ERM–Southwest, Inc.

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October 4, 1993

Ms. Jean Mescher
McKesson Corporation
One Post Street
San Francisco, CA 94104-5296 W.O. #92-18

Subject: Arkwood, Inc. Superfund Site - Omaha, Arkansas
Monthly Progress Report No. 19 - September 1993

ERM

Dear Ms. Mescher:

The following progress report is being provided by ERM-Southwest, Inc., for submission by McKesson Service Merchandising Co. (*MMI*), formerly Mass Merchandisers, Inc., in accordance with Section IX.B.1 of the Consent Decree. This report is to be submitted to the United States Environmental Protection Agency (*EPA*) and to the Arkansas Department of Pollution Control and Ecology (*State*).

Actions taken towards achieving compliance with the Consent Decree:

1. General description of Work (as defined in the Consent Decree) activities commenced or completed during the reporting period:

   a. Continued preparation of RD documents in anticipation of submitting the Phase I - Interim Action Pretreatment and Storage 60% - 90% review set by October 13, 1993.

   b. Received c-PNA and dioxin results on additional samples from the supplemental pilot work done in May of this year.

2. Data received during the reporting period:

   a. Analytical data for c-PNA and dioxin were received from Gulf States Analytical; the report is attached.

   b. Samples taken subsequent to May 1, 1993 will be discarded after November 5, 1993 unless EPA notifies McKesson otherwise.

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Metairie, Louisiana 70002
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A member of the Environmental Resources Management Group

A3600046

3. Work activities projected to be commenced or completed during the next three reporting periods:

   a. October 1993

      Transmit Phase I - Interim Action Pretreatment and Storage 60% - 90% Submittal by October 13 for EPA review.

   b. November 1993

      1) EPA complete review of Phase I - Interim Action Pretreatment and Storage 60% - 90% Submittal.

      2) Prepare response to EPA 80% review comments.

      3) Begin preparation of Phase I - Interim Action Pretreatment and Storage 100% Submittal.

   c. December 1993

      Submit Draft Phase I - Interim Action Pretreatment and Storage 100% Submittal and Draft Remedial Action Plan to EPA for review.

4. Problems encountered or anticipated in commencing or completing the Work activities:

   No problems have been encountered or are anticipated at this time.

Sincerely,
ERM-SOUTHWEST, INC.

Ronald T. Grimes, P.E.

RTG/kee
Attachment

cc: D. S. Diehl, ERM-Southwest, Inc.
M. L. Lutz, ERM-Southwest, Inc.

TABLE 1

Summary of Analytical Results Received September 1993

Arkwood, Inc.
Omaha, Arkansas

Sample No.	c-PNA (B(a)P Equivalent) (mg/kg)	Total 2,3,7,8-TCDD Toxicity Equivalent (µg/kg)
SWP-02-2D	2.744	32
SWP-02-2C	0.697	4.2
SWP-02-2F	2.480	26
SWP-04-2D	0.906	14
SWP-04-2C	0.512	3.6
SWP-04-2F	1.560	22

[illegible]

09/23/93

Mr. Ron Grimes
ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094

Reference:
Project: Arkwood
Project No.: 92-17
GSAI Group: 10743 Group Report Date: 09/23/93

Dear Mr. Grimes:

Enclosed are the analytical results for your above referenced project. The following samples are included in the report.

SWP-04-2D	SWP-02-2D	SWP-04-2C
SWP-02-2C	SWP-04-2F	SWP-02-2F

All holding times were met for the tests performed on these samples, except for the following:

Sample - (Sample Date) Test Description	Expiration Date	Date Analyzed	Days Past Holding Time
SWP-04-2D - (05/16/93)			
Dioxins and Furans, Solids	06/25/93	09/22/93	89
Semivolatile Extraction - Solids	05/30/93	08/24/93	86
Acid-Base Partition Cleanup	05/23/93	08/24/93	93
Polynuclear Aromatics, GC/MS, SW	06/25/93	09/07/93	74
SWP-02-2D - (05/14/93)			
Dioxins and Furans, Solids	06/23/93	09/22/93	91
Semivolatile Extraction - Solids	05/28/93	08/24/93	88
Acid-Base Partition Cleanup	05/21/93	08/24/93	95
Polynuclear Aromatics, GC/MS, SW	06/23/93	09/07/93	76
SWP-04-2C - (05/20/93)			
Dioxins and Furans, Solids	06/29/93	09/22/93	85
Semivolatile Extraction - Solids	06/03/93	08/24/93	82
Acid-Base Partition Cleanup	05/27/93	08/24/93	89
Polynuclear Aromatics, GC/MS, SW	06/29/93	09/07/93	70
SWP-02-2C - (05/20/93)			
Dioxins and Furans, Solids	06/29/93	09/22/93	85
Semivolatile Extraction - Solids	06/03/93	08/24/93	82
Acid-Base Partition Cleanup	05/27/93	08/24/93	89
Polynuclear Aromatics, GC/MS, SW	06/29/93	09/09/93	72
SWP-04-2F - (05/20/93)			

09/23/93

Reference:
Project: Arkwood
Project No.: 92-17
GSAI Group: 10743 Group Report Date: 09/23/93

Sample - (Sample Date) Test Description	Expiration Date	Date Analyzed	Days Past Holding Time
SWP-04-2F - (05/20/93)			
Dioxins and Furans, Solids	06/29/93	09/22/93	85
Semivolatile Extraction - Solids	06/03/93	08/24/93	82
Acid-Base Partition Cleanup	05/27/93	08/24/93	89
Polynuclear Aromatics, GC/MS, SW	06/29/93	09/08/93	71
SWP-02-2F - (05/20/93)			
Dioxins and Furans, Solids	06/29/93	09/22/93	85
Semivolatile Extraction - Solids	06/03/93	08/24/93	82
Acid-Base Partition Cleanup	05/27/93	08/24/93	89
Polynuclear Aromatics, GC/MS, SW	06/29/93	09/08/93	71

Holding time for the above referenced tests expired prior to request for analysis.

Our A2LA accreditation requires that, should this report be reproduced, it must be reproduced in total.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Gulf States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely yours,

Melanie L. D'Aoust
Project Manager

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 10743
Date Reported: 09/23/93
Date Received: 08/09/93

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:55752 - SWP-04-2D						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00020	09/22/93	SUB
	Tetrachlorodibenzo-p-dioxins	0.0499	mg/kg	0.00023	09/22/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00033	09/22/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00040	09/22/93	SUB
	Hexachlorodibenzofurans	0.0616	mg/kg	0.00069	09/22/93	SUB
	Hexachlorodibenzo-p-dioxins	ND	mg/kg	0.00066	09/22/93	SUB
	Heptachlorodibenzofurans	0.413	mg/kg	0.00059	09/22/93	SUB
	Heptachlorodibenzo-p-dioxins	0.900	mg/kg	0.00067	09/22/93	SUB
	Octachlorodibenzofurans	0.512	mg/kg	0.00110	09/22/93	SUB
	Octachlorodibenzo-p-dioxins	5.88	mg/kg	0.00089	09/22/93	SUB
	Total Dioxins and Furans	8	mg/kg		09/22/93	SUB
	Total 2,3,7,8-TCDD Toxicity Equival	0	mg/kg		09/22/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	0.401	mg/kg	0.330	09/07/93	HV
	Acenaphthylene	ND	mg/kg	0.330	09/07/93	HV
	Anthracene	1.43	mg/kg	0.330	09/07/93	HV
	Benzo(a)anthracene	0.826	mg/kg	0.330	09/07/93	HV
	Benzo(b)fluoranthene	2.41	mg/kg	0.330	09/07/93	HV
	Benzo(k)fluoranthene	0.688	mg/kg	0.330	09/07/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	09/07/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	09/07/93	HV
	Chrysene	2.15	mg/kg	0.330	09/07/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	09/07/93	HV
	Fluoranthene	15.0	mg/kg	1.65	09/08/93	HV
	Fluorene	ND	mg/kg	0.330	09/07/93	HV
	1-Methylnaphthalene	1.14	mg/kg	0.330	09/07/93	HV
	2-Methylnaphthalene	1.69	mg/kg	0.330	09/07/93	HV
	Naphthalene	ND	mg/kg	0.330	09/07/93	HV
	Phenanthrene	5.43	mg/kg	1.65	09/08/93	HV
	Pyrene	4.17	mg/kg	0.330	09/07/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	09/07/93	HV
Sample:55753 - SWP-02-2D						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00019	09/22/93	SUB

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ERM-Southwest, Inc. GSAI Group: 10743

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:55753 - SWP-02-2D						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00022	09/22/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00031	09/22/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00038	09/22/93	SUB
	Hexachlorodibenzofurans	0.125	mg/kg	0.00064	09/22/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0634	mg/kg	0.00062	09/22/93	SUB
	Heptachlorodibenzofurans	0.893	mg/kg	0.00055	09/22/93	SUB
	Heptachlorodibenzo-p-dioxins	2.07	mg/kg	0.00063	09/22/93	SUB
	Octachlorodibenzofurans	0.960	mg/kg	0.0010	09/22/93	SUB
	Octachlorodibenzo-p-dioxins	10.5	mg/kg	0.00083	09/22/93	SUB
	Total Dioxins and Furans	15	mg/kg		09/22/93	SUB
	Total 2,3,7,8-TCDD Toxicity Equival	0	mg/kg		09/22/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.660	09/07/93	HV
	Acenaphthylene	1.03	mg/kg	0.660	09/07/93	HV
	Anthracene	2.47	mg/kg	0.660	09/07/93	HV
	Benzo(a)anthracene	2.13	mg/kg	0.660	09/07/93	HV
	Benzo(b)fluoranthene	6.44	mg/kg	0.660	09/07/93	HV
	Benzo(k)fluoranthene	1.87	mg/kg	0.660	09/07/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.660	09/07/93	HV
	Benzo(a)pyrene	0.924	mg/kg	0.660	09/07/93	HV
	Chrysene	5.18	mg/kg	0.660	09/07/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.660	09/07/93	HV
	Fluoranthene	28.3	mg/kg	3.30	09/08/93	HV
	Fluorene	ND	mg/kg	0.660	09/07/93	HV
	1-Methylnaphthalene	ND	mg/kg	0.660	09/07/93	HV
	2-Methylnaphthalene	1.54	mg/kg	0.660	09/07/93	HV
	Naphthalene	ND	mg/kg	0.660	09/07/93	HV
	Phenanthrene	8.75	mg/kg	0.660	09/07/93	HV
	Pyrene	23.8	mg/kg	3.30	09/08/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.660	09/07/93	HV
Sample:56051 - SWP-04-2C						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00020	09/22/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00023	09/22/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00032	09/22/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00040	09/22/93	SUB
	Hexachlorodibenzofurans	ND	mg/kg	0.00068	09/22/93	SUB
	Hexachlorodibenzo-p-dioxins	ND	mg/kg	0.00065	09/22/93	SUB
	Heptachlorodibenzofurans	0.0858	mg/kg	0.00058	09/22/93	SUB
	Heptachlorodibenzo-p-dioxins	0.301	mg/kg	0.00066	09/22/93	SUB

