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Analytical

TYPE OF REPORT

REPORT

REPORT NO.: MDA-414

JOB/PROJECT NO.: 483.2450; 483.2460; 483.2470 & 483.2490

DATE: December 13, 1983

PERIOD COVERED:

TITLE: ANALYSIS OF KRUMERICH SOIL SAMPLES

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ABSTRACT: Soil samples from the Krumerich plant were analyzed for their PCB, TCDD and Mercury content. Results of these analyses are shown in this report.

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REF. NO.: MDA-414

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ACKNOWLEDGEMENT

Contributions of the following Dayton Laboratory personnel to this project are gratefully acknowledged:

Analyses: J. A. Giust
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R. W. Noble

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I. INTRODUCTION

A total of forty-one (41) samples, were received from the Krumm-rich plant for analyses. The analyses to be conducted were for possible concentrations of polychlorinated biphenyls (PCB); 2,3,7,8-tetrachlorodibenzodioxin (TCDD) and mercury. All analyses were conducted in accordance to U.S. EPA approved or accepted procedures. For internal purposes the samples were assigned MRC Log # 1-83-07-18-02.

II. SUMMARY

Tables 1-3 shows the results for the analyses of the samples for their PCB concentrations. Table 4 shows total organic carbon, (TOC) and phenol analyses conducted on specified samples while table 5 shows the TCDD results requested on specific samples. Table 6 shows the concentrations of mercury found in the specified samples.

III. ANALYSIS RESULTS

3.1 PCB ANALYSES

3.1.1 SAMPLE EXTRACTION

Solid samples were first visually inspected to determine general qualities, eg. wet, oily, containing plant material etc. Four general types of samples were received for analysis. They were: rocky concrete material, soil, sludge, and liquid. In general each sample posed different analytical separation problems of which sample homogeneity was considered to be most critical. Rocky concrete material required larger sample weights in order to obtain a representative sample; soils and lagoon sludge required smaller

analysis. They were: rocky concrete material, soil, sludge, and liquid. In general each sample posed different analytical separation problems of which sample homogeneity was considered to be most critical. Rocky concrete material required larger sample weights in order to obtain a representative sample; soils and lagoon sludge required smaller weights for analysis. The liquid sample (primarily water) required larger amounts due to lower levels of detection required.

The separation scheme for solids was as follows. An aliquot of the solid sample was weighed into a 40 mL Pierce vial with teflon faced caps in the following quantities: rocky concrete materials, 10-20 g; soils approximately, 1.0 g; and lagoon sludge 0.1 g. The samples were spiked with 100 μ L of 10 μ g/mL pentachlorobenzene as a surrogate spiking compound. 10.0 mL benzene was pipetted into the Pierce vial, and the samples were then placed into an ultrasound bath for 30 minutes.

The separation technique for liquids was as follows. 100 mL of sample was added to a 125 mL separatory funnel. The sample was spiked with 100 μ L of 10 μ g/mL pentachlorobenzene and allowed to equilibrate for 30 minutes. The sample was extracted three times with three 10 mL aliquots of methylene chloride. The extracts were combined in a graduated centrifuge tube and the volume was reduced to 1.0 mL under a nitrogen stream.

The extracts were then inspected for suitability for capillary GC/EC instrumental analysis, and dilutions were made accordingly before analysis.

Relative response factors were calculated for the major PCB isomers in the three formulations and the capillary GC/EC data were analysed using a different set of response factors for each formulation. The presence of one or more of the three Aroclor formulations was confirmed by visual inspection of the GC/EC chromatograms and by using the table of concentrations printed out using the three sets of relative response factors of the characteristic PCB isomers of the three Aroclor formulations.

3.1.3. RESULTS

Tables 1-3 summarize the concentrations of Aroclor 1248, 1254 and 1260 measured using the above extraction and analysis protocol. Recoveries of pentachlorobenzene surrogate spiking compound are also reported in the tables.

