

N00213.AR.000081  
NAS KEY WEST  
5090.3a

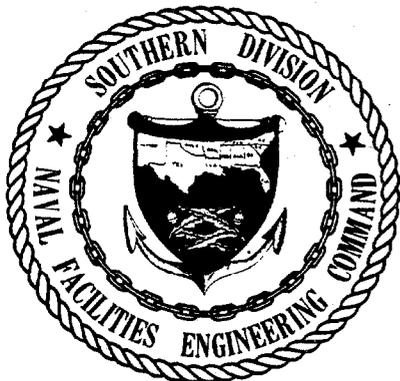
FINAL REMEDIAL INVESTIGATION REPORT PHASE 1 FOR SITE 1, SITE 3, SITE 4, SITE 5,  
SITE 7, SITE 8, SITE 9 AND SITE 10 APPENDIX G VOLUME 1 OF 5 NAS KEY WEST FL  
5/1/1991  
IT CORPORATION

# FINAL REPORT



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

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 1

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



## CERTIFICATE OF ANALYSIS

Kim Laisy  
IT Corporation  
5815 Middlebrook Pike  
Knoxville, TN 37921

August 2, 1990

**TDL PROJECT NUMBER:** ITCY482643

**IT JOB NUMBER:** 486000.09

**This is the Certificate of Analysis for the following samples:**

<b>Client Project ID:</b>	ITCY46151 (NAS, Key West)
<b>Date Received by Lab:</b>	July 16, 1990
<b>Number of Samples:</b>	Two (2)
<b>Sample Type:</b>	Water

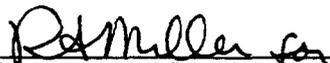
### I. Introduction/Case Narrative

Two (2) water samples were received July 16, 1990, for the analysis of Appendix IX dioxins and furans. This includes isomer specific 2,3,7,8-TCDD and total tetra through hexa (Cl<sub>4</sub>-Cl<sub>6</sub>) dioxin and furan homologs (See Appendix A, Cross Reference List and Appendix C, Chain-of-Custody and Request for Analysis records). The samples and blank were spiked with an internal standard mixture containing 50 ng each of <sup>13</sup>C-2,3,7,8-TCDD, <sup>13</sup>C-PeCDD, <sup>13</sup>C-PeCDF, <sup>13</sup>C-HxCDD and <sup>13</sup>C-HxCDF. The samples and blank were extracted and cleaned up using a modified version of the EPA reference method described in "RCRA SW-846, Method 8280," revised September, 1986. Extracts were analyzed by GC/MS operating in the selected ion monitoring mode for enhanced sensitivity.

The samples were labeled with the following:

04-04-GW  
10-01-GW

Reviewed and Approved:

  
\_\_\_\_\_  
Duane K. Root  
Analytical Operations Manager  
qhc-s\NM257

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

Page 2 of 7  
Kim Laisy  
NAS, Key West  
Date: August 2, 1990  
Client Project ID: ITCY46151

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482643

## II. Analytical Results/Methodology

### **SAMPLE PREPARATION**

Approximately 1000 ml of each sample and 1000 ml distilled water (for the blank) were transferred into individual separatory funnels. The samples and blank were spiked with the internal standard mixture, and then triple-extracted with  $\text{CH}_2\text{Cl}_2$ . The resulting extracts were filtered into a KD flask and the volume reduced to approximately 1 ml.

### **SAMPLE CLEANUP**

The samples and blank were cleaned up using dual column chromatography consisting of an acid-modified silica gel column followed by a neutral alumina column to aid in the removal of chemical interferences. Detailed descriptions of these cleanup techniques can be found in Option A of the U.S. Environmental Protection Agency, Region VII Protocol for "The Determination Of 2,3,7,8-TCDD In Soil And Sediment", revised September, 1983. Final extracts were concentrated to near dryness and raised to 50  $\mu\text{l}$  with 25 ng  $^{13}\text{C}$ -1,2,3,4-TCDD and 25 ng  $^{13}\text{C}$ -1,2,3,7,8,9-HxCDD which were used as recovery standards.

### **GC/MS ANALYSIS**

**Isomer Specific TCDD** - The sample extracts were analyzed using HRGC/LRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for this isomer specific analysis was a 60 m SP-2331 fused silica capillary column. Before acquisition of the sample data, a seven isomer performance mixture containing the six most closely eluting TCDD isomers was analyzed.

A five-point calibration plot was analyzed in triplicate. The mean response factors obtained from this fifteen-point calibration were used for all subsequent calculations. The shift standard, analyzed on the same day as the sample, produced a response factor within 10% of the fifteen-point curve for TCDD.

**Total Dioxin and Furan** - The samples and blank were analyzed for total dioxin and furan homologs from  $\text{Cl}_4$ - $\text{Cl}_6$ . The analytical approach employed by ITAS for the determination of total dioxins and furans is considered semi-quantitative due to the lack of availability of all dioxin and furan isomer standards. The standard analyzed each shift consisted of:

**II. Analytical Results/Methodology (continued)****GC/MS ANALYSIS (continued)****Dioxins**

<sup>13</sup>C-2,3,7,8-TCDD  
<sup>13</sup>C-1,2,3,4-TCDD  
<sup>13</sup>C-1,2,3,7,8-PeCDD  
<sup>13</sup>C-1,2,3,6,7,8-HxCDD  
<sup>13</sup>C-1,2,3,7,8,9-HxCDD  
<sup>13</sup>C-OCDD  
2,3,7,8-TCDD  
1,2,3,7,8-PeCDD  
1,2,3,4,7,8-HxCDD  
1,2,3,6,7,8-HxCDD  
1,2,3,7,8,9-HxCDD

**Dibenzofurans**

<sup>13</sup>C-2,3,7,8-TCDF  
<sup>13</sup>C-1,2,3,7,8-PeCDF  
<sup>13</sup>C-1,2,3,4,7,8-HxCDF  
2,3,7,8-TCDF  
1,2,3,7,8-PeCDF  
2,3,4,7,8-PeCDF  
1,2,3,4,7,8-HxCDF  
1,2,3,6,7,8-HxCDF  
2,3,4,6,7,8-HxCDF  
1,2,3,7,8,9-HxCDF

Response factors were calculated for each compound in the standard relative to its <sup>13</sup>C labeled homolog; the same response was assumed applicable to all isomers in each homologous group. A five-point calibration plot was analyzed in triplicate. The mean response factors obtained from this fifteen-point calibration were used for all subsequent calculations. The shift standard, analyzed on the same day as the samples, produced a response factor within 30% of the multipoint.

The extracts were analyzed using HRGC/LRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for the analysis was a 60 m DB-5 type fused silica capillary column.

**GC/MS RESULTS**

**Isomer Specific TCDD** - The results for the isomer specific analysis, shown in Appendix B, are reported in ppt. A detection limit is calculated from 2.5 times the signal in the area of the elution of <sup>13</sup>C-TCDD whenever a sample contains no detectable 2,3,7,8-TCDD.

**Totals** - The results for the totals analysis, shown in Appendix B, are reported in ppt with the total amount of each homologous group calculated. When more than one isomer in a homologous group of dioxin or furan is found, all of the isomers are added together to produce a total homolog result. Detection limits are calculated from 2.5 times signal to noise when a "Not Detected" (ND) is reported. The detection limits are listed in parenthesis.

**III. Quality Control**

Routine laboratory QA/QC was followed. Recoveries for the internal standards for each sample are presented with the sample analysis data.

**APPENDIX A**

Page 4 of 7  
Kim Laisy  
NAS, Key West  
Date: August 2, 1990  
Client Project ID: ITCY46151

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482643

CROSS REFERENCE LIST

TDL SAMPLE NO.	ITAS SAMPLE NO.	CLIENT SAMPLE NO.	MATRIX
BB2703	LL2984	04-04-GW	Water
BB2704	LL2985	10-01-GW	Water

**APPENDIX B**

Page 7 of 7  
Kim Laisy  
NAS, Key West  
Date: August 2, 1990

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

Client Project ID: ITCY46151

TDL Project No.: ITCY482643

Dioxin/Furan Analysis - Method 8280

Client Sample ID: Method Blank  
Sample Date: NA  
IT Sample ID: BLK1781  
Extraction Date: July 18, 1990

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Analyte	Conc. (ng/L)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 20, 1990

2,3,7,8-TCDD	ND(0.62)	<sup>13</sup> C-2,3,7,8-TCDD	81
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Totals Analysis Date: July 20, 1990

**Dioxins**

Total TCDD	ND(0.42)	<sup>13</sup> C-2,3,7,8-TCDD	75
Total PeCDD	ND(0.82)	<sup>13</sup> C-1,2,3,7,8-PeCDD	102
Total HxCDD	ND(0.69)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	77

**Furans**

Total TCDF	ND(0.39)	<sup>13</sup> C-2,3,7,8-TCDF	64
Total PeCDF	ND(0.21)	<sup>13</sup> C-1,2,3,7,8-PeCDF	93
Total HxCDF	ND(0.22)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	76

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**APPENDIX C**



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

**CHAIN-OF-CUSTODY RECORD**

R/A Control No. 8542

C/C Control No. 137162

PROJECT NAME/NUMBER LTCY 46151 (Key West)

LAB DESTINATION IT/SAL

SAMPLE TEAM MEMBERS \_\_\_\_\_

CARRIER/WAYBILL NO. \_\_\_\_\_

BB2703  
BB2704

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
442984	04-04-GW	7-12-90	water	1gal. amber	Cooler Temp <sup>12</sup> 20°C Custody Seals Intact OK + Intact 7-16-90	
442985	10-01-GW	"	"	"		

Special Instructions: \_\_\_\_\_

Possible Sample Hazards: \_\_\_\_\_

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: S Harris IAS 7-16-90 1230

3. Relinquished By: \_\_\_\_\_

Received By: WJ Conrad TOL 7-16-90 1530

Received by: \_\_\_\_\_

2. Relinquished By: \_\_\_\_\_

4. Relinquished By: \_\_\_\_\_

Received By: \_\_\_\_\_

Received By: \_\_\_\_\_

ITCY 482643

WHITE - To accompany samples  
YELLOW - Field copy

BS Door A



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

**REQUEST FOR ANALYSIS**

R/A Control No. 188542

C/C Control No. 137162

PROJECT NAME ITCY 46151

DATE SAMPLES SHIPPED 7-16-90

PROJECT NUMBER \_\_\_\_\_

LAB DESTINATION IT/SAL

PROFIT CENTER NUMBER 4620

LABORATORY CONTACT \_\_\_\_\_

PROJECT MANAGER \_\_\_\_\_

SEND LAB REPORT TO ITAS/Middlebrook

BILL TO ITAS/Middlebrook

DATE REPORT REQUIRED Normal

PURCHASE ORDER NO. 486000109

PROJECT CONTACT Kim Laisy

PROJECT CONTACT PHONE NO. 615/588-6401

002703

002704

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
LL2984	water	1gal.	NONE	App. IX Dioxins & Furans	
LL2984/5 <small>4/21 7/29</small>	"	"	"	↓	

TURNAROUND TIME REQUIRED: (Rush must be approved by the Laboratory Project Manager.) **QC LEVEL:** (Levels II and III subject to surcharge; project-specific requirements must be submitted to lab before beginning work.)

Normal  Rush \_\_\_\_\_ (Subject to rush surcharge.) I  II \_\_\_\_\_ III \_\_\_\_\_ Project Specific \_\_\_\_\_

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances.)

Non-hazard \_\_\_\_\_ Flammable \_\_\_\_\_ Skin Irritant \_\_\_\_\_ Highly Toxic \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, archive and disposal.)

Return to Client \_\_\_\_\_ Disposal by Lab  Archive \_\_\_\_\_ (Indicate number of months.)

FOR LAB USE ONLY Received by MJ Conrad Date/Time 7-16-90 1530 ITCY482643

WH Original, to accompany samples  
YEL - Field copy

Company: IT Analytical Services

Date: 08/09/90

Client Work ID: ITCY46151

Work Order: T0-07-147

---

TEST CODE 614      TEST NAME EPA 614/8140

The method of analysis for organophosphorus pesticides is taken from E.P.A. Methods 614 and 8140. The samples are extracted with solvent and concentrated. Final detection is by gas chromatography using a flameless alkali salt nitrogen-phosphorus detector.

TEST CODE 615      TEST NAME EPA 615/8150

The method of analysis for chlorophenoxy and phenolic herbicides is taken from E.P.A. Methods 615 and 8150. Samples are acidified, extracted with solvent, hydrolyzed, partitioned in base, partitioned from acid and methylated. If necessary, a portion of the methylated extract is cleaned-up to remove interferences. Final detection is by gas chromatography using an electron capture detector.



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

# **ANALYTICAL SERVICES**

**RECEIVED**

**SEP 24 1990**

**I.T. CORPORATION  
TAMPA, FLORIDA**

## **CERTIFICATE OF ANALYSIS**

**Date: 08/09/90**

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

**Work Order: T0-07-225**

**P.O. Number: 486000.02**

**This is the Certificate of Analysis for the following samples:**

**Client Work ID: ITCY 46209 Key West  
Date Received: 07/24/90  
Number of Samples: 2  
Sample Type: solid**

### **TABLE OF CONTENTS FOR ANALYTICAL RESULTS**

<u>PAGES</u>	<u>LABORATORY #</u>	<u>SAMPLE IDENTIFICATION</u>
3	T0-07-225-01	LL3899 10-MW01-SS
5	T0-07-225-02	LL3900 SP-04-05-MW-SS

**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: 08/14/90

Client Work ID: ITCY 46209 Key West

Work Order: T0-07-225

---

TEST CODE 8140      TEST NAME EPA 8140

The method of analysis for organophosphorus pesticides is taken from E.P.A. Methods 614, 622 and 8140. The samples are extracted with solvent and concentrated. Final detection is by gas chromatography using a flameless alkali salt nitrogen-phosphorus detector.

TEST CODE 8150      TEST NAME EPA 8150 in Soil

The method of analysis for chlorophenoxy and phenolic herbicides is taken from E.P.A. Methods 615 and 8150. Samples are acidified, extracted with solvent, hydrolyzed, partitioned in base, partitioned from acid and methylated. If necessary, a portion of the methylated extract is cleaned-up to remove interferences. Final detection is by gas chromatography using an electron capture detector.



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

# ANALYTICAL SERVICES

RECEIVED

SEP. 24 1990

I.T. CORPORATION  
TAMPA, FLORIDA

## CERTIFICATE OF ANALYSIS

Kim Laisy  
IT Corporation  
5815 Middlebrook Pike  
Knoxville, TN 37921

August 15, 1990

TDL PROJECT NUMBER: ITCY482654

IT JOB NUMBER: 486000.09

This is the Certificate of Analysis for the following samples:

Client Project ID:	ITCY46209 (Key West)
Date Received by Lab:	July 23, 1990
Number of Samples:	Two (2)
Sample Type:	Soils

### I. Introduction/Case Narrative

Two (2) soil samples were received July 23, 1990, for the analysis of Appendix IX dioxins and furans. This includes isomer specific 2,3,7,8-TCDD and total tetra through hexa (Cl<sub>4</sub>-Cl<sub>6</sub>) dioxin and furan homologs (See Appendix A, Cross Reference List and Appendix C, Chain-of-Custody and Request for Analysis records). The samples and blank were spiked with an internal standard mixture containing 50 ng each of <sup>13</sup>C-2,3,7,8-TCDD, <sup>13</sup>C-PeCDD, <sup>13</sup>C-PeCDF, <sup>13</sup>C-HxCDD and <sup>13</sup>C-HxCDF. The samples and blank were extracted and cleaned up using a modified version of the EPA reference method described in "RCRA SW-846, Method 8280," revised September, 1986. Extracts were analyzed by GC/MS operating in the selected ion monitoring mode for enhanced sensitivity.

The samples were labeled with the following:

10-MW01-SS  
SP-04-05-MW-SS

FILE COPY

Reviewed and Approved:

Duane K. Root  
Analytical Operations Manager

qhc-s\NM263

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

## II. Analytical Results/Methodology

### **SAMPLE PREPARATION**

A ten (10) gram aliquot of each soil sample and 10 grams of sodium sulfate (for the blank) were weighed into separate jars. The samples and blank were spiked with the internal standard mixture and extracted with a methanol/hexane mixture for three hours using a platform shaker. The resulting extracts were filtered into a KD flask and the volume reduced to approximately 1 ml.

### **SAMPLE CLEANUP**

The samples and blank were cleaned up using dual column chromatography consisting of an acid-modified silica gel column followed by a neutral alumina column to aid in the removal of chemical interferences. Detailed descriptions of these cleanup techniques can be found in Option A of the U.S. Environmental Protection Agency, Region VII Protocol for "The Determination Of 2,3,7,8-TCDD In Soil And Sediment", revised September, 1983. Final extracts were concentrated to near dryness and raised to 50  $\mu$ l with 25 ng  $^{13}\text{C}$ -1,2,3,4-TCDD and 25 ng  $^{13}\text{C}$ -1,2,3,7,8,9-HxCDD which were used as recovery standards.

### **C/MS ANALYSIS**

**Isomer Specific TCDD** - The sample extracts were analyzed using HRGC/LRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for this isomer specific analysis was a 60 m SP-2331 fused silica capillary column. Before acquisition of the sample data, a seven isomer performance mixture containing the six most closely eluting TCDD isomers was analyzed.

A five-point calibration plot was analyzed in triplicate. The mean response factors obtained from this fifteen-point calibration were used for all subsequent calculations. The shift standard, analyzed on the same day as the sample, produced a response factor within 10% of the fifteen-point curve for TCDD.

**Total Dioxin and Furan** - The samples and blank were analyzed for total dioxin and furan homologs from  $\text{Cl}_4$ - $\text{Cl}_6$ . The analytical approach employed by ITAS for the determination of total dioxins and furans is considered semi-quantitative due to the lack of availability of all dioxin and furan isomer standards. The standard analyzed each shift consisted of:

II. Analytical Results/Methodology (continued)

GC/MS ANALYSIS (continued)

Dioxins

<sup>13</sup>C-2,3,7,8-TCDD  
<sup>13</sup>C-1,2,3,4-TCDD  
<sup>13</sup>C-1,2,3,7,8-PeCDD  
<sup>13</sup>C-1,2,3,6,7,8-HxCDD  
<sup>13</sup>C-1,2,3,7,8,9-HxCDD  
<sup>13</sup>C-OCDD  
2,3,7,8-TCDD  
1,2,3,7,8-PeCDD  
1,2,3,4,7,8-HxCDD  
1,2,3,6,7,8-HxCDD  
1,2,3,7,8,9-HxCDD

Dibenzofurans

<sup>13</sup>C-2,3,7,8-TCDF  
<sup>13</sup>C-1,2,3,7,8-PeCDF  
<sup>13</sup>C-1,2,3,4,7,8-HxCDF  
2,3,7,8-TCDF  
1,2,3,7,8-PeCDF  
2,3,4,7,8-PeCDF  
1,2,3,4,7,8-HxCDF  
1,2,3,6,7,8-HxCDF  
2,3,4,6,7,8-HxCDF  
1,2,3,7,8,9-HxCDF

Response factors were calculated for each compound in the standard relative to its <sup>13</sup>C labeled homolog; the same response was assumed applicable to all isomers in each homologous group. A five-point calibration plot was analyzed in triplicate. The mean response factors obtained from this fifteen-point calibration were used for all subsequent calculations. The shift standard, analyzed on the same day as the samples, produced a response factor within 30% of the multipoint.

The extracts were analyzed using HRGC/LRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for the analysis was a 60 m DB-5 type fused silica capillary column.

GC/MS RESULTS

**Isomer Specific TCDD** - The results for the isomer specific analysis, shown in Appendix B, are reported in ppb (ng/g). A detection limit is calculated from 2.5 times the signal in the area of the elution of <sup>13</sup>C-TCDD whenever a sample contains no detectable 2,3,7,8-TCDD.

**Totals** - The results for the totals analysis, shown in Appendix B, are reported in ppb (ng/g) with the total amount of each homologous group calculated. When more than one isomer in a homologous group of dioxin or furan is found, all of the isomers are added together to produce a total homolog result. Detection limits are calculated from 2.5 times signal to noise when a "Not Detected" (ND) is reported. The detection limits are listed in parenthesis.

III. Quality Control

Routine laboratory QA/QC was followed. Recoveries for the internal standards for each sample are presented with the sample analysis data.

**APPENDIX A**

Page 4 of 7

Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46209

IT ANALYTICAL SERVICES

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482654

CROSS REFERENCE LIST

IT SAMPLE NO.	ITAS SAMPLE NO.	CLIENT SAMPLE NO.	MATRIX
BB2723	LL3901	10-MW01-SS	Soil
BB2724	LL3902	SP-04-05-MW-SS	Soil

**APPENDIX C**



CHAIN-OF-CUSTODY RECORD

R/A Control No. 188585  
C/C Control No. 136666

PROJECT NAME/NUMBER ITCY 46209

LAB DESTINATION IT SAL

SAMPLE TEAM MEMBERS

CARRIER/WAYBILL NO.

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
30723 LL 3901	10-MW01-SS	7/17/90	Soil	250 ml amber	Cooler Temp @ 5°C Custody Seals Intact OK NAC 7/23/90	
30724 LL 3902	SP-04-05-MW-SS	"	"	"		

Special Instructions:

Possible Sample Hazards: Caution: Contains high concentrations of pesticides

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: SA Kennedy, ITAS, 7/23/90 1200  
Received By: T.J. Conrad TDL 7/23/90 1500

3. Relinquished By: \_\_\_\_\_  
Received by: \_\_\_\_\_

2. Relinquished By: \_\_\_\_\_  
Received By: \_\_\_\_\_

4. Relinquished By: \_\_\_\_\_  
Received By: \_\_\_\_\_

ITCY482654

WHITE - To accompany samples  
YELLOW - Field copy



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

**REQUEST FOR ANALYSIS**

R/A Control No. 18, 85  
 C/C Control No. 136666  
 DATE SAMPLES SHIPPED 7-23-90  
 LAB DESTINATION IT SAL  
 LABORATORY CONTACT Nancy Conrad  
 SEND LAB REPORT TO IT Corp.  
Middlebrook Pk  
 DATE REPORT REQUIRED normal  
 PROJECT CONTACT Kim Laisy  
 PROJECT CONTACT PHONE NO. 588-6401

PROJECT NAME Key West  
 PROJECT NUMBER ITCY 46209  
 PROFIT CENTER NUMBER 4620  
 PROJECT MANAGER \_\_\_\_\_  
 BILL TO ITAS  
 PURCHASE ORDER NO. 486000.09

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
882723 LL 3901	Sail			App. IX Dioxins + Furans by CLP, no data pkg.	
882724 LL 3902	"				

TURNAROUND TIME REQUIRED: (Rush must be approved by the Laboratory Project Manager.)  
 Normal  Rush \_\_\_\_\_ (Subject to rush surcharge.)  
 QC LEVEL: (Levels II and III subject to surcharge; project-specific requirements must be submitted to lab before beginning work.)  
 I \_\_\_\_\_ II \_\_\_\_\_ III \_\_\_\_\_ Project Specific \_\_\_\_\_

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances.)  
 Non-hazard \_\_\_\_\_ Flammable \_\_\_\_\_ Skin Irritant \_\_\_\_\_ Highly Toxic \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, archive and disposal.)  
 Return to Client \_\_\_\_\_ Disposal by Lab  Archive \_\_\_\_\_ (Indicate number of months.)

FOR LAB USE ONLY  
 Received by NJ Conrad Date/Time 7-23-90 1500 ITCY482654

WHITE - Original, to accompany samples  
 YELLOW - Field copy

**CERTIFICATE OF ANALYSIS**

---

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

August 8, 1990

Job Number: ITCY 45858

P.O. Number: 595392

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 06/05/90  
Number of Samples: Twenty-two (22)  
Sample Type: Soil

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**I. Introduction**

On 06/05/90, twenty-two (22) 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.

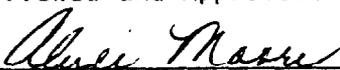
**II. Analytical Results/Methodology**

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 geotechnical parameters were performed at the IT-Technology Development laboratory, Knoxville, Tennessee. A separate laboratory report for these parameters will follow.

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:

  
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  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

## II. Analytical Results/Methodology (continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCB's 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 EP Toxicity extracted in accordance with EPA SW-846 method 1310. The EP Toxicity leachate was analyzed for RCRA metals by inductively coupled plasma spectroscopy (ICP) and cold vapor atomic absorption spectroscopy (CVAA) based on EPA SW-846 methods 6010 and 7470, respectively.

## III. Quality Control

The volatiles analyses were performed on 06/12/90 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 06/18 and 06/21/90 by direct injection of sample extract on a Restek RTX-5 capillary column on a VG TRIO-1 GC/MS/DS. The volatiles analyses generally went well. PLOT 2 volatile's sample required one additional dilution due to a high level of acetone. PLOT 3 was run after Plot 2 original and before PLOT 2 dilution; in data review it could not be ruled out that the level of acetone (and 2-propanol, tentative) seen in PLOT 3 were at least partly due to system carryover, hence these results should be viewed as upper limits. MS/MSD analysis using (on PLOT 1) sample showed all results within CLP advisory limits.

The semivolatiles runs went well. One surrogate rose above normal recovery limit in two cases; however, the deviation was not extreme, and the samples met CLP compliance limits overall. All semivolatiles samples were run at 3-5 fold dilution, because of extract appearance. In the tentatively identified compounds, several apparently chlorinated species were seen, some with sufficiently good spectral match to suggest a specific compound; other peaks that were seen included the prep generated aldol or related products, and tetrahydropyrandiol (tentative), which are known laboratory background components. MS/MSD analysis (again on PLOT 1) showed all results within CLP advisory limits. There were no other problems seen in final review of the data for either the volatiles or semivolatiles fraction.

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### III. Quality Control (continued)

The samples were extracted for pesticide/PCBs on 06/07/90. The analyses were performed from 06/11/90 to 06/21/90 using a mixed phase (SP-2250/SP-2401), 3% OV-1, and 5% SP-2401 columns on the Varian 3740B/Varian 3740H/Varian 3740G instruments. Due to the high concentrations of some pesticides, detected, elevated detection limits were reported for other affected compounds. A matrix spike/matrix spike duplicate was attempted using sample SITE 3, PLOT 1. Recoveries were impossible due to the amount of pesticides already present in the samples. Further dilutions would have diluted out the spike added. Precision results were good. No other problems were encountered.

The samples were digested on 06/14/90 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 06/14/90; the GFAA analyses for arsenic, lead, selenium and thallium were performed from 06/14 to 06/20/90; the remaining metals were analyzed by ICP on 06/19/90. All run QC was acceptable. A duplicate/spike pair was prepared using sample number SITE 3, PLOT 1. Spike recovery (accuracy) results were outside control limits for cobalt, copper and silver by ICP and selenium by GFAA. A post digestion spike was performed as required by CLP protocol, with comparable results indicating a definite matrix effect. A post digestion spike is not required for silver due to its precipitous nature. Duplicate RPD (precision) results were outside control limits for the following elements; copper, lead and zinc. This could be attributed to sample nonhomogeneity problems which are typically encountered when analyzing a soil matrix. Due to the high levels of arsenic detected in sample SITE 3, PLOT 1 the original, duplicate and spike are reported by ICP. Lead was also reported by ICP for the same reason, but for all samples. The samples flagged with an "E" qualifier indicate the serial dilution for the ICP is outside the 10 percent difference range for that element. The elements displaying this variation are all minerals. It is not unusual for high levels of minerals to mask recoveries; therefore, the more diluted the sample, the more enhanced the recovery. The detection limit for silver is elevated due to matrix interferences caused by the high calcium levels in the samples.

The samples were analyzed for cyanide on 06/14/90. A duplicate/spike pair was prepared using sample SITE 3, PLOT 1. Precision results were good, but accuracy results showed a 14% recovery. It was decided that a distillate spike would be performed to show the point of control. The post distillation aliquot that was spiked showed good recovery results, indicating a definite matrix effect. Both spikes are reported. No other problems were encountered.

The samples were EP Toxicity extracted from 06/13 to 06/16/90 and the leachates were digested on 06/20/90 for ICP. The leachates for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed from 06/16 to 06/19/90. The remaining metals were analyzed by ICP on 06/27/90. All run QC was acceptable. A matrix spike/matrix spike duplicate pair was prepared using sample number MWSF-6. Spike recovery (accuracy) results were within control limits for all requested elements with the exception of silver. The detection limit for silver is elevated due to high calcium levels in these samples. A post digestion spike was performed for silver, although not required, with 100% recovery. Duplicate RPD (precision) results were within control limits for all elements. No problems were encountered.

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Job Number: ITCY 45858

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: VB0612

<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	3 J	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
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: 06/12/90  
Dilution Factor: 1

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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: VB0612

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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VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1

Lab Sample ID: LL0048

<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	5 BJ	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	6 U
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.