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ERM-Southwest, Inc. GSAI Group: 10743

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:56051 - SWP-04-2C						
2795	Dioxins and Furans, Solids					
	Octachlorodibenzofurans	0.110	mg/kg	0.0011	09/22/93	SUB
	Octachlorodibenzo-p-dioxins	1.32	mg/kg	0.00087	09/22/93	SUB
	Total Dioxins and Furans	2	mg/kg		09/22/93	SUB
	Total 2,3,7,8-TCDD Toxicity Equival	0	mg/kg		09/22/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	0.842	mg/kg	0.330	09/07/93	HV
	Acenaphthylene	0.399	mg/kg	0.330	09/07/93	HV
	Anthracene	0.794	mg/kg	0.330	09/07/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	09/07/93	HV
	Benzo(b)fluoranthene	0.593	mg/kg	0.330	09/07/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	09/07/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	09/07/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	09/07/93	HV
	Chrysene	0.870	mg/kg	0.330	09/07/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	09/07/93	HV
	Fluoranthene	5.99	mg/kg	0.660	09/09/93	HV
	Fluorene	1.84	mg/kg	0.330	09/07/93	HV
	1-Methylnaphthalene	1.37	mg/kg	0.330	09/07/93	HV
	2-Methylnaphthalene	1.84	mg/kg	0.330	09/07/93	HV
	Naphthalene	ND	mg/kg	0.330	09/07/93	HV
	Phenanthrene	9.87	mg/kg	0.660	09/09/93	HV
	Pyrene	2.10	mg/kg	0.330	09/07/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	09/07/93	HV
Sample:56052 - SWP-02-2C						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00020	09/22/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00023	09/22/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00032	09/22/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00040	09/22/93	SUB
	Hexachlorodibenzofurans	ND	mg/kg	0.00068	09/22/93	SUB
	Hexachlorodibenzo-p-dioxins	ND	mg/kg	0.00065	09/22/93	SUB
	Heptachlorodibenzofurans	0.140	mg/kg	0.00058	09/22/93	SUB
	Heptachlorodibenzo-p-dioxins	0.217	mg/kg	0.00066	09/22/93	SUB
	Octachlorodibenzofurans	0.182	mg/kg	0.0011	09/22/93	SUB
	Octachlorodibenzo-p-dioxins	1.84	mg/kg	0.00087	09/22/93	SUB
	Total Dioxins and Furans	2	mg/kg		09/22/93	SUB
	Total 2,3,7,8-TCDD Toxicity Equival	0	mg/kg		09/22/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	0.733	mg/kg	0.660	09/09/93	HV
	Acenaphthylene	0.486	mg/kg	0.330	09/07/93	HV

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ERM-Southwest, Inc. GSAI Group: 10743

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:56052 - SWP-02-2C						
6721	Polynuclear Aromatics, GC/MS, SW					
	Anthracene	2.61	mg/kg	0.330	09/07/93	HV
	Benzo(a)anthracene	0.737	mg/kg	0.330	09/07/93	HV
	Benzo(b)fluoranthene	1.22	mg/kg	0.330	09/07/93	HV
	Benzo(k)fluoranthene	0.363	mg/kg	0.330	09/07/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	09/07/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	09/07/93	HV
	Chrysene	1.22	mg/kg	0.330	09/07/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	09/07/93	HV
	Fluoranthene	7.18	mg/kg	1.65	09/08/93	HV
	Fluorene	1.11	mg/kg	0.330	09/07/93	HV
	1-Methylnaphthalene	1.06	mg/kg	0.330	09/07/93	HV
	2-Methylnaphthalene	1.42	mg/kg	0.330	09/07/93	HV
	Naphthalene	ND	mg/kg	0.330	09/07/93	HV
	Phenanthrene	7.93	mg/kg	0.660	09/09/93	HV
	Pyrene	3.83	mg/kg	0.330	09/07/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	09/07/93	HV
Sample:56057 - SWP-04-2F						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00020	09/22/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00023	09/22/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00033	09/22/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00040	09/22/93	SUB
	Hexachlorodibenzofurans	0.0719	mg/kg	0.00068	09/22/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0303	mg/kg	0.00065	09/22/93	SUB
	Heptachlorodibenzofurans	0.679	mg/kg	0.00059	09/22/93	SUB
	Heptachlorodibenzo-p-dioxins	1.59	mg/kg	0.00067	09/22/93	SUB
	Octachlorodibenzofurans	0.707	mg/kg	0.0011	09/22/93	SUB
	Octachlorodibenzo-p-dioxins	8.13	mg/kg	0.00088	09/22/93	SUB
	Total Dioxins and Furans	11	mg/kg		09/22/93	SUB
	Total 2,3,7,8-TCDD Toxicity Equival	0	mg/kg		09/22/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	1.65	09/08/93	HV
	Acenaphthylene	ND	mg/kg	1.65	09/08/93	HV
	Anthracene	2.08	mg/kg	0.330	09/07/93	HV
	Benzo(a)anthracene	1.17	mg/kg	0.330	09/07/93	HV
	Benzo(b)fluoranthene	4.32	mg/kg	0.330	09/07/93	HV
	Benzo(k)fluoranthene	1.18	mg/kg	0.330	09/07/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	09/04/93	HV
	Benzo(a)pyrene	0.461	mg/kg	0.330	09/07/93	HV
	Chrysene	2.83	mg/kg	0.330	09/07/93	HV

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 10743

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:56057 - SWP-04-2F						
6721	Polynuclear Aromatics, GC/MS, SW					
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	09/04/93	HV
	Fluoranthene	24.7	mg/kg	1.65	09/08/93	HV
	Fluorene	3.81	mg/kg	1.65	09/08/93	HV
	1-Methylnaphthalene	2.30	mg/kg	0.330	09/07/93	HV
	2-Methylnaphthalene	3.03	mg/kg	0.330	09/07/93	HV
	Naphthalene	0.485	mg/kg	0.330	09/07/93	HV
	Phenanthrene	18.8	mg/kg	1.65	09/08/93	HV
	Pyrene	9.87	mg/kg	1.65	09/08/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	09/07/93	HV
Sample:56061 - SWP-02-2F						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00020	09/22/93	SUB
	Tetrachlorodibenzo-p-dioxins	0.0128	mg/kg	0.00023	09/22/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00033	09/22/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00040	09/22/93	SUB
	Hexachlorodibenzofurans	0.123	mg/kg	0.00068	09/22/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0289	mg/kg	0.00065	09/22/93	SUB
	Heptachlorodibenzofurans	0.767	mg/kg	0.00058	09/22/93	SUB
	Heptachlorodibenzo-p-dioxins	1.63	mg/kg	0.00066	09/22/93	SUB
	Octachlorodibenzofurans	0.798	mg/kg	0.0011	09/22/93	SUB
	Octachlorodibenzo-p-dioxins	8.47	mg/kg	0.00088	09/22/93	SUB
	Total Dioxins and Furans	12	mg/kg		09/22/93	SUB
	Total 2,3,7,8-TCDD Toxicity Equival	0	mg/kg		09/22/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	1.65	09/08/93	HV
	Acenaphthylene	ND	mg/kg	1.65	09/08/93	HV
	Anthracene	1.96	mg/kg	0.330	09/07/93	HV
	Benzo(a)anthracene	1.92	mg/kg	0.330	09/07/93	HV
	Benzo(b)fluoranthene	6.45	mg/kg	1.65	09/08/93	HV
	Benzo(k)fluoranthene	1.98	mg/kg	0.330	09/07/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	09/07/93	HV
	Benzo(a)pyrene	0.907	mg/kg	0.330	09/07/93	HV
	Chrysene	4.12	mg/kg	0.330	09/07/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	09/07/93	HV
	Fluoranthene	23.1	mg/kg	3.30	09/09/93	HV
	Fluorene	2.02	mg/kg	1.65	09/08/93	HV
	1-Methylnaphthalene	0.560	mg/kg	0.330	09/07/93	HV
	2-Methylnaphthalene	1.01	mg/kg	0.330	09/07/93	HV
	Naphthalene	0.401	mg/kg	0.330	09/07/93	HV
	Phenanthrene	7.47	mg/kg	1.65	09/08/93	HV

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 10743

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:56061 - SWP-02-2F						
6721	Polynuclear Aromatics, GC/MS, SW					
	Pyrene	14.5	mg/kg	1.65	09/08/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	09/07/93	HV

Test Method Summary:
2795 - SW-846 8280 6721 - SW-846 8270

ND - Compound was analyzed but not detected.

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust
Project Manager

PCDD/PCDF SUMMARY REPORT

SAMPLE: 10743-55752

PROJECT ID: GULF STATES ANALYTICAL

SPECIFIC ANALYTES	CONC (PPB)	DL (PPB)	BLANK (PPB)
2,3,7,8-TCDD	ND	0.23	-
1,2,3,7,8-PeCDD	ND	0.4	-
1,2,3,4,7,8-HxCDD	ND	0.66	-
1,2,3,6,7,8-HxCDD	ND	0.33	-
1,2,3,7,8,9-HxCDD	ND	0.56	-
1,2,3,4,6,7,8-HpCDD	671	0.67	-
OCDD	5880	0.89	-
2,3,7,8-TCDF	ND	0.2	-
1,2,3,7,8-PeCDF	ND	0.32	-
2,3,4,7,8-PeCDF	ND	0.33	-
1,2,3,4,7,8-HxCDF	ND	0.37	-
1,2,3,6,7,8-HxCDF	ND	0.29	-
2,3,4,6,7,8-HxCDF	ND	0.54	-
1,2,3,7,8,9-HxCDF	ND	0.69	-
1,2,3,4,6,7,8-HpCDF	83.5	0.55	-
1,2,3,4,7,8,9-HpCDF	ND	0.59	-
OCDF	512	1.1	-

Definitions:

CONC – The concentration, given in parts per billion (ppb) or parts per trillion (ppt).

DL – The detection limit, given in parts per billion (ppb), parts per trillion (ppt), or in nanograms (ng).

BLANK – The concentration of the method blank.

ND – (Non-Detect) The concentration of the analyte is less than the detection limit.