3.2 TOC AND PHENOL ANALYSES

- 3.2.1 The total organic carbon (TOC) and total phenol concentrations were determined to U.S. EPA standard analysis (1)

3.3 TCDD ANALYSIS

The samples were analyzed according to the EPA Region VII June 1983 method "Determination of 2,3,7,8-TCDD in Soil and Sediment." For quality control purposes MRC Method Number 07-QAGC-R3 was followed. Briefly this method requires that for every set of samples of the same matrix type a replicate sample, a low (0.8 ppb in this case) spiked sample, a high (8.1 ppb in this case) spiked sample, and a method blank must be analyzed.

3.3.1 Preparation and Analysis

Samples of 10 g were weighed out and spike with 25.9 ng of carbon-13 labeled 2,3,7,8-TCDD and 10.8 ng of Chlorine-37 labeled 2,3,7,8-TCDD. Ten grams of washed anhydrous sodium

TABLE 1. RESULTS OF CAPILLARY GC/EC ANALYSES OF
KRUMHOLTZ PLANT SAMPLES

483.24618 and 483.24918

August 15, 1983

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			1 Soil	1a Solid	2 Solid	3 Liquid	4 Soil	4a Soil
			Concentration (µg/g)					
Aroclor 1248	GC/EC	0.1	.68	10.6	ND ^b	.146	233	163
Aroclor 1254	GC/EC	0.1	.21	5.9	ND	.06	100	62
Aroclor 1260	GC/EC	0.1	.15	3.5	ND	.026	15.2	10
TOTAL AROCLOR	GC/EC	0.1	1.04	20.0	ND	0.232	348.2	243.0
Surrogate Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	0.1	82	42	102	112	NA ^c	NA
Process File			BP 108	BP 116	BP 111	BP 130	BP 134	132
Extract Dilution			1:1	1:10	1:1	1:10	1:100	1:100
GC Extraction Number	-		PCB 003	PCB 002	PCB 012	PCB 015	PCB 010	PCB 004
Sample Wt. - Extracted (g)	-		4.26	7.64	4.34	100	8.7	6.26

^a L.O.D. = limit of detection in µg/g.

^b ND = none detected with a detection limit given by the L.O.D. value for each compound.

^c NA = not analyzed due to sample extract dilution.

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TABLE 1. (Continued)

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			5 Soil	5a Solid	6 Soil	6a Solid	7 Soil	7a Solid
			Concentration (µg/g)					
Aroclor 1248	GC/EC	0.1	24.9	370	2.78	12.4	3.6	100
Aroclor 1254	GC/EC	0.1	11.9	360	1.02	5.4	2.9	43
Aroclor 1260	GC/EC	0.1	2.6	340	0.49	3.1	7.8	89.9
TOTAL AROCLOR	GC/EC	0.1	39.3	1070	4.29	20.9	14.3	232.9
Serrogate Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	0.1	73	NA	40	86	236	NA
Process File			BP 135	BP 118	BP 110	BP 115	BP 119	BP 133
Extract Dilution			1:10	1:1000	1:1	1:10	1:10	1:100
SEC Extraction Number	-		PCB 011	PCB 005	PCB 009	PCB 001	PCB 006	PCB 007
Sample Wt. Extracted (g)	-		7.03	9.99	7.36	7.7	14.23	18.88

^a L.O.D. = limit of detection in µg/g.^b ND = none detected with a detection limit given by the L.O.D. value for each compound.^c NA = not analyzed due to sample extract dilution.^d = High recovery possibly due to the presence of pentachlorobenzene in soil sample.

TABLE 1. (Continued)

Analyte	Analysis Method	L.O.D. ^a	Sample Identification						
			7a Solid (Duplicate)	Method Blank	Method Blank	KS 859			
			Concentration (µg/g)						
Aroclor 1248	GC/EC	0.1	164	ND ^b	ND	ND (<1.0)			
Aroclor 1254	GC/EC	0.1	61.3	ND	ND	2.1			
Aroclor 1260	GC/EC	0.1	12	ND	ND	16.5			
TOTAL AROCLOR	GC/EC	0.1	237.3	ND	ND	18.6			
Spike/Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)						
			HA ^c	86	94	92			
Pentachlorobenzene	GC/EC	0.1	NA ^c	86	94	92			
Process File			BP 136	BP 109	BP 112	BP120			
Extract Dilution			1:100	1:1	1:1	1:1			
HSC Extraction Number	-		PCB 013	PCB 008	PCB 014	PCB 058			
Sample Wt. Extracted (g)	-		10	0	0	1.0			

^a L.O.D. = limit of detection in µg/g.^b ND = none detected with a detection limit given by the L.O.D. value for each compound.^c HA = not analyzed due to sample extract dilution.

