	6 U	58.6	93

	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>RPD</u>
1,1-dichloroethene	63.3	58.1	92	1
trichloroethene	63.3	52.8	83	-1
benzene	63.3	50.6	80	0
toluene	63.3	55.7	88	2
chlorobenzene	63.3	59.2	94	-1

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Analyzed: 07/25/90

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 04-01-SW  
Lab Sample ID: LL3517

<u>Compound</u>		<u>Compound</u>	
phenol	10 U	bis(2-chloroethoxy)methane	10 U
bis(2-chloroethyl)ether	10 U	2,4-dichlorophenol	10 U
2-chlorophenol	10 U	1,2,4-trichlorobenzene	10 U
1,3-dichlorobenzene	10 U	naphthalene	10 U
1,4-dichlorobenzene	10 U	4-chloroaniline	10 U
benzyl alcohol	10 U	hexachlorobutadiene	10 U
1,2-dichlorobenzene	10 U	4-chloro-3-methylphenol	10 U
2-methylphenol	10 U	2-methylnaphthalene	10 U
bis(2-chloroisopropyl)ether	10 U	hexachlorocyclopentadiene	10 U
4-methylphenol	10 U	2,4,6-trichlorophenol	10 U
n-nitroso-di-n-propylamine	10 U	2,4,5-trichlorophenol	50 U
hexachloroethane	10 U	2-chloronaphthalene	10 U
nitrobenzene	10 U	2-nitroaniline	50 U
isophorone	10 U	dimethyl phthalate	10 U
2-nitrophenol	10 U	acenaphthylene	10 U
2,4-dimethylphenol	10 U	2,6-dinitrotoluene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/20/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 04-01-SW  
Lab Sample ID: LL3517

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	50 U	anthracene	10 U
acenaphthene	10 U	di-n-butylphthalate	10 U
2,4-dinitrophenol	50 U	fluoranthene	10 U
4-nitrophenol	10 U	pyrene	10 U
dibenzofuran	10 U	butylbenzylphthalate	10 U
2,4-dinitrotoluene	10 U	3,3'-dichlorobenzidine	20 U
diethylphthalate	10 U	benzo(a)anthracene	10 U
4-chlorophenyl-phenylether	10 U	chrysene	10 U
fluorene	10 U	bis(2-ethylhexyl)phthalate	5 BJ
4-nitroaniline	50 U	di-n-octylphthalate	10 U
4,6-dinitro-2-methylphenol	50 U	benzo(b)fluoranthene	10 U
n-nitrosodiphenylamine <sup>1</sup>	10 U	benzo(k)fluoranthene	10 U
4-bromophenyl-phenylether	10 U	benzo(a)pyrene	10 U
hexachlorobenzene	10 U	indeno(1,2,3-cd)pyrene	10 U
pentachlorophenol	50 U	dibenzo(a,h)anthracene	10 U
phenanthrene	10 U	benzo(g,h,i)perylene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

B - Analyte was found in the blank as well as the sample.

1 - Detected as diphenylamine.

Date Extracted: 07/20/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: 04-01-SW  
Lab Sample ID: LL3517

n-nitrosodimethylamine	10 U	m-dinitrobenzene	10 U
2-picoline	70 U	pentachlorobenzene	20 U
n-nitrosomethylethylamine	10 U	2-naphthylamine	170 U
methyl methanesulfonate	10 U	1-naphthylamine	120 U
n-nitrosodiethylamine	10 U	2,3,4,6-tetrachlorophenol	10 U
ethyl methanesulfonate	10 U	5-nitro-o-toluidine	20 U
aniline	50 U	diphenylamine	10 U
pentachloroethane	20 U	tetraethyl dithiopyropho(3)	10 U
3-methylphenol	10 U	sym-trinitrobenzene	10 U
n-nitrosopyrrolidine	10 U	phenacetin	10 U
acetophenone	10 U	diallate	10 U
n-nitrosomorpholine	10 U	4-aminobiphenyl	50 U
-toluidine	10 U	pronamide	30 U
n-nitrosopiperidine	10 U	pentachloronitrobenzene	20 U
o,o,o-triethylphosphorot(2)	10 U	dinoseb	20 U
2,6-dichlorophenol	10 U	4-nitroquinoline-1-oxide	10 U
hexachloropropene	20 U	methapyrilene	40 U
a,a-dimethylphenethylamine	10 U	aramite	10 U
n-nitrosodi-n-butylamine	20 U	p-(dimethylamino)azobenzene	30 U
p-phenylenediamine	50 U	3,3'-dimethylbenzidine	80 U
safrole	10 U	2-acetylaminofluorene	10 U
1,2,4,5-tetrachlorobenzene	10 U	7,12-dimethylbenz(a)anth(4)	20 U
isosafrole	10 U	hexachlorophene(5)	500 U
1,4-naphthoquinone	10 U	3-methylcholanthrene	30 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