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

Date Analyzed: 06/12/90

Dilution Factor: 1

% Moisture: 19

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0048

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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SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0048

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
1,1-dichloroethene	61.7	6 U	51.7	84
trichloroethene	61.7	6 U	53.3	86
benzene	61.7	6 U	49.0	79
toluene	61.7	6 U	54.1	88
chlorobenzene	61.7	6 U	59.5	96

	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>RPD</u>
1,1-dichloroethene	61.7	48.0	78	7
trichloroethene	61.7	52.3	85	1
benzene	61.7	47.9	78	1
toluene	61.7	51.9	84	5
chlorobenzene	61.7	59.8	97	-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: 06/12/90

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VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 2  
Lab Sample ID: LL0051

<u>Compound</u>		<u>Compound</u>	
chloroethane	13 U	1,2-dichloropropane	6 U
bromoethane	13 U	cis-1,3-dichloropropene	6 U
vinyl chloride	13 U	trichloroethene	6 U
chloroethane	13 U	dibromochloromethane	6 U
ethylene chloride	5 J	1,1,2-trichloroethane	6 U
acetone	880 BD	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	13 U
1,2-dichloroethene (total)	6 U	2-hexanone	13 U
chloroform	6 U	tetrachloroethene	6 U
1,2-dichloroethane	6 U	1,1,2,2-tetrachloroethane	6 U
2-butanone	13 U	toluene	6 U
1,1,1-trichloroethane	6 U	chlorobenzene	6 U
carbon tetrachloride	6 U	ethylbenzene	6 U
vinyl acetate	13 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.

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

D - Compound analyzed at a secondary dilution factor.

Date Analyzed: 06/12/90

Dilution Factor: 1

% Moisture: 22

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 2  
Lab Sample ID: LL0051

<u>Relative Identification (1)</u>	<u>Concentration (2)</u>
propanol (acn)	150

- 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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VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 3  
Lab Sample ID: LL0052

<u>Compound</u>		<u>Compound</u>	
chloroethane	14 U	1,2-dichloropropane	7 U
bromoethane	14 U	cis-1,3-dichloropropene	7 U
vinyl chloride	14 U	trichloroethene	7 U
chloroethane	14 U	dibromochloromethane	7 U
ethylene chloride	4 J	1,1,2-trichloroethane	7 U
acetone	78 B	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	7 U
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	7 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: 06/12/90  
Dilution Factor: 1  
% Moisture: 27

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 3  
Lab Sample ID: LL0052

<u>Relative Identification</u> (1)	<u>Concentration</u> (2)
propanol (acn)	9.5

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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VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 4  
Lab Sample ID: LL0053

<u>Compound</u>		<u>Compound</u>	
chloromethane	11 U	1,2-dichloropropane	6 U
bromomethane	11 U	cis-1,3-dichloropropene	6 U
vinyl chloride	11 U	trichloroethene	6 U
chloroethane	11 U	dibromochloromethane	6 U
methylene chloride	2 J	1,1,2-trichloroethane	6 U
acetone	6 JB	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	11 U
1,2-dichloroethene (total)	6 U	2-hexanone	11 U
chloroform	6 U	tetrachloroethene	6 U
1,2-dichloroethane	6 U	1,1,2,2-tetrachloroethane	6 U
2-butanone	11 U	toluene	6 U
1,1,1-trichloroethane	6 U	chlorobenzene	6 U
carbon tetrachloride	6 U	ethylbenzene	6 U
vinyl acetate	11 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.

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

Date Analyzed: 06/12/90  
Dilution Factor: 1  
% Moisture: 11

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 4  
Lab Sample ID: LL0053

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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VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 5  
Lab Sample ID: LL0054

<u>Compound</u>		<u>Compound</u>	
chloromethane	13 U	1,2-dichloropropane	6 U
bromomethane	13 U	cis-1,3-dichloropropene	6 U
vinyl chloride	13 U	trichloroethene	6 U
chloroethane	13 U	dibromochloromethane	6 U
methylene chloride	6 U	1,1,2-trichloroethane	6 U
acetone	13 U	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	13 U
1,2-dichloroethene (total)	6 U	2-hexanone	13 U
chloroform	6 U	tetrachloroethene	6 U
1,2-dichloroethane	6 U	1,1,2,2-tetrachloroethane	6 U
2-butanone	13 U	toluene	6 U
1,1,1-trichloroethane	6 U	chlorobenzene	6 U
carbon tetrachloride	6 U	ethylbenzene	6 U
vinyl acetate	13 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.  
B - Analyte was found in the blank as well as the sample.

Date Analyzed: 06/12/90  
Dilution Factor: 1  
% Moisture: 21

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 5  
Lab Sample ID: LL0054

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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Client Project ID: NAS-Key West

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VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 6  
Lab Sample ID: LL0055

<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	10	1,1,2-trichloroethane	6 U
acetone	12 U	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	6 U
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: 06/12/90  
Dilution Factor: 1  
% Moisture: 16

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 6  
Lab Sample ID: LL0055

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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SOIL SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	VOLATILE		
	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
Site 3, Plot 1	101	98	90
Site 3, Plot 2	106	96	95
Site 3, Plot 2 DL	100	102	93
Site 3, Plot 3	111	92	95
Site 3, Plot 4	102	92	91
Site 3, Plot 5	101	90	88
Site 3, Plot 6	113	84	91
Site 3, Plot 1 MS	103	99	95
Site 3, Plot 1 MSD	96	97	94
Method Blank	98	96	90

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

DL - Dilution

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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: BLA1137

<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
(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: 06/07/90  
Date Analyzed: 06/18/90  
Dilution Factor: 1

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank  
Lab Sample ID: BLA1137

<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: 06/07/90  
Date Analyzed: 06/18/90  
Dilution Factor: 1

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

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: BLA1137

<u>Tentative Identification</u> (1)	<u>Concentration</u> (2)
3-penten-2-one, 4-methyl-	4,300 A
unknown (hydroxypentanone?)	370 A
2-pentanone, 4-hydroxy-4-methyl-	37,000 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.

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0056

<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
2-methylphenol	2,000 U	2-methylnaphthalene	2,000 U
bis(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	9,700 U
hexachloroethane	2,000 U	2-chloronaphthalene	2,000 U
nitrobenzene	2,000 U	2-nitroaniline	9,700 U
isophorone	2,000 U	dimethyl phthalate	2,000 U
2-nitrophenol	2,000 U	acenaphthylene	2,000 U
2,4-dimethylphenol	2,000 U	2,6-dinitrotoluene	2,000 U
benzoic acid	9,700 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: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 5  
% Moisture: 19

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST (continued)

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0056

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	9,700 U	anthracene	2,000 U
acenaphthene	2,000 U	di-n-butylphthalate	2,000 U
2,4-dinitrophenol	9,700 U	fluoranthene	2,000 U
4-nitrophenol	9,700 U	pyrene	2,000 U
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	2,000 U
4-chlorophenyl-phenylether	2,000 U	chrysene	250 J
orene	2,000 U	bis(2-ethylhexyl)phthalate	540 J
4-nitroaniline	9,700 U	di-n-octylphthalate	2,000 U
4,6-dinitro-2-methylphenol	9,700 U	benzo(b)fluoranthene	2,000 U
n-nitrosodiphenylamine <sup>1</sup>	2,000 U	benzo(k)fluoranthene	2,000 U
4-bromophenyl-phenylether	2,000 U	benzo(a)pyrene	290 J
hexachlorobenzene	2,000 U	indeno(1,2,3-cd)pyrene	2,000 U
pentachlorophenol	9,700 U	dibenzo(a,h)anthracene	2,000 U
phenanthrene	2,000 U	benzo(g,h,i)perylene	570 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: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 5  
% Moisture: 19

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0056

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
3-penten-2-one, 4-methyl-	5,400 AB
2-pentanone, 4-hydroxy-4-methyl-	60,000 AB
2,4-pentanedione	1,900 A
3-hexen-2-one, 5-methyl-	1,800 A
2H-pyran-2,3-diol, tetrahydro	3,900
unknown	7,800
chlorinated hydrocarbon	2,800
chlorinated hydrocarbon	4,700
chlorinated hydrocarbon	11,000
DDT	61,000 Y

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.
- Y - Indistinguishable isomer in tentatively identified compounds.
- B - Analyte was found in the blank as well as the sample.

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0056

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
phenol	8,150	2,000 U	6,030	74
2-chlorophenol	8,150	2,000 U	6,520	80
1,4-dichlorobenzene	4,070	2,000 U	2,870	71
n-nitroso-di-n-propylamine	4,070	2,000 U	2,930	72
1,2,4-trichlorobenzene	4,070	2,000 U	3,010	74
4-chloro-3-methylphenol	8,150	2,000 U	7,150	88
acenaphthene	4,070	2,000 U	3,440	85
4-nitrophenol	8,150	9,700 U	6,030	74
2,4-dinitrotoluene	4,070	2,000 U	3,200	79
pentachlorophenol	8,150	9,700 U	4,440	54
pyrene	4,070	2,000 U	4,320	106
	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>RPD</u>
phenol	8,100	6,440	80	-8
2-chlorophenol	8,100	7,270	90	-12
1,4-dichlorobenzene	4,050	3,180	79	-11
n-nitroso-di-n-propylamine	4,050	3,240	80	-11
1,2,4-trichlorobenzene	4,050	3,080	76	-3
4-chloro-3-methylphenol	8,100	7,030	87	1
acenaphthene	4,050	3,460	85	0
4-nitrophenol	8,100	3,810	47	45
2,4-dinitrotoluene	4,050	2,270	56	34
pentachlorophenol	8,100	3,060	38	35
pyrene	4,050	3,180	79	29

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 Extracted: 06/07/90  
Date Analyzed: 06/21/90

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 2  
Lab Sample ID: LL0059

<u>Compound</u>		<u>Compound</u>	
phenol	2,100 U	bis(2-chloroethoxy)methane	2,100 U
bis(2-chloroethyl)ether	2,100 U	2,4-dichlorophenol	2,100 U
2-chlorophenol	2,100 U	1,2,4-trichlorobenzene	2,100 U
1,3-dichlorobenzene	2,100 U	naphthalene	2,100 U
1,4-dichlorobenzene	2,100 U	4-chloroaniline	2,100 U
benzyl alcohol	2,100 U	hexachlorobutadiene	2,100 U
1,2-dichlorobenzene	2,100 U	4-chloro-3-methylphenol	2,100 U
2-methylphenol	2,100 U	2-methylnaphthalene	2,100 U
bis(2-chloroisopropyl)ether	2,100 U	hexachlorocyclopentadiene	2,100 U
4-methylphenol	2,100 U	2,4,6-trichlorophenol	2,100 U
n-nitroso-di-n-propylamine	2,100 U	2,4,5-trichlorophenol	10,000 U
hexachloroethane	2,100 U	2-chloronaphthalene	2,100 U
nitrobenzene	2,100 U	2-nitroaniline	10,000 U
isophorone	2,100 U	dimethyl phthalate	2,100 U
2-nitrophenol	2,100 U	acenaphthylene	2,100 U
2,4-dimethylphenol	2,100 U	2,6-dinitrotoluene	2,100 U
benzoic acid	10,000 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: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 5  
% Moisture: 22

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST (continued)

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 2  
Lab Sample ID: LL0059

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	10,000 U	anthracene	2,100 U
acenaphthene	2,100 U	di-n-butylphthalate	2,100 U
2,4-dinitrophenol	10,000 U	fluoranthene	2,100 U
4-nitrophenol	10,000 U	pyrene	2,100 U
dibenzofuran	2,100 U	butylbenzylphthalate	2,100 U
2,4-dinitrotoluene	2,100 U	3,3'-dichlorobenzidine	4,200 U
diethylphthalate	240 J	benzo(a)anthracene	2,100 U
4-chlorophenyl-phenylether	2,100 U	chrysene	2,100 U
luorene	2,100 U	bis(2-ethylhexyl)phthalate	490 J
4-nitroaniline	10,000 U	di-n-octylphthalate	2,100 U
4,6-dinitro-2-methylphenol	10,000 U	benzo(b)fluoranthene	2,100 U
n-nitrosodiphenylamine <sup>1</sup>	2,100 U	benzo(k)fluoranthene	2,100 U
4-bromophenyl-phenylether	2,100 U	benzo(a)pyrene	2,100 U
hexachlorobenzene	2,100 U	indeno(1,2,3-cd)pyrene	2,100 U
pentachlorophenol	10,000 U	dibenzo(a,h)anthracene	2,100 U
phenanthrene	2,100 U	benzo(g,h,i)perylene	2,100 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.

1 - Detected as diphenylamine.

Date Extracted: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 5  
% Moisture: 22

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 2  
Lab Sample ID: LL0059

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
3-penten-2-one, 4-methyl-	5,000 AB
2-pentanone, 4-hydroxy-4-methyl-	62,000 AB
2,4-pentanedione	2,400 A
3-hexen-2-one, 5-methyl-	3,100 A
2H-pyran-2,3-diol, tetrahydro	3,400
unknown	5,300
unknown sat'd hydrocarbon	1,400
unknown	2,000
unknown	920
chlordane	9,100
unknown	2,900
unknown sat'd hydrocarbon	1,000
DDE	52,000 Y
dieldrin	43,000
chlorinated hydrocarbon	4,100
chlorinated hydrocarbon	50,000
chlorinated hydrocarbon	43,000
DDT	230,000 Y
chlorobenzilate	2,100
DDMU	15,000

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.
- Y - Indistinguishable isomer in tentatively identified compounds.
- B - Analyte was found in the blank as well as the sample.

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 3

Lab Sample ID: LL0060

<u>Compound</u>		<u>Compound</u>	
phenol	1,400 U	bis(2-chloroethoxy)methane	1,400 U
bis(2-chloroethyl)ether	1,400 U	2,4-dichlorophenol	1,400 U
2-chlorophenol	1,400 U	1,2,4-trichlorobenzene	1,400 U
1,3-dichlorobenzene	1,400 U	naphthalene	1,400 U
1,4-dichlorobenzene	1,400 U	4-chloroaniline	1,400 U
benzyl alcohol	1,400 U	hexachlorobutadiene	1,400 U
1,2-dichlorobenzene	1,400 U	4-chloro-3-methylphenol	1,400 U
2-methylphenol	1,400 U	2-methylnaphthalene	1,400 U
(2-chloroisopropyl)ether	1,400 U	hexachlorocyclopentadiene	1,400 U
4-methylphenol	1,400 U	2,4,6-trichlorophenol	1,400 U
n-nitroso-di-n-propylamine	1,400 U	2,4,5-trichlorophenol	6,600 U
hexachloroethane	1,400 U	2-chloronaphthalene	1,400 U
nitrobenzene	1,400 U	2-nitroaniline	6,600 U
isophorone	1,400 U	dimethyl phthalate	1,400 U
2-nitrophenol	1,400 U	acenaphthylene	1,400 U
2,4-dimethylphenol	1,400 U	2,6-dinitrotoluene	1,400 U
benzoic acid	6,600 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: 06/07/90  
Date Analyzed: 06/18/90  
Dilution Factor: 3  
% Moisture: 27

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 3  
Lab Sample ID: LL0060

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	6,600 U	anthracene	1,400 U
acenaphthene	1,400 U	di-n-butylphthalate	1,400 U
2,4-dinitrophenol	6,600 U	fluoranthene	1,400 U
4-nitrophenol	6,600 U	pyrene	1,400 U
dibenzofuran	1,400 U	butylbenzylphthalate	1,400 U
2,4-dinitrotoluene	1,400 U	3,3'-dichlorobenzidine	2,700 U
diethylphthalate	1,400 U	benzo(a)anthracene	1,400 U
4-chlorophenyl-phenylether	1,400 U	chrysene	1,400 U
fluorene	1,400 U	bis(2-ethylhexyl)phthalate	170 J
4-nitroaniline	6,600 U	di-n-octylphthalate	1,400 U
4,6-dinitro-2-methylphenol	6,600 U	benzo(b)fluoranthene	1,400 U
n-nitrosodiphenylamine <sup>1</sup>	1,400 U	benzo(k)fluoranthene	1,400 U
4-bromophenyl-phenylether	1,400 U	benzo(a)pyrene	1,400 U
hexachlorobenzene	1,400 U	indeno(1,2,3-cd)pyrene	1,400 U
pentachlorophenol	6,600 U	dibenzo(a,h)anthracene	1,400 U
phenanthrene	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: 06/07/90  
Date Analyzed: 06/18/90  
Dilution Factor: 3  
% Moisture: 27

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 3  
Lab Sample ID: LL0060

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
chlorinated hydrocarbon	16,000
chlorinated hydrocarbon	2,600
chlorinated hydrocarbon	12,000
unknown	1,900
2H-pyran-2,3-diol, tetrahydro	1,200
3-hexen-2-one, 5-methyl-	1,200 A
2,4-pentanedione	680 A
2-pentanone, 4-hydroxy-4-methyl-	28,000 AB
3-penten-2-one, 4-methyl-	2,500 AB

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  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 4  
Lab Sample ID: LL0061

<u>Compound</u>		<u>Compound</u>	
phenol	1,800 U	bis(2-chloroethoxy)methane	1,800 U
bis(2-chloroethyl)ether	1,800 U	2,4-dichlorophenol	1,800 U
2-chlorophenol	1,800 U	1,2,4-trichlorobenzene	1,800 U
1,3-dichlorobenzene	1,800 U	naphthalene	1,800 U
1,4-dichlorobenzene	1,800 U	4-chloroaniline	1,800 U
benzyl alcohol	1,800 U	hexachlorobutadiene	1,800 U
1,2-dichlorobenzene	1,800 U	4-chloro-3-methylphenol	1,800 U
2-methylphenol	1,800 U	2-methylnaphthalene	1,800 U
bis(2-chloroisopropyl)ether	1,800 U	hexachlorocyclopentadiene	1,800 U
4-methylphenol	1,800 U	2,4,6-trichlorophenol	1,800 U
n-nitroso-di-n-propylamine	1,800 U	2,4,5-trichlorophenol	8,900 U
hexachloroethane	1,800 U	2-chloronaphthalene	1,800 U
nitrobenzene	1,800 U	2-nitroaniline	8,900 U
isophorone	1,800 U	dimethyl phthalate	1,800 U
2-nitrophenol	1,800 U	acenaphthylene	1,800 U
2,4-dimethylphenol	1,800 U	2,6-dinitrotoluene	1,800 U
benzoic acid	8,900 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: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 5  
% Moisture: 11

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 4  
Lab Sample ID: LL0061

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	8,900 U	anthracene	1,800 U
acenaphthene	1,800 U	di-n-butylphthalate	1,800 U
2,4-dinitrophenol	8,900 U	fluoranthene	1,800 U
4-nitrophenol	8,900 U	pyrene	1,800 U
dibenzofuran	1,800 U	butylbenzylphthalate	1,800 U
2,4-dinitrotoluene	1,800 U	3,3'-dichlorobenzidine	3,700 U
diethylphthalate	1,800 U	benzo(a)anthracene	1,800 U
4-chlorophenyl-phenylether	1,800 U	chrysene	1,800 U
orene	1,800 U	bis(2-ethylhexyl)phthalate	460 J
nitroaniline	8,900 U	di-n-octylphthalate	1,800 U
4,6-dinitro-2-methylphenol	8,900 U	benzo(b)fluoranthene	1,800 U
n-nitrosodiphenylamine <sup>1</sup>	1,800 U	benzo(k)fluoranthene	1,800 U
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	8,900 U	dibenzo(a,h)anthracene	1,800 U
phenanthrene	1,800 U	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: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 5  
% Moisture: 11

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 4  
Lab Sample ID: LL0061

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
chlorinated hydrocarbon	150,000
2-pentanone, 4-hydroxy-4-methyl	64,000 AB
DDT	100,000 Y
chlorinated hydrocarbon	84,000
DDE	47,000 Y
DDMU	18,000
unknown sat'd hydrocarbon	3,700
cyclohexane, 1,2,3,4,5,6-hexamethyl	3,000
unknown sat'd hydrocarbon	2,700
chlorinated hydrocarbon	11,000
unknown sat'd hydrocarbon	3,700
dieldrin	10,000
3-penten-2-one, 4-methyl-	5,400 AB
unknown	5,100
unknown sat'd hydrocarbon	3,000
unknown sat'd hydrocarbon	2,400
mitotane (usan)	6,000
2H-pyran-2,3-diol, tetrahydro	3,400
2,4-pentanedione	2,900 A
unknown sat'd hydrocarbon	1,700

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.
- Y - Indistinguishable isomer in tentatively identified compounds.

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 5

Lab Sample ID: LL0062

<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
(2-chloroisopropyl)ether	1,700 U	hexachlorocyclopentadiene	1,700 U
1-methylphenol	1,700 U	2,4,6-trichlorophenol	1,700 U
n-nitroso-di-n-propylamine	1,700 U	2,4,5-trichlorophenol	8,000 U
hexachloroethane	1,700 U	2-chloronaphthalene	1,700 U
nitrobenzene	1,700 U	2-nitroaniline	8,000 U
isophorone	1,700 U	dimethyl phthalate	1,700 U
2-nitrophenol	1,700 U	acenaphthylene	1,700 U
2,4-dimethylphenol	1,700 U	2,6-dinitrotoluene	1,700 U
benzoic acid	8,000 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: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 4  
% Moisture: 21

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST (continued)

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 5  
Lab Sample ID: LL0062

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	8,000 U	anthracene	1,700 U
acenaphthene	1,700 U	di-n-butylphthalate	1,700 U
2,4-dinitrophenol	8,000 U	fluoranthene	1,700 U
4-nitrophenol	8,000 U	pyrene	1,700 U
dibenzofuran	1,700 U	butylbenzylphthalate	1,700 U
2,4-dinitrotoluene	1,700 U	3,3'-dichlorobenzidine	3,300 U
diethylphthalate	1,700 U	benzo(a)anthracene	1,700 U
4-chlorophenyl-phenylether	1,700 U	chrysene	1,700 U
fluorene	1,700 U	bis(2-ethylhexyl)phthalate	490 J
4-nitroaniline	8,000 U	di-n-octylphthalate	1,700 U
4,6-dinitro-2-methylphenol	8,000 U	benzo(b)fluoranthene	1,700 U
n-nitrosodiphenylamine <sup>1</sup>	1,700 U	benzo(k)fluoranthene	1,700 U
4-bromophenyl-phenylether	1,700 U	benzo(a)pyrene	1,700 U
hexachlorobenzene	1,700 U	indeno(1,2,3-cd)pyrene	1,700 U
pentachlorophenol	8,000 U	dibenzo(a,h)anthracene	1,700 U
phenanthrene	1,700 U	benzo(g,h,i)perylene	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.

1 - Detected as diphenylamine.

Date Extracted: 06/07/90  
Date Analyzed: 06/21/90  
Dilution Factor: 4  
% Moisture: 21

Client Project ID: NAS-Key West

Job Number: ITCY 45858

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 5  
Lab Sample ID: LL0062

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
3-penten-2-one, 4-methyl- unknown (hydroxypentanone?)	6,400 AB 690 AB
2-pentanone, 4-hydroxy-4-methyl	68,000 AB
2,4-pentanedione	2,000 A
3-hexen-2-one, 5-methyl-	2,800 A
2H-pyran-2,3-diol, tetrahydro	2,600
butanoic acid, ethenyl ester	1,700
unknown	9,600
chlorinated hydrocarbon	2,100
chlorinated hydrocarbon	1,900
chlorinated hydrocarbon	3,000
DDT	14,000 Y

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.
- Y - Indistinguishable isomer in tentatively identified compounds.

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 6  
Lab Sample ID: LL0063

<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	5,700 U
hexachloroethane	1,200 U	2-chloronaphthalene	1,200 U
nitrobenzene	1,200 U	2-nitroaniline	5,700 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
benzoic acid	5,700 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: 06/07/90  
Date Analyzed: 06/18/90  
Dilution Factor: 3  
% Moisture: 16

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SEMIVOLATILE TARGET COMPOUND LIST (continued)

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 6  
Lab Sample ID: LL0063

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	5,700 U	anthracene	1,200 U
acenaphthene	1,200 U	di-n-butylphthalate	1,200 U
2,4-dinitrophenol	5,700 U	fluoranthene	1,200 U
4-nitrophenol	5,700 U	pyrene	1,200 U
dibenzofuran	1,200 U	butylbenzylphthalate	1,200 U
2,4-dinitrotoluene	1,200 U	3,3'-dichlorobenzidine	2,300 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	300 J
4-nitroaniline	5,700 U	di-n-octylphthalate	1,200 U
4,6-dinitro-2-methylphenol	5,700 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	5,700 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: 06/07/90  
Date Analyzed: 06/18/90  
Dilution Factor: 3  
% Moisture: 16

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 6  
Lab Sample ID: LL0063

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
DDT	6,300 Y
chlorinated hydrocarbon	2,200
chlorinated hydrocarbon	800
chlorinated hydrocarbon	16,000
2H-pyran-2,3-diol, tetrahydro	2,600
3-hexen-2-one, 5-methyl-	1,900 A
2,4-pentanedione	2,400 A
2-pentanone, 4-hydroxy-4-methyl-	52,000 AB
3-penten-2-one, 4-methyl-	4,600 AB
unknown	4,800

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.
- Y - Indistinguishable isomer in tentatively identified compounds.

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%)*
Site 3, Plot 1	62	67	101	64	64	70
Site 3, Plot 2	72	81	160 **	75	67	91
Site 3, Plot 3	31	37	40	34	38	28
Site 3, Plot 4	79	81	148 **	76	76	88
Site 3, Plot 5	82	81	93	79	82	86
Site 3, Plot 6	68	77	88	75	80	74
Site 3, Plot 1 MS	84	84	134	84	82	90
Site 3, Plot 1 MSD	77	87	94	90	90	66
Method Blank	70	78	112	73	79	77

\*Values in parenthesis represent USEPA contract required QC limits.  
\*\*Values are outside of contract required QC limits.