TOTAL ANALYTES	CONC (PPB)	DL (PPB)
TOTAL TCDD	49.9	0.23
TOTAL PeCDD	ND	0.40
TOTAL HxCDD	ND	0.66
TOTAL HpCDD	900	0.67
TOTAL TCDF	ND	0.20
TOTAL PeCDF	ND	0.33
TOTAL HxCDF	61.8	0.69
TOTAL HpCDF	413	0.59

TOTAL DIOXINS/FURANS: 7816.7 PPB

TOTAL 2,3,7,8-TCDD TOXICITY (1989 ITEF) EQUIVALENTS: 14 PPB

For information, please reference the following when contacting our Technical Services Department:

TLH Project: P012463
TLH File: MA00265
TLH Method: 8280

12823 Park One Drive • Sugar Land, Texas 77478

Phone: (713) 240-5340 • FAX: (713) 240-5341

PCDD/PCDF SUMMARY REPORT

SAMPLE: 10743-55753

PROJECT ID: GULF STATES ANALYTICAL

SPECIFIC ANALYTES	CONC (PPB)	DL (PPB)	BLANK (PPB)
2,3,7,8-TCDD	ND	0.22	-
1,2,3,7,8-PeCDD	ND	0.38	-
1,2,3,4,7,8-HxCDD	ND	0.62	-
1,2,3,6,7,8-HxCDD	30.4	0.31	-
1,2,3,7,8,9-HxCDD	ND	0.52	-
1,2,3,4,6,7,8-HpCDD	1530	0.63	-
OCDD	10500	0.83	-
2,3,7,8-TCDF	ND	0.19	-
1,2,3,7,8-PeCDF	ND	0.3	-
2,3,4,7,8-PeCDF	ND	0.31	-
1,2,3,4,7,8-HxCDF	ND	0.35	-
1,2,3,6,7,8-HxCDF	ND	0.27	-
2,3,4,6,7,8-HxCDF	ND	0.5	-
1,2,3,7,8,9-HxCDF	ND	0.64	-
1,2,3,4,6,7,8-HpCDF	165	0.52	-
1,2,3,4,7,8,9-HpCDF	ND	0.55	-
OCDF	960	1	-

Definitions:

CONC – The concentration, given in parts per billion (ppb) or parts per trillion (ppt).

DL – The detection limit, given in parts per billion (ppb), parts per trillion (ppt), or in nanograms (ng).

BLANK – The concentration of the method blank.

ND – (Non-Detect) The concentration of the analyte is less than the detection limit.

TOTAL ANALYTES	CONC (PPB)	DL (PPB)
TOTAL TCDD	ND	0.22
TOTAL PeCDD	ND	0.38
TOTAL HxCDD	63.4	0.62
TOTAL HpCDD	2070	0.63
TOTAL TCDF	ND	0.19
TOTAL PeCDF	ND	0.31
TOTAL HxCDF	125	0.64
TOTAL HpCDF	893	0.55

TOTAL DIOXINS/FURANS: 14611.4 PPB

TOTAL 2,3,7,8-TCDD TOXICITY (1989 ITEF) EQUIVALENTS: 32 PPB

For information, please reference the following when contacting our Technical Services Department:

TLH Project: P012463
TLH File: MA00269
TLH Method: 8280

12823 Park One Drive • Sugar Land, Texas 77478

Phone: (713) 240-5340 • FAX: (713) 240-5341

03:50 PM 9/28/93

PCDD/PCDF SUMMARY REPORT

SAMPLE: 10743-56051

PROJECT ID: GULF STATES ANALYTICAL

SPECIFIC ANALYTES	CONC (PPB)	DL (PPB)	BLANK (PPB)
2,3,7,8-TCDD	ND	0.23	-
1,2,3,7,8-PeCDD	ND	0.4	-
1,2,3,4,7,8-HxCDD	ND	0.65	-
1,2,3,6,7,8-HxCDD	ND	0.33	-
1,2,3,7,8,9-HxCDD	ND	0.55	-
1,2,3,4,6,7,8-HpCDD	222	0.66	-
OCDD	1320	0.87	-
2,3,7,8-TCDF	ND	0.2	-
1,2,3,7,8-PeCDF	ND	0.31	-
2,3,4,7,8-PeCDF	ND	0.32	-
1,2,3,4,7,8-HxCDF	ND	0.36	-
1,2,3,6,7,8-HxCDF	ND	0.28	-
2,3,4,6,7,8-HxCDF	ND	0.53	-
1,2,3,7,8,9-HxCDF	ND	0.68	-
1,2,3,4,6,7,8-HpCDF	ND	0.54	-
1,2,3,4,7,8,9-HpCDF	ND	0.58	-
OCDF	110	1.1	-

Definitions:

CONC – The concentration, given in parts per billion (ppb) or parts per trillion (ppt).

DL – The detection limit, given in parts per billion (ppb), parts per trillion (ppt), or in nanograms (ng).

BLANK – The concentration of the method blank.

ND – (Non-Detect) The concentration of the analyte is less than the detection limit.

TOTAL ANALYTES	CONC (PPB)	DL (PPB)
TOTAL TCDD	ND	0.23
TOTAL PeCDD	ND	0.40
TOTAL HxCDD	ND	0.65
TOTAL HpCDD	301	0.66
TOTAL TCDF	ND	0.20
TOTAL PeCDF	ND	0.32
TOTAL HxCDF	ND	0.68
TOTAL HpCDF	85.8	0.58

TOTAL DIOXINS/FURANS: 1816.8 PPB

TOTAL 2,3,7,8-TCDD TOXICITY (1989 ITEF) EQUIVALENTS: 3.6 PPB

For information, please reference the following when contacting our Technical Services Department:

TLH Project: P012463
TLH File: MA00272
TLH Method: 8280

12823 Park One Drive • Sugar Land, Texas 77478

Phone: (713) 240-5340 • FAX: (713) 240-5341

PCDD/PCDF SUMMARY REPORT

SAMPLE: 10743-56052
PROJECT ID: GULF STATES ANALYTICAL

SPECIFIC ANALYTES	CONC (PPB)	DL (PPB)	BLANK (PPB)
2,3,7,8-TCDD	ND	0.23	-
1,2,3,7,8-PeCDD	ND	0.4	-
1,2,3,4,7,8-HxCDD	ND	0.65	-
1,2,3,6,7,8-HxCDD	ND	0.33	-
1,2,3,7,8,9-HxCDD	ND	0.55	-
1,2,3,4,6,7,8-HpCDD	217	0.66	-
OCDD	1840	0.87	-
2,3,7,8-TCDF	ND	0.2	-
1,2,3,7,8-PeCDF	ND	0.31	-
2,3,4,7,8-PeCDF	ND	0.32	-
1,2,3,4,7,8-HxCDF	ND	0.36	-
1,2,3,6,7,8-HxCDF	ND	0.28	-
2,3,4,6,7,8-HxCDF	ND	0.53	-
1,2,3,7,8,9-HxCDF	ND	0.68	-
1,2,3,4,6,7,8-HpCDF	ND	0.54	-
1,2,3,4,7,8,9-HpCDF	ND	0.58	-
OCDF	182	1.1	-

Definitions:

CONC – The concentration, given in parts per billion (ppb) or parts per trillion (ppt).

DL – The detection limit, given in parts per billion (ppb), parts per trillion (ppt), or in nanograms (ng).

BLANK – The concentration of the method blank.

ND – (Non-Detect) The concentration of the analyte is less than the detection limit.

TOTAL ANALYTES	CONC (PPB)	DL (PPB)
TOTAL TCDD	ND	0.23
TOTAL PeCDD	ND	0.40
TOTAL HxCDD	ND	0.65
TOTAL HpCDD	217	0.66
TOTAL TCDF	ND	0.20
TOTAL PeCDF	ND	0.32
TOTAL HxCDF	ND	0.68
TOTAL HpCDF	140	0.58

TOTAL DIOXINS/FURANS: 2379 PPB

TOTAL 2,3,7,8-TCDD TOXICITY (1989 ITEF) EQUIVALENTS: 4.2 PPB

For information, please reference the following when contacting our Technical Services Department:

TLH Project: P012463
TLH File: MA00270
TLH Method: 8280

12823 Park One Drive • Sugar Land, Texas 77478
Phone: (713) 240-5340 • FAX: (713) 240-5341

PCDD/PCDF SUMMARY REPORT

SAMPLE: 10743-56057

PROJECT ID: GULF STATES ANALYTICAL

SPECIFIC ANALYTES	CONC (PPB)	DL (PPB)	BLANK (PPB)
2,3,7,8-TCDD	ND	0.23	-
1,2,3,7,8-PeCDD	ND	0.4	-
1,2,3,4,7,8-HxCDD	ND	0.65	-
1,2,3,6,7,8-HxCDD	ND	0.33	-
1,2,3,7,8,9-HxCDD	ND	0.56	-
1,2,3,4,6,7,8-HpCDD	1170	0.67	-
OCDD	8130	0.88	-
2,3,7,8-TCDF	ND	0.2	-
1,2,3,7,8-PeCDF	ND	0.31	-
2,3,4,7,8-PeCDF	ND	0.33	-
1,2,3,4,7,8-HxCDF	ND	0.37	-
1,2,3,6,7,8-HxCDF	ND	0.29	-
2,3,4,6,7,8-HxCDF	ND	0.53	-
1,2,3,7,8,9-HxCDF	ND	0.68	-
1,2,3,4,6,7,8-HpCDF	126	0.55	-
1,2,3,4,7,8,9-HpCDF	ND	0.59	-
OCDF	707	1.1	-

Definitions:

CONC – The concentration, given in parts per billion (ppb) or parts per trillion (ppt).

DL – The detection limit, given in parts per billion (ppb), parts per trillion (ppt), or in nanograms (ng).

BLANK – The concentration of the method blank.

ND – (Non-Detect) The concentration of the analyte is less than the detection limit.

TOTAL ANALYTES	CONC (PPB)	DL (PPB)
TOTAL TCDD	ND	0.23
TOTAL PeCDD	ND	0.40
TOTAL HxCDD	30.3	0.65
TOTAL HpCDD	1590	0.67
TOTAL TCDF	ND	0.20
TOTAL PeCDF	ND	0.33
TOTAL HxCDF	71.9	0.68
TOTAL HpCDF	679	0.59

TOTAL DIOXINS/FURANS: 11208.2 PPB

TOTAL 2,3,7,8-TCDD TOXICITY (1989 ITEF) EQUIVALENTS: 22 PPB

For information, please reference the following when contacting our Technical Services Department:

TLH Project: P012463
TLH File: MA00271
TLH Method: 8280

12823 Park One Drive • Sugar Land, Texas 77478

Phone: (713) 240-5340 • FAX: (713) 240-5341

PCDD/PCDF SUMMARY REPORT

SAMPLE: 10743-56061

PROJECT ID: GULF STATES ANALYTICAL

SPECIFIC ANALYTES	CONC (PPB)	DL (PPB)	BLANK (PPB)
2,3,7,8-TCDD	ND	0.23	-
1,2,3,7,8-PeCDD	ND	0.4	-
1,2,3,4,7,8-HxCDD	ND	0.65	-
1,2,3,6,7,8-HxCDD	28.9	0.33	-
1,2,3,7,8,9-HxCDD	ND	0.55	-
1,2,3,4,6,7,8-HpCDD	1220	0.66	-
OCDD	8470	0.88	-
2,3,7,8-TCDF	ND	0.2	-
1,2,3,7,8-PeCDF	ND	0.31	-
2,3,4,7,8-PeCDF	ND	0.33	-
1,2,3,4,7,8-HxCDF	ND	0.37	-
1,2,3,6,7,8-HxCDF	ND	0.29	-
2,3,4,6,7,8-HxCDF	ND	0.53	-
1,2,3,7,8,9-HxCDF	ND	0.68	-
1,2,3,4,6,7,8-HpCDF	148	0.55	-
1,2,3,4,7,8,9-HpCDF	ND	0.58	-
OCDF	798	1.1	-

Definitions:

CONC – The concentration, given in parts per billion (ppb) or parts per trillion (ppt).