2 - o,o,o-triethylphosphorothioate

3 - tetraethyl dithiopyrophosphate

4 - 7,12-dimethylbenz(a)anthracene

5 - Quantitation limit for hexachlorophene in soil is ten times that listed.

Date Extracted: 07/20/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

WATER SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	SEMI-VOLATILE					
	Nitro- Benzene-D5 (35-114%)*	2-Fluoro- Biphenyl (43-116%)*	Terphenyl- D14 (33-141%)*	Phenol-D5 (10-94%)*	2-Fluoro- Phenol (21-100%)*	2,4,6 Tribromo- Phenol (10-123%)*
04-01-SW	56	48	73	49	64	62
Method Blank	82	67	83	30	39	60

\* - Values in parenthesis represent USEPA contract required QC limits.

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1383

n-nitrosodimethylamine	330 U	m-dinitrobenzene	330 U
2-picoline	2,300 U	pentachlorobenzene	670 U
n-nitrosomethylethylamine	330 U	2-naphthylamine	5,700 U
methyl methanesulfonate	330 U	1-naphthylamine	4,000 U
n-nitrosodiethylamine	330 U	2,3,4,6-tetrachlorophenol	330 U
ethyl methanesulfonate	330 U	5-nitro-o-toluidine	670 U
aniline	1,700 U	diphenylamine	330 U
pentachloroethane	670 U	tetraethyl dithiopyropho(3)	330 U
3-methylphenol	330 U	sym-trinitrobenzene	330 U
n-nitrosopyrrolidine	330 U	phenacetin	330 U
acetophenone	330 U	diallate	330 U
n-nitrosomorpholine	330 U	4-aminobiphenyl	1,700 U
o-toluidine	330 U	pronamide	1,000 U
n-nitrosopiperidine	330 U	pentachloronitrobenzene	670 U
o,o,o-triethylphosphorot(2)	330 U	dinoseb	670 U
2,6-dichlorophenol	330 U	4-nitroquinoline-1-oxide	330 U
hexachloropropene	670 U	methapyrilene	1,300 U
a,a-dimethylphenethylamine	330 U	aramite	330 U
n-nitrosodi-n-butylamine	670 U	p-(dimethylamino)azobenzene	1,000 U
p-phenylenediamine	1,700 U	3,3'-dimethylbenzidine	2,700 U
safrole	330 U	2-acetylaminofluorene	330 U
1,2,4,5-tetrachlorobenzene	330 U	7,12-dimethylbenz(a)anth(4)	670 U
isosafrole	330 U	hexachlorophene(5)	1,700 U
1,4-naphthoquinone	330 U	3-methylcholanthrene	1,000 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

2 - o,o,o-triethylphosphorothioate

3 - tetraethyl dithiopyrophosphate

4 - 7,12-dimethylbenz(a)anthracene

5 - Quantitation limit for hexachlorophene in soil is ten times that listed.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 1

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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APPENDIX IX SEMIVOLATILE ANALYSIS

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3473

<u>Compound</u>		<u>Compound</u>	
phenol	1,700 U	bis(2-chloroethoxy)methane	1,700 U
bis(2-chloroethyl)ether	1,700 U	2,4-dichlorophenol	1,700 U
2-chlorophenol	1,700 U	1,2,4-trichlorobenzene	1,700 U
1,3-dichlorobenzene	1,700 U	naphthalene	1,700 U
1,4-dichlorobenzene	1,700 U	4-chloroaniline	1,700 U
benzyl alcohol	1,700 U	hexachlorobutadiene	1,700 U
1,2-dichlorobenzene	1,700 U	4-chloro-3-methylphenol	1,700 U
2-methylphenol	1,700 U	2-methylnaphthalene	1,700 U
bis(2-chloroisopropyl)ether	1,700 U	hexachlorocyclopentadiene	1,700 U
-methylphenol	1,700 U	2,4,6-trichlorophenol	1,700 U
-nitroso-di-n-propylamine	1,700 U	2,4,5-trichlorophenol	8,100 U
hexachloroethane	1,700 U	2-chloronaphthalene	1,700 U
nitrobenzene	1,700 U	2-nitroaniline	8,100 U
isophorone	1,700 U	dimethyl phthalate	1,700 U
2-nitrophenol	1,700 U	acenaphthylene	2,500
2,4-dimethylphenol	1,700 U	2,6-dinitrotoluene	1,700 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 4