TABLE 2. RESULTS OF CAPILLARY GC/EC ANALYSES OF
KRUMHOLTZ PLANT SAMPLES

483.24718

August 15, 1983

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			Method Blank	KRS 1	KRS 2	KRS 3	KLS	KLS (DP)
			Concentration (µg/g)					
Aroclor 1248	GC/EC	1	ND ^b	ND	ND	ND	824	906
Aroclor 1254	GC/EC	1	ND	ND	ND	ND	328	306
Aroclor 1260	GC/EC	1	ND	ND	ND	ND	194	188
TOTAL AROCLOR	GC/EC	1	ND	ND	ND	ND	1,346	1,400
Spike Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	1	107	90	87	95	208 ^c	192 ^c
Process File			BP 160	BP 162	BP 163	BP 164	BP 179	BP 180
Extract Dilution			1:1	1:1	1:1	1:1	1:10	1:10
WGC Extraction Number	-		PCB 052	PCB 053	PCB 054	PCB 055	PCB 047	PCB 048
Sample Wt. Extracted (g)	-		0	1.117	1.135	1.168	0.119	0.116

^a L.O.D. = limit of detection in µg/g.

^b ND = none detected with a detection limit given by the L.O.D. value for each compound.

^c High recovery possibly due to the presence of pentachlorobenzene in soil sample.

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TABLE 3. RESULTS OF CAPILLARY GC/EC ANALYSES OF
KRUMHOLTZ PLANT SAMPLES

483.24518

August 15, 1983

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			KR 01	KR 01 (D)	KR 02	KR 03	KR 03 (D)	KR 04
			Concentration (µg/g)					
Aroclor 1248	GC/EC	1	5.4	4.14	84	ND	ND	ND
Aroclor 1254	GC/EC	1	5.0	4.68	90	12.5	10	1.45
Aroclor 1260	GC/EC	1	5.6	6.28	200	2.9	2.9	7.45
TOTAL AROCLOR	GC/EC	1	16	15.1	374	15.4	12.9	8.90
Surrogate Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	1	103	122	131	103	107	104
Process File			BP 124	BP 136	BP 106	BP 111	BP 110	BP 123
Extract Dilution			1:1	1:1	1:10	1:1	1:1	1:1
HPC Extraction Number	-		PCB 042	PCB 041	PCB 017	PCB 023	PCB 022	PCB 008
Sample Wt. Extracted (g)	-		1.028	1.019	1.026	1.042	1.037	1.052

^a L.O.D. = limit of detection in µg/g.

^b ND = none detected with a detection limit given by the L.O.D. value for each compound.

^c NA = not analyzed.

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TABLE 3. (Continued)

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			KR 04 (D)	KR 05	KR 06	KR 07	KR 08	KR 09
			Concentration (µg/g)					
Aroclor 1248	GC/EC	1	2.69	1.1	2.0	1.55	ND ^b	ND
Aroclor 1254	GC/EC	1	1.25	2.5	2.45	1.42	0.2	0.1
Aroclor 1260	GC/EC	1	7.22	.3	3.68	2.4	14.5	14.2
TOTAL AROCLOR	GC/EC	1	11.16	3.9	8.93	5.37	22.7	20.3
Pentachlorobenzene Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	1	107	1408 ^c	108	113	107	111
Process File			BP 137	BP 138	BP 139	BP 140	BP 121	BP 105
Extract Dilution			1:1	1:1	1:1	1:1	1:1	1:1
WBC Extraction Number	-		PCB 039	PCB 035	PCB 019	PCB 038	PCB 036	PCB 016
Sample Wt. Extracted (g)	-		1.047	1.039	1.028	1.015	1.001	1.003

^a L.O.D. = limit of detection in µg/g.^b ND = none detected with a detection limit given by the L.O.D. value for each compound.^c = High recovery possibly due to the presence of pentachlorobenzene in soil samples.