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

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: BLA1137

<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: 06/07/90  
Date Analyzed: 06/12/90  
Dilution Factor: 1

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0056

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	4,900 U	endosulfan sulfate	9,700 U
$\beta$ -BHC	4,700 J	4,4'-DDT	180,000 F
$\delta$ -BHC	4,900 U	methoxychlor	49,000 U
$\gamma$ -BHC (lindane)	4,900 U	endrin ketone	9,700 U
heptachlor	4,900 U	$\alpha$ -chlordane	8,400 J
aldrin	1,500 J	$\gamma$ -chlordane	7,100 J
heptachlor epoxide	4,900 U	toxaphene	97,000 U
endosulfan I	4,900 U	Aroclor 1016	49,000 U
dieldrin	27,000 F	Aroclor 1221	49,000 U
4,4'-DDE	28,000 F	Aroclor 1232	49,000 U
endrin	9,700 U	Aroclor 1242	49,000 U
endosulfan II	9,700 U	Aroclor 1248	49,000 U
4,4'-DDD	28,000 F	Aroclor 1254	97,000 U
		Aroclor 1260	97,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Date Extracted: 06/07/90  
Date Analyzed: 06/13/90  
Dilution Factor: 500  
% Moisture: 19

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0056

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
$\gamma$ -BHC (lindane)	32.6	4,900 U	4,900 U	0 *
heptachlor	32.6	4,900 U	4,900 U	0 *
aldrin	32.6	1,540 J	1,670	399 *
dieldrin	81.5	26,500	34,300	9,571 *
endrin	81.5	9,700 U	9,700 U	0 *
4,4'-DDT	81.5	177,000	165,000	-999 *

	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>% RPD</u>
$\gamma$ -BHC (lindane)	32.5	4,900 U	0 *	0
heptachlor	32.5	4,900 U	0 *	0
aldrin	32.5	1,540	0 *	200 *
dieldrin	81.2	36,500	9,999 *	-4
endrin	81.2	9,700 U	0 *	0
4,4'-DDT	81.2	245,000	9,999 *	-244 *

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: 06/07/90  
Date Analyzed: 06/13/90

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August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1 DL  
Lab Sample ID: LL0056 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	49,000 U	endosulfan sulfate	97,000 U
$\beta$ -BHC	5,300 DJ	4,4'-DDT	220,000 D
$\delta$ -BHC	49,000 U	methoxychlor	490,000 U
$\gamma$ -BHC (lindane)	49,000 U	endrin ketone	97,000 U
heptachlor	49,000 U	$\alpha$ -chlordane	8,100 DJ
aldrin	1,200 DJ	$\gamma$ -chlordane	7,700 DJ
heptachlor epoxide	49,000 U	toxaphene	970,000 U
endosulfan I	49,000 U	Aroclor 1016	490,000 U
dieldrin	28,000 DJ	Aroclor 1221	490,000 U
4,4'-DDE	30,000 DJ	Aroclor 1232	490,000 U
endrin	97,000 U	Aroclor 1242	490,000 U
endosulfan II	97,000 U	Aroclor 1248	490,000 U
4,4'-DDD	34,000 DJ	Aroclor 1254	970,000 U
		Aroclor 1260	970,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/07/90  
Date Analyzed: 06/13/90  
Dilution Factor: 5,000  
% Moisture: 19

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: Site 3, Plot 1 DL  
Lab Sample ID: LL0056 DL

	<u>Conc. Spike Added</u>	<u>Sample Conc.</u>	<u>MS Conc.</u>	<u>MS % Rec.</u>
γ-BHC (lindane)	32.6	49,000 U	49,000 U	0 *
heptachlor	32.6	49,000 U	49,000 U	0 *
aldrin	32.6	1,220 J	3,260	6,258 *
dieldrin	81.5	28,000 J	66,000	9,999 *
endrin	81.5	97,000 U	97,000 U	0 *
4,4'-DDT	81.5	216,000	509,000	9,999 *

	<u>Conc. Spike Added</u>	<u>MSD Conc.</u>	<u>MSD % Rec.</u>	<u>% RPD</u>
γ-BHC (lindane)	32.5	49,000 U	0 *	0
heptachlor	32.5	49,000 U	0 *	0
aldrin	32.5	1,220	0 *	200 *
dieldrin	81.2	39,800	9,999 *	0
endrin	81.2	97,000 U	0 *	0
4,4'-DDT	81.2	310,000	9,999 *	0

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: 06/07/90  
Date Analyzed: 06/13/90

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 2  
Lab Sample ID: LL0059

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	2,000 U	endosulfan sulfate	4,100 U
$\beta$ -BHC	1,400 J	4,4'-DDT	63,000 F
$\delta$ -BHC	2,000 U	methoxychlor	20,000 U
$\gamma$ -BHC (lindane)	2,000 U	endrin ketone	4,100 U
heptachlor	2,000 U	$\alpha$ -chlordane	1,600 J
aldrin	2,000 U	$\gamma$ -chlordane	1,100 J
heptachlor epoxide	2,000 U	toxaphene	41,000 U
endosulfan I	2,000 U	Aroclor 1016	20,000 U
aldrin	4,100 U	Aroclor 1221	20,000 U
4,4'-DDE	14,000 F	Aroclor 1232	20,000 U
endrin	4,100 U	Aroclor 1242	20,000 U
endosulfan II	4,100 U	Aroclor 1248	20,000 U
4,4'-DDD	6,700	Aroclor 1254	41,000 U
		Aroclor 1260	41,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Date Extracted: 06/07/90  
Date Analyzed: 06/14/90  
Dilution Factor: 200  
% Moisture: 22

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 2 DL

Lab Sample ID: LL0059 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	20,000 U	endosulfan sulfate	41,000 U
$\beta$ -BHC	1,700 DJ	4,4'-DDT	86,000 D
$\delta$ -BHC	20,000 U	methoxychlor	200,000 U
$\gamma$ -BHC (lindane)	20,000 U	endrin ketone	41,000 U
heptachlor	20,000 U	$\alpha$ -chlordane	1,400 DJ
aldrin	20,000 U	$\gamma$ -chlordane	1,000 DJ
heptachlor epoxide	20,000 U	toxaphene	410,000 U
endosulfan I	20,000 U	Aroclor 1016	200,000 U
dieldrin	41,000 U	Aroclor 1221	200,000 U
4,4'-DDE	20,000 DJ	Aroclor 1232	200,000 U
endrin	41,000 U	Aroclor 1242	200,000 U
endosulfan II	41,000 U	Aroclor 1248	200,000 U
4,4'-DDD	7,100 DJ	Aroclor 1254	410,000 U
		Aroclor 1260	410,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/07/90  
Date Analyzed: 06/13/90  
Dilution Factor: 2,000  
% Moisture: 22

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 3  
Lab Sample ID: LL0060

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	2,200 U	endosulfan sulfate	4,400 U
$\beta$ -BHC	2,900	4,4'-DDT	71,000 F
$\delta$ -BHC	2,200 U	methoxychlor	22,000 U
$\gamma$ -BHC (lindane)	2,200 U	endrin ketone	4,400 U
heptachlor	2,200 U	$\alpha$ -chlordane	22,000 U
aldrin	2,200 U	$\gamma$ -chlordane	22,000 U
heptachlor epoxide	2,200 U	toxaphene	44,000 U
endosulfan I	2,700 Z	Aroclor 1016	22,000 U
dieldrin	5,200 F	Aroclor 1221	22,000 U
4,4'-DDE	24,000 F	Aroclor 1232	22,000 U
endrin	4,400 U	Aroclor 1242	22,000 U
endosulfan II	4,400 U	Aroclor 1248	22,000 U
4,4'-DDD	67,000 F	Aroclor 1254	44,000 U
		Aroclor 1260	44,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/07/90  
Date Analyzed: 06/14/90  
Dilution Factor: 200  
% Moisture: 27

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August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 3 DL  
Lab Sample ID: LL0060 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	22,000 U	endosulfan sulfate	44,000 U
$\beta$ -BHC	7,700 DJ	4,4'-DDT	100,000 D
$\delta$ -BHC	22,000 U	methoxychlor	220,000 U
$\gamma$ -BHC (lindane)	22,000 U	endrin ketone	44,000 U
heptachlor	22,000 U	$\alpha$ -chlordane	220,000 U
aldrin	22,000 U	$\gamma$ -chlordane	220,000 U
heptachlor epoxide	22,000 U	toxaphene	440,000 U
endosulfan I	22,000 U	Aroclor 1016	220,000 U
dieldrin	6,800 DJ	Aroclor 1221	220,000 U
4,4'-DDE	33,000 DJ	Aroclor 1232	220,000 U
endrin	44,000 U	Aroclor 1242	220,000 U
endosulfan II	44,000 U	Aroclor 1248	220,000 U
4,4'-DDD	80,000 D	Aroclor 1254	440,000 U
		Aroclor 1260	440,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/07/90  
Date Analyzed: 06/13/90  
Dilution Factor: 2,000  
% Moisture: 27

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August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 4

Lab Sample ID: LL0061

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	1,800 U	endosulfan sulfate	3,500 U
$\beta$ -BHC	4,700	4,4'-DDT	60,000 F
$\delta$ -BHC	1,800 U	methoxychlor	18,000 U
$\gamma$ -BHC (lindane)	1,800 U	endrin ketone	3,500 U
heptachlor	1,800 U	$\alpha$ -chlordane	18,000 U
aldrin	1,800 U	$\gamma$ -chlordane	18,000 U
heptachlor epoxide	1,800 U	toxaphene	35,000 U
endosulfan I	2,400 Z	Aroclor 1016	18,000 U
dieldrin	4,400	Aroclor 1221	18,000 U
4,4'-DDE	20,000 F	Aroclor 1232	18,000 U
endrin	3,500 U	Aroclor 1242	18,000 U
endosulfan II	3,500 U	Aroclor 1248	18,000 U
4,4'-DDD	57,000 F	Aroclor 1254	35,000 U
		Aroclor 1260	35,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/07/90

Date Analyzed: 06/14/90

Dilution Factor: 200

% Moisture: 11

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August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 4 DL  
Lab Sample ID: LL0061 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	18,000 U	endosulfan sulfate	35,000 U
$\beta$ -BHC	5,600 DJ	4,4'-DDT	79,000 D
$\delta$ -BHC	18,000 U	methoxychlor	180,000 U
$\gamma$ -BHC (lindane)	18,000 U	endrin ketone	35,000 U
heptachlor	18,000 U	$\alpha$ -chlordane	180,000 U
aldrin	18,000 U	$\gamma$ -chlordane	180,000 U
heptachlor epoxide	18,000 U	toxaphene	350,000 U
endosulfan I	18,000 U	Aroclor 1016	180,000 U
dieldrin	5,000 DJ	Aroclor 1221	180,000 U
4,4'-DDE	26,000 DJ	Aroclor 1232	180,000 U
endrin	35,000 U	Aroclor 1242	180,000 U
endosulfan II	35,000 U	Aroclor 1248	180,000 U
4,4'-DDD	68,000 D	Aroclor 1254	350,000 U
		Aroclor 1260	350,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/07/90  
Date Analyzed: 06/13/90  
Dilution Factor: 2,000  
% Moisture: 11

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 5

Lab Sample ID: LL0062

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	500 U	endosulfan sulfate	1,000 U
$\beta$ -BHC	800	4,4'-DDT	20,000 F
$\delta$ -BHC	500 U	methoxychlor	5,000 U
$\gamma$ -BHC (lindane)	500 U	endrin ketone	1,000 U
heptachlor	500 U	$\alpha$ -chlordane	5,000 U
aldrin	500 U	$\gamma$ -chlordane	880 J
heptachlor epoxide	500 U	toxaphene	10,000 U
endosulfan I	850 Z	Aroclor 1016	5,000 U
dieldrin	700 JZF	Aroclor 1221	5,000 U
4,4'-DDE	6,800 F	Aroclor 1232	5,000 U
endrin	1,000 U	Aroclor 1242	5,000 U
endosulfan II	1,000 U	Aroclor 1248	5,000 U
4,4'-DDD	2,000	Aroclor 1254	10,000 U
		Aroclor 1260	10,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/07/90

Date Analyzed: 06/14/90

Dilution Factor: 50.0

% Moisture: 21

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 5 DL  
Lab Sample ID: LL0062 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	5,000 U	endosulfan sulfate	10,000 U
$\beta$ -BHC	750 DJ	4,4'-DDT	17,000 D
$\delta$ -BHC	5,000 U	methoxychlor	50,000 U
$\gamma$ -BHC (lindane)	5,000 U	endrin ketone	10,000 U
heptachlor	5,000 U	$\alpha$ -chlordane	50,000 U
aldrin	5,000 U	$\gamma$ -chlordane	800 DJ
heptachlor epoxide	5,000 U	toxaphene	100,000 U
endosulfan I	5,000 U	Aroclor 1016	50,000 U
dieldrin	10,000 U	Aroclor 1221	50,000 U
4,4'-DDE	9,100 DJ	Aroclor 1232	50,000 U
endrin	10,000 U	Aroclor 1242	50,000 U
endosulfan II	10,000 U	Aroclor 1248	50,000 U
4,4'-DDD	4,000 DJ	Aroclor 1254	100,000 U
		Aroclor 1260	100,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/07/90  
Date Analyzed: 06/14/90  
Dilution Factor: 500  
% Moisture: 21

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IT ANALYTICAL SERVICES  
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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 6

Lab Sample ID: LL0063

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	380 U	endosulfan sulfate	750 U
$\beta$ -BHC	290 J	4,4'-DDT	7,800 F
$\delta$ -BHC	380 U	methoxychlor	3,800 U
$\gamma$ -BHC (lindane)	380 U	endrin ketone	750 U
heptachlor	380 U	$\alpha$ -chlordane	3,800 U
aldrin	380 U	$\gamma$ -chlordane	3,800 U
heptachlor epoxide	380 U	toxaphene	7,500 U
endosulfan I	380 U	Aroclor 1016	3,800 U
dieldrin	750 U	Aroclor 1221	3,800 U
4,4'-DDE	6,500 F	Aroclor 1232	3,800 U
endrin	750 U	Aroclor 1242	3,800 U
endosulfan II	750 U	Aroclor 1248	3,800 U
4,4'-DDD	1,200	Aroclor 1254	7,500 U
		Aroclor 1260	7,500 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Date Extracted: 06/07/90

Date Analyzed: 06/14/90

Dilution Factor: 40.0

% Moisture: 16

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August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 6 DL  
Lab Sample ID: LL0063 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	3,800 U	endosulfan sulfate	7,500 U
$\beta$ -BHC	350 DJ	4,4'-DDT	9,100 D
$\delta$ -BHC	3,800 U	methoxychlor	38,000 U
$\gamma$ -BHC (lindane)	3,800 U	endrin ketone	7,500 U
heptachlor	3,800 U	$\alpha$ -chlordane	38,000 U
aldrin	3,800 U	$\gamma$ -chlordane	38,000 U
heptachlor epoxide	3,800 U	toxaphene	75,000 U
endosulfan I	3,800 U	Aroclor 1016	38,000 U
dieldrin	7,500 U	Aroclor 1221	38,000 U
4,4'-DDE	8,700 D	Aroclor 1232	38,000 U
endrin	7,500 U	Aroclor 1242	38,000 U
endosulfan II	7,500 U	Aroclor 1248	38,000 U
4,4'-DDD	1,400 DJ	Aroclor 1254	75,000 U
		Aroclor 1260	75,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/07/90  
Date Analyzed: 06/13/90  
Dilution Factor: 400  
% Moisture: 16

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SOIL SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>PESTICIDE</u>
	<u>Dibutylchloroendate (20-150%)*</u>
Method Blank	106
Site 3, Plot 1	D
Site 3, Plot 1 DL	D
Site 3, Plot 1 MS	D
Site 3, Plot 1 MSD	D
Site 3, Plot 1 MSD DL	D
Site 3, Plot 1 MS DL	D
Site 3, Plot 2	D
Site 3, Plot 2 DL	D
Site 3, Plot 3	D
Site 3, Plot 3 DL	D
Site 3, Plot 4	D
Site 3, Plot 4 DL	D
Site 3, Plot 5	D
Site 3, Plot 5 DL	D
Site 3, Plot 6	D
Site 3, Plot 6 DL	D

\* - Values in parenthesis represent USEPA advisory QC limits.  
D - Surrogates diluted out.

DL - Dilution

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank <u>PBSC2327/C2330/C4289</u>	Site 3, Plot 1 <u>LL0064</u>
aluminum	4 U	263
antimony	3 U	3.3 U
arsenic	0.2 U	27.4
barium	0.2 U	11.6 B
beryllium	0.1 U	0.11 U
cadmium	0.5 U	0.66 B
calcium	3 U	356,000
chromium	1 U	4.0
cobalt	2 U	2.2 U
copper	1 U	24.2
iron	1 U	732 E
lead	3 U	110
magnesium	3 U	1,540 E
manganese	0.2 U	9.6
mercury	0.02 U	0.05
nickel	2 U	2.2 U
potassium	100 U	110 U
selenium	0.2 U	0.4 UW
silver	0.5 U	5.5 U
sodium	20 U	639 B
thallium	0.2 U	0.2 UW
vanadium	1 U	2.2 B
zinc	1.3 B	89.9 E
% Solids:	-	90.5

- 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.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14 - 06/20/90 (GFAA)  
06/14/90 (CVAA)

Client Project ID: NAS-Key West

Job Number: ITCY 45858

MATRIX SPIKE RECOVERY

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0066

	<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	47.2	3.3 U	55.2	85.5
arsenic	75-125	214	28.0	221	84.2
barium	75-125	191	11.6 U	221	81.2
beryllium	75-125	4.7	0.11 B	5.5	85.4
cadmium	75-125	4.8	0.66 B	5.5	75.3
chromium	75-125	21.6	4.0	22.1	79.6
cobalt	75-125	40.1	2.2 U	55.2	72.6 N
copper	75-125	44.6	24.2	27.6	73.9 N
lead	75-125	160	110	55.2	90.6
manganese	75-125	54.1	9.6	55.2	80.6
nickel	75-125	41.6	2.2 U	55.2	75.4
silver	75-125	5.5 U	5.5 U	5.5	0 N
vanadium	75-125	49.7	2.2 B	55.2	86.0
zinc	75-125	136	89.9	55.2	83.5

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.

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

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14 - 06/20/90 (GFAA)

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Client Project ID: NAS-Key West

Job Number: ITCY 45858

MATRIX SPIKE RECOVERY

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0066

	<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>
mercury	75-125	0.16	0.05	0.11	100.0
selenium	75-125	0.56	0.4 U	1.1	50.9 N
thallium	75-125	4.2	0.2 U	5.5	76.4

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

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

Date Digested: 06/14/90  
Date Analyzed: 06/14 - 06/20/90 (GFAA)  
06/14/90 (CVAA)

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

POST DIGEST SPIKE RECOVERY

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0066

	<u>Spiked Sample Result</u>	<u>Sample Result</u>	<u>Spike Added</u>	<u>% Recovery</u>
cobalt	39.3	2.2 U	55.2	71.2
copper	44.2	24.2	27.6	72.5
selenium	0.61	0.4 U	1.1	55.5

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

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14 - 06/20/90 (GFAA)

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

DUPLICATE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0065

	<u>Control Limit</u>	<u>Original Sample Concentration</u>	<u>Duplicate Concentration</u>	<u>Difference</u>
aluminum	+ 20% RPD	263	216	19.6
antimony		3.3 U	4.5 B	
arsenic	+ 20% RPD	28.0	28.9	-3.2
barium		11.6 B	12.2 B	
beryllium		0.11 U	0.11 U	
cadmium		0.66 B	0.65 B	
calcium	+ 20% RPD	356,000	347,000	2.6
chromium	+ 2.2 mg/kg	4.0	3.7	0.3
cobalt		2.2 U	2.2 U	
copper	+ 5.5 mg/kg	24.2	34.3	10.1 *
iron	+ 20% RPD	732	857	15.7
lead	+ 20% RPD	110	146	-28.1 *
magnesium	+ 20% RPD	1,540	1,320	15.4
manganese	+ 3.3 mg/kg	9.6	10.7	1.1
nickel		2.2 U	2.2 U	
potassium		110 U	110 U	
silver		5.5 U	5.5 U	
sodium		639 B	654 B	
vanadium		2.2 B	1.7 B	
zinc	+ 20% RPD	89.9	67.6	28.3 *

RPD - Relative Percent Difference

\* - Out of USEPA advisory control 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 Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

DUPLICATE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0065

	<u>Control Limit</u>	<u>Original Sample Concentration</u>	<u>Duplicate Concentration</u>	<u>Difference</u>
mercury	+ 0.02 mg/kg	0.05	0.05	0
selenium		0.4 U	0.4 U	
thallium		0.2 U	0.2 U	

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

Date Digested: 06/14/90  
Date Analyzed: 06/14 - 06/20/90 (GFAA)  
06/14/90 (CVAA)

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Site 3, Plot 2 LL0067	Site 3, Plot 3 LL0068
aluminum	560	949
antimony	4.7 U	6.4 U
arsenic	6.6	16.6
barium	27.8 B	24.0 B
beryllium	0.16 U	0.21 U
cadmium	1.3	1.1 U
calcium	392,000	613,000
chromium	4.6	6.9
cobalt	1.6 U	4.2 U
copper	26.8	17.3
iron	1,050 E	779 E
lead	87.1	85.2
magnesium	1,830 E	2,590 E
manganese	14.7	15.3
mercury	0.15	0.11
nickel	3.1 U	4.2 U
potassium	160 U	213 U
selenium	0.3 UW	0.4 UW
silver	7.8 U	10.6 U
sodium	959 B	1,310
thallium	0.3 UW	0.4 UW
vanadium	2.7 B	4.1 B
zinc	114 E	129
% Solids:	63.7	47.0

- 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.
- E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14 - 06/20/90 (GFAA)  
06/14/90 (CVAA)

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Site 3, Plot 4 LL0069	Site 3, Plot 5 LL0070
aluminum	115	921
antimony	3.5 U	3.5 U
arsenic	27.9	12.8
barium	28.5	23.0 B
beryllium	0.12 U	0.12 U
cadmium	0.58 U	0.58 U
calcium	290,000	335,000
chromium	2.7	4.9
cobalt	2.3 U	2.3 U
copper	10.1	14.0
iron	745 E	1,340 E
lead	76.3	115
magnesium	784 E	1,640 E
manganese	5.0	13.7
mercury	0.02 U	0.08
nickel	2.3 U	2.3 U
potassium	116	117 U
selenium	0.2 UW	0.5 UW
silver	5.8 U	5.8 U
sodium	1,140	945 B
thallium	0.2 UW	0.2 UW
vanadium	1.5 B	3.5 B
zinc	35.0 E	106 E
% Solids:	85.9	85.6

- 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.
- E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
 Date Analyzed: 06/19/90 (ICP)  
 06/14 - 06/20/90 (GFAA)  
 06/14/90 (CVAA)

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID:	Site 3, Plot 6
Lab Sample ID:	<u>LL0071</u>
aluminum	1,790
antimony	3.4 U
arsenic	3.7 W
barium	14.8 B
beryllium	0.12 B
cadmium	0.58 U
calcium	333,000
chromium	6.3
cobalt	2.3 U
copper	11.8
iron	1,200 E
lead	50.2
magnesium	2,410 E
manganese	16.4
mercury	0.04
nickel	2.4 B
potassium	124 B
selenium	0.2 UW
silver	5.8 U
sodium	1,030
thallium	0.2 UW
vanadium	4.9 B
zinc	70.3 E
% Solids:	86.4

- 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.  
E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14 - 06/20/90 (GFAA)  
06/14/90 (CVAA)

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KNOXVILLE, TN

Project ID: NAS-Key West

Job Number: ITCY 45858

CYANIDE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Result</u>
P1245	Method Blank	0.5 U
LL0064	Site 3, Plot 1	0.5 U
LL0067	Site 3, Plot 2	0.5 U
LL0068	Site 3, Plot 3	0.5 U
LL0069	Site 3, Plot 4	0.5 U
LL0070	Site 3, Plot 5	0.5 U
LL0071	Site 3, Plot 6	0.5 U

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

Date Analyzed: 06/14/90

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

DUPLICATE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0064

<u>Parameter</u>	<u>Original Sample</u>	<u>Duplicate</u>	<u>RPD</u>
cyanide	0.5 U	0.5 U	NC

RPD - Relative Percent Difference

NC - Non-calculable RPD

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

Date Analyzed: 06/14/90

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

MATRIX SPIKE RECOVERY

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0064

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>
cyanide	5.00	0.5 U	0.69	14

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

Date Analyzed: 06/14/90

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

POST - DISTILLATION SPIKE

Results in mg/liter (ppm)

Sample Matrix: Distillate

Client Sample ID: Site 3, Plot 1  
Lab Sample ID: LL0064

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>
cyanide	0.10	0.01 U	0.09	90

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

Date Analyzed: 06/14/90

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID:	Method Blank	Site 7, MW1	Site 7, MW2	Site 7, MW3
Lab Sample ID:	<u>PBRC2359</u>	<u>LL0072</u>	<u>LL0073</u>	<u>LL0074</u>
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.002 U	0.030	0.024	0.050
cadmium	0.005 U	0.005 U	0.005 U	0.005 U
chromium	0.01 U	0.01 U	0.01 U	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	NR	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.005 U	0.010 U	0.010 U	0.010 U

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

NR - Not required

Date Extracted: 06/13 - 06/16/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/16 - 06/19/90 (CVAA)

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID:	Site 7, MW4	Site 7, MW5	Site 7, MW6	BSF-1
Lab Sample ID:	<u>LL0075</u>	<u>LL0076</u>	<u>LL0077</u>	<u>LL0078</u>
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.035	0.031	0.042	0.044
cadmium	0.005 U	0.005 U	0.005 U	0.005 U
chromium	0.01 U	0.01 U	0.01	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	0.001 U	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.005 U	0.010 U	0.010	0.010

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

Date Extracted: 06/13 - 06/16/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/16 - 06/19/90 (CVAA)

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID:	MWSF-6
Lab Sample ID:	<u>LL0087</u>
arsenic	0.03 U
barium	0.049
cadmium	0.005 U
chromium	0.01 U
lead	0.03 U
mercury	0.001 U
selenium	0.06 U
silver	0.010 U

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

Date Extracted: 06/13 - 06/16/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/16 - 06/19/90 (CVAA)

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in mg/liter (ppm) in the extract

Client Sample ID: MWSF-6  
Lab Sample ID: LL0087/LL0088/LL0089

<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>
arsenic	2.0	0.03 U	2.0	100.0	1.9	95.0	5.1
barium	2.0	0.049	1.8	87.6	1.7	82.6	5.9
cadmium	0.050	0.005 U	0.043	86.0	0.040	80.0	7.2
chromium	0.20	0.01 U	0.18	90.0	0.17	85.0	5.7
lead	0.50	0.03 U	0.40	80.0	0.38	76.0	5.1
selenium	2.0	0.06 U	2.2	110.0	2.1	105.0	4.6
silver	0.05	0.010 U	0.010 U	0 N	0.010 U	0 N	0 *
mercury	0.010	0.001 U	0.008	80.0	0.008	80.0	0

RPD - Relative Percent Difference

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

\* - 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.

Date Extracted: 06/13 - 06/16/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/16 - 06/19/90 (CVAA)

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

POST DIGESTION MATRIX SPIKE ANALYSIS  
Results in mg/liter (ppm) in the extract  
Sample Matrix: Soil

Client Sample ID: MWSF-6  
Lab Sample ID: LL0086

<u>Compound</u>	<u>Conc. Spike Added</u>	<u>Sample Result</u>	<u>Conc. MS</u>	<u>% Rec.</u>
silver	0.05	0.010 U	0.050	100.0

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

Date Extracted: 06/13 - 06/16/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)



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# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

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IT Corporation  
3012 US Highway 301 North, Suite 1000  
Tampa, FL 33619  
ATTN: Robert Stephens

August 13, 1990

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Job Number: ITCY 45898

P.O. Number: 595392

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 06/06/90  
Number of Samples: Three (3)  
Sample Type: Soil

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### I. Introduction

On 06/06/90, three (3) 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.

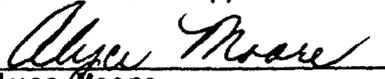
### II. Analytical Results/Methodology

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 geotechnical parameters were performed at the IT-Technology Development laboratory, Knoxville, Tennessee. A separate laboratory report for these parameters will follow.

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:

  
Alyce Moore  
Laboratory Manager

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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 45898

## II. Analytical Results/Methodology (continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCB's 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 EP Toxicity extracted in accordance with EPA SW-846 method 1310. The EP Toxicity leachate was analyzed for RCRA metals by inductively coupled plasma spectroscopy (ICP) and cold vapor atomic absorption spectroscopy (CVAA) based on EPA SW-846 methods 6010 and 7470, respectively.

## III. Quality Control

The volatiles analyses were performed on 06/13/90 by purge and trap with a J&W DB-624 above column on a Finnigan OWA GC/MS/DS. The semivolatiles analyses were performed on 07/02 and 07/03/90 by direct injection of sample extract on a Restek RTX-5 capillary column on a VG TRIO-1 GC/MS/DS. Both volatiles and semivolatiles runs went well, with the exception of two marginally low surrogate recoveries in Site 4-2 semivolatiles sample. Evaluation of the sample data indicated no significant impact from this, as the deviations were moderate; reextraction of the sample, which would have been beyond holding time, was unwarranted. The results from the run were reported with good confidence. In the semivolatiles TICs, several aldol and related carbonyl products (generated by soil extraction) were seen, and these were characterized as such; also, compounds such as (tentative) tetrahydropyrandiol and ethanediol monoacetate were noted as possible lab background, based on our experience. Those compounds seen in the method blank were characterized with "B" qualifiers; overall, few clearly sample intrinsic peaks were seen. There were no other problems seen in final review of the data for either the volatiles or semivolatiles fraction.

The samples were extracted on 06/13/90. The pesticide/PCB analyses were performed from 06/20/90 to 06/26/90 using a mixed phase (SP-2250/SP-2401) and 3% OV-1 columns on the Varian 3740B/Varian 3740H instruments. All samples and the associated method blank were treated for sulfur interferences using EPA SW-846 method 3660. This cleanup was performed on 06/20/90. Associated QC samples were analyzed with ITAS project ITCY 45858, sample Site 3, Plot 1. No problems were encountered.

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August 13, 1990

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KNOXVILLE, TN

Client Project ID: NAS-Key West

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### III. Quality Control (continued)

The samples were digested on 06/18/90 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 06/20/90; the GFAA analyses for arsenic, lead, selenium and thallium were performed from 06/25 to 06/30/90; the remaining metals were analyzed by ICP on 06/19/90. All run QC was acceptable. Associated QC samples were analyzed with ITAS project ITCY 45858, sample Site 3, Plot 1. The silver detection limit is elevated due to matrix interferences encountered because of the high calcium levels found in the samples. The serial dilution was slightly outside the control limit of 10% difference for iron and magnesium. Again, high levels of minerals in the sample can hinder recoveries; therefore, dilutions would result in recovery enhancement.

The samples were analyzed for cyanide on 06/12/90. No problems were encountered. Associated QC samples were analyzed with ITAS project ITCY 45858, sample Site 3, Plot 1.

The samples were EP Toxicity extracted on 06/19 and 06/20/90. The leachates were digested on 06/19 and 06/20/90 for ICP. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 06/20/90. The remaining metals were analyzed by ICP on 06/29/90. All run QC was acceptable. The silver detection limit was elevated due to matrix interferences caused by the high calcium levels found in the samples. Associated QC samples were analyzed with ITAS project ITCY 45858, sample MWSF-6. No other problems were encountered.

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Client Project ID: NAS-Key West

Job Number: ITCY 45898

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: VB0613

<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
1,2-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: 06/13/90  
Dilution Factor: 1

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August 13, 1990

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

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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: VB0613

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 45898

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	VOLATILE		
	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
Site 4-1	98	98	95
Site 4-2	97	97	93
Site 4-Boring MW4	99	98	95
Method Blank	94	95	92

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

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IT ANALYTICAL SERVICES  
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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

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: BLA1176

<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
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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1

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August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

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: BLA1176

<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	410
3-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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

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: BLA1176

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl	42,000 A
hexanedioic acid, dioctyl ester	1,500
5-hexen-2-one, 5-methyl-	1,100 A
unknown	390
unknown sat'd hydrocarbon	380
unknown	340
unknown sat'd hydrocarbon	250
unknown sat'd hydrocarbon	240
unknown sat'd hydrocarbon	190
2,5-hexanedione	180 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.