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3473

Compound

Compound

3-nitroaniline	8,100 U
acenaphthene	1,700 U
2,4-dinitrophenol	8,100 U
4-nitrophenol	8 100 U
dibenzofuran	1,700 U
2,4-dinitrotoluene	1,700 U
diethylphthalate	1,700 U
4-chlorophenyl-phenylether	1,700 U
fluorene	300 J
4-nitroaniline	8,100 U
,6-dinitro-2-methylphenol	8,100 U
,4-nitrosodiphenylamine <sup>1</sup>	1,700 U
4-bromophenyl-phenylether	1,700 U
hexachlorobenzene	1,700 U
pentachlorophenol	8,100 U
phenanthrene	1,500 J

anthracene	1,100 J
di-n-butylphthalate	1,700 U
fluoranthene	3,600
pyrene	8,500
butylbenzylphthalate	1,700 U
3,3'-dichlorobenzidine	3,300 U
benzo(a)anthracene	2,900
chrysene	5,900
bis(2-ethylhexyl)phthalate	830 J
di-n-octylphthalate	1,700 U
benzo(b)fluoranthene	3,800
benzo(k)fluoranthene	3,800
benzo(a)pyrene	3,500
indeno(1,2,3-cd)pyrene	3,000
dibenzo(a,h)anthracene	1,500 J
benzo(g,h,i)perylene	3,900

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
J - Indicates an estimated value less than the detection limit.  
1 - Detected as diphenylamine.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 4

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

APPENDIX IX SEMIVOLATILE ANALYSIS (continued)

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3473

n-nitrosodimethylamine	1,700 U	m-dinitrobenzene	1,700 U
2-picoline	12,000 U	pentachlorobenzene	3,400 U
n-nitrosomethylethylamine	1,700 U	2-naphthylamine	29,000 U
methyl methanesulfonate	1,700 U	1-naphthylamine	20,000 U
n-nitrosodiethylamine	1,700 U	2,3,4,6-tetrachlorophenol	1,700 U
ethyl methanesulfonate	1,700 U	5-nitro-o-toluidine	3,400 U
aniline	8,600 U	diphenylamine	1,700 U
pentachloroethane	3,400 U	tetraethyl dithiopyropho(3)	1,700 U
3-methylphenol	1,700 U	sym-trinitrobenzene	1,700 U
n-nitrosopyrrolidine	1,700 U	phenacetin	1,700 U
acetophenone	1,700 U	diallate	1,700 U
n-nitrosomorpholine	1,700 U	4-aminobiphenyl	8,400 U
o-toluidine	1,700 U	pronamide	5,100 U
n-nitrosopiperidine	1,700 U	pentachloronitrobenzene	3,400 U
o,o,o-triethylphosphorot(2)	1,700 U	dinoseb	3,400 U
2,6-dichlorophenol	1,700 U	4-nitroquinoline-1-oxide	1,700 U
hexachloropropene	3,400 U	methapyrilene	6,700 U
a,a-dimethylphenethylamine	1,700 U	aramite	1,700 U
n-nitrosodi-n-butylamine	3,400 U	p-(dimethylamino)azobenzene	5,100 U
p-phenylenediamine	8,400 U	3,3'-dimethylbenzidine	14,000 U
safrole	1,700 U	2-acetylaminofluorene	1,700 U
1,2,4,5-tetrachlorobenzene	1,700 U	7,12-dimethylbenz(a)anth(4)	3,400 U
isosafrole	1,700 U	hexachlorophene(5)	8,600 U
1,4-naphthoquinone	1,700 U	3-methylcholanthrene	5,100 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

2 - o,o,o-triethylphosphorothioate

3 - tetraethyl dithiopyrophosphate

4 - 7,12-dimethylbenz(a)anthracene

5 - Quantitation limit for hexachlorophene in soil is ten times that listed.