TABLE 1. (Continued)

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			KR 10	KR 11	KR 12	KR 13	KR 14	KR 15
			Concentration (µg/g)					
Aroclor 1248	GC/EC	1	ND	ND	ND	3.1	ND	ND
Aroclor 1254	GC/EC	1	ND	1.7	ND	7.6	11.1	.83
Aroclor 1260	GC/EC	1	ND	.96	ND	.96	10.9	1.13
TOTAL AROCLOR	GC/EC	1	ND	2.66	ND	11.66	22.0	1.96
Surrogate Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	1	112	163	106	109	117	119
Process File			BP 115	BP 119	BP 120	BP 141	BP 117	BP 113
Extract Dilution			1:1	1:1	1:1	1:1	1:1	1:1
SEC Extraction Number	-		PCB 028	PCB 032	PCB 033	PCB 018	PCB 039	PCB 036
Sample Wt. Extracted (g)	-		1.038	1.018	1.037	1.009	1.000	1.023

^a L.O.D. = limit of detection in µg/g.^b ND = none detected with a detection limit given by the L.O.D. value for each compound.^c NA = not analyzed.

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TABLE 1. (Continued)

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			KR 16	KR 17	KR 17 (D)	KR 18	KR 19	KR 20
			Concentration (µg/g)					
Aroclor 1248	GC/EC	1	.77	ND	ND	ND	23	.89
Aroclor 1254	GC/EC	1	1.7	ND	ND	ND	26.7	.89
Aroclor 1260	GC/EC	1	1.2	ND	ND	ND	16.3	1.44
TOTAL AROCLOR	GC/EC	1	3.67	ND	ND	ND	66	3.22
Surrogate Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	1	112	114	115	107	130	110
Process File			BP 142	BP 131	BP 145	BP 146	BP 122	BP 147
Extract Dilution			1:1	1:1	1:1	1:1	1:1	1:1
HPLC Extraction Number	-		PCB 021	PCB 031	PCB 030	PCB 024	PCB 037	PCB 034
Sample Wt. Extracted (g)	-		1.048	1.015	1.036	1.011	1.012	1.001

^a L.O.D. = limit of detection in µg/g.^b ND = none detected with a detection limit given by the L.O.D. value for each compound.^c NA = not analyzed.

TABLE 3. (Continued)

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			KR 21	KR 22	KR 23	KR 24	Method Blank	Method Blank
			Concentration (µg/g)					
Aroclor 1248	GC/EC	1	ND	ND	2.3	-	ND	ND
Aroclor 1254	GC/EC	1	1.2	ND	1.6	-	ND	ND
Aroclor 1260	GC/EC	1	1.73	ND	1.9	-	ND	ND
TOTAL AROCLOR	GC/EC	1	2.93	ND	5.8	-	ND	ND
Hexonite Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentachlorobenzene	GC/EC	1	150	107	105	-	101	105
Process File			BP 109	BP 112	BP 114	-	BP 148	BP 125
Extract Dilution			1:1	1:1	1:1	-	1:1	1:1
WPC Extraction Number	-		PCB 020	PCB 025	PCB 027	-	PCB 043	PCB 044
Sample Wt. Extracted (g)	-		1.009	1.004	1.003	-	0	0

^a L.O.D. = limit of detection in µg/g.^b ND = none detected with a detection limit given by the L.O.D. value for each compound.^c NA = not analyzed.