DL – The detection limit, given in parts per billion (ppb), parts per trillion (ppt), or in nanograms (ng).

BLANK – The concentration of the method blank.

ND – (Non-Detect) The concentration of the analyte is less than the detection limit.

TOTAL ANALYTES	CONC (PPB)	DL (PPB)
TOTAL TCDD	12.8	0.23
TOTAL PeCDD	ND	0.40
TOTAL HxCDD	28.9	0.65
TOTAL HpCDD	1630	0.66
TOTAL TCDF	ND	0.20
TOTAL PeCDF	ND	0.33
TOTAL HxCDF	123	0.68
TOTAL HpCDF	767	0.58

TOTAL DIOXINS/FURANS: 11829.7 PPB

TOTAL 2,3,7,8-TCDD TOXICITY (1989 ITEF) EQUIVALENTS: 26 PPB

For information, please reference the following when contacting our Technical Services Department:

TLH Project: P012463
TLH File: MA00274
TLH Method: 8280

12823 Park One Drive • Sugar Land, Texas 77478

Phone: (713) 240-5340 • FAX: (713) 240-5341

03:50 PM 9/28/93

PCDD/PCDF SUMMARY REPORT

SAMPLE: DFBLK

PROJECT ID: GULF STATES ANALYTICAL

SPECIFIC ANALYTES	CONC (PPB)	DL (PPB)	BLANK (PPB)
2,3,7,8-TCDD	ND	0.23	-
1,2,3,7,8-PeCDD	ND	0.4	-
1,2,3,4,7,8-HxCDD	ND	0.65	-
1,2,3,6,7,8-HxCDD	ND	0.33	-
1,2,3,7,8,9-HxCDD	ND	0.56	-
1,2,3,4,6,7,8-HpCDD	ND	0.67	-
OCDD	ND	0.88	-
2,3,7,8-TCDF	ND	0.2	-
1,2,3,7,8-PeCDF	ND	0.31	-
2,3,4,7,8-PeCDF	ND	0.33	-
1,2,3,4,7,8-HxCDF	ND	0.37	-
1,2,3,6,7,8-HxCDF	ND	0.29	-
2,3,4,6,7,8-HxCDF	ND	0.53	-
1,2,3,7,8,9-HxCDF	ND	0.68	-
1,2,3,4,6,7,8-HpCDF	ND	0.55	-
1,2,3,4,7,8,9-HpCDF	ND	0.59	-
OCDF	ND	1.1	-

Definitions:

CONC – The concentration, given in parts per billion (ppb) or parts per trillion (ppt).

DL – The detection limit, given in parts per billion (ppb), parts per trillion (ppt), or in nanograms (ng).

BLANK – The concentration of the method blank.

ND – (Non-Detect) The concentration of the analyte is less than the detection limit.

TOTAL ANALYTES	CONC (PPB)	DL (PPB)
TOTAL TCDD	ND	0.23
TOTAL PeCDD	ND	0.40
TOTAL HxCDD	ND	0.65
TOTAL HpCDD	ND	0.67
TOTAL TCDF	ND	0.20
TOTAL PeCDF	ND	0.33
TOTAL HxCDF	ND	0.68
TOTAL HpCDF	ND	0.59

TOTAL DIOXINS/FURANS: ND

TOTAL 2,3,7,8-TCDD TOXICITY (1989 ITEF) EQUIVALENTS: ND

For information, please reference the following when contacting our Technical Services Department:

TLH Project: P012463
TLH File: MA00258
TLH Method: 8280

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Phone: (713) 240-5340 • FAX: (713) 240-5341

September 2, 1993

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ENV. & ENG. SERVICES

ERM-Southwest, Inc.

16300 Katy Freeway
Suite 300
Houston, Texas 77094-1609
(713) 579-8999
(713) 579-8988 (Fax)

Ms. Jean Mescher
McKesson Corporation
One Post Street
San Francisco, CA 94104-5296

W.O. #92-17

Subject: Arkwood, Inc. Superfund Site - Omaha, Arkansas
Monthly Progress Report No. 18 - August 1993

Dear Ms. Mescher:

The following progress report is being provided by ERM-Southwest, Inc., for submission by McKesson Service Merchandising Co. (MMI), formerly Mass Merchandisers, Inc., in accordance with Section IX.B.1 of the Consent Decree. This report is to be submitted to the United States Environmental Protection Agency (EPA) and to the Arkansas Department of Pollution Control and Ecology (State).

ERM

Actions taken towards achieving compliance with the Consent Decree:

1. General description of Work (as defined in the Consent Decree) activities commenced or completed during the reporting period:

   a. Met with EPA, State and Weston on August 5 in Little Rock, Arkansas:

      1) Presented results of Additional Field Scale Pilot Studies to the State and EPA,

      2) Reviewed concept of advancing the start of Remedial Action (RA) activities approximately one year by dividing the RA into two phases, and

      3) Reviewed modifications to Remedial Design (RD) schedule necessary to accommodate the advanced start of the RA.

   b. Began preparation of RD documents in anticipation of submitting a Pre-Final (60%-90%)$_1$ Remedial Design review set for the Phase I - Interim Action Pretreatment and Storage, that is, excavation, dry sieving and material storage by October 13, 1993.

   c. Ordered c-PNA and dioxin results on additional samples from the supplemental pilot work conducted in May of this year.

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(214) 458-7204 (Fax)

5959 Gateway West Blvd.
Suite 655
El Paso, Texas 79925
(915) 779-6666
(915) 779-6632 (Fax)

A member of the Environmental
Resources Management Group

2. Data received during the reporting period:

   a. Analytical data for dioxin on sample SWP-06-1C and SWP-06-1F were received from Gulf States Analytical; the report is attached.

   b. Samples taken prior to May 1, 1993 have been discarded in accordance with the notification given by McKesson on July 23, 1993. Samples subsequent to May 1, 1993 will be discarded after final c-PNA and dioxin analyses are completed.

ERM

3. Work activities projected to be commenced or completed during the next three reporting periods:

   a. September 1993

      Continue development of Phase I - Interim Action Pretreatment and Storage: Pre-Final (60-90%) Remedial Design Submittal.

   b. October 1993

      Transmit Phase I - Interim Action Pretreatment and Storage: Pre-Final (60%-90%) Remedial Design Submittal by October 13 for EPA review.

   c. November 1993

      1) EPA complete review of Phase I - Interim Action Pretreatment and Storage: Pre-Final (60%-90%) Remedial Design Submittal.

      2) Prepare response to EPA review comments.

      3) Begin preparation of Phase I Interim Action - Incineration Pretreatment and Storage: Draft-Final (100%) Design Submittal.

      4) Meet with EPA and State on November 19 (proposed date) to discuss addressing and incorporating agency comments in the Phase I Interim Action - Pretreatment and Storage - draft Final (100%) Remedial Design.

4. Problems encountered or anticipated in commencing or completing the Work activities:

No problems have been encountered or are anticipated at this time.

Sincerely,

ERM-SOUTHWEST, INC.

Ronald T. Grimes, P.E.

ERM

RTG/sms

cc: D. S. Diehl, ERM-Southwest, Inc.
M. L. Lutz, ERM-Southwest, Inc.

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

08/17/93

Mr. Ron Grimes
ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094

Reference:
Project: Arkwood
Project No.: 92-17
GSAI Group: 10519 Group Report Date: 08/17/93

Dear Mr. Grimes:

Enclosed are the analytical results for your above referenced project. The following samples are included in the report.

SWP-06-1C SWP-06-1F

All holding times were met for the tests performed on these samples, except for the following:

Sample - (Sample Date) Test Description	Expiration Date	Date Analyzed	Days Past Holding Time
SWP-06-1C - (05/21/93)			
Dioxins and Furans, Solids	06/30/93	08/05/93	36
Semivolatile Extraction - Solids	06/04/93	07/12/93	38
Acid-Base Partition Cleanup	05/28/93	07/15/93	48
Polynuclear Aromatics, GC/MS, SW	06/30/93	07/20/93	20
SWP-06-1F - (05/21/93)			
Dioxins and Furans, Solids	06/30/93	08/05/93	36
Semivolatile Extraction - Solids	06/04/93	07/12/93	38
Acid-Base Partition Cleanup	05/28/93	07/15/93	48
Polynuclear Aromatics, GC/MS, SW	06/30/93	07/20/93	20

Holding times for the tests referenced above had already expired prior to request for analysis.

Our A2LA accreditation requires that, should this report be reproduced, it must be reproduced in total.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Gulf States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

08/17/93

Reference:
Project: Arkwood
Project No.: 92-17
GSAI Group: 10519 Group Report Date: 08/17/93
Page 2

We look forward to working with you on future projects.

Sincerely yours,

Melanie L. D'Aoust

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

Attn: Mr. Ron Grimes
Project: Arkwood

GSAI Group: 10519
Date Reported: 08/17/93
Date Received: 07/12/93

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:56086 - SWP-06-1C						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.029	08/05/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.067	08/05/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.078	08/05/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.24	08/05/93	SUB
	Hexachlorodibenzofurans	0.16	mg/kg	0.04	08/05/93	SUB
	Hexachlorodibenzo-p-dioxins	ND	mg/kg	0.064	08/05/93	SUB
	Heptachlorodibenzofurans	0.417	mg/kg	0.066	08/05/93	SUB
	Heptachlorodibenzo-p-dioxins	0.66	mg/kg	0.11	08/05/93	SUB
	Octachlorodibenzofurans	0.33	mg/kg	0.07	08/05/93	SUB
	Octachlorodibenzo-p-dioxins	4.43	mg/kg	0.09	08/05/93	SUB
	Total Dioxins and Furans	6.00	mg/kg	0.24	08/05/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	ND	mg/kg (1)	0.067	08/05/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	1.25	mg/kg	0.330	07/20/93	LG
	Acenaphthylene	ND	mg/kg	0.330	07/20/93	LG
	Anthracene	0.508	mg/kg	0.330	07/20/93	LG
	Benzo(a)anthracene	ND	mg/kg	0.330	07/20/93	LG
	Benzo(b)fluoranthene	0.647	mg/kg	0.330	07/20/93	LG
	Benzo(k)fluoranthene	ND	mg/kg	0.330	07/20/93	LG
	Benzo(ghi)perylene	ND	mg/kg	0.330	07/20/93	LG
	Benzo(a)pyrene	0.353	mg/kg	0.330	07/20/93	LG
	Chrysene	1.13	mg/kg	0.330	07/20/93	LG
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	07/20/93	LG
	Fluoranthene	7.58	mg/kg	1.32	07/20/93	LG
	Fluorene	1.35	mg/kg	0.330	07/20/93	LG
	1-Methylnaphthalene	3.76	mg/kg	1.32	07/20/93	LG
	2-Methylnaphthalene	4.01	mg/kg	1.32	07/20/93	LG
	Naphthalene	ND	mg/kg	0.330	07/20/93	LG
	Phenanthrene	6.33	mg/kg	1.32	07/20/93	LG
	Pyrene	5.03	mg/kg	0.330	07/20/93	LG
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	07/20/93	LG
Sample:56087 - SWP-06-1F						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.035	08/05/93	SUB