Date Extracted: 07/24/90  
Date Analyzed: 08/16/90  
Dilution Factor: 4

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

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APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank  
Lab Sample ID: BLA1368

<u>Compound</u>		<u>Compound</u>	
α-BHC	0.050 U	methoxychlor	0.50 U
β-BHC	0.050 U	chlordane	0.50 U
δ-BHC	0.050 U	toxaphene	1.0 U
γ-BHC (lindane)	0.050 U	Aroclor 1016	0.50 U
heptachlor	0.050 U	Aroclor 1221	0.50 U
aldrin	0.050 U	Aroclor 1232	0.50 U
heptachlor epoxide	0.050 U	Aroclor 1242	0.50 U
endosulfan I	0.050 U	Aroclor 1248	0.50 U
dieldrin	0.10 U	Aroclor 1254	1.0 U
1,4'-DDE	0.10 U	Aroclor 1260	1.0 U
endrin	0.10 U	endrin aldehyde	0.10 U
endosulfan II	0.10 U	isodrin	0.050 U
4,4'-DDD	0.10 U	kepone	0.10 U
endosulfan sulfate	0.10 U	chlorobenzilate	0.50 U
4,4'-DDT	0.10 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/20/90  
Date Analyzed: 08/08/90  
Dilution Factor: 1

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID: 04-01-SW  
Lab Sample ID: LL3517

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	0.050 U	methoxychlor	0.50 U
$\beta$ -BHC	0.050 U	chlordan	0.50 U
$\delta$ -BHC	0.050 U	toxaphene	1.0 U
$\gamma$ -BHC (lindane)	0.050 U	Aroclor 1016	0.50 U
heptachlor	0.050 U	Aroclor 1221	0.50 U
aldrin	0.050 U	Aroclor 1232	0.50 U
heptachlor epoxide	0.050 U	Aroclor 1242	0.50 U
endosulfan I	0.050 U	Aroclor 1248	0.50 U
dieldrin	0.10 U	Aroclor 1254	1.0 U
2,4'-DDE	0.10 U	Aroclor 1260	1.0 U
endrin	0.10 U	endrin aldehyde	0.10 U
endosulfan II	0.10 U	isodrin	0.050 U
4,4'-DDD	0.10 U	kepone	0.10 U
endosulfan sulfate	0.10 U	chlorobenzilate	0.50 U
4,4'-DDT	0.10 U		

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Extracted: 07/20/90  
Date Analyzed: 07/27/90  
Dilution Factor: 1

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APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3473

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	50	U	methoxychlor	500	U
$\beta$ -BHC	50	U	endrin ketone	100	U
$\delta$ -BHC	50	U	$\alpha$ -chlordane	500	U
$\gamma$ -BHC (lindane)	49	J	$\gamma$ -chlordane	360	J
heptachlor	55	FZ	toxaphene	1,000	U
aldrin	240	FZ	Aroclor 1016	500	U
heptachlor epoxide	120		Aroclor 1221	500	U
endosulfan I	450	FZ	Aroclor 1232	500	U
dieldrin	840	FZ	Aroclor 1242	500	U
1,4'-DDE	900	F	Aroclor 1248	500	U
endrin	100	U	Aroclor 1254	14,000	FZ
endosulfan II	100	U	Aroclor 1260	13,000	FZ
4,4'-DDD	1,300	F	isodrin	160	FZ
endosulfan sulfate	100	U	kepone	100	U
4,4'-DDT	1,200	F	chlorobenzilate	1,000	F

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value less than the detection limit.

F - Peak offscale and therefore out of linear range.

Z - Elevated CRQL reported due to matrix interferences obscuring the compound of interest.

Date Extracted: 07/25/90  
Date Analyzed: 08/08/90  
Dilution Factor: 5

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KNOXVILLE, TN

Client Project ID: NAS-Key West

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APPENDIX IX ORGANOCHLORINE PESTICIDES

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: 04-01-SED DL  
Lab Sample ID: LL3473 DL