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TABLE 3. (Continued)

Analyte	Analysis Method	L.O.D. ^a	Sample Identification					
			Method Blank	Method Blank				
			Concentration (µg/g)					
Aroclor 1248	GC/EC	1	ND	ND				
Aroclor 1254	GC/EC	1	ND	ND				
Aroclor 1260	GC/EC	1	ND	ND				
TOTAL AROCLOR	GC/EC	1	ND	ND				
Surrogate Spiking Compound	Analysis Method	Amount added (µg/g)	Recovery (%)					
Pentaclorobenzene	GC/EC	1	103	111				
Process File			BP 149	BP 150				
Extract Dilution			1:1	1:1				
WPC Extraction Number	-		PCB 045	PCB 046				
Sample Wt. Extracted (g)	-		0	0				

^a L.O.D. = limit of detection in µg/g.^b ND = none detected with a detection limit given by the L.O.D. value for each compound.^c NA = not analysed.

sulfate were added and the samples were stirred, allowed to stand and stirred again. Samples were mixed again immediately prior to addition of extraction solvents. The extraction process involved the addition of 15 mL of methanol (all solvents are Burdick and Jackson "distilled in glass" grade), stirring and the subsequent addition of 150 mL of hexane. The samples were then shaken for 3 hours on a wrist action shaker and the extraction solvent removed. The solvent was then successively extracted with 50 mL of water, concentrated sulfuric acid (until clear), water, 20% potassium hydroxide and water. The hexane was then dried with 10 g of anhydrous sodium sulfate. Each sample was then placed on the head of a mixed phase column consisting of (top to bottom) 2 g of silica, 4 g of silica plus 40% sulfuric acid, 1 g of silica, 2 g of silica plus 36% potassium hydroxide and 1 g of silica. The column was eluted directly onto a column containing 2.5 g of Woelm basic alumina. The alumina column was first eluted with 10 mL of 2% methylene chloride/hexane (v/v) and this fraction discarded. An additional elution was made with 15 mL of a 50% methylene chloride/hexane (v/v) mixture to remove the 2,3,7,8-TCDD from the column.

For certain samples it was necessary to conduct further cleanup of the samples either by a HPLC cleanup used a Zorbax-ODS 25 cm by 4.6 mm ID column using methanol at 2.0 mL/minute as the eluting solvent. The eluate was collected in the 2,3,7,8-TCDD elution window and then extracted by adding 2 mL of 2% sodium bicarbonate to the methanol and extracting with 2 mL of hexane three times. Option D involved placing the samples on top of a column containing 10% Carbowack C on Celite packed to a depth of 2 cm in a 1.0 cm ID pipet. The column was eluted with 1 mL of hexane, 1 mL of 1:1 cyclohexane in methylene chloride, 1 mL of 75:20:5 methylene chloride/methanol/benzene and finally with

2 mL of toluene. The toluene fraction was collected to be concentrated.

All samples has 50 μ L of dodecane keeper added to them and then they were concentrated under a gentle stream of nitrogen and submitted for GC/MS analysis. The GC/MS analyses were conducted on Hewlett/Packard 5985B and 5987 GC/MS instruments. Samples that were not subjected to Option D cleanup were initially screened on a 30 m DB-5 capillary. Following HPLC cleanup any positive were then subjected to analysis on a 60 m SP2330 capillary column along with all samples that were prepared using Option D. The mass spectrometer was operated in the selected ion monitoring mode analyzing for ions characteristic of both the native (unlabeled) 2,3,7,8-TCDD (m/z 257, 320, 322), chlorine-37 labeled 2,3,7,8-TCDD (m/z 328) and carbon-13 labeled 2,3,7,8-TCDD (m/z 332, 334).

3.3.2 STANDARDS

Standard solutions were prepared from standards that had been cross validated with a standard provided as a check sample by the EPA. Concentration of the internal standards conformed to the levels specified by the method.

3.3.3 RESULTS

The results of the analyses of the samples are given in table 5. The table also gives all pertinent QA/QC information.

3.4 MERCURY ANALYSES

The analysis for mercury concentrations were conducted in accordance to the CO^1 vapor atomic absorption technique (1).