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 10519

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:56087 - SWP-06-1F						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.084	08/05/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.094	08/05/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.3	08/05/93	SUB
	Hexachlorodibenzofurans	0.203	mg/kg	0.043	08/05/93	SUB
	Hexachlorodibenzo-p-dioxins	ND	mg/kg	0.079	08/05/93	SUB
	Heptachlorodibenzofurans	1.19	mg/kg	0.07	08/05/93	SUB
	Heptachlorodibenzo-p-dioxins	2.54	mg/kg	0.13	08/05/93	SUB
	Octachlorodibenzofurans	0.959	mg/kg	0.075	08/05/93	SUB
	Octachlorodibenzo-p-dioxins	12.4	mg/kg	0.097	08/05/93	SUB
	Total Dioxins and Furans	17.3	mg/kg	0.3	08/05/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	ND	mg/kg (2)	0.084	08/05/93	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	1.51	mg/kg	0.660	07/20/93	LG
	Acenaphthylene	ND	mg/kg	0.660	07/20/93	LG
	Anthracene	1.25	mg/kg	0.660	07/20/93	LG
	Benzo(a)anthracene	1.16	mg/kg	0.660	07/20/93	LG
	Benzo(b)fluoranthene	3.07	mg/kg	0.660	07/20/93	LG
	Benzo(k)fluoranthene	1.36	mg/kg	0.660	07/20/93	LG
	Benzo(ghi)perylene	ND	mg/kg	0.660	07/20/93	LG
	Benzo(a)pyrene	0.739	mg/kg	0.660	07/20/93	LG
	Chrysene	3.15	mg/kg	0.660	07/20/93	LG
	Dibenzo(a,h)anthracene	ND	mg/kg	0.660	07/20/93	LG
	Fluoranthene	16.3	mg/kg	2.64	07/20/93	LG
	Fluorene	ND	mg/kg	0.660	07/20/93	LG
	1-Methylnaphthalene	3.51	mg/kg	0.660	07/20/93	LG
	2-Methylnaphthalene	1.89	mg/kg	0.660	07/20/93	LG
	Naphthalene	ND	mg/kg	0.660	07/20/93	LG
	Phenanthrene	6.91	mg/kg	0.660	07/20/93	LG
	Pyrene	19.0	mg/kg	2.64	07/20/93	LG
	Indeno(1,2,3-cd)pyrene	0.993	mg/kg	0.660	07/20/93	LG

(1) Reported as toxicity equivalents.

(2) Reported as toxicity equivalents.

Test Method Summary:
2795 - SW-846 8280 6721 - SW-846 8270
ND - Compound was analyzed but not detected.

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust
Project Manager

102451

Request for Analysis

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, TX 77092, (713) 690-4444, FAX (713) 690-5646

Company: ERM - SOUTHWEST	Phone No: (713) 579-8999
	Fax No: (713) 579-8988
Reports Sent To: Ron Grimes	Project Location: Harrison, AR
Project Name: Arkwood	P.O./Project Number: 92-17
Sampler(s) Name: (Signature) Charles Hamer	
Courier: GSAI Pickup	

Cooler #593

Field Sample ID	Sampling Date	Sampling Time	Matrix: Water	Soil	Sludge	Oil	Other	# of Containers	PCP 8270 (1197)	Moisture 160.3 (0111)
1. SWP-08-1C	5/21/93	1215		✓				1	✓	
2. SWP-08-1F	5/21/93	1214		✓				1	✓	
3. SWP-02-1C	5/21/93	0950		✓				1	✓	
4. SWP-06-1C	5/21/93	1142		✓				1	✓	
5. SWP-06-1F	5/21/93	1141		✓				1	✓	
6. SWP-04-1C	5/21/93	1101		✓				1	✓	
7. SWP-04-1F	5/21/93	1102		✓				1	✓	
8. SWP-02-1F	5/21/93	0951		✓				1	✓	
9.										
10.										
11.										
12.										
13.										
14.										

Relinquished by Sampler: (Signature)	Relinquished by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by Laboratory: (Signature)
Charles Hamer			H. Tatum		
Date: 5/21/93	Date:	Date:			
Time: 3:00	Time:	Time:			

Remarks:

Requested Turnaround:

Special Detection Limits:

Data Delivered on Disk

QC Package: (circle one)
CLP Site Specific
Tier I Tier II QC Summary

CLIENT: [illegible] CONTACT: [illegible]

PROJECT: ARKwood CARRIER GSAI

RECV'D STAMP: [illegible] 58 UNPACKED STAMP [illegible] 57

DATE SHIPPED: 5-24-93 UNPACKED BY [illegible]

NUMBER OF KITS RECEIVED: 1 B.O.# 4342 Group# 10245 ✓ 105/19

KIT CHECKLIST

KIT ID	COC PRESENT	CUSTODY TAPE PRESENT?	CUSTODY TAPE INTACT?	COOLER TEMP	# OF SAMPLE CONTAINERS
593	Yes	C yes / B No	yes / No	3°C	8 ✓
		C / B			
		C / B			
		C / B			

C = COOLER B = BOTTLES

INCONSISTENCIES

SAMPLE	PARAMETER	INCONSISTENCY

PRESERVATIVES CHECKED? YES ✓ NO ✓ SEE ABOVE NOTES

ACTION TAKEN

PERSON CONTACTED: DATE:

RESOLUTION

GSAI EMPLOYEE DATE:

[ ] HNO3 [ ] HCL [ ] H2SO4 [ ] NAOH [ ] Na2S2O3 [8] NEAT [3] SO ✓

Metals VOAs Wet Wet CN/S BNA/Pest Herb

Validated By [illegible] Project Manager MLD 5/25/93

8/92 S.A. 152.05

ERM-Southwest, Inc.

16300 Katy Freeway
Suite 300
Houston, Texas 77094-1609
(713) 579-8999
(713) 579-8988 (Fax)

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JUN 0 3 1993

ENV. & ENG. SERVICES

June 2, 1993

Ms. Jean Mescher
McKesson Corporation
One Post Street
San Francisco, CA 94104-5296

W.O. #92-17

Subject: Arkwood, Inc. Superfund Site - Omaha, Arkansas
Monthly Progress Report No. 15 - May 1993

Dear Ms. Mescher:

The following progress report is being provided by ERM-Southwest, Inc., for submission by McKesson Service Merchandising Co. ("MMI"), formerly Mass Merchandisers, Inc., in accordance with Section IX.B.1 of the Consent Decree. This report is to be submitted to the United States Environmental Protection Agency ("EPA") and to the Arkansas Department of Pollution Control and Ecology ("State").

ERM

Actions taken towards achieving compliance with the Consent Decree:

1. General description of Work (as defined in the Consent Decree) activities commenced or completed during the reporting period:

   a. Responded to EPA comments on the draft PER and the Supplemental Work Plan on May 21, 1993. Comments not directly pertaining to the PER will be addressed in the Preliminary Design (30%) submittal.

   b. Began Supplemental Work Plan activities at the site on May 6 and completed the majority of the work by May 22, 1993. Drying bed studies are on-going and will be completed in June. Analytical results will also be available at that time.

2. Data received during the reporting period:

   Moisture content data was received from Gulf States Analytical and is attached.

3. Work activities projected to be commenced or completed during the next three reporting periods:

   a. June 1993

      1) EPA approval of PER.

      2) Receive results of additional field scale pilot studies.

      3) Begin development of Preliminary Design (30%) Submittal.

3501 N. Causeway Blvd.
Suite 200
Metairie, Louisiana 70002
(504) 831-6700
(504) 831-6742 (Fax)

8310 Capital
of Texas Highway North
Suite 405
Austin, Texas 78731-1079
(512) 346-1700
(512) 346-2767 (Fax)

4100 Spring Valley Road
Suite 200
Dallas, Texas 75244
(214) 458-7272
(214) 458-7204 (Fax)

5959 Gateway West Blvd.
Suite 655
El Paso, Texas 79925
(915) 779-6666
(915) 779-6632 (Fax)

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Resources Management Group

b. July 1993

Continue development of Preliminary Design (30%) Submittal.

c. August 1993

Continue development of Preliminary Design (30%) Submittal.

4. Problems encountered or anticipated in commencing or completing the Work activities:

No problems have been encountered or are anticipated at this time.

Sincerely,

ERM-SOUTHWEST, INC.

Ronald T. Grimes, P.E.

RTG/mfa
Attachment

cc: D. S. Diehl, ERM-Southwest, Inc.
M. L. Lutz, ERM-Southwest, Inc.

GULF STATES ANALYTICAL, INC
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

05/25/93

Mr. Ron Grimes
ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094

Reference:
Project: Arkwood
Project No.: 92-17
GSAI Group: 10200 Group Report Date: 05/20/93

Dear Mr. Grimes:

Enclosed are the analytical results for your above referenced project. The following samples are included in the report.

SWP-02-2D	SWP-05-1D	SWP-03-1W
SWP-03-1D	SWP-05-1W	

All holding times were met for the tests performed on these samples.

Our A2LA accreditation requires that, should this report be reproduced, it must be reproduced in total.

Thank you for selecting Gulf States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely yours,

Melanie L. D'Aoust

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 10200
Date Reported: 05/20/93
Date Received: 05/18/93

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results Dry Weight	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:55753 - SWP-02-2D						
0111	Moisture	13.8	%	0.1	05/19/93	HV
CL15	Client Requested Procedure	18.5		0.0	05/19/93	HV
Sample:55754 - SWP-05-1D						
0111	Moisture	10.0	%	0.1	05/19/93	HV
CL15	Client Requested Procedure	12.3		0.0	05/19/93	HV
Sample:55759 - SWP-03-1W						
0111	Moisture	14.8	%	0.1	05/19/93	HV
CL15	Client Requested Procedure	20.4		0.0	05/19/93	HV
Sample:55760 - SWP-03-1D						
0111	Moisture	10.5	%	0.1	05/19/93	HV
CL15	Client Requested Procedure	13.1		0.0	05/19/93	HV
Sample:55762 - SWP-05-1W						
0111	Moisture	12.5	%	0.1	05/19/93	HV
CL15	Client Requested Procedure	16.3		0.0	05/19/93	HV

Test Method Summary:
0111 - EPA 160.3 CL15 - IN HOUSE

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust

Melanie L. D'Aoust
Project Manager

ERM-Southwest, Inc.

16300 Katy Freeway
Suite 300
Houston, Texas 77094-1609
(713) 579-8999
(713) 579-8988 (Fax)

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MAR 4 1993
ENV. & EN^^ SERVICES

March 3, 1993

Ms. Jean Mescher
McKesson Corporation
One Post Street
San Francisco, CA 94104-5296 W.O. 92-17

Subject: Arkwood, Inc. Superfund Site - Omaha, Arkansas
Monthly Progress Report No. 12 - February 1993

Dear Ms. Mescher:

The following progress report is being provided by ERM-Southwest, Inc., for submission by McKesson Service Merchandising Co. ("MMI"), formerly Mass Merchandisers, Inc., in accordance with Section IX.B.1 of the Consent Decree. This report is to be submitted to the United States Environmental Protection Agency ("EPA") and to the Arkansas Department of Pollution Control and Ecology ("State").