**CERTIFICATE OF ANALYSIS**

Kim Laisy  
IT Corporation  
5815 Middlebrook Pike  
Knoxville, TN 37921

August 15, 1990

**TDL PROJECT NUMBER:** ITCY482649

**IT JOB NUMBER:** 486000.09

**This is the Certificate of Analysis for the following samples:**

**Client Project ID:** ITCY46179 (Key West)  
**Date Received by Lab:** July 19, 1990  
**Number of Samples:** Six (6)  
**Sample Type:** Three (3) Soil and Three (3) Water

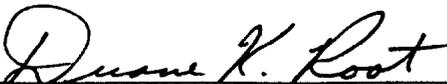
**I. Introduction/Case Narrative**

Three (3) soil and three (3) water samples were received July 19, 1990, for the analysis of Appendix IX dioxins and furans. This includes isomer specific 2,3,7,8-TCDD and total tetra through hexa (Cl<sub>4</sub>-Cl<sub>6</sub>) dioxin and furan homologs (See Appendix A, Cross Reference List and Appendix C, Chain-of-Custody and Request for Analysis records). The samples and blank were spiked with an internal standard mixture containing 50 ng each of <sup>13</sup>C-2,3,7,8-TCDD, <sup>13</sup>C-PeCDD, <sup>13</sup>C-PeCDF, <sup>13</sup>C-HxCDD and <sup>13</sup>C-HxCDF. The samples and blanks were extracted and cleaned up using a modified version of the EPA reference method described in "RCRA SW-846, Method 8280," revised September, 1986. Extracts were analyzed by GC/MS operating in the selected ion monitoring mode for enhanced sensitivity.

The samples were labeled with the following:

04-01-SED	04-01-SW
04-01-SED (MS)	04-01-SW (MS)
04-01-SED (MSD)	04-01-SW (MSD)

Reviewed and Approved:

  
Duane K. Root  
Analytical Operations Manager  
qhc-s\NM262

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

Page 2 of 15  
Kim Laisy  
Key West  
Date: August 15, 1990  
Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

## II. Analytical Results/Methodology

### SAMPLE PREPARATION

**Water** - Approximately 500 ml of each sample and 1000 ml distilled water (for the blank) were transferred into individual separatory funnels. The samples and blank were spiked with the internal standard mixture, and then triple-extracted with  $\text{CH}_2\text{Cl}_2$ . The resulting extracts were filtered into a KD flask and the volume reduced to approximately 1 ml.

**Soil** - A ten (10) gram aliquot of each soil sample and ten (10) grams of sodium sulfate (for the blank) were weighed into separate jars. The samples and blank were spiked with the internal standard mixture and extracted with a methanol/hexane mixture for three hours using a platform shaker. The resulting extracts were filtered into a KD flask and the volume reduced to approximately 1 ml.

### SAMPLE CLEANUP

The samples and blanks were cleaned up using dual column chromatography consisting of an acid-modified silica gel column followed by a neutral alumina column to aid in the removal of chemical interferences. Detailed descriptions of these cleanup techniques can be found in Option A of the U.S. Environmental Protection Agency, Region VII Protocol for "The Determination Of 2,3,7,8-TCDD In Soil And Sediment", revised September, 1983. Final extracts were concentrated to near dryness and raised to 50  $\mu\text{l}$  with 25 ng  $^{13}\text{C}$ -1,2,3,4-TCDD and 25 ng  $^{13}\text{C}$ -1,2,3,7,8,9-HxCDD which were used as recovery standards.

### GC/MS ANALYSIS

**Isomer Specific TCDD** - The sample extracts were analyzed using HRGC/LRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for this isomer specific analysis was a 60 m SP-2331 fused silica capillary column. Before acquisition of the sample data, a seven isomer performance mixture containing the six most closely eluting TCDD isomers was analyzed.

A five-point calibration plot was analyzed in triplicate. The mean response factors obtained from this fifteen-point calibration were used for all subsequent calculations. The shift standard, analyzed on the same day as the sample, produced a response factor within 10% of the fifteen-point curve for TCDD.

**Total Dioxin and Furan** - The samples and blanks were analyzed for total dioxin and furan homologs from  $\text{Cl}_4$ - $\text{Cl}_6$ . The analytical approach employed by ITAS for the determination of total dioxins and furans is considered semi-quantitative due to the lack of availability of all dioxin and furan isomer standards. The standard analyzed each shift consisted of:

Kim Laisy  
Key West

Date: August 15, 1990

Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
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KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

II. Analytical Results/Methodology (continued)

## GC/MS ANALYSIS (continued)

Dioxins

<sup>13</sup>C-2,3,7,8-TCDD  
<sup>13</sup>C-1,2,3,4-TCDD  
<sup>13</sup>C-1,2,3,7,8-PeCDD  
<sup>13</sup>C-1,2,3,6,7,8-HxCDD  
<sup>13</sup>C-1,2,3,7,8,9-HxCDD  
<sup>13</sup>C-OCDD  
2,3,7,8-TCDD  
1,2,3,7,8-PeCDD  
1,2,3,4,7,8-HxCDD  
1,2,3,6,7,8-HxCDD  
1,2,3,7,8,9-HxCDD

Dibenzofurans

<sup>13</sup>C-2,3,7,8-TCDF  
<sup>13</sup>C-1,2,3,7,8-PeCDF  
<sup>13</sup>C-1,2,3,4,7,8-HxCDF  
2,3,7,8-TCDF  
1,2,3,7,8-PeCDF  
2,3,4,7,8-PeCDF  
1,2,3,4,7,8-HxCDF  
1,2,3,6,7,8-HxCDF  
2,3,4,6,7,8-HxCDF  
1,2,3,7,8,9-HxCDF

Response factors were calculated for each compound in the standard relative to its <sup>13</sup>C labeled homolog; the same response was assumed applicable to all isomers in each homologous group. A five-point calibration plot was analyzed in triplicate. The mean response factors obtained from this fifteen-point calibration were used for all subsequent calculations. The left standard, analyzed on the same day as the samples, produced a response factor within 30% of the multipoint.

The extracts were analyzed using HRGC/LRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for the analysis was a 60 m DB-5 type fused silica capillary column.

## GC/MS RESULTS

**Isomer Specific TCDD** - The results for the isomer specific analysis, shown in Appendix B, are reported in ppt (ng/L) for water and ppb (ng/g) for soil. A detection limit is calculated from 2.5 times the signal in the area of the elution of <sup>13</sup>C-TCDD whenever a sample contains no detectable 2,3,7,8-TCDD.

**Totals** - The results for the totals analysis, shown in Appendix B, are reported in ppt (ng/L) for water and ppb (ng/g) for soil with the total amount of each homologous group calculated. When more than one isomer in a homologous group of dioxin or furan is found, all of the isomers are added together to produce a total homolog result. Detection limits are calculated from 2.5 times signal to noise when a "Not Detected" (ND) is reported. The detection limits are listed in parenthesis.

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Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46179

IT ANALYTICAL SERVICES

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

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### III. Quality Control

Laboratory project specific QA/QC was followed. Appendix C lists the results of the QA/QC samples. In all cases, precision and accuracy are within the limits established for acceptance of dioxin/dibenzofuran data.

**APPENDIX A**

Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46179

IT ANALYTICAL SERVICES

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

CROSS REFERENCE LIST

IT SAMPLE NO.	ITAS SAMPLE NO.	CLIENT SAMPLE NO.	MATRIX
BB2712	LL3479	04-01-SED	Soil
BB2712MS	LL3480	04-01-SED (MS)	Soil
BB2712MSD	LL3481	04-01-SED (MSD)	Soil
BB2713	LL3518	04-01-SW	Water
BB2713MS	LL3518	04-01-SW (MS)	Water
BB2713MSD	LL3518	04-01-SW (MSD)	Water

Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46179

IT ANALYTICAL SERVICES

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

**Dioxin/Furan Analysis - Method 8280**

Client Sample ID: 04-01-SED (Soil) (Matrix Spike)  
 Sample Date: July 17, 1990  
 IT Sample ID: BB2712MS  
 Extraction Date: July 23, 1990

Analyte	Conc. (ng/g)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 26, 1990

2,3,7,8-TCDD	0.86	<sup>13</sup> C-2,3,7,8-TCDD	77
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Totals Analysis Date: August 9, 1990

**Dioxins**

2,3,7,8-TCDD	1.1	<sup>13</sup> C-2,3,7,8-TCDD	70
1,2,3,7,8-PeCDD	1.0	<sup>13</sup> C-1,2,3,7,8-PeCDD	66
1,2,3,6,7,8-HxCDD	0.94	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	76

**Furans**

2,3,7,8-TCDF	1.1	<sup>13</sup> C-2,3,7,8-TCDF	73
1,2,3,7,8-PeCDF	0.97	<sup>13</sup> C-1,2,3,7,8-PeCDF	74
1,2,3,4,7,8-HxCDF	1.0	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	86

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Kim Laisy  
Key West  
Date: August 15, 1990  
Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

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Dioxin/Furan Analysis - Method 8280

Client Sample ID: 04-01-SED (Soil) (Matrix Spike Duplicate)  
Sample Date: July 17, 1990  
IT Sample ID: BB2612MSD  
Extraction Date: July 23, 1990

---

Analyte	Conc. (ng/g)	Internal Standard	% Recovery
Isomer Specific Analysis Date: July 31, 1990			
2,3,7,8-TCDD	0.95	<sup>13</sup> C-2,3,7,8-TCDD	70

---

Totals Analysis Date: August 9, 1990

**Dioxins**

2,3,7,8-TCDD	0.96	<sup>13</sup> C-2,3,7,8-TCDD	72
1,2,3,7,8-PeCDD	1.0	<sup>13</sup> C-1,2,3,7,8-PeCDD	65
1,2,3,6,7,8-HxCDD	0.85	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	76

**Furans**

2,3,7,8-TCDF	1.0	<sup>13</sup> C-2,3,7,8-TCDF	77
1,2,3,7,8-PeCDF	0.99	<sup>13</sup> C-1,2,3,7,8-PeCDF	71
1,2,3,4,7,8-HxCDF	1.0	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	73

---

Kim Laisy  
Key West

Date: August 15, 1990

Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

## Dioxin/Furan Analysis - Method 8280

Client Sample ID: 04-01-SW (Water) (Matrix Spike)  
Sample Date: July 17, 1990  
IT Sample ID: BB2713MS  
Extraction Date: July 23, 1990

Analyte	Conc. (ng/L)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 24, 1990

2,3,7,8-TCDD	23.0	<sup>13</sup> C-2,3,7,8-TCDD	89
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Totals Analysis Date: July 25, 1990

**Dioxins**

2,3,7,8-TCDD	20.3	<sup>13</sup> C-2,3,7,8-TCDD	85
1,2,3,7,8-PeCDD	21.6	<sup>13</sup> C-1,2,3,7,8-PeCDD	120
1,2,3,6,7,8-HxCDD	25.4	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	85

**Furans**

2,3,7,8-TCDF	21.7	<sup>13</sup> C-2,3,7,8-TCDF	68
1,2,3,7,8-PeCDF	19.4	<sup>13</sup> C-1,2,3,7,8-PeCDF	113
1,2,3,4,7,8-HxCDF	22.4	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	91

Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

## Dioxin/Furan Analysis - Method 8280

Client Sample ID: 04-01-SW (Water) (Matrix Spike Duplicate)  
 Sample Date: July 17, 1990  
 IT Sample ID: BB2713MSD  
 Extraction Date: July 23, 1990

Analyte	Conc. (ng/L)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 24, 1990

2,3,7,8-TCDD	25.1	<sup>13</sup> C-2,3,7,8-TCDD	80
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Totals Analysis Date: July 25, 1990

**Dioxins**

2,3,7,8-TCDD	20.6	<sup>13</sup> C-2,3,7,8-TCDD	75
1,2,3,7,8-PeCDD	20.3	<sup>13</sup> C-1,2,3,7,8-PeCDD	118
1,2,3,6,7,8-HxCDD	23.8	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	79

**Furans**

2,3,7,8-TCDF	21.4	<sup>13</sup> C-2,3,7,8-TCDF	60
1,2,3,7,8-PeCDF	19.0	<sup>13</sup> C-1,2,3,7,8-PeCDF	110
1,2,3,4,7,8-HxCDF	21.2	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	86

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Kim Laisy  
Key West  
Date: August 15, 1990  
Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

Dioxin/Furan Analysis - Method 8280

Client Sample ID: Method Blank  
Sample Date: NA  
IT Sample ID: BLK1785  
Extraction Date: July 23, 1990

---

Analyte	Conc. (ng/L)	Internal Standard	% Recovery
Isomer Specific Analysis Date: July 24, 1990			
2,3,7,8-TCDD	ND(1.3)	<sup>13</sup> C-2,3,7,8-TCDD	88

---

Totals Analysis Date: July 24, 1990

**Dioxins**

Total TCDD	ND(0.35)	<sup>13</sup> C-2,3,7,8-TCDD	84
Total PeCDD	ND(0.39)	<sup>13</sup> C-1,2,3,7,8-PeCDD	114
Total HxCDD	ND(0.69)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	79

**Furans**

Total TCDF	ND(0.36)	<sup>13</sup> C-2,3,7,8-TCDF	72
Total PeCDF	ND(0.25)	<sup>13</sup> C-1,2,3,7,8-PeCDF	108
Total HxCDF	ND(0.27)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	89

---

**APPENDIX C**

Kim Laisy  
Key West

Date: August 15, 1990

Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

## QA/QC REPORT

Sample Number: BB2712

Sample Matrix: Soil

Extraction Date: July 23, 1990 LRMS

Report Date: August 15, 1990

Compound	Amt Added (ng/g)	Sample Amount (ng/g)	Conc. MS (ng/g)	% Recov.	Conc. MSD (ng/g)	% Recov.	% RPD	EPA % Recov. Range	EPA % RPD Range
Isomer Specific Analysis									
2,3,7,8-TCDD	1.0	ND	0.86	86	0.95	95	-9.9	60-140	±50
Totals Analysis									
2,3,7,8-TCDD	1.0	ND	1.1	110	0.96	96	13.6	a	b
1,2,3,7,8-PeCDD	1.0	ND	1.0	100	1.0	100	0.0	a	b
1,2,3,6,7,8-HxCDD	1.0	ND	0.94	94	0.85	85	10	a	b
2,3,7,8-TCDF	1.0	ND	1.1	110	1.0	100	9.5	a	b
1,2,3,7,8-PeCDF	1.0	ND	0.97	97	0.99	99	-2.0	a	b
1,2,3,4,7,8-HxCDF	1.0	ND	1.0	100	1.0	100	0.0	a	b

$$\% \text{ Recov} = (\text{Conc MS (or MSD)} - \text{Sample Amt}) / \text{Amt Added} \times 100$$

$$\text{RPD} = ((\text{Conc MS} - \text{Conc MSD}) / (\text{Conc MS} + \text{Conc MSD}) / 2) \times 100$$

<sup>a</sup> No EPA Range has been established for these analytes. IT QA/QC limits 60-140%

<sup>b</sup> No EPA Range has been established for these analytes. IT QA/QC limits ± 50%

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 Kim Laisy  
 Key West  
 Date: August 15, 1990  
 Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
 304 DIRECTORS DRIVE  
 KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

QA/QC REPORT

Sample Number: BB2713  
 Sample Matrix: Water  
 Extraction Date: July 23, 1990 LRMS  
 Report Date: August 15, 1990

Compound	Amt Added (ng/L)	Sample Amount (ng/L)	Conc. MS (ng/L)	% Recov.	Conc. MSD (ng/L)	% Recov.	% RPD	EPA % Recov. Range	EPA % RPD Range
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Isomer Specific Analysis

2,3,7,8-TCDD	20	ND	23.0	115	25.1	126	-8.7	60-140	±50
--------------	----	----	------	-----	------	-----	------	--------	-----

Totals Analysis

2,3,7,8-TCDD	20	ND	20.3	102	20.6	103	-1.5	a	b
1,2,3,7,8-PeCDD	20	ND	21.6	108	20.3	102	6.3	a	b
1,2,3,6,7,8-HxCDD	20	ND	25.4	127	23.8	119	6.5	a	b
2,3,7,8-TCDF	20	ND	21.7	109	21.4	107	1.4	a	b
1,2,3,7,8-PeCDF	20	ND	19.4	97	19.0	95	2.1	a	b
1,2,3,4,7,8-HxCDF	20	ND	22.4	112	21.2	106	5.5	a	b

% Recov = (Conc MS (or MSD)-Sample Amt)/ Amt Added)X 100

RPD= ((Conc.MS-Conc MSD)/(Conc MS + Conc MSD)/2)X 100

<sup>a</sup> No EPA Range has been established for these analytes. IT QA/QC limits 60-140%

<sup>b</sup> No EPA Range has been established for these analytes. IT QA/QC limits ± 50%

**APPENDIX D**



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

**CHAIN-OF-CUSTODY RECORD**

R/A Control No. 188576

C/C Control No. 136604

PROJECT NAME/NUMBER ITCY 46179 (Key West) LAB DESTINATION IT SAC

SAMPLE TEAM MEMBERS \_\_\_\_\_ CARRIER/WAYBILL NO. \_\_\_\_\_

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
LL3518	04-01-SEA	7/17/90	Soil	250 ml amber	Cooler Temp @ 9C OK + Custody Seals intact 7-19-90	
	04-01-SW	"	Water	1 gal amber		

Special Instructions: Use LL 3480-81 to report MS/MSD on LL 3479 (O.S.)

Possible Sample Hazards: Use LL 3518 to report ms/msd on water per Scott Harris 7-20-90 (OK)

**SIGNATURES: (Name, Company, Date and Time)**

- 1. Relinquished By: SA Kennedy, ITAS, 7/19/90 1330
- Received By: NG Conrad TOL 7-19-90 1430
- 2. Relinquished By: \_\_\_\_\_
- Received By: \_\_\_\_\_
- 3. Relinquished By: \_\_\_\_\_
- Received by: \_\_\_\_\_
- 4. Relinquished By: \_\_\_\_\_
- Received By: \_\_\_\_\_

WHIT To accompany samples  
YEL Field copy

ITCY482649  
TIDORC



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

**REQUEST FOR ANALYSIS**

R/A Control No. 108576  
C/C Control No. 136604

PROJECT NAME Key West  
PROJECT NUMBER ITCY 46179  
PROFIT CENTER NUMBER 4620  
PROJECT MANAGER \_\_\_\_\_  
BILL TO ITAS  
PURCHASE ORDER NO. 486000.09

DATE SAMPLES SHIPPED 7-19-90  
LAB DESTINATION IT SAH  
LABORATORY CONTACT Nancy Conrad  
SEND LAB REPORT TO IT Corp.  
Middlebrook Pike  
DATE REPORT REQUIRED Normal  
PROJECT CONTACT Kim Laisy  
PROJECT CONTACT PHONE NO. 588-6401

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
BB2712 LL 3479-81	soil			App. IX Dioxins + Furans by CLP,	OS/MS/MSD for soil
BB2713 LL 3518	water	1 gal		no data pkg.	

TURNAROUND TIME REQUIRED: (Rush must be approved by the Laboratory Project Manager.)  
 Normal  Rush \_\_\_\_\_ (Subject to rush surcharge.)  
 QC LEVEL: (Levels II and III subject to surcharge; project-specific requirements must be submitted to lab before beginning work.)  
 I \_\_\_\_\_ II \_\_\_\_\_ III \_\_\_\_\_ Project Specific \_\_\_\_\_

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances.)  
 Non-hazard \_\_\_\_\_ Flammable \_\_\_\_\_ Skin Irritant \_\_\_\_\_ Highly Toxic \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, archive and disposal.)  
 Return to Client \_\_\_\_\_ Disposal by Lab  Archive \_\_\_\_\_ (Indicate number of months.)

FOR LAB USE ONLY

Received by NJ Conrad Date/Time 7-19-90 1430 ITCY 482649

WHITE - Original, to accompany samples  
YELLOW - Field copy



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

Date: 08/09/90

IT Analytical Services  
5815 Middlebrook Pike  
Knoxville, TN 37921  
Alyce Moore

Work Order: T0-07-179

P.O. Number: 486000.02

This is the Certificate of Analysis for the following samples:

Client Work ID: ITCY 46179 Key West  
Date Received: 07/19/90  
Number of Samples: 2  
Sample Type: aqueous/solid

### TABLE OF CONTENTS FOR ANALYTICAL RESULTS

<u>PAGES</u>	<u>LABORATORY #</u>	<u>SAMPLE IDENTIFICATION</u>
2	T0-07-179-01	LL3482/83/84 04-01-SED
4	T0-07-179-02	LL3519 04-01-SW

Reviewed and Approved:

David A. Fichette  
Project Manager

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

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-179

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD)  
Client Sample ID: LL3482/83/84 04-01-SED  
Lab Sample ID: T0-07-179-MS/MSD  
Extraction Date: 07/20/90  
Analysis Date: 07/27/90

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

Results in Milligrams per Kilogram

Parameter	Amt in Sample	Amt of Spike	MS Result	MSD Result	MS % REC	MSD % REC	% RPD
Dimethoate	ND<0.06	5.	4.9	5.46	98.	109.	10.6
Methyl Parathion	ND<0.06	5.	4.6	4.76	92.	95.	3.2

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD)  
Client Sample ID: LL3482/83/84 04-01-SED  
Lab Sample ID: T0-07-179-MS/MSD  
Extraction Date: 07/20/90  
Analysis Date: 07/26/90

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
2,4-D	ND<0.09	10.	8.42	8.04	84.	80.	4.9
2,4,5-TP	ND<0.02	2.	2.00	1.91	100.	95.	5.1

RPD=MS-MSD

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((MS+MSD)/2)

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-179

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TEST CODE 8140 TEST NAME EPA 8140

The method of analysis for organophosphorus pesticides is taken from E.P.A. Methods 614, 622 and 8140. The samples are extracted with solvent and concentrated. Final detection is by gas chromatography using a flameless alkali salt nitrogen-phosphorus detector.

TEST CODE 8150 TEST NAME EPA 8150 in Soil

The method of analysis for chlorophenoxy and phenolic herbicides is taken from E.P.A. Methods 615 and 8150. Samples are acidified, extracted with solvent, hydrolyzed, partitioned in base, partitioned from acid and methylated. If necessary, a portion of the methylated extract is cleaned-up to remove interferences. Final detection is by gas chromatography using an electron capture detector.



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# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

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

August 15, 1990

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Job Number: ITCY 45911

P.O. Number: 595392

This is the Certificate of Analysis for the following samples:

Client Project ID: NAS-Key West  
Date Received by Lab: 06/08/90  
Number of Samples: Thirty-five (35)  
Sample Type: Soil

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### I. Introduction

On 06/08/90, thirty-five (35) 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.

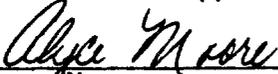
### II. Analytical Results/Methodology

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 geotechnical parameters were performed at the IT-Technology Development laboratory, Knoxville, Tennessee. A separate laboratory report for these parameters will follow.

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:

  
Alyce Moore  
Laboratory Manager

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American Association for Laboratory Accreditation

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

## II. Analytical Results/Methodology (continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCB's 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 EP Toxicity extracted in accordance with EPA SW-846 method 1310. The EP Toxicity leachate was analyzed for RCRA metals by inductively coupled plasma spectroscopy (ICP) and cold vapor atomic absorption spectroscopy (CVAA) based on EPA SW-846 methods 6010 and 7470, respectively.

## III. Quality Control

The volatiles analyses were performed on 06/13 and 06/14/90 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 07/02 and 07/03/90 by direct injection of sample extract on a Restek RTX-5 capillary column on a VG TRIO-1 GC/MS/DS. The volatiles runs generally went well. Site 5, Plot 2 showed high levels and was ultimately analyzed using a methanol extraction (1/125 dilution). Other samples required no dilution. All standards, blanks, and samples were run by heated purge. The semivolatiles runs went well. Some extracts contained high levels of hydrocarbons and other species, and dilutions were required. A few of the chromatograms showed evidence of heavy "oil clusters". TICs included, among other compounds, aldol or similar condensation products generated by the soil acetone/methylene chloride extraction. Some compounds were also seen in the method blank. These non-sample intrinsic peaks were qualified with "A" or "B" flags, respectively. Other tentative matches which we consider to likely be lab background are tetrahydropyrandiol and octadecenamamide. Otherwise, peaks matched out against the EPA NIST spectral library as (generally indistinguishable) saturated hydrocarbons and chlorinated species. The hydrocarbons appeared to be in the C14-C20 range for the most part. 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 number ITCY 45858, sample Site 3, Plot 1.

The pesticide/PCB analyses were performed from 06/20/90 to 06/30/90 using a mixed phase (SP-2250/SP-2401), 3% OV-1, and 5% SP-2401 column on the Varian 3740B/Varian 3740H/Varian 3740G instruments. The samples and the associated method blank were treated for sulfur interferences. This cleanup was performed on 06/20/90. Dilutions

### III. Quality Control (continued)

were required, in most cases, due to the presence of high concentrations of DDE, DDD and DDT. These dilution factors prevented the quantitation of surrogate recoveries for these samples, due to the surrogate being effectively diluted out. These dilutions also resulted in elevated detection limits for many of the other pesticides and PCBs. Matrix interferences were encountered which made identification and quantitation for some other species (particularly DDE) difficult. For sample MW5-C, Site 4, only the results from the diluted run were reported. The more concentrated run provided no additional information due to the high levels seen. No other problems were encountered. Associated QC samples were analyzed with ITAS project ITCY 45858, sample Site 3, Plot 1.

The samples were digested on 06/14/90 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 06/14/90; the GFAA analyses for arsenic, lead, selenium and thallium were performed from 06/14 to 06/20/90; the remaining metals were analyzed by ICP on 06/19/90. All run QC was acceptable. Associated QC samples were analyzed with ITAS project ITCY 45858, sample Site 3, Plot 1. Elevated detection limits were reported for silver due to interferences caused by the high levels of calcium present in the samples. No other problems were encountered.

The samples were analyzed for cyanide on 06/18/90. Associated QC samples were analyzed with ITAS project ITCY 45858, sample Site 3, Plot 1. No problems were encountered.

The samples were EP Toxicity extracted from 06/13 to 06/15/90. The leachates were digested on 06/20/90 for ICP. The leachates for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed from 06/15 to 06/19/90; the remaining metals were analyzed by ICP on 06/27/90. All run QC was acceptable. A matrix spike/matrix spike duplicate pair was prepared using sample number BFFTA-5. Spike recovery (accuracy) results were within control limits for all parameters with the exception of silver. The high calcium levels detected in these samples caused matrix interference problems for the silver analysis by elevating the detection limit and affecting spike recoveries. Duplicate RPD (precision) results were slightly elevated for the silver analysis (11.8%). No other problems were encountered.

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August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank 1  
Lab Sample ID: VB0613

<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: 06/13/90

Dilution Factor: 1

This method blank applies to the following sample: Site 5, Plot 2.

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August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: MW5A, Site 4  
Lab Sample ID: LL0501

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  
 August 15, 1990

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Plot 2, NAS Site 3  
 Lab Sample ID: LL0502

<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	5 J	1,1,2-trichloroethane	6 U
acetone	6 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	6 U
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: 06/14/90  
 Dilution Factor: 1  
 % Moisture: 14

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Plot 2, NAS Site 3  
Lab Sample ID: LL0502

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 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3  
Lab Sample ID: LL0503

<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	1,1,2-trichloroethane	6 U
acetone	8 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: 06/14/90  
Dilution Factor: 1  
% Moisture: 14

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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3  
Lab Sample ID: LL0503

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 45911

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Sample No.	VOLATILE		
	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
MW3A, Site 4	93	96	88
MW4A, Site 4	98	100	91
MW5A, Site 4	98	99	92
Site 5, Plot 2	95	94	97
Plot 2, NAS Site 3	96	97	90
Site 5, Plot 3	105	84	89
Site 5, Plot 4	100	96	94
Plot 4, NAS Site 3	103	83	88
Site 5, Plot 5	105	91	93
Site 5, Plot 6	100	96	92
Method Blank 1	94	95	92
Method Blank 2	96	99	90

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

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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: BLA1176

<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
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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1

IT Corporation  
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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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: BLA1176

<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	410
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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Plot 2, NAS Site 3  
Lab Sample ID: LL0530

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	1,900 U	anthracene	380 U
acenaphthene	380 U	di-n-butylphthalate	380 U
2,4-dinitrophenol	1,900 U	fluoranthene	380 U
4-nitrophenol	1,900 U	pyrene	380 U
dibenzofuran	380 U	butylbenzylphthalate	380 U
2,4-dinitrotoluene	380 U	3,3'-dichlorobenzidine	760 U
diethylphthalate	420	benzo(a)anthracene	380 U
4-chlorophenyl-phenylether	380 U	chrysene	380 U
orene	380 U	bis(2-ethylhexyl)phthalate	460 B
4-nitroaniline	1,900 U	di-n-octylphthalate	380 U
4,6-dinitro-2-methylphenol	1,900 U	benzo(b)fluoranthene	380 U
n-nitrosodiphenylamine <sup>1</sup>	380 U	benzo(k)fluoranthene	380 U
4-bromophenyl-phenylether	380 U	benzo(a)pyrene	380 U
hexachlorobenzene	380 U	indeno(1,2,3-cd)pyrene	380 U
pentachlorophenol	1,900 U	dibenzo(a,h)anthracene	380 U
phenanthrene	380 U	benzo(g,h,i)perylene	380 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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1  
% Moisture: 14

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Plot 2, NAS Site 3  
Lab Sample ID: LL0530

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl- unknown	47,000 AB 2,900 A
hexanedioic acid, dioctyl ester	2,700 B
3-penten-2-one, 4-methyl-	1,300 A
3-hexene-2-one, 5-methyl- sulfur	1,300 A 800
2,4-pentanedione	1,200 A
2H-pyran-2,3-diol, tetrahydro-, diacetate, cis-	830
unknown sat'd hydrocarbon	460 B
unknown	340 B
unknown	310 B
2-butanone, 3-methyl-	310 A
unknown sat'd hydrocarbon	240 B
unknown sat'd hydrocarbon	220 B
unknown sat'd hydrocarbon	170 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.