TABLE 4. ANALYTICAL RESULTS FOR KRUPPBRICH PLANT
SAMPLES FOR TOC AND TOTAL PHENOL

<u>Sample ID</u>	<u>TOC, ng/g</u>	<u>Total Phenol, ng/g</u>
Lagoon sludge	17.1	<0.071
Sample No. 1	4.6	<0.39
Sample No. 2	4.1	<0.44
Sample No. 3	7.6	<0.32

QUALITY CONTROL DATA

<u>Reference Standards</u>	<u>Observed Value, µg/g</u>	<u>True Value, µg/g</u>	<u>Percent Recovery</u>
PCS 35179 TOC	24.9	25.0	100
PCS 162 Phenol	95	100	95

TABLE 3. 2,2,2,9-TMP DATA REINPUT

REPLACES 2220 AND 1100000

Extraction				Genotype				Allele				Frequency				Comments			
Sample	Method	Genotype	Allele	Genotype	Allele	Genotype	Allele	Genotype	Allele	Genotype	Allele	Genotype	Allele						
00-01-0-1	J	C	C	10 04	0	1	1729	1500	112	136	119	72	0	0	0	0	1704		
00-02-0-1	J	C	C	11 56	0	1	1722	0011	-	0	0	116	3	0	1100	100	00-1		
00-03-0-1	J	C	C	10 09	0	1	1721	1000	0	55	0	96	74	143	212	1220	2000	00-1	
00-04-0-1	J	C	C	11 07	0	1	1721	0	90	17	82	56	0	1	112	1010	1700	150-1	
00-05-0-1	J	C	C	10 03	0	0	011	1553	-	0	0	120	0	0	0	272	350	00-1	
00-06-0-1	J	C	C	10 11	0	1	1729	1000	-	0	0	105	0	0	0	351	303	102-1	
00-07-0-1	J	C	C	11 06	0	1	1729	150	1	0	112	64	64	0	0	376	1177	150-1	
00-08-0-1	J	C	C	10 09	0	1	1729	0	0	0	112	0	0	0	0	375	2200	00-1	
00-09-0-1	J	C	C	10 10	0	0	012	0725	0	0	119	25	27	0	0	0	0	0	
00-10-0-1	J	C	C	11 03	0	0	0	1105	0	70	70	120	1137	1000	517	2012	1000	0 0 pph edited	
00-11-0-1	J	C	C	11 22	0	0	0	1105	-	0	0	133	100	0	0	0	0	0	
00-12-0-1	J	C	C	10 03	0	0	010	0700	-	0	0	150	35	31	0	0	0	0	
00-13-0-1	J	C	C	11 03	0	0	0	1102	0	55	0	119	13	20	0	0	1030	2000	00-1
00-14-0-1	J	C	C	10 11	0	1	1729	2363	-	0	77	93	0	0	0	701	1500	2170	
00-15-0-1	J	C	C	10 03	0	0	011	1721	0	0	110	0	21	0	0	1006	700	00-1	
00-16-0-1	J	C	C	10 02	0	1	1727	0002	-	0	70	119	0	0	0	1357	2071	100-1	
00-17-0-1	J	C	C	10 10	0	1	1729	0002	-	0	70	127	11	0	0	0	201	001	100
00-18-0-1	J	C	C	11 01	0	0	010	1729	0	0	113	0	0	0	0	713	1000	00-1	
00-19-0-1	J	C	C	10 03	0	0	011	1520	-	0	73	112	0	0	0	200	520	1130	
00-20-0-1	J	C	C	10 37	1	1	1721	1000	0	75	70	100	1121	1000	095	2000	6200	00-1	
00-21-0-1	J	C	C	10 06	0	1	1729	1700	-	0	0	127	0	0	0	1000	100	00-1	
00-22-0-1	J	C	C	10 03	0	0	011	1500	-	0	0	122	0	0	0	335	107	00-1	
00-23-0-1	J	C	C	11 02	2	0	0	1720	1002	0	0	113	506	050	170	51	1260	1001	
00-24-0-1	J	C	C	10 10	0	0	0	1720	1000	0	22	0	0	0	0	0	0	0	
00-25-0-1	J	C	C	11 07	10	0	0	1703	0	0	0	0	0	0	0	0	0	0	
00-26-0-1	J	C	C	10 03	0	1	1721	2353	0	0	123	34	30	0	150	1300	2600	100-1	
00-27-0-1	J	C	C	11 01	0	0	0	1701	2355	0	71	71	6112	6231	1000	3012	3271	0 0 pph edited	
00-28-0-1	J	C	C	10 06	0	1	1729	1645	-	0	77	117	0	0	0	1116	1100	00-1	
00-29-0-1	J	C	C	10 37	0	0	0	1723	1555	0	62	140	0	0	0	1150	1000	00-1	
00-30-0-1	J	C	C	10 03	0	1	1723	1535	-	0	0	0	0	0	0	0	0	0	
00-31-0-1	J	C	C	10 03	0	0	011	1555	-	0	0	114	3	0	0	0	0	0	
00-32-0-1	J	C	C	10 03	0	0	012	1600	-	0	63	120	0	0	0	200	611	00-1	
00-33-0-1	J	C	C	10 01	0	1	10-10	0211	0	72	10	90	1362	1050	136	22920	53000	170-1	
00-34-0-1	J	C	C	10 04	0	1	10-10	0220	0	75	70	90	091	324	170	10000	10000	00-1	
00-35-0-1	J	C	C	10 01	0	1	10-10	0200	-	0	70	90	0	0	0	20000	15000	00-1	
00-36-0-1	J	C	C	10 10	0	1	10-10	0100	-	0	77	100	0	30	0	16350	20100	00-1	
00-37-0-1	J	C	C	10 21	10	1	10-10	0113	-	0	70	91	0	901	0	20500	01002	0020-1	
00-38-0-1	J	C	C	10 02	0	1	10-10	1300	0	70	83	90	10010	10000	517	10000	10000	00-1	
00-39-0-1	J	C	C	10 03	0	2	10-10	1312	0	70	75	97	20500	05000	10000	10010	10000	0 0 pph edited	
00-40-0-1	J	C	C	10 23	0	0	10-10	1359	0	62	64	73	19000	25000	10010	2000	10000	0 0 pph edited	
00-41-0-1	J	C	C	10 03	0	2	10-10	1400	0	77	77	85	70000	00770	10000	0700	10000	0 0 pph edited	
00-42-0-1	J	C	C	10 01	0	1	10-10	1410	0	70	80	10	10000	10000	10000	10000	10000	00-1	
00-43-0-1	J	C	C	10 26	0	0	10-10	1511	0	73	77	79	22002	21000	10000	0010	23000	10071	
00-44-0-1	J	C	C	10 01	0	1	10-10	1610	-	0	81	95	0	0	0	20025	00010	00001	