Actions taken towards achieving compliance with the Consent Decree:

1. General description of Work (as defined in the Consent Decree) activities commenced or completed during the reporting period:
   a. Analytical work to progressively define the extent of the affected area and to evaluate the c-PNA and dioxin concentrations was completed.
   b. Analytical work to evaluate incineration characteristics was completed.
   c. A bench scale sand drying bed experiment was completed. Results are shown in the attached graph entitled Arkwood Treatability Study (Air Drying - Percent Moisture).
   d. Development of the Preliminary Engineering Report (PER) continued during this reporting period.

2. Data received during the reporting period:
   a. Additional analytical data from the initial field work became available during this reporting period. Since full analytical data packages will be included in the Preliminary Engineering Report it was agreed with EPA that for the monthly reports, a summary of the findings would be sufficient. See attached GSAI Groups 9558, 9631, 9335, 9466 and 9060.

      Sample locations for the initial sampling were shown on the sample location map enclosed with the November report.

3501 N. Causeway Blvd.
Suite 200
Metairie, Louisiana 70002
(504) 831-6700
(504) 831-6742 (Fax)

1120 South
Capital of Texas Highway
Building II
Suite 205
Austin, Texas 78746
(512) 328-9200
(512) 328-9214 (Fax)

4100 Spring Valley Road
Suite 200
Dallas, Texas 75244
(214) 458-7272
(214) 458-7204 (Fax)

5959 Gateway West Blvd.
Suite 655
El Paso, Texas 79925
(915) 779-6666
(915) 779-6632 (Fax)

A member of the Environmental Resources Management Group

b. Analytical data from the field drying/chain flailing experiment were received and are attached as GSAI Group 9488.

c. Analytical data for the incineration characteristics study were received and are attached as GSAI Group 9487 and the reports from Galbraith Laboratories.

d. A Proctor curve was developed for a sample of raw feed stock.

3. Work activities projected to be commenced or completed during the next three reporting periods:

a. March 1993

1) Work will continue on development of the PER.

2) Draft PER will be submitted to EPA by March 24, 1992.

b. April 1993

1) EPA review of Draft PER.

c. May 1993

1) Respond to EPA comments on Draft PER.

4. Problems encountered or anticipated in commencing or completing the Work activities:

No problems have been encountered or are anticipated at this time.

Sincerely,

ERM-SOUTHWEST, INC.

James W. Weinhuber for

Ronald T. Grimes, P.E.

RTG/skd

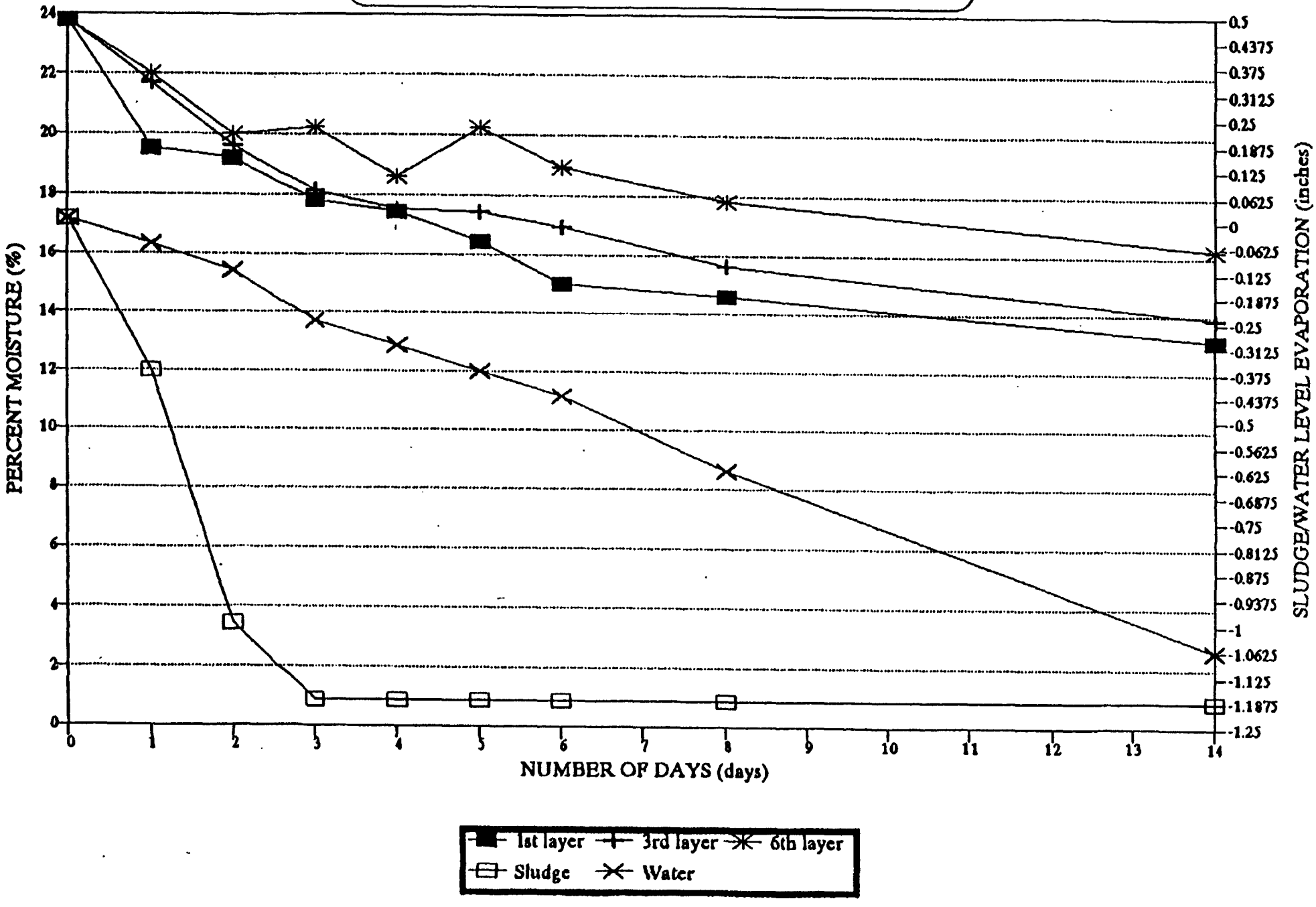
cc: D. S. Diehl, ERM-Southwest, Inc.
M. L. Lutz, ERM-Southwest, Inc.

Graph
Attachment A

March 3, 1993
W.O. #92-17

ERM-SOUTHWEST, INC.
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1609
(713) 579-8999

ARKWOOD TREATABILITY STUDY
(AIR DRYING - PERCENT MOISTURE)



GSAI Groups
Attachment B

March 3, 1993
W.O. #92-17

ERM-SOUTHWEST, INC.
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1609
(713) 579-8999

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 9558
Date Reported: 02/03/93
Date Received: 10/06/92

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47803 - PDS-4B,6-12"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	450	mg/kg	160	02/03/93	HV
Sample:47809 - PDS-9B,6-12"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	95.0	mg/kg	40.0	02/03/93	HV

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 9631
Date Reported: 02/18/93
Date Received: 02/09/93

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47804 - PDS-4C,12-18"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	127	mg/kg	80.0	02/16/93	LG

Respectfully Submitted,
Reviewed and Approved by:

T. K. Koenig for

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

02/15/93

Mr. Ron Grimes
ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094

Reference:
Project: Arkwood
Project No.: 92-17
GSAI Group Nos: 9060, 9109, 9335

Dear Mr. Grimes:

The reported Dioxin and Furan data is based upon two analytical runs. Per SW-846 method 8280, a dilution must be run when an analyte of interest exceeds the linear calibration range. For many of the samples, a diluted analysis was required for the hepta and octa congeners.

After discussions with the laboratory performing the analysis, Triangle Laboratories of Houston, it was determined to report all data acquired from the undiluted analytical runs, even though some of the congeners had exceeded the calibrated linear range. It was required to dilute samples with internal standard solutions. After this is accomplished, there is no accurate way to quantitate an analyte since the internal standard amount is altered. We used the undiluted results in their entirety because the quantitation was more accurate using the unaltered internal standard response factor. At the suggestion of Triangle Laboratories, the qualitative diluted result was used to verify undiluted result.

Thank you for selecting Gulf States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely yours,

Melanie L. D'Aoust

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT
(Revised 02/04/93)

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 9335
Date Reported: 01/20/93
Date Received: 10/01/92

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47315 - PDS-2B, 6-12"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	0.00074	mg/kg	0.00007	01/07/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00008	01/07/93	SUB
	Pentachlorodibenzofurans	0.0349	mg/kg	0.00012	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00014	01/07/93	SUB
	Hexachlorodibenzofurans	0.169	mg/kg	0.00024	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0199	mg/kg	0.00023	01/07/93	SUB
	Heptachlorodibenzofurans	0.263	mg/kg	0.00021	01/07/93	SUB
	Heptachlorodibenzo-p-dioxins	0.450	mg/kg	0.00024	01/07/93	SUB
	Octachlorodibenzofurans	0.0937	mg/kg	0.00039	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	1.07	mg/kg	0.00031	01/07/93	SUB
	Total Dioxins and Furans	2.10	mg/kg	0.00039	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.0120	mg/kg (11)	0.00008	01/07/93	SUB
Sample:47335 - PDS-19A, 0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	0.00017	mg/kg	0.00006	01/07/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00007	01/07/93	SUB
	Pentachlorodibenzofurans	0.00298	mg/kg	0.00011	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00013	01/07/93	SUB
	Hexachlorodibenzofurans	0.0263	mg/kg	0.00022	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.00911	mg/kg	0.00021	01/07/93	SUB
	Heptachlorodibenzofurans	0.103	mg/kg	0.00019	01/07/93	SUB
	Heptachlorodibenzo-p-dioxins	0.326	mg/kg	0.00022	01/07/93	SUB
	Octachlorodibenzofurans	0.111	mg/kg	0.00035	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	1.07	mg/kg	0.00028	01/07/93	SUB
	Total Dioxins and Furans	1.65	mg/kg	0.00035	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00460	mg/kg (12)	0.00007	01/07/93	SUB
Sample:47353 - PDS-43A, 0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00008	01/07/93	SUB