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

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IT ANALYTICAL SERVICES  
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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3

Lab Sample ID: LL0531

<u>Compound</u>		<u>Compound</u>	
phenol	3,800 U	bis(2-chloroethoxy)methane	3,800 U
bis(2-chloroethyl)ether	3,800 U	2,4-dichlorophenol	3,800 U
2-chlorophenol	3,800 U	1,2,4-trichlorobenzene	3,800 U
1,3-dichlorobenzene	3,800 U	naphthalene	3,800 U
1,4-dichlorobenzene	3,800 U	4-chloroaniline	3,800 U
benzyl alcohol	3,800 U	hexachlorobutadiene	3,800 U
1,2-dichlorobenzene	3,800 U	4-chloro-3-methylphenol	3,800 U
2-methylphenol	3,800 U	2-methylnaphthalene	3,800 U
bis(2-chloroisopropyl)ether	3,800 U	hexachlorocyclopentadiene	3,800 U
o-methylphenol	3,800 U	2,4,6-trichlorophenol	3,800 U
n-nitroso-di-n-propylamine	3,800 U	2,4,5-trichlorophenol	19,000 U
hexachloroethane	3,800 U	2-chloronaphthalene	3,800 U
nitrobenzene	3,800 U	2-nitroaniline	19,000 U
isophorone	3,800 U	dimethyl phthalate	3,800 U
2-nitrophenol	3,800 U	acenaphthylene	3,800 U
2,4-dimethylphenol	3,800 U	2,6-dinitrotoluene	3,800 U
benzoic acid	19,000 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 10  
% Moisture: 14

IT Corporation  
August 15, 1990

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3  
Lab Sample ID: LL0531

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	19,000 U	anthracene	3,800 U
acenaphthene	3,800 U	di-n-butylphthalate	3,800 U
2,4-dinitrophenol	19,000 U	fluoranthene	3,800 U
4-nitrophenol	19,000 U	pyrene	3,800 U
dibenzofuran	3,800 U	butylbenzylphthalate	3,800 U
2,4-dinitrotoluene	3,800 U	3,3'-dichlorobenzidine	7,600 U
diethylphthalate	3,800 U	benzo(a)anthracene	3,800 U
4-chlorophenyl-phenylether	3,800 U	chrysene	3,800 U
fluorene	3,800 U	bis(2-ethylhexyl)phthalate	700 BJ
4-nitroaniline	19,000 U	di-n-octylphthalate	3,800 U
4,6-dinitro-2-methylphenol	19,000 U	benzo(b)fluoranthene	3,800 U
n-nitrosodiphenylamine <sup>1</sup>	3,800 U	benzo(k)fluoranthene	3,800 U
4-bromophenyl-phenylether	3,800 U	benzo(a)pyrene	3,800 U
hexachlorobenzene	3,800 U	indeno(1,2,3-cd)pyrene	3,800 U
pentachlorophenol	19,000 U	dibenzo(a,h)anthracene	3,800 U
phenanthrene	3,800 U	benzo(g,h,i)perylene	3,800 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.

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

1 - Detected as diphenylamine.

Date Extracted: 06/13/90

Date Analyzed: 07/03/90

Dilution Factor: 10

% Moisture: 14

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3  
Lab Sample ID: LL0531

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl-	83,000 AB
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	32,000
hexanedioic acid, dioctyl ester	11,000 B
DDMU	4,100
unknown sat'd hydrocarbon	2,800
unknown sat'd hydrocarbon	2,200
p,p'-DDT	3,100
3-penten-2-one, 4-methyl-	4,200 A
unknown sat'd hydrocarbon	2,300
2H-pyran-2,3-diol, tetrahydro-, diacetate, cis-	3,500
3-hexen-2-one, 5-methyl-	2,900 A
unknown sat'd hydrocarbon	1,600
unknown	1,800 A
m,p'-DDD	80,000
hexadecane	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.

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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%)*
MW3B, Site 4	60	67	72	56	40	42
MW4B, Site 4	36	40	47	38	39	42
MW5C, Site 4	51	56	64	46	35	26
Plot 2, NAS Site 3	69	73	81	72	70	84
Plot 4, NAS Site 3	68	81	98	71	77	87
Site 5, Plot 2	77	89	117	77	79	74
Site 5, Plot 3	60	73	125	60	63	69
Site 5, Plot 4	74	79	125	78	81	70
Site 5, Plot 5	69	78	109	72	70	74
Site 5, Plot 6	75	82	88	77	78	84
Method Blank	72	79	76	73	70	71

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

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Plot 2, NAS Site 3  
Lab Sample ID: LL0530

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	46 U	endosulfan sulfate	93 U
$\beta$ -BHC	89	4,4'-DDT	1,400 F
$\delta$ -BHC	46 U	methoxychlor	460 U
$\gamma$ -BHC (lindane)	46 U	endrin ketone	93 U
heptachlor	46 U	$\alpha$ -chlordane	39 J
aldrin	46 U	$\gamma$ -chlordane	54 J
heptachlor epoxide	46 U	toxaphene	930 U
endosulfan I	46 U	Aroclor 1016	460 U
dieldrin	67 J	Aroclor 1221	460 U
4,4'-DDE	470 F	Aroclor 1232	460 U
endrin	93 U	Aroclor 1242	460 U
endosulfan II	93 U	Aroclor 1248	460 U
4,4'-DDD	68 J	Aroclor 1254	930 U
		Aroclor 1260	930 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Date Extracted: 06/13/90  
Date Analyzed: 06/23/90  
Dilution Factor: 5  
% Moisture: 14

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Plot 2, NAS Site 3 DL  
Lab Sample ID: LL0530 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	460 U	endosulfan sulfate	930 U
$\beta$ -BHC	85 DJ	4,4'-DDT	1,800 D
$\delta$ -BHC	460 U	methoxychlor	4,600 U
$\gamma$ -BHC (lindane)	460 U	endrin ketone	930 U
heptachlor	460 U	$\alpha$ -chlordane	4,600 U
aldrin	460 U	$\gamma$ -chlordane	4,600 U
heptachlor epoxide	460 U	toxaphene	9,300 U
endosulfan I	460 U	Aroclor 1016	4,600 U
dieldrin	66 DJ	Aroclor 1221	4,600 U
4,4'-DDE	560 DJ	Aroclor 1232	4,600 U
endrin	930 U	Aroclor 1242	4,600 U
endosulfan II	930 U	Aroclor 1248	4,600 U
4,4'-DDD	93 DJ	Aroclor 1254	9,300 U
		Aroclor 1260	9,300 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90  
Date Analyzed: 06/23/90  
Dilution Factor: 50  
% Moisture: 14

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3  
Lab Sample ID: LL0531

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	1,900 U	endosulfan sulfate	3,700 U
$\beta$ -BHC	2,300	4,4'-DDT	6,000
$\delta$ -BHC	1,900 U	methoxychlor	19,000 U
$\gamma$ -BHC (lindane)	1,900 U	endrin ketone	3,700 U
heptachlor	1,900 U	$\alpha$ -chlordane	19,000 U
aldrin	1,900 U	$\gamma$ -chlordane	19,000 U
heptachlor epoxide	1,900 U	toxaphene	37,000 U
endosulfan I	1,900 U	Aroclor 1016	19,000 U
dieldrin	930 J	Aroclor 1221	19,000 U
4,4'-DDE	6,800 F	Aroclor 1232	19,000 U
endrin	3,700 U	Aroclor 1242	19,000 U
endosulfan II	3,700 U	Aroclor 1248	19,000 U
4,4'-DDD	56,000 F	Aroclor 1254	37,000 U
		Aroclor 1260	37,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Date Extracted: 06/13/90  
Date Analyzed: 06/23/90  
Dilution Factor: 200  
% Moisture: 14

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3 DL  
Lab Sample ID: LL0531 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	19,000 U	endosulfan sulfate	37,000 U
$\beta$ -BHC	2,200 DJ	4,4'-DDT	4,500 DJ
$\delta$ -BHC	19,000 U	methoxychlor	190,000 U
$\gamma$ -BHC (lindane)	19,000 U	endrin ketone	37,000 U
heptachlor	19,000 U	$\alpha$ -chlordane	190,000 U
aldrin	19,000 U	$\gamma$ -chlordane	190,000 U
heptachlor epoxide	19,000 U	toxaphene	370,000 U
endosulfan I	19,000 U	Aroclor 1016	190,000 U
dieldrin	37,000 U	Aroclor 1221	190,000 U
4,4'-DDE	8,600 DJ	Aroclor 1232	190,000 U
endrin	37,000 U	Aroclor 1242	190,000 U
endosulfan II	37,000 U	Aroclor 1248	190,000 U
4,4'-DDD	83,000 D	Aroclor 1254	370,000 U
		Aroclor 1260	370,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 2,000  
% Moisture: 14

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	MW3C, Site 4 LL0537		MW4C, Site 4 LL0538	
aluminum	83.8	E	477	E
antimony	3.7	U	3.8	U
arsenic	0.2	UW	0.5	BW
barium	5.1	BE	5.5	BE
beryllium	0.12	U	0.13	U
cadmium	0.62	U	0.64	U
calcium	408,000		342,000	
chromium	3.8		4.0	
cobalt	2.5	U	2.6	U
copper	3.2		3.0	B
iron	89.4	E	398	E
lead	0.4	B	5.5	
magnesium	1,070	E	1,830	E
manganese	1.7	B	5.4	
mercury	0.02	U	0.03	U
nickel	2.5	U	2.6	U
potassium	124	U	128	U
selenium	0.5	UW	0.3	UW
silver	6.2	U	6.4	U
sodium	3,940		2,590	
thallium	0.2	UW	0.3	UW
vanadium	3.0	B	2.4	B
zinc	10.2		11.1	
% Solids:	80.5		78.4	

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.

E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90

Date Analyzed: 06/19/90 (ICP)

06/14, 06/15, 06/16 and 06/20/90 (GFAA)

06/14/90 (CVAA)

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID:	MW5B, Site 4	Plot 2, NAS Site 3
Lab Sample ID:	LL0539	LL0540
aluminum	2,760 E	116 E
antimony	3.7 U	3.4 U
arsenic	0.2 U	0.7 BW
barium	9.1 E	6.5 BE
beryllium	0.12 U	0.11 U
cadmium	0.61 U	0.57 U
calcium	334,000	317,000
chromium	5.8	2.4
cobalt	2.4 U	2.3 U
copper	1.9 B	2.3 B
iron	1,290 E	117 E
lead	1.0	6.2
magnesium	4,420 E	664 E
manganese	5.4	2.0
mercury	0.02 U	0.04
nickel	2.4 U	2.3 U
potassium	122 U	113 U
selenium	0.5 UW	0.5 UW
silver	6.1 U	5.7 U
sodium	1,320	919
thallium	0.2 UW	0.2 UW
vanadium	5.4 B	1.1 U
zinc	8.1	12.3
% Solids:	81.9	88.3

- 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.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
 Date Analyzed: 06/19/90 (ICP)  
 06/14, 06/15, 06/16 and 06/20/90 (GFAA)  
 06/14/90 (CVAA)

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in mg/liter (ppm) in the extract

Client Sample ID: BFFTA-5  
Lab Sample ID: LL0508/LL0509/LL0510

<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>
arsenic	2.0	0.03 U	2.0	100.0	1.9	95.0	5.1
barium	2.0	0.039	1.9	93.0	1.8	88.0	5.5
selenium	2.0	0.06 U	2.2	110.0	2.2	110.0	0
lead	0.50	0.03 U	0.43	86.0	0.43	86.0	0
chromium	0.20	0.01 U	0.18	90.0	0.18	90.0	0
cadmium	0.050	0.005 U	0.056	112.0	0.054	108.0	3.6
silver	0.050	0.01 U	0.01 U	0.0 N	0.01 U	0.0 N	0

RPD - Relative Percent Difference

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

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

Date Extracted: 06/13 - 06/15/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/19/90 (CVAA)

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in mg/liter (ppm) in the extract

Client Sample ID: BFFTA-5  
Lab Sample ID: LL0508/LL0509/LL0510

<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>
mercury	0.010	0.001 U	0.009	90.0	0.008	80.0	11.8

RPD - Relative Percent Difference

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

Date Extracted: 06/13 - 06/15/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/19/90 (CVAA)

Page 5 of 7  
Kim Laisy  
NAS, Key West  
Date: August 2, 1990

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

Client Project ID: ITCY46151

TDL Project No.: ITCY482643

Dioxin/Furan Analysis - Method 8280

Client Sample ID: 04-04-GW (Water)  
Sample Date: July 12, 1990  
IT Sample ID: BB2703  
Extraction Date: July 18, 1990

---

Analyte	Conc. (ng/L)	Internal Standard	% Recovery
Isomer Specific Analysis Date: July 23, 1990			
2,3,7,8-TCDD	ND(0.49)	<sup>13</sup> C-2,3,7,8-TCDD	84

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Totals Analysis Date: July 20, 1990

**Dioxins**

Total TCDD	ND(0.17)	<sup>13</sup> C-2,3,7,8-TCDD	75
Total PeCDD	ND(0.65)	<sup>13</sup> C-1,2,3,7,8-PeCDD	106
Total HxCDD	ND(0.58)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	77

**Furans**

Total TCDF	ND(0.39)	<sup>13</sup> C-2,3,7,8-TCDF	65
Total PeCDF	ND(0.30)	<sup>13</sup> C-1,2,3,7,8-PeCDF	96
Total HxCDF	ND(0.23)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	81

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Page 6 of 7  
Kim Laisy  
NAS, Key West  
Date: August 2, 1990  
Client Project ID: ITCY46151

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482643

Dioxin/Furan Analysis - Method 8280

Client Sample ID: 10-01-GW (Water)  
Sample Date: July 12, 1990  
IT Sample ID: BB2704  
Extraction Date: July 18, 1990

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Analyte	Conc. (ng/L)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 23, 1990

2,3,7,8-TCDD	ND(0.99)	<sup>13</sup> C-2,3,7,8-TCDD	81
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Totals Analysis Date: July 20, 1990

**Dioxins**

Total TCDD	ND(0.35)	<sup>13</sup> C-2,3,7,8-TCDD	76
Total PeCDD	ND(0.65)	<sup>13</sup> C-1,2,3,7,8-PeCDD	102
Total HxCDD	ND(1.3)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	74

**Furans**

Total TCDF	ND(0.39)	<sup>13</sup> C-2,3,7,8-TCDF	65
Total PeCDF	ND(0.22)	<sup>13</sup> C-1,2,3,7,8-PeCDF	94
Total HxCDF	ND(0.20)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	80

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# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

Date: 08/09/90

IT Analytical Services  
5815 Middlebrook Pike  
Knoxville, TN 37921  
Alyce Moore

Work Order: T0-07-147

P.O. Number: 486000.02

This is the Certificate of Analysis for the following samples:

Client Work ID: ITCY46151  
Date Received: 07/17/90  
Number of Samples: 2  
Sample Type: aqueous

### TABLE OF CONTENTS FOR ANALYTICAL RESULTS

<u>PAGES</u>	<u>LABORATORY #</u>	<u>SAMPLE IDENTIFICATION</u>
2	T0-07-147-01	LL2986 04-04-GW
4	T0-07-147-02	LL2987 10-01-GW

Reviewed and Approved:

David A. Pichette  
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: 08/09/90  
Client Work ID: ITCY46151

Work Order: T0-07-147

TEST NAME: EPA 614/8140

SAMPLE ID: LL2986 04-04-GW  
SAMPLE DATE: 07/12/90  
LAB SAMPLE ID: T007147-01  
SAMPLE MATRIX: aqueous  
RECEIPT CONDITION: Cool  
EXTRACTION DATE: 07/17/90  
ANALYSIS DATE: 07/27/90

## RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Dimethoate	1.0	None
Disulfoton	1.0	None
Famphur	2.0	None
Parathion ethyl	1.0	None
Parathion methyl	1.0	None
Phorate	1.0	None
Sulfotepp	1.0	None
Thionazin	1.0	None
0,0,0-Triethylphosphorothioate	0.50	None

Company: IT Analytical Services

Date: 08/09/90

Client Work ID: ITCY46151

Work Order: T0-07-147

TEST NAME: EPA 615/8150

SAMPLE ID: LL2986 04-04-GW

SAMPLE DATE: 07/12/90

LAB SAMPLE ID: T007147-01

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool

EXTRACTION DATE: 07/17/90

ANALYSIS DATE: 07/25/90

## RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
2,4-D	0.16	None
Dinoseb	0.04	None
2,4,5-T	0.04	None
2,4,5-TP	0.04	None

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY46151

Work Order: T0-07-147

TEST NAME: EPA 614/8140

SAMPLE ID: LL2987 10-01-GW  
SAMPLE DATE: 07/12/90  
LAB SAMPLE ID: T007147-02  
SAMPLE MATRIX: aqueous  
RECEIPT CONDITION: Cool  
EXTRACTION DATE: 07/17/90  
ANALYSIS DATE: 07/27/90

## RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Dimethoate	1.0	None
Disulfoton	1.0	None
Famphur	2.0	None
Parathion ethyl	1.0	None
Parathion methyl	1.0	None
Phorate	1.0	None
Sulfotepp	1.0	None
Thionazin	1.0	None
O,O,O-Triethylphosphorothioate	0.50	None

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY46151

Work Order: T0-07-147

TEST NAME: EPA 615/8150

SAMPLE ID: LL2987 10-01-GW  
SAMPLE DATE: 07/12/90  
LAB SAMPLE ID: T007147-02  
SAMPLE MATRIX: aqueous  
RECEIPT CONDITION: Cool  
EXTRACTION DATE: 07/17/90  
ANALYSIS DATE: 07/25/90

RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
2,4-D	0.16	None
Dinoseb	0.04	None
2,4,5-T	0.04	None
2,4,5-TP	0.04	None

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY46151

Work Order: T0-07-147

## QUALITY CONTROL REPORT

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

Client Sample ID: LL2986 04-04-GW  
Lab Sample ID: T0-07-147-MS/MSD  
Extraction Date: 07/17/90  
Analysis Date: 07/27/90

## 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
Dimethoate	ND<1.0	10.	8.4	6.25	84.	62.	30.
Methyl Parathion	ND<1.0	10.	9.93	6.98	99.	70.	34.

## QUALITY CONTROL REPORT

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

Client Sample ID: LL2986 04-04-GW  
Lab Sample ID: T0-07-147-MS/MSD  
Extraction Date: 07/17/90  
Analysis Date: 07/25/90

## 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
2,4-D	ND<0.16	10.	4.73	4.88	47.	49.	4.2
2,4,5-TP	ND<0.04	2.	1.04	1.10	52.	55.	5.6

RPD=MS-MSD

$$\frac{MS+MSD}{2}$$

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46209 Key West

Work Order: T0-07-225

TEST NAME: EPA 8140

SAMPLE ID: LL3899 10-MW01-SS  
SAMPLE DATE: 07/17/90  
LAB SAMPLE ID: T007225-01  
SAMPLE MATRIX: solid  
RECEIPT CONDITION: Cool  
EXTRACTION DATE: 07/27/90  
ANALYSIS DATE: 07/31/90

## RESULTS in Milligrams per Kilogram

Appendix IX PARAMETER	DETECTION LIMIT	DETECTED
Dimethoate	0.07	None
Disulfoton	0.07	None
Parathion ethyl	0.07	None
Parathion methyl	0.07	None
Phorate	0.14	None
Sulfotepp	0.14	None
Famphur	0.14	None
Thionazin	0.07	None
O,O,O-Triethylphosphorothioate	0.03	None

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46209 Key West

Work Order: T0-07-225

TEST NAME: EPA 8150 in Soil

SAMPLE ID: LL3899 10-MW01-SS  
SAMPLE DATE: 07/17/90  
LAB SAMPLE ID: T007225-01  
SAMPLE MATRIX: solid  
RECEIPT CONDITION: cool  
EXTRACTION DATE: 07/25/90  
ANALYSIS DATE: 07/31/90

## RESULTS in Milligrams per Kilogram

PARAMETER	DETECTION LIMIT	DETECTED
2,4-D	0.11	None
Dinoseb	0.03	None
2,4,5-T	0.03	None
2,4,5-TP	0.03	None

Sample LL3899 was apparently not spiked with Surrogate.  
There were no other unusual problems encountered with the  
analysis of these samples.

Company: IT Analytical Services

Date: 08/09/90

Client Work ID: ITCY 46209 Key West

Work Order: T0-07-225

TEST NAME: EPA 8140

SAMPLE ID: LL3900 SP-04-05-MW-SS

SAMPLE DATE: 07/17/90

LAB SAMPLE ID: T007225-02

SAMPLE MATRIX: solid

RECEIPT CONDITION: Cool

EXTRACTION DATE: 07/27/90

ANALYSIS DATE: 07/31/90

## RESULTS in Milligrams per Kilogram

Appendix IX PARAMETER	DETECTION LIMIT	DETECTED
Dimethoate	0.08	None
Disulfoton	0.08	None
Parathion ethyl	0.08	None
Parathion methyl	0.08	None
Phorate	0.16	None
Famphur	0.16	None
Thionazin	0.08	None
O,O,O-Triethylphosphorothioate	0.04	None

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46209 Key West

Work Order: T0-07-225

TEST NAME: EPA 8150 in Soil

SAMPLE ID: LL3900 SP-04-05-MW-SS  
SAMPLE DATE: 07/17/90  
LAB SAMPLE ID: T007225-02  
SAMPLE MATRIX: solid  
RECEIPT CONDITION: cool  
EXTRACTION DATE: 07/25/90  
ANALYSIS DATE: 07/31/90

## RESULTS in Milligrams per Kilogram

PARAMETER	DETECTION LIMIT	DETECTED
2,4-D	0.13	None
Dinoseb	0.03	None
2,4,5-T	0.03	None
2,4,5-TP	0.03	None

**APPENDIX B**

Page 5 of 7  
Kim Laisy  
Key West  
Date: August 15, 1990  
Client Project ID: ITCY46209

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482654

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Dioxin/Furan Analysis - Method 8280

Client Sample ID: 10-MW01-SS (Soil)  
Sample Date: July 17, 1990  
IT Sample ID: BB2723  
Extraction Date: July 26, 1990

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Analyte	Conc. (ng/g)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 31, 1990

2,3,7,8-TCDD	ND(0.11)	<sup>13</sup> C-2,3,7,8-TCDD	68
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Totals Analysis Date: August 10, 1990

**Dioxins**

Total TCDD	ND(0.15)	<sup>13</sup> C-2,3,7,8-TCDD	60
Total PeCDD	ND(0.62)	<sup>13</sup> C-1,2,3,7,8-PeCDD	58
Total HxCDD	ND(0.20)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	68

**Furans**

Total TCDF	ND(0.25)	<sup>13</sup> C-2,3,7,8-TCDF	59
Total PeCDF	ND(0.16)	<sup>13</sup> C-1,2,3,7,8-PeCDF	74
Total HxCDF	ND(0.41)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	80

---

Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46209

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482654

## Dioxin/Furan Analysis - Method 8280

Client Sample ID: SP-04-05-MW-SS (Soil)  
 Sample Date: July 17, 1990  
 IT Sample ID: BB2724  
 Extraction Date: July 26, 1990

Analyte	Conc. (ng/g)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 31, 1990

2,3,7,8-TCDD	ND(0.056)	<sup>13</sup> C-2,3,7,8-TCDD	71
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Totals Analysis Date: August 10, 1990

**Dioxins**

Total TCDD	ND(0.20)	<sup>13</sup> C-2,3,7,8-TCDD	72
Total PeCDD	ND(0.26)	<sup>13</sup> C-1,2,3,7,8-PeCDD	67
Total HxCDD	ND(0.59)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	73

**Furans**

Total TCDF	ND(0.087)	<sup>13</sup> C-2,3,7,8-TCDF	73
Total PeCDF	ND(0.12)	<sup>13</sup> C-1,2,3,7,8-PeCDF	82
Total HxCDF	ND(0.52)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	80

Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46209

IT ANALYTICAL SERVICES

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482654

## Dioxin/Furan Analysis - Method 8280

Client Sample ID: Method Blank  
 Sample Date: NA  
 IT Sample ID: BLK1786  
 Extraction Date: July 26, 1990

Analyte	Conc. (ng/g)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 27, 1990

2,3,7,8-TCDD	ND(0.063)	<sup>13</sup> C-2,3,7,8-TCDD	88
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Totals Analysis Date: July 27, 1990

**Dioxins**

Total TCDD	ND(0.026)	<sup>13</sup> C-2,3,7,8-TCDD	82
Total PeCDD	ND(0.052)	<sup>13</sup> C-1,2,3,7,8-PeCDD	107
Total HxCDD	ND(0.071)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	87

**Furans**

Total TCDF	ND(0.042)	<sup>13</sup> C-2,3,7,8-TCDF	76
Total PeCDF	ND(0.066)	<sup>13</sup> C-1,2,3,7,8-PeCDF	104
Total HxCDF	ND(0.026)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	89

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	<u>BSF-2</u> <u>LL0079</u>	<u>BSF-3</u> <u>LL0080</u>	<u>BSF-4</u> <u>LL0081</u>	<u>MWSF-1</u> <u>LL0082</u>
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.026	0.029	0.045	0.059
cadmium	0.005 U	0.005 U	0.005 U	0.005 U
chromium	0.01	0.01	0.02	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	0.001 U	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.010 U	0.010 U	0.010 U	0.010 U

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

Date Extracted: 06/13 - 06/16/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/16 - 06/19/90 (CVAA)

IT Corporation  
August 8, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45858

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID:	MWSF-2	MWSF-3	MWSF-4	MWSF-5
Lab Sample ID:	<u>LL0083</u>	<u>LL0084</u>	<u>LL0085</u>	<u>LL0086</u>
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.046	0.048	0.029	0.039
cadmium	0.005 U	0.005 U	0.005 U	0.005 U
chromium	0.01 U	0.01 U	0.01 U	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	0.001 U	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.010 U	0.010 U	0.010 U	0.010 U

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

Date Extracted: 06/13 - 06/16/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/16 - 06/19/90 (CVAA)

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-1  
Lab Sample ID: LL0364

<u>Compound</u>		<u>Compound</u>	
chloromethane	17 U	1,2-dichloropropane	8 U
bromomethane	17 U	cis-1,3-dichloropropene	8 U
vinyl chloride	17 U	trichloroethene	8 U
chloroethane	17 U	dibromochloromethane	8 U
methylene chloride	3 J	1,1,2-trichloroethane	8 U
acetone	14 J	benzene	8 U
carbon disulfide	8 U	trans-1,3-dichloropropene	8 U
1,1-dichloroethene	8 U	bromoform	8 U
1,2-dichloroethane	8 U	4-methyl-2-pentanone	17 U
1,1,2-dichloroethene (total)	8 U	2-hexanone	17 U
chloroform	8 U	tetrachloroethene	8 U
1,2-dichloroethane	8 U	1,1,2,2-tetrachloroethane	8 U
2-butanone	17 U	toluene	8 U
1,1,1-trichloroethane	8 U	chlorobenzene	8 U
carbon tetrachloride	8 U	ethylbenzene	8 U
vinyl acetate	17 U	styrene	8 U
bromodichloromethane	8 U	total xylenes	8 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: 06/13/90  
Dilution Factor: 1  
% Moisture: 40

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

---

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 4-1  
Lab Sample ID: LL0364

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 45898

VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-2

Lab Sample ID: LL0365

<u>Compound</u>		<u>Compound</u>	
chloromethane	13 U	1,2-dichloropropane	6 U
bromomethane	13 U	cis-1,3-dichloropropene	6 U
vinyl chloride	13 U	trichloroethene	6 U
chloroethane	13 U	dibromochloromethane	6 U
methylene chloride	3 J	1,1,2-trichloroethane	6 U
acetone	9 J	benzene	6 U
carbon disulfide	6 U	trans-1,3-dichloropropene	6 U
1,1-dichloroethene	6 U	bromoform	6 U
1,2-dichloroethene	6 U	4-methyl-2-pentanone	13 U
1,1,2-dichloroethene (total)	6 U	2-hexanone	13 U
chloroform	6 U	tetrachloroethene	6 U
1,2-dichloroethane	6 U	1,1,2,2-tetrachloroethane	6 U
2-butanone	13 U	toluene	6 U
1,1,1-trichloroethane	6 U	chlorobenzene	6 U
carbon tetrachloride	6 U	ethylbenzene	6 U
vinyl acetate	13 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: 06/13/90  
Dilution Factor: 1  
% Moisture: 21