<u>Compound</u>			<u>Compound</u>		
$\alpha$ -BHC	500	U	methoxychlor	5,000	U
$\beta$ -BHC	500	U	endrin ketone	1,000	U
$\delta$ -BHC	500	U	$\alpha$ -chlordane	5,000	U
$\gamma$ -BHC (lindane)	17	DJ	$\gamma$ -chlordane	260	DJ
heptachlor	500	U	toxaphene	10,000	U
aldrin	500	U	Aroclor 1016	5,000	U
heptachlor epoxide	500	U	Aroclor 1221	5,000	U
endosulfan I	500	U	Aroclor 1232	5,000	U
dieldrin	1,000	U	Aroclor 1242	5,000	U
1,4'-DDE	1,200	D	Aroclor 1248	5,000	U
endrin	1,000	U	Aroclor 1254	10,000	U
endosulfan II	1,000	U	Aroclor 1260	10,000	U
4,4'-DDD	1,600	D	isodrin	500	U
endosulfan sulfate	1,000	U	kepone	1,000	U
4,4'-DDT	1,300	D	chlorobenzilate	1,200	DJ

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
D - Compound analyzed at a secondary dilution factor.  
J - Indicates an estimated value less than the detection limit.  
DL - Dilution

Date Extracted: 07/25/90  
Date Analyzed: 08/08/90  
Dilution Factor: 50

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IT ANALYTICAL SERVICES  
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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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TARGET ANALYTE LIST - INORGANICS

Results in  $\mu\text{g/liter}$  (ppb)

Sample Matrix: Water

Client Sample ID:	Method Blank	04-01-SW
Lab Sample ID:	<u>PBWC2813/C2816</u>	<u>LL3515</u>
antimony	30.0 U	30.0 U
arsenic	30.0 U	30.0 U
barium	2.0 U	44.5 B
beryllium	1.0 U	1.0 U
cadmium	5.0 U	5.0 U
chromium	10.0 U	10.0 U
cobalt	20.0 U	20.0 U
copper	10.0 U	272
lead	30.0 U	377
mercury	NR	8.4
nickel	20.0 U	20.0 U
selenium	2.0 U	10.0 U
silver	5.0 U	5.0 U
thallium	30.0 U	30.0 U
vanadium	10.0 U	10.0 U
zinc	5.0 U	731
tin	20.0 U	20.0 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

B - Value greater than instrument detection limit, but less than contract required quantitation limit.

NR - Not required.

Date Digested: 08/03/90  
Date Analyzed: 08/14/90 (ICP)  
08/23/90 (GFAA)  
08/08/90 (CVAA)

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IT ANALYTICAL SERVICES  
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TARGET ANALYTE LIST - INORGANICS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Method Blank 04-01-SED  
Lab Sample ID: PBSC4336/C2787/C2792 LL3476

antimony	3.0 U	6.9 B
arsenic	3.0 U	11.4
barium	0.2 U	141
beryllium	0.1 U	0.21 B
cadmium	0.5 U	10.6
chromium	1.0 U	47.3
cobalt	2.0 U	7.3
copper	1.0 U	594
lead	3.0 U	1,140
mercury	0.02 U	5.5 W
nickel	2.0 U	42.4
selenium	6.0 U	1.3 UW
silver	0.5 U	2.5
thallium	3.0 U	18.0
vanadium	1.0 U	8.6
zinc	0.5 U	1,300
tin	2.0 U	117
% Solids		74.4

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.  
B - Value greater than instrument detection limit, but less than contract required quantitation limit.  
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.

Date Digested: 08/01/90  
Date Analyzed: 08/13/90 (ICP)  
08/23/90 (GFAA)  
08/02/90 (CVAA)

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IT ANALYTICAL SERVICES  
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Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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POST DIGEST MATRIX SPIKE RECOVERY

Results in  $\mu\text{g}/\text{kg}$  (ppb)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

	<u>Spiked Sample Result</u>	<u>Sample Result</u>	<u>Spike Added</u>	<u>% Recovery</u>
antimony	500.62	51.51 B	500.0	89.8
arsenic	1,821.17	84.78	2,000.0	86.8
barium	2,841.38	1,051.77	2,000.0	89.5
beryllium	44.52	1.56 B	50.0	85.9
cadmium	112.52	78.80	50.0	67.4
chromium	502.68	352.26	200.0	75.2
cobalt	437.30	54.48	500.0	76.6
copper	4,485.23	4,417.58	250.0	27.1
lead	8,994.64	8,478.57	500.0	103.2
nickel	711.82	315.42	500.0	79.3
selenium	1,670.54	60.00 U	2,000.0	83.5
silver	43.38	18.37	50.0	50.0
thallium	1,824.91	134.09	2,000.0	84.5
vanadium	468.22	63.66	500.0	80.9
zinc	10,279.11	9,687.45	500.0	118.3

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

B - Value greater than instrument detection limit, but less than contract required quantitation limit.