ERM-Southwest, Inc. GSAI Group: 9335

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47353 - PDS-43A, 0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00009	01/07/93	SUB
	Pentachlorodibenzofurans	0.00636	mg/kg	0.00013	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00016	01/07/93	SUB
	Hexachlorodibenzofurans	0.0155	mg/kg	0.00028	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.00789	mg/kg	0.00027	01/07/93	SUB
	Heptachlorodibenzofurans	0.124	mg/kg	0.00024	01/07/93	SUB
	Heptachlorodibenzo-p-dioxins	0.333	mg/kg	0.00027	01/07/93	SUB
	Octachlorodibenzofurans	0.129	mg/kg	0.00045	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	1.50	mg/kg	0.00036	01/07/93	SUB
	Total Dioxins and Furans	2.12	mg/kg	0.00045	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00480	mg/kg (13)	0.00009	01/07/93	SUB
Sample:47538 - PDS-46A, 0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	0.00020	mg/kg	0.00006	01/07/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00007	01/07/93	SUB
	Pentachlorodibenzofurans	0.0322	mg/kg	0.0001	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	0.00024	mg/kg	0.00013	01/07/93	SUB
	Hexachlorodibenzofurans	0.176	mg/kg	0.00021	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0347	mg/kg	0.0002	01/07/93	SUB
	Heptachlorodibenzofurans	0.394	mg/kg	0.00018	01/07/93	SUB
	Heptachlorodibenzo-p-dioxins	0.841	mg/kg	0.00021	01/07/93	SUB
	Octachlorodibenzofurans	0.215	mg/kg	0.00034	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	2.00	mg/kg	0.00028	01/07/93	SUB
	Total Dioxins and Furans	3.69	mg/kg	0.00034	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.0140	mg/kg (14)	0.00007	01/07/93	SUB
Sample:47539 - PDS-46B, 6-12"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	0.00314	mg/kg	0.00007	01/07/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00009	01/07/93	SUB
	Pentachlorodibenzofurans	0.00905	mg/kg	0.00012	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00015	01/07/93	SUB
	Hexachlorodibenzofurans	0.0979	mg/kg	0.00025	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0138	mg/kg	0.00024	01/07/93	SUB
	Heptachlorodibenzofurans	0.183	mg/kg	0.00022	01/07/93	SUB

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9335

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47539 - PDS-46B, 6-12"						
2795	Dioxins and Furans, Solids					
	Heptachlorodibenzo-p-dioxins	0.392	mg/kg	0.00025	01/07/93	SUB
	Octachlorodibenzofurans	0.100	mg/kg	0.00041	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	1.53	mg/kg	0.00033	01/07/93	SUB
	Total Dioxins and Furans	2.33	mg/kg	0.00041	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00800	mg/kg (15)	0.00009	01/07/93	SUB
Sample:48241 - PDS-41A,0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00007	01/08/93	SUB
	Tetrachlorodibenzo-p-dioxins	0.00078	mg/kg	0.00008	01/08/93	SUB
	Pentachlorodibenzofurans	0.00186	mg/kg	0.00012	01/08/93	SUB
	Pentachlorodibenzo-p-dioxins	0.00023	mg/kg	0.00014	01/08/93	SUB
	Hexachlorodibenzofurans	0.0245	mg/kg	0.00025	01/08/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0128	mg/kg	0.00024	01/08/93	SUB
	Heptachlorodibenzofurans	0.134	mg/kg	0.00021	01/08/93	SUB
	Heptachlorodibenzo-p-dioxins	0.343	mg/kg	0.00024	01/08/93	SUB
	Octachlorodibenzofurans	0.121	mg/kg	0.00039	01/08/93	SUB
	Octachlorodibenzo-p-dioxins	0.928	mg/kg	0.00032	01/08/93	SUB
	Total Dioxins and Furans	1.57	mg/kg	0.00039	01/08/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00540	mg/kg (16)	0.00008	01/08/93	SUB
Sample:48247 - PDS-47A,0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00008	01/08/93	SUB
	Tetrachlorodibenzo-p-dioxins	0.00104	mg/kg	0.00009	01/08/93	SUB
	Pentachlorodibenzofurans	0.00160	mg/kg	0.00013	01/08/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00015	01/08/93	SUB
	Hexachlorodibenzofurans	0.0226	mg/kg	0.00026	01/08/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0124	mg/kg	0.00025	01/08/93	SUB
	Heptachlorodibenzofurans	0.155	mg/kg	0.00023	01/08/93	SUB
	Heptachlorodibenzo-p-dioxins	0.516	mg/kg	0.00026	01/08/93	SUB
	Octachlorodibenzofurans	0.180	mg/kg	0.00042	01/08/93	SUB
	Octachlorodibenzo-p-dioxins	1.40	mg/kg	0.00034	01/08/93	SUB
	Total Dioxins and Furans	2.29	mg/kg	0.00042	01/08/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00770	mg/kg (17)	0.00009	01/08/93	SUB
Sample:48273 - PDS-95A, 0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00006	01/07/93	SUB

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9335

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:48273 - PDS-95A, 0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00006	01/07/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00009	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00011	01/07/93	SUB
	Hexachlorodibenzofurans	0.00729	mg/kg	0.00019	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.00804	mg/kg	0.00018	01/07/93	SUB
	Heptachlorodibenzofurans	0.0684	mg/kg	0.00017	01/07/93	SUB
	Heptachlorodibenzo-p-dioxins	0.421	mg/kg	0.00019	01/07/93	SUB
	Octachlorodibenzofurans	0.0896	mg/kg	0.00031	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	1.53	mg/kg	0.00025	01/07/93	SUB
	Total Dioxins and Furans	2.12	mg/kg	0.00031	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00550	mg/kg (18)	0.00006	01/07/93	SUB
Sample:48288 - PDS-44A, 0-6"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00006	01/07/93	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00007	01/07/93	SUB
	Pentachlorodibenzofurans	0.00296	mg/kg	0.00011	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00013	01/07/93	SUB
	Hexachlorodibenzofurans	0.0291	mg/kg	0.00022	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.0253	mg/kg	0.00021	01/07/93	SUB
	Heptachlorodibenzofurans	0.223	mg/kg	0.00019	01/07/93	SUB
	Heptachlorodibenzo-p-dioxins	0.610	mg/kg	0.00021	01/07/93	SUB
	Octachlorodibenzofurans	0.190	mg/kg	0.00035	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	2.38	mg/kg	0.00028	01/07/93	SUB
	Total Dioxins and Furans	3.46	mg/kg	0.00035	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00920	mg/kg (19)	0.00007	01/07/93	SUB
Sample:48289 - PDS-44B, 6-12"						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00008	01/07/93	SUB
	Tetrachlorodibenzo-p-dioxins	0.00261	mg/kg	0.00009	01/07/93	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00013	01/07/93	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00016	01/07/93	SUB
	Hexachlorodibenzofurans	0.00469	mg/kg	0.00028	01/07/93	SUB
	Hexachlorodibenzo-p-dioxins	0.00194	mg/kg	0.00026	01/07/93	SUB
	Heptachlorodibenzofurans	0.0602	mg/kg	0.00024	01/07/93	SUB

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9335

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:48289 - PDS-44B, 6-12"						
2795	Dioxins and Furans, Solids					
	Heptachlorodibenzo-p-dioxins	0.153	mg/kg	0.00027	01/07/93	SUB
	Octachlorodibenzofurans	0.0736	mg/kg	0.00044	01/07/93	SUB
	Octachlorodibenzo-p-dioxins	0.647	mg/kg	0.00035	01/07/93	SUB
	Total Dioxins and Furans	0.943	mg/kg	0.00044	01/07/93	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00220	mg/kg (20)	0.00009	01/07/93	SUB

(1) Reported as toxicity equivalents.

(2) Reported as toxicity equivalents.

(3) Reported as toxicity equivalents.

(4) Reported as toxicity equivalents.

(5) Reported as toxicity equivalents.

(6) Reported as toxicity equivalents.

(7) Reported as toxicity equivalents.

(8) Reported as toxicity equivalents.

(9) Reported as toxicity equivalents.

(10) Reported as toxicity equivalents.

ND - Not detected at the limit of quantitation

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 9466
Date Reported: 01/27/93
Date Received: 01/14/93

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47314 - PDS-2A, 0-6"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	14.0	mg/kg	1.65	01/26/93	HV
	Acenaphthylene	2.20	mg/kg	0.330	01/26/93	HV
	Anthracene	2.10	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	0.440	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	0.830	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	0.950	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	0.350	mg/kg	0.330	01/26/93	HV
	Chrysene	1.50	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	14.0	mg/kg	1.65	01/26/93	HV
	Fluorene	5.80	mg/kg	1.65	01/26/93	HV
	1-Methylnaphthalene	23.0	mg/kg	1.65	01/26/93	HV
	2-Methylnaphthalene	16.0	mg/kg	1.65	01/26/93	HV
	Naphthalene	ND	mg/kg	0.330	01/26/93	HV
	Phenanthrene	51.0	mg/kg	6.60	01/26/93	HV
	Pyrene	5.30	mg/kg	1.65	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV
Sample:47325 - PDS-8C, 12-18"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	01/26/93	HV
	Acenaphthylene	ND	mg/kg	0.330	01/26/93	HV
	Anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	01/26/93	HV
	Chrysene	ND	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Fluorene	ND	mg/kg	0.330	01/26/93	HV
	1-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9466

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47325 - PDS-8C, 12-18"						
6721	Polynuclear Aromatics, GC/MS, SW					
	2-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	Naphthalene	ND	mg/kg	0.330	01/26/93	HV
	Phenanthrene	ND	mg/kg	0.330	01/26/93	HV
	Pyrene	ND	mg/kg	0.330	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV
Sample:47332 - PDS-17A, 0-6"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	01/26/93	HV
	Acenaphthylene	ND	mg/kg	0.330	01/26/93	HV
	Anthracene	0.550	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	0.360	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	0.400	mg/kg	0.330	01/26/93	HV
	Chrysene	ND	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	0.750	mg/kg	0.330	01/26/93	HV
	Fluorene	ND	mg/kg	0.330	01/26/93	HV
	1-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	2-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	Naphthalene	ND	mg/kg	0.330	01/26/93	HV
	Phenanthrene	0.340	mg/kg	0.330	01/26/93	HV
	Pyrene	ND	mg/kg	0.330	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV
Sample:47341 - PDS-24A, 0-6"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	01/26/93	HV
	Acenaphthylene	ND	mg/kg	0.330	01/26/93	HV
	Anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	01/26/93	HV
	Chrysene	ND	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Fluorene	ND	mg/kg	0.330	01/26/93	HV

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9466

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47341 - PDS-24A, 0-6"						
6721	Polynuclear Aromatics, GC/MS, SW					
	1-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	2-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	Naphthalene	ND	mg/kg	0.330	01/26/93	HV
	Phenanthrene	ND	mg/kg	0.330	01/26/93	HV
	Pyrene	0.860	mg/kg	0.330	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV
Sample:47663 - PDS-85B, 6-12"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	01/26/93	HV
	Acenaphthylene	ND	mg/kg	0.330	01/26/93	HV
	Anthracene	0.510	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	0.340	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	0.360	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	01/26/93	HV
	Chrysene	0.440	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	3.40	mg/kg	0.660	01/26/93	HV
	Fluorene	0.510	mg/kg	0.330	01/26/93	HV
	1-Methylnaphthalene	0.960	mg/kg	0.330	01/26/93	HV
	2-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	Naphthalene	ND	mg/kg	0.330	01/26/93	HV
	Phenanthrene	3.80	mg/kg	0.660	01/26/93	HV
	Pyrene	1.50	mg/kg	0.330	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV
Sample:47801 - PDS-3C,12-18"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	190	mg/kg	64.0	01/22/93	LG
Sample:47802 - PDS-4A,0-6"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	850	mg/kg	400	01/23/93	LG
Sample:47805 - PDS-5A,0-6"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	120	mg/kg	64.0	01/23/93	LG
Sample:47808 - PDS-9A,0-6"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	790	mg/kg	400	01/23/93	LG