Corrected for contribution by native TCOO (Subtract 0.009 of n/s 32)

^bBased on 10-year sample.

① • Duplicate

LD = Low Spatial

100 • High School
 100 • High School

MS - 1041 10/10/00
MS - 1042 10/10/00

$\beta = 200$
 $\beta = 200$

B.C.O. = Cleanup

W. • 10/12/2000

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TABLE 6. RESULTS OF ANALYSIS OF KIRKBRIDGE SOIL SAMPLES FOR MERCURY

Sample ID	(µg/gram) PPM			Sample ID	(µg/gram) PPM
KR01	11.6 ^a	(9.5)	(13.7)	KR14	0.9
KR02	2.0			KR15	0.3
KR03	8000.0			KR16	<0.3
KR04	13.6			KR17	<0.3
KR05	3.1			KR18	<0.3
KR06	1.5			KR19	6.4
KR07	1.4			KR20	0.8
KR08	10.9			KR21	1.1
KR09	7.8			KR22	<0.8
KR10	<0.3			KR23	0.8
^a Results for (KR01) and (KR13) are averaged values from duplicate samples analysis					
KR11	1.3	(0.2)	(0.3)	QC DATA	
KR12	<0.3			1. QC REFERENCE: Recovery-97 and 96-	
				2. SAMPLE SPIKE (KR06) Recovery 86%	
KR13	0.3 ^a			After Digestion (KR20) Recovery 71%	

0357/3

REFERENCES

1. U.S. EP Methods for Chemical Analysis of Water and Wastes,
EPA 600/4-79-020, March 1979

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