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

---

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 4-2  
Lab Sample ID: LL0365

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  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-Boring MW4  
Lab Sample ID: LL0366

<u>Compound</u>		<u>Compound</u>	
chloromethane	15 U	1,2-dichloropropane	7 U
bromomethane	15 U	cis-1,3-dichloropropene	7 U
vinyl chloride	15 U	trichloroethene	7 U
chloroethane	15 U	dibromochloromethane	7 U
methylene chloride	4 J	1,1,2-trichloroethane	7 U
acetone	20	benzene	7 U
carbon disulfide	7 U	trans-1,3-dichloropropene	7 U
1,1-dichloroethene	7 U	bromoform	7 U
1,2-dichloroethene	7 U	4-methyl-2-pentanone	15 U
1,1,2-dichloroethene (total)	7 U	2-hexanone	15 U
chloroform	7 U	tetrachloroethene	7 U
1,2-dichloroethane	7 U	1,1,2,2-tetrachloroethane	7 U
2-butanone	15 U	toluene	7 U
1,1,1-trichloroethane	7 U	chlorobenzene	7 U
carbon tetrachloride	7 U	ethylbenzene	7 U
vinyl acetate	15 U	styrene	7 U
bromodichloromethane	7 U	total xylenes	7 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: 06/13/90  
Dilution Factor: 1  
% Moisture: 33

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 4-Boring MW4  
Lab Sample ID: LL0366

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  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-1  
Lab Sample ID: LL0367

<u>Compound</u>		<u>Compound</u>	
phenol	550 U	bis(2-chloroethoxy)methane	550 U
bis(2-chloroethyl)ether	550 U	2,4-dichlorophenol	550 U
2-chlorophenol	550 U	1,2,4-trichlorobenzene	550 U
1,3-dichlorobenzene	550 U	naphthalene	550 U
1,4-dichlorobenzene	550 U	4-chloroaniline	550 U
benzyl alcohol	550 U	hexachlorobutadiene	550 U
1,2-dichlorobenzene	550 U	4-chloro-3-methylphenol	550 U
2-methylphenol	550 U	2-methylnaphthalene	550 U
(2-chloroisopropyl)ether	550 U	hexachlorocyclopentadiene	550 U
methylphenol	550 U	2,4,6-trichlorophenol	550 U
n-nitroso-di-n-propylamine	550 U	2,4,5-trichlorophenol	2,700 U
hexachloroethane	550 U	2-chloronaphthalene	550 U
nitrobenzene	550 U	2-nitroaniline	2,700 U
isophorone	550 U	dimethyl phthalate	550 U
2-nitrophenol	550 U	acenaphthylene	550 U
2,4-dimethylphenol	550 U	2,6-dinitrotoluene	550 U
benzoic acid	2,700 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 40

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 4-1  
Lab Sample ID: LL0367

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	2,700 U	anthracene	550 U
acenaphthene	550 U	di-n-butylphthalate	550 U
2,4-dinitrophenol	2,700 U	fluoranthene	550 U
4-nitrophenol	2,700 U	pyrene	550 U
dibenzofuran	550 U	butylbenzylphthalate	550 U
2,4-dinitrotoluene	550 U	3,3'-dichlorobenzidine	1,100 U
diethylphthalate	92 J	benzo(a)anthracene	550 U
4-chlorophenyl-phenylether	550 U	chrysene	550 U
fluorene	550 U	bis(2-ethylhexyl)phthalate	410 BJ
4-nitroaniline	2,700 U	di-n-octylphthalate	550 U
4,6-dinitro-2-methylphenol	2,700 U	benzo(b)fluoranthene	550 U
n-nitrosodiphenylamine <sup>1</sup>	550 U	benzo(k)fluoranthene	550 U
4-bromophenyl-phenylether	550 U	benzo(a)pyrene	550 U
hexachlorobenzene	550 U	indeno(1,2,3-cd)pyrene	550 U
pentachlorophenol	2,700 U	dibenzo(a,h)anthracene	550 U
phenanthrene	550 U	benzo(g,h,i)perylene	550 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 40

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 4-1  
Lab Sample ID: LL0367

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl- sulfur, mol (S8)	58,000 AB 7,600
hexanedioic acid, dioctyl ester	2,300 B
unknown (hydroxypentanone?)	2,500 A
3-hexen-2-one, 5-methyl- unknown	1,400 A 620
unknown	370
unknown sat'd hydrocarbon	560 B
-pyran-2,3-diol, tetrahydro unknown	480 390 B
unknown sat'd hydrocarbon	330 B
unknown sat'd hydrocarbon	310 B
unknown	260 B
unknown sat'd hydrocarbon	240 B
unknown	230

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  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-2  
Lab Sample ID: LL0368

<u>Compound</u>		<u>Compound</u>	
phenol	420 U	bis(2-chloroethoxy)methane	420 U
bis(2-chloroethyl)ether	420 U	2,4-dichlorophenol	420 U
2-chlorophenol	420 U	1,2,4-trichlorobenzene	420 U
1,3-dichlorobenzene	420 U	naphthalene	420 U
1,4-dichlorobenzene	420 U	4-chloroaniline	420 U
benzyl alcohol	420 U	hexachlorobutadiene	420 U
1,2-dichlorobenzene	420 U	4-chloro-3-methylphenol	420 U
2-methylphenol	420 U	2-methylnaphthalene	420 U
bis(2-chloroisopropyl)ether	420 U	hexachlorocyclopentadiene	420 U
4-methylphenol	420 U	2,4,6-trichlorophenol	420 U
n-nitroso-di-n-propylamine	420 U	2,4,5-trichlorophenol	2,000 U
hexachloroethane	420 U	2-chloronaphthalene	420 U
nitrobenzene	420 U	2-nitroaniline	2,000 U
isophorone	420 U	dimethyl phthalate	420 U
2-nitrophenol	420 U	acenaphthylene	420 U
2,4-dimethylphenol	420 U	2,6-dinitrotoluene	420 U
benzoic acid	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.

Date Extracted: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 21

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

SEMIVOLATILE TARGET COMPOUND LIST (continued)

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

Sample Matrix: Soil

Client Sample ID: Site 4-2  
Lab Sample ID: LL0368

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	2,000 U	anthracene	420 U
acenaphthene	420 U	di-n-butylphthalate	420 U
2,4-dinitrophenol	2,000 U	fluoranthene	420 U
4-nitrophenol	2,000 U	pyrene	420 U
dibenzofuran	420 U	butylbenzylphthalate	420 U
2,4-dinitrotoluene	420 U	3,3'-dichlorobenzidine	830 U
diethylphthalate	420 U	benzo(a)anthracene	420 U
1-chlorophenyl-phenylether	420 U	chrysene	420 U
orene	420 U	bis(2-ethylhexyl)phthalate	370 BJ
4-nitroaniline	2,000 U	di-n-octylphthalate	420 U
4,6-dinitro-2-methylphenol	2,000 U	benzo(b)fluoranthene	420 U
n-nitrosodiphenylamine <sup>1</sup>	420 U	benzo(k)fluoranthene	420 U
4-bromophenyl-phenylether	420 U	benzo(a)pyrene	420 U
hexachlorobenzene	420 U	indeno(1,2,3-cd)pyrene	420 U
pentachlorophenol	2,000 U	dibenzo(a,h)anthracene	420 U
phenanthrene	420 U	benzo(g,h,i)perylene	420 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 21

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 4-2  
Lab Sample ID: LL0368

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl-	64,000 AB
hexanedioic acid, dioctyl ester	5,300 B
3-hexen-2-one, 5-methyl-	3,300 A
2H-pyran-2,3-diol, tetrahydro	2,400
unknown (hydroxypentanone?)	1,300
unknown	780
3-penten-2-one, 4-methyl-	560 A
unknown	370
unknown	470 B
unknown sat'd hydrocarbon	460 B
1,2-ethanediol, monoacetate	310
unknown	310 B
unknown sat'd hydrocarbon	280 B
unknown sat'd hydrocarbon	270 B
unknown	230
unknown sat'd hydrocarbon	170 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.

- 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 45898

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 4-Boring MW4  
Lab Sample ID: LL0369

<u>Compound</u>		<u>Compound</u>	
phenol	990 U	bis(2-chloroethoxy)methane	990 U
bis(2-chloroethyl)ether	990 U	2,4-dichlorophenol	990 U
2-chlorophenol	990 U	1,2,4-trichlorobenzene	990 U
1,3-dichlorobenzene	990 U	naphthalene	990 U
1,4-dichlorobenzene	990 U	4-chloroaniline	990 U
benzyl alcohol	990 U	hexachlorobutadiene	990 U
1,2-dichlorobenzene	990 U	4-chloro-3-methylphenol	990 U
2-methylphenol	990 U	2-methylnaphthalene	990 U
bis(2-chloroisopropyl)ether	990 U	hexachlorocyclopentadiene	990 U
4-methylphenol	990 U	2,4,6-trichlorophenol	990 U
n-nitroso-di-n-propylamine	990 U	2,4,5-trichlorophenol	4,800 U
hexachloroethane	990 U	2-chloronaphthalene	990 U
nitrobenzene	990 U	2-nitroaniline	4,800 U
isophorone	990 U	dimethyl phthalate	990 U
2-nitrophenol	990 U	acenaphthylene	990 U
2,4-dimethylphenol	990 U	2,6-dinitrotoluene	990 U
benzoic acid	4,800 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 2  
% Moisture: 33

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 4-Boring MW4  
Lab Sample ID: LL0369

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	4,800 U	anthracene	990 U
acenaphthene	990 U	di-n-butylphthalate	990 U
2,4-dinitrophenol	4,800 U	fluoranthene	990 U
4-nitrophenol	4,800 U	pyrene	990 U
dibenzofuran	990 U	butylbenzylphthalate	990 U
2,4-dinitrotoluene	990 U	3,3'-dichlorobenzidine	2,000 U
diethylphthalate	990 U	benzo(a)anthracene	990 U
4-chlorophenyl-phenylether	990 U	chrysene	990 U
fluorene	990 U	bis(2-ethylhexyl)phthalate	790 BJ
4-nitroaniline	4,800 U	di-n-octylphthalate	990 U
4,6-dinitro-2-methylphenol	4,800 U	benzo(b)fluoranthene	990 U
n-nitrosodiphenylamine <sup>1</sup>	990 U	benzo(k)fluoranthene	990 U
4-bromophenyl-phenylether	990 U	benzo(a)pyrene	990 U
hexachlorobenzene	990 U	indeno(1,2,3-cd)pyrene	990 U
pentachlorophenol	4,800 U	dibenzo(a,h)anthracene	990 U
phenanthrene	990 U	benzo(g,h,i)perylene	990 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 2  
% Moisture: 33

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 4-Boring MW4  
Lab Sample ID: LL0369

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl	66,000 AB
hexanedioic acid, dioctyl ester	2,800 B
1,2-ethanediol, monoacetate	3,600
2,4-pentanedione	3,300 A
2H-pyran-2,3-diol, tetrahydro	2,700
unknown (hydroxypentanone?)	2,500 A
3-hexen-2-one, 5-methyl-	2,000 A
unknown	830
ent-2-one, 4-methyl-	1,100 A
unknown	510
unknown sat'd hydrocarbon	460 B
ethanone, 1-oxiranyl-	1,300 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  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

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%)*
Site 4-1	56	58	63	55	53	42
Site 4-2	67	70	75	49	23**	11**
Site 4-Boring MW4	68	78	80	72	75	67
Method Blank	72	79	76	73	70	71

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

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

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

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: BLA1176

<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
-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: 06/13/90  
Date Analyzed: 06/20/90  
Dilution Factor: 1

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-1  
Lab Sample ID: LL0367

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	8.1 U	endosulfan sulfate	16 U
$\beta$ -BHC	8.1 U	4,4'-DDT	16 U
$\delta$ -BHC	8.1 U	methoxychlor	81 U
$\gamma$ -BHC (lindane)	8.1 U	endrin ketone	16 U
heptachlor	8.1 U	$\alpha$ -chlordane	81 U
aldrin	8.1 U	$\gamma$ -chlordane	81 U
heptachlor epoxide	8.1 U	toxaphene	160 U
endosulfan I	8.1 U	Aroclor 1016	81 U
dieldrin	16 U	Aroclor 1221	81 U
4,4'-DDE	16 U	Aroclor 1232	81 U
endrin	16 U	Aroclor 1242	81 U
endosulfan II	16 U	Aroclor 1248	81 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: 06/13/90  
Date Analyzed: 06/20/90  
Dilution Factor: 1  
% Moisture: 1

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-2  
Lab Sample ID: LL0368

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	8.1 U	endosulfan sulfate	16 U
$\beta$ -BHC	8.1 U	4,4'-DDT	16 U
$\delta$ -BHC	8.1 U	methoxychlor	81 U
$\gamma$ -BHC (lindane)	8.1 U	endrin ketone	16 U
heptachlor	8.1 U	$\alpha$ -chlordane	81 U
aldrin	8.1 U	$\gamma$ -chlordane	81 U
heptachlor epoxide	8.1 U	toxaphene	160 U
endosulfan I	8.1 U	Aroclor 1016	81 U
dieldrin	16 U	Aroclor 1221	81 U
4,4'-DDE	16 U	Aroclor 1232	81 U
endrin	16 U	Aroclor 1242	81 U
endosulfan II	16 U	Aroclor 1248	81 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: 06/13/90  
Date Analyzed: 06/20/90  
Dilution Factor: 1  
% Moisture: 1

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 4-Boring MW4  
Lab Sample ID: LL0369

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	8.1 U	endosulfan sulfate	16 U
$\beta$ -BHC	8.1 U	4,4'-DDT	16 U
$\delta$ -BHC	8.1 U	methoxychlor	81 U
$\gamma$ -BHC (lindane)	8.1 U	endrin ketone	16 U
heptachlor	8.1 U	$\alpha$ -chlordane	81 U
aldrin	8.1 U	$\gamma$ -chlordane	81 U
heptachlor epoxide	8.1 U	toxaphene	160 U
endosulfan I	8.1 U	Aroclor 1016	81 U
dieldrin	16 U	Aroclor 1221	81 U
4,4'-DDE	16 U	Aroclor 1232	81 U
endrin	16 U	Aroclor 1242	81 U
endosulfan II	16 U	Aroclor 1248	81 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: 06/13/90  
Date Analyzed: 06/20/90  
Dilution Factor: 1  
% Moisture: 1

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

ent Project ID: NAS-Key West

Job Number: ITCY 45898

SOIL SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>PESTICIDE</u>
	<u>Dibutylchloroendate (20-150%)*</u>
Method Blank	103
Site 4-Boring MW4	102
Site 4-1	89
Site 4-2	105

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

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank <u>PBSC2376/C2368/C4298</u>	Site 4-1 <u>LL0370</u>
aluminum	4.0 U	57.7
antimony	3.0 U	4.2 U
arsenic	0.2 U	0.28 U
barium	0.2 U	5.0 B
beryllium	0.1 U	0.14 U
cadmium	0.5 U	0.70 U
calcium	3.0 U	338,000
chromium	1.0 U	3.7
cobalt	2.0 U	2.8 U
copper	1.0 U	5.8
iron	1.0 U	140 E
lead	0.2 U	1.2
magnesium	3.0 U	1,030 E
manganese	0.2 U	2.0 B
mercury	0.02 U	0.03 U
nickel	2.0 U	2.8 U
potassium	100.0 U	140 U
selenium	0.2 U	0.28 UW
silver	0.5 U	7.0 U
sodium	20 U	3,580
thallium	0.2 U	0.28 UW
vanadium	1.0 U	2.5 B
zinc	0.5 U	10.4
% Solids:	-	71.4

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.

E - The reported value is estimated because of the presence of interference.

Date Digested: 06/18/90  
Date Analyzed: 06/19/90 (ICP)  
06/25 - 06/30/90 (GFAA)  
06/20/90 (CVAA)

Project ID: NAS-Key West

Job Number: ITCY 45898

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Site 4-2 LL0371	Site 4-Boring MW4 LL0372
aluminum	103	1,200
antimony	3.7 U	4.3 U
arsenic	0.50 B	0.65 B
barium	10.6 B	9.9 B
beryllium	0.12 U	0.14 U
cadmium	0.62 U	0.72 U
calcium	374,000	456,000
chromium	3.1	5.3
cobalt	2.5 U	2.9 U
copper	4.3	4.9
iron	298 E	789 E
lead	0.93 B	5.2
magnesium	1,590 E	5,120 E
manganese	8.5	16.6
mercury	0.02 U	0.03 U
nickel	2.5 U	2.9 U
potassium	125 U	144 U
selenium	0.25 UW	0.29 U
silver	6.2 U	7.2 U
sodium	2,240	3,330
thallium	0.25 UW	0.29 UW
vanadium	1.2 U	3.1 B
zinc	11.7	19.1
% Solids:	80.2	69.4

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.

E - The reported value is estimated because of the presence of interference.

Date Digested: 06/18/90  
Date Analyzed: 06/19/90 (ICP)  
06/25 - 06/30/90 (GFAA)  
06/20/90 (CVAA)

Date  
Date

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

CYANIDE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Result</u>
P1233	Method Blank	0.5 U
LL0370	Site 4-1	0.5 U
LL0371	Site 4-2	0.5 U
LL0372	Site 4-Boring MW4	0.5 U

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

Date Analyzed: 06/12/90

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank 1 <u>PBRC2382</u>	Method Blank 2 <u>PBRC2383</u>	Site 4-1 <u>LL0370</u>	Site 4-2 <u>LL0371</u>
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.002 U	0.002 U	0.031	0.043
cadmium	0.005 U	0.005 U	0.005 U	0.005 U
chromium	0.01 U	0.01 U	0.01 U	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	NR	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.005 U	0.005 U	0.010 U	0.010 U

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

NR - Not required

Date Extracted: 06/19 and 06/20/90  
Date Digested: 06/19 and 06/20/90  
Date Analyzed: 06/29/90 (ICP)  
06/20/90 (CVAA)

IT Corporation  
August 13, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45898

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID:	Site 4-Boring MW4
Lab Sample ID:	<u>LL0372</u>
arsenic	0.03 U
barium	0.024
cadmium	0.005 U
chromium	0.01 U
lead	0.03 U
mercury	0.001 U
selenium	0.06 U
silver	0.010 U

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

Date Extracted: 06/19 and 06/20/90  
Date Digested: 06/19 and 06/20/90  
Date Analyzed: 06/29/90 (ICP)  
06/20/90 (CVAA)

**APPENDIX B**

Page 6 of 15  
Kim Laisy  
Key West  
Date: August 15, 1990  
Client Project ID: ITCY46179

IT ANALYTICAL SERVICES  
304 DIRECTORS DRIVE  
KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

Dioxin/Furan Analysis - Method 8280

Client Sample ID: 04-01-SED (Soil)  
Sample Date: July 17, 1990  
IT Sample ID: BB2712  
Extraction Date: July 23, 1990

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Analyte	Conc. (ng/g)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 26, 1990

2,3,7,8-TCDD	ND(0.14)	<sup>13</sup> C-2,3,7,8-TCDD	61
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Totals Analysis Date: August 10, 1990

**Dioxins**

Total TCDD	ND(0.45)	<sup>13</sup> C-2,3,7,8-TCDD	80
Total PeCDD	ND(0.81)	<sup>13</sup> C-1,2,3,7,8-PeCDD	69
Total HxCDD	ND(0.46)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	73

**Furans**

Total TCDF	ND(0.96)	<sup>13</sup> C-2,3,7,8-TCDF	79
Total PeCDF	ND(0.22)	<sup>13</sup> C-1,2,3,7,8-PeCDF	78
Total HxCDF	ND(0.24)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	85

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Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46179

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

**Dioxin/Furan Analysis - Method 8280**

Client Sample ID: Method Blank  
 Sample Date: NA  
 IT Sample ID: BLK1784  
 Extraction Date: July 23, 1990

Analyte	Conc. (ng/g)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 25, 1990

2,3,7,8-TCDD	ND(0.077)	<sup>13</sup> C-2,3,7,8-TCDD	95
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Totals Analysis Date: August 9, 1990

**Dioxins**

Total TCDD	ND(0.055)	<sup>13</sup> C-2,3,7,8-TCDD	91
Total PeCDD	ND(0.17)	<sup>13</sup> C-1,2,3,7,8-PeCDD	99
Total HxCDD	ND(0.15)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	95

**Furans**

Total TCDF	ND(0.053)	<sup>13</sup> C-2,3,7,8-TCDF	94
Total PeCDF	ND(0.051)	<sup>13</sup> C-1,2,3,7,8-PeCDF	102
Total HxCDF	ND(0.10)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	96

Kim Laisy

Key West

Date: August 15, 1990

Client Project ID: ITCY46179

304 DIRECTORS DRIVE

KNOXVILLE, TENNESSEE

TDL Project No.: ITCY482649

## Dioxin/Furan Analysis - Method 8280

Client Sample ID: 04-01-SW (Water)

Sample Date: July 17, 1990

IT Sample ID: BB2713

Extraction Date: July 23, 1990

Analyte	Conc. (ng/L)	Internal Standard	% Recovery
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Isomer Specific Analysis Date: July 24, 1990

2,3,7,8-TCDD	ND(1.4)	<sup>13</sup> C-2,3,7,8-TCDD	85
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Totals Analysis Date: July 25, 1990

**Dioxins**

Total TCDD	ND(0.41)	<sup>13</sup> C-2,3,7,8-TCDD	78
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Total PeCDD	ND(1.8)	<sup>13</sup> C-1,2,3,7,8-PeCDD	109
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Total HxCDD	ND(1.0)	<sup>13</sup> C-1,2,3,6,7,8-HxCDD	80
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**Furans**

Total TCDF	ND(0.088)	<sup>13</sup> C-2,3,7,8-TCDF	64
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Total PeCDF	ND(0.43)	<sup>13</sup> C-1,2,3,7,8-PeCDF	103
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Total HxCDF	ND(0.94)	<sup>13</sup> C-1,2,3,4,7,8-HxCDF	83
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Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46179 Key West

IT ANALYTICAL SERVICES  
SAN JOSE, CA

Work Order: T0-07-179

TEST NAME: EPA 8140

SAMPLE ID: LL3482/83/84 04-01-SED  
SAMPLE DATE: 07/17/90  
LAB SAMPLE ID: T007179-01  
SAMPLE MATRIX: solid  
RECEIPT CONDITION: cool  
EXTRACTION DATE: 07/20/90  
ANALYSIS DATE: 07/27/90

RESULTS in Milligrams per Kilogram

PARAMETER	DETECTION LIMIT	DETECTED
Dimethoate	0.06	None
Disulfoton	0.06	None
Famphur	0.11	None
Parathion ethyl	0.06	None
Parathion methyl	0.06	None
Phorate	0.06	None
Sulfotepp	0.06	None
Thionazin	0.06	None
O,O,O-Triethylphosphorothioate	0.03	None

Company: IT Analytical Services  
Date: 08/10/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-179

TEST NAME: EPA 8150 in Soil

SAMPLE ID: LL3482/83/84 04-01-SED  
SAMPLE DATE: 07/17/90  
LAB SAMPLE ID: T007179-01  
SAMPLE MATRIX: solid  
RECEIPT CONDITION: cool  
EXTRACTION DATE: 07/20/90  
ANALYSIS DATE: 07/26/90

RESULTS in Micrograms per Kilogram

PARAMETER	DETECTION LIMIT	DETECTED
2,4-D	0.09	None
Dinoseb	0.02	None
2,4,5-T	0.02	None
2,4,5-TP	0.02	None

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-179

TEST NAME: EPA 8140

SAMPLE ID: LL3519 04-01-SW  
SAMPLE DATE: 07/17/90  
LAB SAMPLE ID: T007179-02  
SAMPLE MATRIX: aqueous  
RECEIPT CONDITION: cool  
EXTRACTION DATE: 07/20/90  
ANALYSIS DATE: 07/27/90

## RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Dimethoate	1.0	None
Disulfoton	1.0	None
Famphur	2.0	None
Parathion ethyl	1.0	None
Parathion methyl	1.0	None
Phorate	1.0	None
Sulfotepp	1.0	None
Thionazin	1.0	None
O,O,O-Triethylphosphorothioate	0.50	None

Company: IT Analytical Services  
Date: 08/09/90  
Client Work ID: ITCY 46179 Key West

Work Order: T0-07-179

TEST NAME: EPA 8150 in Soil

SAMPLE ID: LL3519 04-01-SW  
SAMPLE DATE: 07/17/90  
LAB SAMPLE ID: T007179-02  
SAMPLE MATRIX: aqueous  
RECEIPT CONDITION: cool  
EXTRACTION DATE: 07/20/90  
ANALYSIS DATE: 07/26/90

## RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
2,4-D	0.16	None
Dinoseb	0.04	None
2,4,5-T	0.04	None
2,4,5-TP	0.04	None

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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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 1  
Lab Sample ID: VB0613

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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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 2  
Lab Sample ID: LL0494

<u>Compound</u>		<u>Compound</u>	
chloromethane	1,500 U	1,2-dichloropropane	740 U
bromomethane	1,500 U	cis-1,3-dichloropropene	740 U
vinyl chloride	1,500 U	trichloroethene	740 U
chloroethane	1,500 U	dibromochloromethane	740 U
methylene chloride	250 J	1,1,2-trichloroethane	740 U
acetone	1,500 U	benzene	740 U
carbon disulfide	740 U	trans-1,3-dichloropropene	740 U
1,1-dichloroethene	740 U	bromoform	740 U
1,1-dichloroethane	740 U	4-methyl-2-pentanone	1,500 U
1,2-dichloroethene (total)	740 U	2-hexanone	1,500 U
chloroform	740 U	tetrachloroethene	740 U
1,2-dichloroethane	740 U	1,1,2,2-tetrachloroethane	740 U
2-butanone	1,500 U	toluene	330 J
1,1,1-trichloroethane	740 U	chlorobenzene	1,600
carbon tetrachloride	740 U	ethylbenzene	1,500
vinyl acetate	1,500 U	styrene	740 U
bromodichloromethane	740 U	total xylenes	8,200

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: 06/13/90  
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 45911

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 2  
Lab Sample ID: LL0494

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
cyclohexane,ethyl-	940
octane,4-methyl-	2,600
unknown	1,200
cyclohexane,propyl-	1,900
cyclopentane,1-butyl-2-propyl-	2,900
benzene,propyl-	1,100

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 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank 2  
Lab Sample ID: VB0614

<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: 06/14/90  
Dilution Factor: 1

This method blank applies to the following samples: MW3A, Site 4; MW4A, Site 4; MW5A, Site 4; Plot 2, NAS Site 3; Site 5, Plot 3; Site 5, Plot 4; Plot 4, NAS Site 3; Site 5, Plot 5; Site 5, Plot 6.

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August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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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 2  
Lab Sample ID: VB0614

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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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 3  
Lab Sample ID: LL0495

<u>Compound</u>		<u>Compound</u>	
chloromethane	13 U	1,2-dichloropropane	7 U
bromomethane	13 U	cis-1,3-dichloropropene	7 U
vinyl chloride	13 U	trichloroethene	7 U
chloroethane	13 U	dibromochloromethane	7 U
methylene chloride	5 J	1,1,2-trichloroethane	7 U
acetone	8 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	13 U
1,2-dichloroethene (total)	3 J	2-hexanone	13 U
chloroform	7 U	tetrachloroethene	7 U
1,2-dichloroethane	7 U	1,1,2,2-tetrachloroethane	7 U
2-butanone	13 U	toluene	14
1,1,1-trichloroethane	7 U	chlorobenzene	7 U
carbon tetrachloride	7 U	ethylbenzene	7 U
vinyl acetate	13 U	styrene	7 U
bromodichloromethane	7 U	total xylenes	7

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: 06/14/90  
Dilution Factor: 1  
% Moisture: 24

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IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 3  
Lab Sample ID: LL0495

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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5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 4  
Lab Sample ID: LL0496

<u>Compound</u>		<u>Compound</u>	
chloromethane	13 U	1,2-dichloropropane	7 U
bromomethane	13 U	cis-1,3-dichloropropene	7 U
vinyl chloride	13 U	trichloroethene	7 U
chloroethane	13 U	dibromochloromethane	7 U
methylene chloride	3 J	1,1,2-trichloroethane	7 U
acetone	13 U	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	13 U
1,2-dichloroethene (total)	7 U	2-hexanone	13 U
chloroform	7 U	tetrachloroethene	7 U
1,2-dichloroethane	7 U	1,1,2,2-tetrachloroethane	7 U
2-butanone	13 U	toluene	5 J
1,1,1-trichloroethane	7 U	chlorobenzene	7 U
carbon tetrachloride	7 U	ethylbenzene	7 U
vinyl acetate	13 U	styrene	7 U
bromodichloromethane	7 U	total xylenes	7 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: 06/14/90  
Dilution Factor: 1  
% Moisture: 24

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August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 4  
Lab Sample ID: LL0496

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 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 5  
Lab Sample ID: LL0497

<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	7	1,1,2-trichloroethane	7 U
acetone	5 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	15
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	7 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: 06/14/90  
Dilution Factor: 1  
% Moisture: 27

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KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 5  
Lab Sample ID: LL0497

Tentative Identification (1)

carene

Concentration (2)

9.3 Y

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 isomer in tentatively identified compounds.