Date Digested: 08/01/90  
Date Analyzed: 08/13/90 (ICP)  
08/23/90 (GFAA)  
08/02/90 (CVAA)

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DUPLICATE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

<u>Parameter</u>	<u>Control Limit</u>	<u>Original Sample</u>	<u>Duplicate</u>	<u>RPD</u>
antimony		6.9234 B	7.1492 B	3.2
arsenic		11.3952	12.2325	7.1
barium		141.3669	153.6694	8.3
beryllium		0.2097 B	0.1344 U	200.0
cadmium		10.5914	8.4960	22.0*
chromium		47.3468	59.4194	22.6*
cobalt	6.7	7.3226	6.5188 B	11.6
copper		593.7608	649.5430	9.0
lead		1,139.5927	1,285.5242	12.0
mercury		5.5376	6.7473	19.7
nickel		42.3952	40.4073	4.8
selenium		8.0645 U	8.0645 U	
silver	1.3	2.4691	3.3602 U	200.0
thallium		18.0228	23.2930	25.5*
vanadium	6.7	8.5565	10.3387	18.9
zinc		1,302.0766	1,442.2043	10.2
tin		117.0242	105.3911	10.5

RPD = Relative Percent Difference

\* - Asterisked values are outside USEPA advisory QC limits.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

B - Value greater than instrument detection limit, but less than contract required quantitation limit.

Date Analyzed: 08/13/90

% Solids: 74.4

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Client Project ID: NAS-Key West

Job Number: ITCY 46179  
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DUPLICATE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

<u>Parameter</u>	<u>Control Limit</u>	<u>Original Sample</u>	<u>Duplicate</u>	<u>RPD</u>
selenium		1.3441 U	1.3441 U	

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 08/23/90

% Solids: 74.4

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Client Project ID: NAS-Key West

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CYANIDE ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
Method Blank	P1366	0.01 U
04-01-SW	LL3514	0.01 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 07/27/90

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SULFIDE ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
Method Blank	P1356	0.20 U
04-04-GW	LL3509	0.20 U
10-01-GW	LL3512	2.0
04-01-SW	LL3513	0.20 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 07/24/90

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID: 04-04-GW  
Lab Sample ID: LL3509

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>	<u>Conc. MSD</u>	<u>% Rec.</u>	<u>RPD</u>
Sulfide	11	0.20 U	12	109	12	109	0

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Analysis Date: 07/24/90

IT Corporation  
September 20, 1990

Client Project ID: NAS-Key West

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Job Number: ITCY 46179  
(Appendix IX)

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CYANIDE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
Method Blank	P1370	0.50 U
04-01-SED	LL3476	0.50 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Analysis Date: 07/30/90

IT Corporation  
September 20, 1990

Client Project ID: NAS-Key West

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Job Number: ITCY 46179  
(Appendix IX)

SULFIDE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Result</u>
Method Blank	P1356	20 U
04-01-SED	LL3476	20 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Analysis Date: 07/24/90

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

MATRIX SPIKE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>
Cyanide	5.00	0.50 U	3.8	76

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Analysis Date: 07/30/90

IT Corporation  
September 20, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 46179  
(Appendix IX)

DUPLICATE ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: 04-01-SED  
Lab Sample ID: LL3476

<u>Compound</u>	<u>Sample Result</u>	<u>Duplicate</u>	<u>RPD</u>	<u>Analysis Date</u>
yanide	0.50 U	0.50 U	NC	07/30/90
sulfide	20 U	20 U	NC	07/24/90

RPD = Relative Percent Difference

NC - Not calculated

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

IT Corporation  
September 11, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITEK 46151 (CLP Data)

MATRIX SPIKE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: 05-SED-U  
Lab Sample ID: LL3065

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>
cyanide	5.0	0.50 U	1.0	20

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 07/26/90

IT Corporation  
September 11, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITEK 46151 (CLP Data)

DUPLICATE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: 05-SED-U

Lab Sample ID: LL3065

	<u>Control Limit</u>	<u>Original Sample</u>	<u>Duplicate</u>	<u>RPD</u>
cyanide		0.50 U	0.50 U	0

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date Analyzed: 07/26/90