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 6  
Lab Sample ID: LL0498

<u>Compound</u>		<u>Compound</u>	
chloromethane	13 U	1,2-dichloropropane	7 U
bromomethane	13 U	cis-1,3-dichloropropene	7 U
vinyl chloride	13 U	trichloroethene	7 U
chloroethane	13 U	dibromochloromethane	7 U
methylene chloride	7 U	1,1,2-trichloroethane	7 U
acetone	5 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	13 U
1,2-dichloroethene (total)	7 U	2-hexanone	13 U
chloroform	7 U	tetrachloroethene	7 U
1,2-dichloroethane	7 U	1,1,2,2-tetrachloroethane	7 U
2-butanone	13 U	toluene	2 J
1,1,1-trichloroethane	7 U	chlorobenzene	7 U
carbon tetrachloride	7 U	ethylbenzene	7 U
vinyl acetate	13 U	styrene	7 U
bromodichloromethane	7 U	total xylenes	7 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: 06/14/90  
Dilution Factor: 1  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 6  
Lab Sample ID: LL0498

Tentative Identification (1)

Concentration (2)

3-carene

18

- 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  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: MW3A, Site 4  
Lab Sample ID: LL0499

<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	39	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	6 U
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: 06/14/90  
Dilution Factor: 1  
% Moisture: 19

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August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: MW3A, Site 4  
Lab Sample ID: LL0499

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  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: MW4A, Site 4  
Lab Sample ID: LL0500

<u>Compound</u>		<u>Compound</u>	
chloromethane	13 U	1,2-dichloropropane	6 U
bromomethane	13 U	cis-1,3-dichloropropene	6 U
vinyl chloride	13 U	trichloroethene	6 U
chloroethane	13 U	dibromochloromethane	6 U
methylene chloride	5 J	1,1,2-trichloroethane	6 U
acetone	89	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	13 U
1,2-dichloroethene (total)	6 U	2-hexanone	13 U
chloroform	6 U	tetrachloroethene	6 U
1,2-dichloroethane	6 U	1,1,2,2-tetrachloroethane	6 U
2-butanone	13 U	toluene	6 U
1,1,1-trichloroethane	6 U	chlorobenzene	6 U
carbon tetrachloride	6 U	ethylbenzene	6 U
vinyl acetate	13 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: 06/14/90  
Dilution Factor: 1  
% Moisture: 23

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL VOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: MW4A, Site 4  
Lab Sample ID: LL0500

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  
 August 15, 1990

Client Project ID: NAS-Key West

Job Number: ITCY 45911

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: MW5A, Site 4  
 Lab Sample ID: LL0501

<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	190	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	6 U
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: 06/14/90  
 Dilution Factor: 1  
 % Moisture: 20

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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: BLA1176

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl hexanedioic acid, dioctyl ester	42,000 A 1,500
5-hexen-2-one, 5-methyl- unknown	1,100 A 390
unknown sat'd hydrocarbon unknown	380 340
unknown sat'd hydrocarbon unknown sat'd hydrocarbon unknown sat'd hydrocarbon	250 240 190
2,5-hexanedione	180 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.

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 2

Lab Sample ID: LL0522

<u>Compound</u>		<u>Compound</u>	
phenol	3,900 U	bis(2-chloroethoxy)methane	3,900 U
bis(2-chloroethyl)ether	3,900 U	2,4-dichlorophenol	3,900 U
2-chlorophenol	3,900 U	1,2,4-trichlorobenzene	2,400 J
1,3-dichlorobenzene	3,900 U	naphthalene	2,900 J
1,4-dichlorobenzene	3,900 U	4-chloroaniline	3,900 U
benzyl alcohol	3,900 U	hexachlorobutadiene	3,900 U
1,2-dichlorobenzene	3,900 U	4-chloro-3-methylphenol	3,900 U
2-methylphenol	3,900 U	2-methylnaphthalene	12,000
bis(2-chloroisopropyl)ether	3,900 U	hexachlorocyclopentadiene	3,900 U
4-methylphenol	3,900 U	2,4,6-trichlorophenol	3,900 U
n-nitroso-di-n-propylamine	3,900 U	2,4,5-trichlorophenol	19,000 U
hexachloroethane	3,900 U	2-chloronaphthalene	3,900 U
nitrobenzene	3,900 U	2-nitroaniline	19,000 U
isophorone	3,900 U	dimethyl phthalate	3,900 U
2-nitrophenol	3,900 U	acenaphthylene	3,900 U
2,4-dimethylphenol	3,900 U	2,6-dinitrotoluene	3,900 U
benzoic acid	19,000 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 10  
% Moisture: 16

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 2  
Lab Sample ID: LL0522

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	19,000 U	anthracene	3,900 U
acenaphthene	3,900 U	di-n-butylphthalate	3,900 U
2,4-dinitrophenol	19,000 U	fluoranthene	3,900 U
4-nitrophenol	19,000 U	pyrene	3,900 U
dibenzofuran	3,900 U	butylbenzylphthalate	3,900 U
2,4-dinitrotoluene	3,900 U	3,3'-dichlorobenzidine	7,900 U
diethylphthalate	3,900 U	benzo(a)anthracene	3,900 U
4-chlorophenyl-phenylether	3,900 U	chrysene	3,900 U
orene	3,900 U	bis(2-ethylhexyl)phthalate	3,900 U
nitroaniline	19,000 U	di-n-octylphthalate	3,900 U
4,6-dinitro-2-methylphenol	19,000 U	benzo(b)fluoranthene	3,900 U
n-nitrosodiphenylamine <sup>1</sup>	3,900 U	benzo(k)fluoranthene	3,900 U
4-bromophenyl-phenylether	3,900 U	benzo(a)pyrene	3,900 U
hexachlorobenzene	3,900 U	indeno(1,2,3-cd)pyrene	3,900 U
pentachlorophenol	19,000 U	dibenzo(a,h)anthracene	3,900 U
phenanthrene	3,900 U	benzo(g,h,i)perylene	3,900 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 10  
% Moisture: 16

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 2  
Lab Sample ID: LL0522

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
unknown sat'd hydrocarbon	80,000
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	780,000
hexadecane	55,000
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	630,000
unknown sat'd hydrocarbon	47,000
unknown sat'd hydrocarbon	40,000
unknown sat'd hydrocarbon	35,000
cyclohexane, alkyl-	30,000
cyclohexane, alkyl-	25,000
unknown sat'd hydrocarbon	25,000
unknown (cyclic?)	25,000
unknown (cyclic?)	25,000
unknown sat'd hydrocarbon	24,000
unknown (unsaturated?)	22,000
unknown sat'd hydrocarbon	21,000
unknown (unsaturated?)	20,000
naphthalene, trimethyl	20,000 Y
unknown sat'd hydrocarbon	20,000
naphthalene, trimethyl	19,000 Y
naphthalene, dimethyl-	19,000 Y

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 isomer in tentatively identified compounds.

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 3

Lab Sample ID: LL0523

<u>Compound</u>		<u>Compound</u>	
phenol	4,300 U	bis(2-chloroethoxy)methane	4,300 U
bis(2-chloroethyl)ether	4,300 U	2,4-dichlorophenol	4,300 U
2-chlorophenol	4,300 U	1,2,4-trichlorobenzene	1,300 J
1,3-dichlorobenzene	4,300 U	naphthalene	4,000 J
1,4-dichlorobenzene	4,300 U	4-chloroaniline	4,300 U
benzyl alcohol	4,300 U	hexachlorobutadiene	4,300 U
1,2-dichlorobenzene	4,300 U	4-chloro-3-methylphenol	4,300 U
2-methylphenol	4,300 U	2-methylnaphthalene	16,000
1-(2-chloroisopropyl)ether	4,300 U	hexachlorocyclopentadiene	4,300 U
4-methylphenol	4,300 U	2,4,6-trichlorophenol	4,300 U
n-nitroso-di-n-propylamine	4,300 U	2,4,5-trichlorophenol	21,000 U
hexachloroethane	4,300 U	2-chloronaphthalene	4,300 U
nitrobenzene	4,300 U	2-nitroaniline	21,000 U
isophorone	4,300 U	dimethyl phthalate	4,300 U
2-nitrophenol	4,300 U	acenaphthylene	4,300 U
2,4-dimethylphenol	4,300 U	2,6-dinitrotoluene	4,300 U
benzoic acid	21,000 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 10  
% Moisture: 24

IT Corporation  
 August 15, 1990

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 3  
 Lab Sample ID: LL0523

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	21,000 U	anthracene	4,300 U
acenaphthene	4,300 U	di-n-butylphthalate	4,300 U
2,4-dinitrophenol	21,000 U	fluoranthene	4,300 U
4-nitrophenol	21,000 U	pyrene	4,300 U
dibenzofuran	4,300 U	butylbenzylphthalate	4,300 U
2,4-dinitrotoluene	4,300 U	3,3'-dichlorobenzidine	8,700 U
diethylphthalate	4,300 U	benzo(a)anthracene	4,300 U
4-chlorophenyl-phenylether	4,300 U	chrysene	4,300 U
fluorene	4,300 U	bis(2-ethylhexyl)phthalate	4,300 U
4-nitroaniline	21,000 U	di-n-octylphthalate	4,300 U
4,6-dinitro-2-methylphenol	21,000 U	benzo(b)fluoranthene	4,300 U
n-nitrosodiphenylamine <sup>1</sup>	4,300 U	benzo(k)fluoranthene	4,300 U
4-bromophenyl-phenylether	4,300 U	benzo(a)pyrene	4,300 U
hexachlorobenzene	4,300 U	indeno(1,2,3-cd)pyrene	4,300 U
pentachlorophenol	21,000 U	dibenzo(a,h)anthracene	4,300 U
phenanthrene	4,300 U	benzo(g,h,i)perylene	4,300 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: 06/13/90  
 Date Analyzed: 07/03/90  
 Dilution Factor: 10  
 % Moisture: 24

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 3  
Lab Sample ID: LL0523

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	1,300,000
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	1,000,000
unknown sat'd hydrocarbon	62,000
hexadecane	59,000
1H-indene, octahydro-2,2,4,4,7,7-hexamethyl-, trans-	48,000
unknown sat'd hydrocarbon	48,000
unknown sat'd hydrocarbon	40,000
unknown sat'd hydrocarbon	37,000
unknown sat'd hydrocarbon	35,000
cyclohexane, alkyl-	27,000
unknown sat'd hydrocarbon	22,000
unknown (cyclohexane deriv?)	21,000
unknown sat'd hydrocarbon	21,000
unknown (cyclohexane deriv?)	20,000
1H-indene, octahydro-2,2,4,4,7,7-hexamethyl-, trans-	19,000
naphthalene, dimethyl-	19,000 Y
unknown aromatic	19,000
unknown sat'd hydrocarbon	33,000
technical chlorophenothane	140,000
2-pentanone, 4-hydroxy-4-methyl-	66,000 AB

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

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 4  
Lab Sample ID: LL0524

<u>Compound</u>		<u>Compound</u>	
phenol	430 U	bis(2-chloroethoxy)methane	430 U
bis(2-chloroethyl)ether	430 U	2,4-dichlorophenol	430 U
2-chlorophenol	430 U	1,2,4-trichlorobenzene	430 U
1,3-dichlorobenzene	430 U	naphthalene	430 U
1,4-dichlorobenzene	430 U	4-chloroaniline	430 U
benzyl alcohol	430 U	hexachlorobutadiene	430 U
1,2-dichlorobenzene	430 U	4-chloro-3-methylphenol	430 U
2-methylphenol	430 U	2-methylnaphthalene	430 U
bis(2-chloroisopropyl)ether	430 U	hexachlorocyclopentadiene	430 U
4-methylphenol	430 U	2,4,6-trichlorophenol	430 U
n-nitroso-di-n-propylamine	430 U	2,4,5-trichlorophenol	2,100 U
hexachloroethane	430 U	2-chloronaphthalene	430 U
nitrobenzene	430 U	2-nitroaniline	2,100 U
isophorone	430 U	dimethyl phthalate	430 U
2-nitrophenol	430 U	acenaphthylene	430 U
2,4-dimethylphenol	430 U	2,6-dinitrotoluene	430 U
benzoic acid	2,100 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.

Date Extracted: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 4  
Lab Sample ID: LL0524

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	2,100 U	anthracene	430 U
acenaphthene	430 U	di-n-butylphthalate	90 J
2,4-dinitrophenol	2,100 U	fluoranthene	430 U
4-nitrophenol	2,100 U	pyrene	430 U
dibenzofuran	430 U	butylbenzylphthalate	430 U
2,4-dinitrotoluene	430 U	3,3'-dichlorobenzidine	870 U
diethylphthalate	210 J	benzo(a)anthracene	430 U
4-chlorophenyl-phenylether	430 U	chrysene	430 U
luorene	430 U	bis(2-ethylhexyl)phthalate	1,100 B
4-nitroaniline	2,100 U	di-n-octylphthalate	430 U
4,6-dinitro-2-methylphenol	2,100 U	benzo(b)fluoranthene	430 U
n-nitrosodiphenylamine <sup>1</sup>	430 U	benzo(k)fluoranthene	430 U
4-bromophenyl-phenylether	430 U	benzo(a)pyrene	430 U
hexachlorobenzene	430 U	indeno(1,2,3-cd)pyrene	430 U
pentachlorophenol	2,100 U	dibenzo(a,h)anthracene	430 U
phenanthrene	430 U	benzo(g,h,i)perylene	430 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 4  
Lab Sample ID: LL0524

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
benzene, 1,1'-(2-chloroethylidene)bis 4-chloro technical chlorophenothane	370,000
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	190,000
p,p'-DDE	160,000
p,p'-DDT	37,000 Y
technical chlorophenothane	14,000 Y
3-penten-2-one, 4-methyl-	12,000
unknown (chlorinated)	4,500 A
unknown	6,700
unknown (chlorinated)	2,700 A
benzene, 1,4-dichloro-2-(2-chloroethyl)-DDE	1,300
DDMU	850
3-hexen-2-one, 5-methyl-	2,500 Y
2H-pyran-2,3-diol, tetrahydro-, diacetate, cis-	2,400
unknown (chlorinated)	1,300 A
unknown	1,100
unknown (chlorinated)	1,200
2-pentanone, 4-hydroxy-4-methyl-	670
o,p'-DDE	1,600
	73,000 AB
	17,000

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.

- Y - Indistinguishable isomer in tentatively identified compounds.
- A - Suspected aldol condensation product.
- B - Analyte was found in the blank as well as the sample.

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 5  
Lab Sample ID: LL0525

<u>Compound</u>		<u>Compound</u>	
phenol	2,200 U	bis(2-chloroethoxy)methane	2,200 U
bis(2-chloroethyl)ether	2,200 U	2,4-dichlorophenol	2,200 U
2-chlorophenol	2,200 U	1,2,4-trichlorobenzene	2,200 U
1,3-dichlorobenzene	2,200 U	naphthalene	2,200 U
1,4-dichlorobenzene	2,200 U	4-chloroaniline	2,200 U
benzyl alcohol	2,200 U	hexachlorobutadiene	2,200 U
1,2-dichlorobenzene	2,200 U	4-chloro-3-methylphenol	2,200 U
2-methylphenol	2,200 U	2-methylnaphthalene	2,200 U
bis(2-chloroisopropyl)ether	2,200 U	hexachlorocyclopentadiene	2,200 U
4-methylphenol	2,200 U	2,4,6-trichlorophenol	2,200 U
n-nitroso-di-n-propylamine	2,200 U	2,4,5-trichlorophenol	11,000 U
hexachloroethane	2,200 U	2-chloronaphthalene	2,200 U
nitrobenzene	2,200 U	2-nitroaniline	11,000 U
isophorone	2,200 U	dimethyl phthalate	2,200 U
2-nitrophenol	2,200 U	acenaphthylene	2,200 U
2,4-dimethylphenol	2,200 U	2,6-dinitrotoluene	2,200 U
benzoic acid	11,000 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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 5  
% Moisture: 27

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 5  
Lab Sample ID: LL0525

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	11,000 U	anthracene	2,200 U
acenaphthene	2,200 U	di-n-butylphthalate	2,200 U
2,4-dinitrophenol	11,000 U	fluoranthene	2,200 U
4-nitrophenol	11,000 U	pyrene	2,200 U
dibenzofuran	2,200 U	butylbenzylphthalate	2,200 U
2,4-dinitrotoluene	2,200 U	3,3'-dichlorobenzidine	4,500 U
diethylphthalate	2,200 U	benzo(a)anthracene	2,200 U
4-chlorophenyl-phenylether	2,200 U	chrysene	2,200 U
fluorene	2,200 U	bis(2-ethylhexyl)phthalate	680 BJ
4-nitroaniline	11,000 U	di-n-octylphthalate	2,200 U
4,6-dinitro-2-methylphenol	11,000 U	benzo(b)fluoranthene	2,200 U
n-nitrosodiphenylamine <sup>1</sup>	2,200 U	benzo(k)fluoranthene	2,200 U
4-bromophenyl-phenylether	2,200 U	benzo(a)pyrene	2,200 U
hexachlorobenzene	2,200 U	indeno(1,2,3-cd)pyrene	2,200 U
pentachlorophenol	11,000 U	dibenzo(a,h)anthracene	2,200 U
phenanthrene	2,200 U	benzo(g,h,i)perylene	2,200 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.

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

1 - Detected as diphenylamine.

Date Extracted: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 5  
% Moisture: 27

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 5  
Lab Sample ID: LL0525

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	1,300,000
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	1,200,000
technical chlorophenothane	380,000
2-pentanone, 4-hydroxy-4-methyl-	76,000 AB
benzene, dichloro(chloroethyl)-	26,000 Y
unknown sat'd hydrocarbon	14,000
DDE	120,000 Y
unknown sat'd hydrocarbon	7,900
unknown sat'd hydrocarbon	13,000
unknown sat'd hydrocarbon	12,000
unknown sat'd hydrocarbon	6,300
unknown sat'd hydrocarbon	10,000
unknown sat'd hydrocarbon	9,400
1H-indene, octahydro-2,2,4,4,7,7-hexamethyl-,trans-	7,700
unknown sat'd hydrocarbon	7,500
m,p'-DDD	47,000
cyclohexane, eicosyl-	6,300
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	42,000
cyclohexane, pentyl-	5,900
unknown	5,200

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

IT Corporation  
 August 15, 1990

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 6  
 Lab Sample ID: LL0526

<u>Compound</u>		<u>Compound</u>	
phenol	430 U	bis(2-chloroethoxy)methane	430 U
bis(2-chloroethyl)ether	430 U	2,4-dichlorophenol	430 U
2-chlorophenol	430 U	1,2,4-trichlorobenzene	430 U
1,3-dichlorobenzene	430 U	naphthalene	430 U
1,4-dichlorobenzene	430 U	4-chloroaniline	430 U
benzyl alcohol	430 U	hexachlorobutadiene	430 U
1,2-dichlorobenzene	430 U	4-chloro-3-methylphenol	430 U
2-methylphenol	430 U	2-methylnaphthalene	430 U
bis(2-chloroisopropyl)ether	430 U	hexachlorocyclopentadiene	430 U
4-methylphenol	430 U	2,4,6-trichlorophenol	430 U
n-nitroso-di-n-propylamine	430 U	2,4,5-trichlorophenol	2,100 U
hexachloroethane	430 U	2-chloronaphthalene	430 U
nitrobenzene	430 U	2-nitroaniline	2,100 U
isophorone	430 U	dimethyl phthalate	430 U
2-nitrophenol	430 U	acenaphthylene	430 U
2,4-dimethylphenol	430 U	2,6-dinitrotoluene	430 U
benzoic acid	2,100 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.

Date Extracted: 06/13/90  
 Date Analyzed: 07/02/90  
 Dilution Factor: 1  
 % Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in ug/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 6  
Lab Sample ID: LL0526

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	2,100 U	anthracene	430 U
acenaphthene	430 U	di-n-butylphthalate	69 J
2,4-dinitrophenol	2,100 U	fluoranthene	430 U
4-nitrophenol	2,100 U	pyrene	430 U
dibenzofuran	430 U	butylbenzylphthalate	430 U
2,4-dinitrotoluene	430 U	3,3'-dichlorobenzidine	870 U
diethylphthalate	210 J	benzo(a)anthracene	430 U
4-chlorophenyl-phenylether	430 U	chrysene	430 U
orene	430 U	bis(2-ethylhexyl)phthalate	1,800 B
nitroaniline	2,100 U	di-n-octylphthalate	430 U
4,6-dinitro-2-methylphenol	2,100 U	benzo(b)fluoranthene	430 U
n-nitrosodiphenylamine <sup>1</sup>	430 U	benzo(k)fluoranthene	430 U
4-bromophenyl-phenylether	430 U	benzo(a)pyrene	430 U
hexachlorobenzene	430 U	indeno(1,2,3-cd)pyrene	430 U
pentachlorophenol	2,100 U	dibenzo(a,h)anthracene	430 U
phenanthrene	430 U	benzo(g,h,i)perylene	430 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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 6  
Lab Sample ID: LL0526

Tentative Identification (1)

Concentration (2)

benzene, 1,1'-(2-chloroethylidene)bis 4-chloro	220,000
2-pentanone, 4-hydroxy-4-methyl-	68,000 AB
technical chlorophenothane	110,000
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	92,000
DDE	23,000 Y
benzene, dichloro(chloroethenyl)-	3,500 Y
3-penten-2-one, 4-methyl-	4,600
technical chlorophenothane	8,000
p,p'-DDT	6,900
unknown	3,200 A
unknown (chlorinated)	1,500
unknown (chlorinated)	4,300
2,4-pentanedione	1,600 A
unknown (chlorinated)	930
3-hexen-2-one, 5-methyl-	1,300 A
2H-pyran-2,3-diol, tetrahydro-, diacetate, cis-	1,100
chlorobenzilate	2,000
DDMU	1,600
unknown (chlorinated)	1,400
DDE	1,300 Y

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

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: MW3B, Site 4  
Lab Sample ID: LL0527

<u>Compound</u>		<u>Compound</u>	
phenol	470 U	bis(2-chloroethoxy)methane	470 U
bis(2-chloroethyl)ether	470 U	2,4-dichlorophenol	470 U
2-chlorophenol	470 U	1,2,4-trichlorobenzene	470 U
1,3-dichlorobenzene	470 U	naphthalene	470 U
1,4-dichlorobenzene	470 U	4-chloroaniline	470 U
benzyl alcohol	470 U	hexachlorobutadiene	470 U
1,2-dichlorobenzene	470 U	4-chloro-3-methylphenol	470 U
2-methylphenol	470 U	2-methylnaphthalene	470 U
is(2-chloroisopropyl)ether	470 U	hexachlorocyclopentadiene	470 U
o-methylphenol	470 U	2,4,6-trichlorophenol	470 U
n-nitroso-di-n-propylamine	470 U	2,4,5-trichlorophenol	2,300 U
hexachloroethane	470 U	2-chloronaphthalene	470 U
nitrobenzene	470 U	2-nitroaniline	2,300 U
isophorone	470 U	dimethyl phthalate	470 U
2-nitrophenol	470 U	acenaphthylene	470 U
2,4-dimethylphenol	470 U	2,6-dinitrotoluene	470 U
benzoic acid	2,300 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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1  
% Moisture: 30

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: MW3B, Site 4  
Lab Sample ID: LL0527

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	2,300 U	anthracene	470 U
acenaphthene	470 U	di-n-butylphthalate	470 U
2,4-dinitrophenol	2,300 U	fluoranthene	470 U
4-nitrophenol	2,300 U	pyrene	470 U
dibenzofuran	470 U	butylbenzylphthalate	470 U
2,4-dinitrotoluene	470 U	3,3'-dichlorobenzidine	940 U
diethylphthalate	99 J	benzo(a)anthracene	470 U
4-chlorophenyl-phenylether	470 U	chrysene	470 U
fluorene	470 U	bis(2-ethylhexyl)phthalate	910 B
4-nitroaniline	2,300 U	di-n-octylphthalate	470 U
4,6-dinitro-2-methylphenol	2,300 U	benzo(b)fluoranthene	470 U
n-nitrosodiphenylamine <sup>1</sup>	470 U	benzo(k)fluoranthene	470 U
4-bromophenyl-phenylether	470 U	benzo(a)pyrene	470 U
hexachlorobenzene	470 U	indeno(1,2,3-cd)pyrene	470 U
pentachlorophenol	2,300 U	dibenzo(a,h)anthracene	470 U
phenanthrene	470 U	benzo(g,h,i)perylene	470 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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1  
% Moisture: 30

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

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

Sample Matrix: Soil

Client Sample ID: MW3B, Site 4  
Lab Sample ID: LL0527

Tentative Identification (1)

Concentration (2)

2-pentanone, 4-hydroxy-4-methyl- unknown	59,000 AB
hexanedioic acid, dioctyl ester	5,200 A
3-hexen-2-one, 5-methyl- unknown (hydroxypentanone?)	3,900 B
2H-pyran-2,3-diol, tetrahydro-, diacetate, cis-	2,900 A
3-penten-2-one, 4-methyl- sulfur	2,200 A
unknown (brominated?)	1,900
unknown sat'd hydrocarbon	1,900 A
2,4-pentanedione	1,200
unknown	450
unknown	550 B
unknown sat'd hydrocarbon	520 A
unknown sat'd hydrocarbon	260
unknown sat'd hydrocarbon	350 B
unknown sat'd hydrocarbon	290 B
unknown sat'd hydrocarbon	260 B
unknown sat'd hydrocarbon	200 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.

A - Suspected aldol condensation product.

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

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: MW4B, Site 4  
Lab Sample ID: LL0528

<u>Compound</u>		<u>Compound</u>	
phenol	420 U	bis(2-chloroethoxy)methane	420 U
bis(2-chloroethyl)ether	420 U	2,4-dichlorophenol	420 U
2-chlorophenol	420 U	1,2,4-trichlorobenzene	420 U
1,3-dichlorobenzene	420 U	naphthalene	420 U
1,4-dichlorobenzene	420 U	4-chloroaniline	420 U
benzyl alcohol	420 U	hexachlorobutadiene	420 U
1,2-dichlorobenzene	420 U	4-chloro-3-methylphenol	420 U
2-methylphenol	420 U	2-methylnaphthalene	420 U
bis(2-chloroisopropyl)ether	420 U	hexachlorocyclopentadiene	420 U
4-methylphenol	420 U	2,4,6-trichlorophenol	420 U
n-nitroso-di-n-propylamine	420 U	2,4,5-trichlorophenol	2,100 U
hexachloroethane	420 U	2-chloronaphthalene	420 U
nitrobenzene	420 U	2-nitroaniline	2,100 U
isophorone	420 U	dimethyl phthalate	420 U
2-nitrophenol	420 U	acenaphthylene	420 U
2,4-dimethylphenol	420 U	2,6-dinitrotoluene	420 U
benzoic acid	2,100 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.

Date Extracted: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1  
% Moisture: 22

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: MW4B, Site 4  
Lab Sample ID: LL0528

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	2,100 U	anthracene	420 U
acenaphthene	420 U	di-n-butylphthalate	420 U
2,4-dinitrophenol	2,100 U	fluoranthene	420 U
4-nitrophenol	2,100 U	pyrene	420 U
dibenzofuran	420 U	butylbenzylphthalate	420 U
2,4-dinitrotoluene	420 U	3,3'-dichlorobenzidine	850 U
diethylphthalate	420 U	benzo(a)anthracene	420 U
4-chlorophenyl-phenylether	420 U	chrysene	420 U
luorene	420 U	bis(2-ethylhexyl)phthalate	400 BJ
4-nitroaniline	2,100 U	di-n-octylphthalate	420 U
4,6-dinitro-2-methylphenol	2,100 U	benzo(b)fluoranthene	420 U
n-nitrosodiphenylamine <sup>1</sup>	420 U	benzo(k)fluoranthene	420 U
4-bromophenyl-phenylether	420 U	benzo(a)pyrene	420 U
hexachlorobenzene	420 U	indeno(1,2,3-cd)pyrene	420 U
pentachlorophenol	2,100 U	dibenzo(a,h)anthracene	420 U
phenanthrene	420 U	benzo(g,h,i)perylene	420 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: 06/13/90

Date Analyzed: 07/02/90

Dilution Factor: 1

% Moisture: 22

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: MW4B, Site 4  
Lab Sample ID: LL0528

<u>Tentative Identification (1)</u>	<u>Concentration (2)</u>
2-pentanone, 4-hydroxy-4-methyl-	32,000 AB
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	39,000
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	33,000
p,p'-DDT	17,000
DDE	9,900 Y
unknown sat'd hydrocarbon	1,600
unknown	3,000 A
unknown sat'd hydrocarbon	1,000
1H-indene, octahydro-2,2,4,4,7,7-hexamethyl-, trans-	1,500
unknown sat'd hydrocarbon	1,400
cyclohexane, hexachloro-	810 Y
hexanedioic acid, dioctyl ester	3,000 B
1H-indene, octahydro-2,2,4,4,7,7-hexamethyl-, trans-	1,000
mitotane (USAN)	2,100
3-hexen-2-one, 5-methyl-	1,400 A
unknown sat'd hydrocarbon	470
unknown	460
unknown (hydroxypentanone?)	1,200 A
3-penten-2-one, 4-methyl	890 A
o,p'-DDE	2,200

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

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: MW5C, Site 4  
Lab Sample ID: LL0529

<u>Compound</u>		<u>Compound</u>	
phenol	400 U	bis(2-chloroethoxy)methane	400 U
bis(2-chloroethyl)ether	400 U	2,4-dichlorophenol	400 U
2-chlorophenol	400 U	1,2,4-trichlorobenzene	400 U
1,3-dichlorobenzene	400 U	naphthalene	400 U
1,4-dichlorobenzene	400 U	4-chloroaniline	400 U
benzyl alcohol	400 U	hexachlorobutadiene	400 U
1,2-dichlorobenzene	400 U	4-chloro-3-methylphenol	400 U
2-methylphenol	400 U	2-methylnaphthalene	400 U
bis(2-chloroisopropyl)ether	400 U	hexachlorocyclopentadiene	400 U
4-methylphenol	400 U	2,4,6-trichlorophenol	400 U
n-nitroso-di-n-propylamine	400 U	2,4,5-trichlorophenol	1,900 U
hexachloroethane	400 U	2-chloronaphthalene	400 U
nitrobenzene	400 U	2-nitroaniline	1,900 U
isophorone	400 U	dimethyl phthalate	400 U
2-nitrophenol	400 U	acenaphthylene	400 U
2,4-dimethylphenol	400 U	2,6-dinitrotoluene	400 U
benzoic acid	1,900 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: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 18

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST (continued)

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

Sample Matrix: Soil

Client Sample ID: MW5C, Site 4  
Lab Sample ID: LL0529

<u>Compound</u>		<u>Compound</u>	
3-nitroaniline	1,900 U	anthracene	400 U
acenaphthene	400 U	di-n-butylphthalate	400 U
2,4-dinitrophenol	1,900 U	fluoranthene	400 U
4-nitrophenol	1,900 U	pyrene	400 U
dibenzofuran	400 U	butylbenzylphthalate	400 U
2,4-dinitrotoluene	400 U	3,3'-dichlorobenzidine	800 U
diethylphthalate	190 J	benzo(a)anthracene	400 U
4-chlorophenyl-phenylether	400 U	chrysene	400 U
fluorene	400 U	bis(2-ethylhexyl)phthalate	820 B
4-nitroaniline	1,900 U	di-n-octylphthalate	400 U
4,6-dinitro-2-methylphenol	1,900 U	benzo(b)fluoranthene	400 U
n-nitrosodiphenylamine <sup>1</sup>	400 U	benzo(k)fluoranthene	400 U
4-bromophenyl-phenylether	400 U	benzo(a)pyrene	400 U
hexachlorobenzene	400 U	indeno(1,2,3-cd)pyrene	400 U
pentachlorophenol	1,900 U	dibenzo(a,h)anthracene	400 U
phenanthrene	400 U	benzo(g,h,i)perylene	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.

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

1 - Detected as diphenylamine.

Date Extracted: 06/13/90  
Date Analyzed: 07/03/90  
Dilution Factor: 1  
% Moisture: 18

Client Project ID: NAS-Key West

Job Number: ITCY 45911

ADDITIONAL SEMIVOLATILE ORGANIC COMPOUNDS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: MW5C, Site 4

Lab Sample ID: LL0529

Tentative Identification (1)

Concentration (2)

2-pentanone, 4-hydroxy-4-methyl-	54,000 AB
hexanedioic acid, dioctyl ester-	14,000 B
3-penten-2-one, 4-methyl-	3,300 A
unknown (hydroxypentanone?)	1,100 A
2H-pyran-2,3-diol, tetrahydro-, diacetate, cis-	520
unknown sat'd hydrocarbon	440 B
9-octadecenamide, (Z)-	400
unknown	230
unknown sat'd hydrocarbon	200 B
unknown sat'd hydrocarbon	190 B
3-hexene-2-one, 5-methyl-	1,200 A
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane	680
m,p'-DDD	380
technical chlorophenothane	320

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  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

SEMIVOLATILE TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Plot 2, NAS Site 3  
Lab Sample ID: LL0530

<u>Compound</u>		<u>Compound</u>	
phenol	380 U	bis(2-chloroethoxy)methane	380 U
bis(2-chloroethyl)ether	380 U	2,4-dichlorophenol	380 U
2-chlorophenol	380 U	1,2,4-trichlorobenzene	380 U
1,3-dichlorobenzene	380 U	naphthalene	380 U
1,4-dichlorobenzene	380 U	4-chloroaniline	380 U
benzyl alcohol	380 U	hexachlorobutadiene	380 U
1,2-dichlorobenzene	380 U	4-chloro-3-methylphenol	380 U
2-methylphenol	380 U	2-methylnaphthalene	380 U
bis(2-chloroisopropyl)ether	380 U	hexachlorocyclopentadiene	380 U
4-methylphenol	380 U	2,4,6-trichlorophenol	380 U
n-nitroso-di-n-propylamine	380 U	2,4,5-trichlorophenol	1,900 U
hexachloroethane	380 U	2-chloronaphthalene	380 U
nitrobenzene	380 U	2-nitroaniline	1,900 U
isophorone	380 U	dimethyl phthalate	380 U
2-nitrophenol	380 U	acenaphthylene	380 U
2,4-dimethylphenol	380 U	2,6-dinitrotoluene	380 U
benzoic acid	1,900 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: 06/13/90  
Date Analyzed: 07/02/90  
Dilution Factor: 1  
% Moisture: 14

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

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: BLA1176

<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: 06/13/90  
Date Analyzed: 06/20/90  
Dilution Factor: 1

IT Corporation  
August 15, 1990

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 2

Lab Sample ID: LL0522

<u>Compound</u>		<u>Compound</u>	
α-BHC	5,700 J	endosulfan sulfate	38,000 U
β-BHC	19,000 U	4,4'-DDT	42,000
δ-BHC	5,600 J	methoxychlor	190,000 U
γ-BHC (lindane)	19,000 U	endrin ketone	38,000 U
heptachlor	19,000 U	α-chlordane	190,000 U
aldrin	19,000 U	γ-chlordane	190,000 U
heptachlor epoxide	19,000 U	toxaphene	380,000 U
endosulfan I	19,000 U	Aroclor 1016	190,000 U
dieldrin	38,000 U	Aroclor 1221	190,000 U
4,4'-DDE	51,000 Z	Aroclor 1232	190,000 U
endrin	38,000 U	Aroclor 1242	190,000 U
endosulfan II	38,000 U	Aroclor 1248	190,000 U
4,4'-DDD	410,000 F	Aroclor 1254	380,000 U
		Aroclor 1260	380,000 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.
- F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.
- Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 2,000  
% Moisture: 16

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 2 DL  
Lab Sample ID: LL0522 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	4,800 DJ	endosulfan sulfate	380,000 U
$\beta$ -BHC	190,000 U	4,4'-DDT	41,000 DJ
$\delta$ -BHC	7,900 DJ	methoxychlor	1,900,000 U
$\gamma$ -BHC (lindane)	190,000 U	endrin ketone	380,000 U
heptachlor	190,000 U	$\alpha$ -chlordane	1,900,000 U
aldrin	190,000 U	$\gamma$ -chlordane	1,900,000 U
heptachlor epoxide	190,000 U	toxaphene	3,800,000 U
endosulfan I	190,000 U	Aroclor 1016	1,900,000 U
dieldrin	380,000 U	Aroclor 1221	1,900,000 U
4,4'-DDE	380,000 U	Aroclor 1232	1,900,000 U
endrin	380,000 U	Aroclor 1242	1,900,000 U
endosulfan II	380,000 U	Aroclor 1248	1,900,000 U
4,4'-DDD	620,000 D	Aroclor 1254	3,800,000 U
		Aroclor 1260	3,800,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 20,000  
% Moisture: 16

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 3  
Lab Sample ID: LL0523

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	3,100 J	endosulfan sulfate	42,000 U
$\beta$ -BHC	21,000 U	4,4'-DDT	160,000
$\delta$ -BHC	21,000 U	methoxychlor	210,000 U
$\gamma$ -BHC (lindane)	21,000 U	endrin ketone	42,000 U
heptachlor	21,000 U	$\alpha$ -chlordane	210,000 U
aldrin	21,000 U	$\gamma$ -chlordane	210,000 U
heptachlor epoxide	21,000 U	toxaphene	420,000 U
endosulfan I	21,000 U	Aroclor 1016	210,000 U
dieldrin	42,000 U	Aroclor 1221	210,000 U
4,4'-DDE	49,000 Z	Aroclor 1232	210,000 U
endrin	42,000 U	Aroclor 1242	210,000 U
endosulfan II	42,000 U	Aroclor 1248	210,000 U
4,4'-DDD	480,000 F	Aroclor 1254	420,000 U
		Aroclor 1260	420,000 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.  
F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.  
Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 2,000  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 3 DL  
Lab Sample ID: LL0523 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	3,500 DJ	endosulfan sulfate	420,000 U
$\beta$ -BHC	210,000 U	4,4'-DDT	150,000 DJ
$\delta$ -BHC	210,000 U	methoxychlor	2,100,000 U
$\gamma$ -BHC (lindane)	210,000 U	endrin ketone	420,000 U
heptachlor	210,000 U	$\alpha$ -chlordane	2,100,000 U
aldrin	210,000 U	$\gamma$ -chlordane	2,100,000 U
heptachlor epoxide	210,000 U	toxaphene	4,200,000 U
endosulfan I	210,000 U	Aroclor 1016	2,100,000 U
endrin	420,000 U	Aroclor 1221	2,100,000 U
4,4'-DDE	420,000 U	Aroclor 1232	2,100,000 U
endrin	420,000 U	Aroclor 1242	2,100,000 U
endosulfan II	420,000 U	Aroclor 1248	2,100,000 U
4,4'-DDD	840,000 D	Aroclor 1254	4,200,000 U
		Aroclor 1260	4,200,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 20,000  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 4  
Lab Sample ID: LL0524

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	5,200 U	endosulfan sulfate	10,000 U
$\beta$ -BHC	5,200 U	4,4'-DDT	160,000 F
$\delta$ -BHC	5,200 U	methoxychlor	52,000 U
$\gamma$ -BHC (lindane)	5,200 U	endrin ketone	10,000 U
heptachlor	5,200 U	$\alpha$ -chlordane	52,000 U
aldrin	5,200 U	$\gamma$ -chlordane	52,000 U
heptachlor epoxide	5,200 U	toxaphene	100,000 U
endosulfan I	5,200 U	Aroclor 1016	52,000 U
dieldrin	10,000 U	Aroclor 1221	52,000 U
4,4'-DDE	24,000 FZ	Aroclor 1232	52,000 U
endrin	10,000 U	Aroclor 1242	52,000 U
endosulfan II	10,000 U	Aroclor 1248	52,000 U
4,4'-DDD	40,000 F	Aroclor 1254	100,000 U
		Aroclor 1260	100,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 500  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 4 DL  
Lab Sample ID: LL0524 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	52,000 U	endosulfan sulfate	100,000 U
$\beta$ -BHC	52,000 U	4,4'-DDT	210,000 D
$\delta$ -BHC	52,000 U	methoxychlor	520,000 U
$\gamma$ -BHC (lindane)	52,000 U	endrin ketone	100,000 U
heptachlor	52,000 U	$\alpha$ -chlordane	520,000 U
aldrin	52,000 U	$\gamma$ -chlordane	520,000 U
heptachlor epoxide	52,000 U	toxaphene	1,000,000 U
endosulfan I	52,000 U	Aroclor 1016	520,000 U
dieldrin	100,000 U	Aroclor 1221	520,000 U
4,4'-DDE	100,000 U	Aroclor 1232	520,000 U
endrin	100,000 U	Aroclor 1242	520,000 U
endosulfan II	100,000 U	Aroclor 1248	520,000 U
4,4'-DDD	49,000 DJ	Aroclor 1254	1,000,000 U
		Aroclor 1260	1,000,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 5,000  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 5  
Lab Sample ID: LL0525

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	22,000 U	endosulfan sulfate	44,000 U
$\beta$ -BHC	1,800 J	4,4'-DDT	420,000 F
$\delta$ -BHC	22,000 U	methoxychlor	220,000 U
$\gamma$ -BHC (lindane)	22,000 U	endrin ketone	44,000 U
heptachlor	22,000 U	$\alpha$ -chlordane	220,000 U
aldrin	22,000 U	$\gamma$ -chlordane	220,000 U
heptachlor epoxide	22,000 U	toxaphene	440,000 U
endosulfan I	22,000 U	Aroclor 1016	220,000 U
dieldrin	44,000 U	Aroclor 1221	220,000 U
4,4'-DDE	110,000 FZ	Aroclor 1232	220,000 U
endrin	44,000 U	Aroclor 1242	220,000 U
endosulfan II	44,000 U	Aroclor 1248	220,000 U
4,4'-DDD	430,000 F	Aroclor 1254	440,000 U
		Aroclor 1260	440,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/13/90  
Date Analyzed: 06/26/90  
Dilution Factor: 2,000  
% Moisture: 27

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 5 DL

Lab Sample ID: LL0525 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	220,000 U	endosulfan sulfate	440,000 U
$\beta$ -BHC	220,000 U	4,4'-DDT	470,000 D
$\delta$ -BHC	220,000 U	methoxychlor	2,200,000 U
$\gamma$ -BHC (lindane)	220,000 U	endrin ketone	440,000 U
heptachlor	220,000 U	$\alpha$ -chlordane	2,200,000 U
aldrin	220,000 U	$\gamma$ -chlordane	2,200,000 U
heptachlor epoxide	220,000 U	toxaphene	4,400,000 U
endosulfan I	220,000 U	Aroclor 1016	2,200,000 U
dieldrin	440,000 U	Aroclor 1221	2,200,000 U
4,4'-DDE	440,000 U	Aroclor 1232	2,200,000 U
endrin	440,000 U	Aroclor 1242	2,200,000 U
endosulfan II	440,000 U	Aroclor 1248	2,200,000 U
4,4'-DDD	580,000 D	Aroclor 1254	4,400,000 U
		Aroclor 1260	4,400,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90

Date Analyzed: 06/26/90

Dilution Factor: 20,000

% Moisture: 27

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 6  
Lab Sample ID: LL0526

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	70 J	endosulfan sulfate	2,100 U
$\beta$ -BHC	1,100	4,4'-DDT	36,000 F
$\delta$ -BHC	53 J	methoxychlor	11,000 U
$\gamma$ -BHC (lindane)	1,100 U	endrin ketone	2,100 U
heptachlor	1,100 U	$\alpha$ -chlordane	11,000 U
aldrin	1,100 U	$\gamma$ -chlordane	11,000 U
heptachlor epoxide	1,100 U	toxaphene	21,000 U
endosulfan I	1,100 U	Aroclor 1016	11,000 U
dieldrin	2,100 U	Aroclor 1221	11,000 U
4,4'-DDE	15,000 FZ	Aroclor 1232	11,000 U
endrin	2,100 U	Aroclor 1242	11,000 U
endosulfan II	2,100 U	Aroclor 1248	11,000 U
4,4'-DDD	28,000 F	Aroclor 1254	21,000 U
		Aroclor 1260	21,000 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.

F - The peak is offscale and therefore out of linear range. The value reported is an estimated value.

Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 100  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: Site 5, Plot 6 DL  
Lab Sample ID: LL0526 DL

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	11,000 U	endosulfan sulfate	21,000 U
$\beta$ -BHC	440 DJ	4,4'-DDT	25,000 D
$\delta$ -BHC	11,000 U	methoxychlor	110,000 U
$\gamma$ -BHC (lindane)	11,000 U	endrin ketone	21,000 U
heptachlor	11,000 U	$\alpha$ -chlordane	110,000 U
aldrin	11,000 U	$\gamma$ -chlordane	110,000 U
heptachlor epoxide	11,000 U	toxaphene	210,000 U
endosulfan I	11,000 U	Aroclor 1016	110,000 U
dieldrin	21,000 U	Aroclor 1221	110,000 U
4,4'-DDE	21,000 U	Aroclor 1232	110,000 U
endrin	21,000 U	Aroclor 1242	110,000 U
endosulfan II	21,000 U	Aroclor 1248	110,000 U
4,4'-DDD	23,000 D	Aroclor 1254	210,000 U
		Aroclor 1260	210,000 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 1,000  
% Moisture: 24

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: MW3B, Site 4  
Lab Sample ID: LL0527

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	11 U	endosulfan sulfate	23 U
$\beta$ -BHC	16 Z	4,4'-DDT	23 U
$\delta$ -BHC	11 U	methoxychlor	110 U
$\gamma$ -BHC (lindane)	11 U	endrin ketone	23 U
heptachlor	11 U	$\alpha$ -chlordane	110 U
aldrin	11 U	$\gamma$ -chlordane	110 U
heptachlor epoxide	11 U	toxaphene	230 U
endosulfan I	11 U	Aroclor 1016	110 U
dieldrin	23 U	Aroclor 1221	110 U
4,4'-DDE	23 U	Aroclor 1232	110 U
endrin	23 U	Aroclor 1242	110 U
endosulfan II	23 U	Aroclor 1248	110 U
4,4'-DDD	23 U	Aroclor 1254	230 U
		Aroclor 1260	230 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.

Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 1  
% Moisture: 30

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August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: MW4B, Site 4  
Lab Sample ID: LL0528

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	10 U	endosulfan sulfate	21 U
$\beta$ -BHC	13 Z	4,4'-DDT	21 U
$\delta$ -BHC	10 U	methoxychlor	100 U
$\gamma$ -BHC (lindane)	10 U	endrin ketone	21 U
heptachlor	10 U	$\alpha$ -chlordane	100 U
aldrin	10 U	$\gamma$ -chlordane	100 U
heptachlor epoxide	10 U	toxaphene	210 U
endosulfan I	10 U	Aroclor 1016	100 U
dieldrin	21 U	Aroclor 1221	100 U
4,4'-DDE	21 U	Aroclor 1232	100 U
endrin	21 U	Aroclor 1242	100 U
endosulfan II	21 U	Aroclor 1248	100 U
4,4'-DDD	21 U	Aroclor 1254	210 U
		Aroclor 1260	210 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.  
Z - No estimated value reported, or an elevated CRQL reported because matrix effects interfered with or obscured the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 1  
% Moisture: 22

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

PESTICIDE AND PCB TARGET COMPOUND LIST

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

Sample Matrix: Soil

Client Sample ID: MW5C, Site 4  
Lab Sample ID: LL0529

<u>Compound</u>		<u>Compound</u>	
$\alpha$ -BHC	190 U	endosulfan sulfate	390 U
$\beta$ -BHC	190 U	4,4'-DDT	340 DJ
$\delta$ -BHC	190 U	methoxychlor	1,900 U
$\gamma$ -BHC (lindane)	190 U	endrin ketone	390 U
heptachlor	190 U	$\alpha$ -chlordane	1,900 U
aldrin	190 U	$\gamma$ -chlordane	1,900 U
heptachlor epoxide	190 U	toxaphene	3,900 U
endosulfan I	190 U	Aroclor 1016	1,900 U
dieldrin	390 U	Aroclor 1221	1,900 U
4,4'-DDE	390 U	Aroclor 1232	1,900 U
endrin	390 U	Aroclor 1242	1,900 U
endosulfan II	390 U	Aroclor 1248	1,900 U
4,4'-DDD	560 D	Aroclor 1254	3,900 U
		Aroclor 1260	3,900 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.

D - Compound analyzed at a secondary dilution factor.

Date Extracted: 06/13/90  
Date Analyzed: 06/22/90  
Dilution Factor: 20  
% Moisture: 18

SOIL SURROGATE PERCENT RECOVERY SUMMARY

<u>Sample No.</u>	<u>PESTICIDE</u>
	<u>Dibutylchlorodate (20-150%)*</u>
Method Blank	103
MW3B, Site 4	130
MW4B, Site 4	121
MW5C, Site 4	108
Plot 2, Site 3	113
Plot 2, Site 3 DL	D
Plot 4, Site 3	D
Plot 4, Site 3 DL	D
Site 5, Plot 2	D
Site 5, Plot 2 DL	D
Site 5, Plot 3	D
Site 5, Plot 3 DL	D
Site 5, Plot 4	D
Site 5, Plot 4 DL	D
Site 5, Plot 5	D
Site 5, Plot 5 DL	D
Site 5, Plot 6	80
Site 5, Plot 6 DL	D

- \* - Values in parenthesis represent USEPA advisory QC limits.
- D - Surrogates diluted out.
- DL - Dilution

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August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank PBSC2327/C2330/C4289	Site 5, Plot 2 LL0532
aluminum	4.0 U	1,000 E
antimony	3.0 U	3.8 U
arsenic	0.2 U	14.3
barium	0.2 U	20.0 BE
beryllium	0.1 U	0.13 U
cadmium	0.5 U	0.63 U
calcium	3.0 U	378,000
chromium	1.0 U	4.8
cobalt	2.0 U	2.5 U
copper	1.0 U	5.8
iron	1.0 U	819 E
lead	0.2 U	34.7
magnesium	3.0 U	2,690 E
manganese	0.2 U	7.5
mercury	0.02 U	0.03 U
nickel	2.0 U	2.5 U
potassium	100 U	126 U
selenium	0.2 U	0.3 UW
silver	0.5 U	9.8
sodium	20 U	909
thallium	0.2 U	0.3 UW
vanadium	1.0 U	2.3 B
zinc	1.3 B	30.7
% Solids:	-	79.5

- 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.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14, 06/15, 06/16 and 06/20/90 (GFAA)  
06/14/90 (CVAA)

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Site 5, Plot 3 LL0533		Site 5, Plot 4 LL0534	
aluminum	1,560	E	1,560	E
antimony	3.5	U	4.6	U
arsenic	3.2	W	3.1	W
barium	11.0	BE	10.8	BE
beryllium	0.12	U	0.15	U
cadmium	0.58	U	0.76	U
calcium	310,000		437,000	
chromium	5.6		4.6	
cobalt	2.3	U	3.1	U
copper	3.7		2.9	B
iron	1,230	E	814	E
lead	82.1		5.7	
magnesium	2,920	E	3,740	E
manganese	10.3		15.5	
mercury	0.02	U	0.03	U
nickel	2.3	U	3.1	U
potassium	115	U	153	U
selenium	0.2	UW	0.3	UW
silver	5.8	U	7.6	U
sodium	1,050		1,600	
thallium	0.2	UW	0.3	UW
vanadium	2.8	B	2.7	B
zinc	30.7		20.3	
% Solids:	86.7		65.4	

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.

E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90

Date Analyzed: 06/19/90 (ICP)

06/14, 06/15, 06/16 and 06/20/90 (GFAA)

06/14/90 (CVAA)

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Site 5, Plot 5 LL0535	Site 5, Plot 6 LL0536
aluminum	3,510 E	1,170 E
antimony	4.1 U	4.0 U
arsenic	1.5 W	1.9 W
barium	14.2 BE	7.6 BE
beryllium	0.14 U	0.13 U
cadmium	0.68 U	0.66 U
calcium	278,000	397,000
chromium	8.5	4.4
cobalt	2.7 U	2.7 U
copper	13.1	5.3
iron	2,100 E	737 E
lead	102	4.9
magnesium	6,230 E	3,040 E
manganese	17.3	9.2
mercury	0.03	0.03 U
nickel	2.7 U	2.7 U
potassium	135 U	133 U
selenium	0.5 UW	0.5 UW
silver	6.8 U	6.6 U
sodium	1,770	1,130
thallium	0.3 UW	0.3 U
vanadium	4.7 B	2.8 B
zinc	38.8	11.5
% Solids:	73.9	75.2

- 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.
- E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14, 06/15, 06/16 and 06/20/90 (GFAA)  
06/14/90 (CVAA)

METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Plot 4, NAS Site 3  
Lab Sample ID: LL0541

aluminum	863	E
antimony	3.4	U
arsenic	7.3	W
barium	12.0	BE
beryllium	0.11	U
cadmium	0.57	U
calcium	359,000	
chromium	3.9	
cobalt	2.3	U
copper	4.2	
iron	825	E
lead	30.4	
magnesium	1,040	E
manganese	10.8	
mercury	0.04	
nickel	2.3	U
potassium	114	U
selenium	0.5	UW
silver	5.7	U
sodium	1,060	
thallium	0.2	UW
vanadium	2.1	B
zinc	20.5	
% Solids:	87.5	

- 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.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- E - The reported value is estimated because of the presence of interference.

Date Digested: 06/14/90  
Date Analyzed: 06/19/90 (ICP)  
06/14, 06/15, 06/16 and 06/20/90 (GFAA)  
06/14/90 (CVAA)

IT Corporation  
August 15, 1990

Client Project ID: NAS-Key West

Job Number: ITCY 45911

CYANIDE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Result</u>
P1233/P1244/P1245	Method Blank	0.5 U
LL0532	Site 5, Plot 2	0.5 U
LL0533	Site 5, Plot 3	0.5 U
LL0534	Site 5, Plot 4	0.5 U
LL0535	Site 5, Plot 5	0.5 U
LL0536	Site 5, Plot 6	0.5 U
LL0537	MW3C, Site 4	0.5 U
LL0538	MW4C, Site 4	0.5 U
LL0539	MW5B, Site 4	0.5 U
LL0540	Plot 2, NAS Site 3	0.5 U
LL0541	Plot 4, NAS Site 3	0.5 U

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

Date Analyzed: 06/18/90

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank <u>PBRC2333</u>	BFFTA-1 <u>LL0504</u>	BFFTA-2 <u>LL0505</u>	BFFTA-3 <u>LL0506</u>
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.002 U	0.048	0.039	0.036
cadmium	0.005 U	0.005 U	0.005 U	0.005 U
chromium	0.01 U	0.01 U	0.01 U	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	NR	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.005 U	0.01 U	0.01 U	0.01 U

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

NR - Not required

Date Extracted: 06/13 - 06/15/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/19/90 (CVAA)

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID:	BFFTA-4	BFFTA-5	BFFTA-6	BFFTA-7
Lab Sample ID:	<u>LL0507</u>	<u>LL0508</u>	<u>LL0511</u>	<u>LL0512</u>
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.042	0.039	0.041	0.031
cadmium	0.005 U	0.005 U	0.005	0.005 U
chromium	0.01 U	0.01 U	0.01 U	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	0.001 U	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.01 U	0.01 U	0.01 U	0.01 U

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

Date Extracted: 06/13 - 06/15/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/19/90 (CVAA)

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	MW1, Site 1 LL0513	MW2, Site 1 LL0514	MW3, Site 1 LL0515	MW3-D, Site 4 LL0515
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.059	0.19	0.20	0.023
cadmium	0.005 U	0.005 U	0.005 U	0.005 U
chromium	0.01 U	0.01 U	0.01 U	0.01 U
lead	0.03 U	0.03 U	0.10	0.03 U
mercury	0.001 U	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.01 U	0.01 U	0.01 U	0.01 U

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

Date Extracted: 06/13 - 06/15/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/19/90 (CVAA)

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	MW4-D, Site 4 LL0517	MW5-D, Site 4 LL0518	MWFFTA-1 LL0519	MWFFTA-2 LL0520
arsenic	0.03 U	0.03 U	0.03 U	0.03 U
barium	0.025	0.044	0.033	0.035
cadmium	0.012	0.005 U	0.014	0.013
chromium	0.01 U	0.01 U	0.01 U	0.01 U
lead	0.03 U	0.03 U	0.03 U	0.03 U
mercury	0.001 U	0.001 U	0.001 U	0.001 U
selenium	0.06 U	0.06 U	0.06 U	0.06 U
silver	0.01 U	0.01 U	0.01 U	0.01 U

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

Date Extracted: 06/13 - 06/15/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/19/90 (CVAA)

IT Corporation  
August 15, 1990

IT ANALYTICAL SERVICES  
5815 MIDDLEBROOK PIKE  
KNOXVILLE, TN

Client Project ID: NAS-Key West

Job Number: ITCY 45911

METALS ANALYSIS

Results in mg/liter (ppm) in the extract

Sample Matrix: Soil

Client Sample ID:	MWFFTA-3
Lab Sample ID:	<u>LL0521</u>
arsenic	0.03 U
barium	0.033
cadmium	0.005 U
chromium	0.01 U
lead	0.03 U
mercury	0.001 U
selenium	0.06 U
silver	0.01 U

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

Date Extracted: 06/13 - 06/15/90  
Date Digested: 06/20/90  
Date Analyzed: 06/27/90 (ICP)  
06/19/90 (CVAA)