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9466

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:47941 - PDS-35A,0-6"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	290	mg/kg	128	01/23/93	LG
Sample:48235 - PDS-40A,0-6"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	01/26/93	HV
	Acenaphthylene	ND	mg/kg	0.330	01/26/93	HV
	Anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	01/26/93	HV
	Chrysene	ND	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	1.30	mg/kg	0.330	01/26/93	HV
	Fluorene	ND	mg/kg	0.330	01/26/93	HV
	1-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	2-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	Naphthalene	ND	mg/kg	0.330	01/26/93	HV
	Phenanthrene	ND	mg/kg	0.330	01/26/93	HV
	Pyrene	0.570	mg/kg	0.330	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV
Sample:48236 - PDS-40B,6-12"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	ND	mg/kg	1.60	01/21/93	LG
Sample:48238 - PDS-39A,0-6"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	ND	mg/kg	1.60	01/22/93	LG
Sample:48248 - PDS-47B,6-12"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	01/26/93	HV
	Acenaphthylene	ND	mg/kg	0.330	01/26/93	HV
	Anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	01/26/93	HV

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9466

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:48248 - PDS-47B,6-12"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Chrysene	ND	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	0.490	mg/kg	0.330	01/26/93	HV
	Fluorene	ND	mg/kg	0.330	01/26/93	HV
	1-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	2-Methylnaphthalene	ND	mg/kg	0.330	01/26/93	HV
	Naphthalene	ND	mg/kg	0.330	01/26/93	HV
	Phenanthrene	ND	mg/kg	0.330	01/26/93	HV
	Pyrene	0.500	mg/kg	0.330	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV
Sample:48294 - PDS-58A, 0-6"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	01/25/93	HV
	Acenaphthylene	ND	mg/kg	0.330	01/25/93	HV
	Anthracene	ND	mg/kg	0.330	01/25/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	01/25/93	HV
	Benzo(b)fluoranthene	ND	mg/kg	0.330	01/25/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/25/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/25/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	01/25/93	HV
	Chrysene	ND	mg/kg	0.330	01/25/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/25/93	HV
	Fluoranthene	ND	mg/kg	0.330	01/25/93	HV
	Fluorene	ND	mg/kg	0.330	01/25/93	HV
	1-Methylnaphthalene	ND	mg/kg	0.330	01/25/93	HV
	2-Methylnaphthalene	ND	mg/kg	0.330	01/25/93	HV
	Naphthalene	ND	mg/kg	0.330	01/25/93	HV
	Phenanthrene	ND	mg/kg	0.330	01/25/93	HV
	Pyrene	ND	mg/kg	0.330	01/25/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/25/93	HV
Sample:48318 - PDS-92A, 0-6"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	ND	mg/kg	1.60	01/22/93	LG
Sample:48319 - PDS-92B, 6-12"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	ND	mg/kg	1.60	01/21/93	LG
Sample:48322 - PDS-93B, 6-12"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	42.0	mg/kg	16.0	01/23/93	LG

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9466

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:48324 - PDS-94A, 0-6"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	500	mg/kg	200	01/23/93	LG
Sample:48325 - PDS-94B, 6-12"						
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	24.0	mg/kg	12.8	01/23/93	LG
Sample:48392 - PDS-86D, 24-30"						
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	2.70	mg/kg	1.65	01/26/93	HV
	Acenaphthylene	ND	mg/kg	1.65	01/26/93	HV
	Anthracene	1.30	mg/kg	0.330	01/26/93	HV
	Benzo(a)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(b)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(k)fluoranthene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(ghi)perylene	ND	mg/kg	0.330	01/26/93	HV
	Benzo(a)pyrene	ND	mg/kg	0.330	01/26/93	HV
	Chrysene	ND	mg/kg	0.330	01/26/93	HV
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	01/26/93	HV
	Fluoranthene	2.60	mg/kg	1.65	01/26/93	HV
	Fluorene	6.10	mg/kg	1.65	01/26/93	HV
	1-Methylnaphthalene	17.0	mg/kg	1.65	01/26/93	HV
	2-Methylnaphthalene	17.0	mg/kg	1.65	01/26/93	HV
	Naphthalene	0.720	mg/kg	0.330	01/26/93	HV
	Phenanthrene	20.0	mg/kg	1.65	01/26/93	HV
	Pyrene	0.870	mg/kg	0.330	01/26/93	HV
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	01/26/93	HV

ND - Not detected at the limit of quantitation

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT
(Revised 02/04/93)

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 9060
Date Reported: 12/18/92
Date Received: 11/18/92

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:50405 - PD1						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	0.00010	mg/kg	0.00008	12/07/92	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00009	12/07/92	SUB
	Pentachlorodibenzofurans	0.00062	mg/kg	0.00013	12/07/92	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00016	12/07/92	SUB
	Hexachlorodibenzofurans	0.00951	mg/kg	0.00028	12/07/92	SUB
	Hexachlorodibenzo-p-dioxins	0.00456	mg/kg	0.00027	12/07/92	SUB
	Heptachlorodibenzofurans	0.0450	mg/kg	0.00024	12/07/92	SUB
	Heptachlorodibenzo-p-dioxins	0.114	mg/kg	0.00027	12/07/92	SUB
	Octachlorodibenzofurans	0.0333	mg/kg	0.00045	12/07/92	SUB
	Octachlorodibenzo-p-dioxins	0.414	mg/kg	0.00036	12/07/92	SUB
	Total Dioxins and Furans	0.621	mg/kg	0.00045	12/07/92	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00160	mg/kg (1)	0.00009	12/07/92	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	12/04/92	LG
	Acenaphthylene	ND	mg/kg	0.330	12/04/92	LG
	Anthracene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(a)anthracene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(b)fluoranthene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(k)fluoranthene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(ghi)perylene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(a)pyrene	ND	mg/kg	0.330	12/04/92	LG
	Chrysene	ND	mg/kg	0.330	12/04/92	LG
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	12/04/92	LG
	Fluoranthene	ND	mg/kg	0.330	12/04/92	LG
	Fluorene	ND	mg/kg	0.330	12/04/92	LG
	1-Methylnaphthalene	ND	mg/kg	0.330	12/04/92	LG
	2-Methylnaphthalene	ND	mg/kg	0.330	12/04/92	LG
	Naphthalene	ND	mg/kg	0.330	12/04/92	LG
	Phenanthrene	ND	mg/kg	0.330	12/04/92	LG
	Pyrene	ND	mg/kg	0.330	12/04/92	LG
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	12/04/92	LG
Sample:50406 - PD2						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00007	12/07/92	SUB

ERM-Southwest, Inc. GSAI Group: 9060

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:50406 - PD2						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00009	12/07/92	SUB
	Pentachlorodibenzofurans	ND	mg/kg	0.00012	12/07/92	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00015	12/07/92	SUB
	Hexachlorodibenzofurans	0.00389	mg/kg	0.00026	12/07/92	SUB
	Hexachlorodibenzo-p-dioxins	0.00430	mg/kg	0.00025	12/07/92	SUB
	Heptachlorodibenzofurans	0.0319	mg/kg	0.00022	12/07/92	SUB
	Heptachlorodibenzo-p-dioxins	0.118	mg/kg	0.00025	12/07/92	SUB
	Octachlorodibenzofurans	0.0345	mg/kg	0.00041	12/07/92	SUB
	Octachlorodibenzo-p-dioxins	0.481	mg/kg	0.00033	12/07/92	SUB
	Total Dioxins and Furans	0.674	mg/kg	0.00041	12/07/92	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00170	mg/kg (2)	0.00009	12/07/92	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	12/04/92	LG
	Acenaphthylene	ND	mg/kg	0.330	12/04/92	LG
	Anthracene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(a)anthracene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(b)fluoranthene	0.960	mg/kg	0.330	12/04/92	LG
	Benzo(k)fluoranthene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(ghi)perylene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(a)pyrene	ND	mg/kg	0.330	12/04/92	LG
	Chrysene	0.560	mg/kg	0.330	12/04/92	LG
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	12/04/92	LG
	Fluoranthene	0.820	mg/kg	0.330	12/04/92	LG
	Fluorene	ND	mg/kg	0.330	12/04/92	LG
	1-Methylnaphthalene	ND	mg/kg	0.330	12/04/92	LG
	2-Methylnaphthalene	ND	mg/kg	0.330	12/04/92	LG
	Naphthalene	ND	mg/kg	0.330	12/04/92	LG
	Phenanthrene	ND	mg/kg	0.330	12/04/92	LG
	Pyrene	1.60	mg/kg	0.330	12/04/92	LG
	Indeno(1,2,3-cd)pyrene	0.400	mg/kg	0.330	12/04/92	LG
Sample:50407 - PD3						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00009	12/08/92	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00010	12/08/92	SUB
	Pentachlorodibenzofurans	0.00041	mg/kg	0.00014	12/08/92	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00017	12/08/92	SUB
	Hexachlorodibenzofurans	0.00495	mg/kg	0.00029	12/08/92	SUB
	Hexachlorodibenzo-p-dioxins	0.00198	mg/kg	0.00028	12/08/92	SUB
	Heptachlorodibenzofurans	0.0338	mg/kg	0.00025	12/08/92	SUB
	Heptachlorodibenzo-p-dioxins	0.0765	mg/kg	0.00029	12/08/92	SUB

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9060

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:50407 - PD3						
2795	Dioxins and Furans, Solids					
	Octachlorodibenzofurans	0.0363	mg/kg	0.00047	12/08/92	SUB
	Octachlorodibenzo-p-dioxins	0.307	mg/kg	0.00038	12/08/92	SUB
	Total Dioxins and Furans	0.461	mg/kg	0.00047	12/08/92	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00110	mg/kg (3)	0.00010	12/08/92	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	12/05/92	LG
	Acenaphthylene	ND	mg/kg	0.330	12/05/92	LG
	Anthracene	ND	mg/kg	0.330	12/05/92	LG
	Benzo(a)anthracene	ND	mg/kg	0.330	12/05/92	LG
	Benzo(b)fluoranthene	0.440	mg/kg	0.330	12/05/92	LG
	Benzo(k)fluoranthene	ND	mg/kg	0.330	12/05/92	LG
	Benzo(ghi)perylene	ND	mg/kg	0.330	12/05/92	LG
	Benzo(a)pyrene	ND	mg/kg	0.330	12/05/92	LG
	Chrysene	0.330	mg/kg	0.330	12/05/92	LG
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	12/05/92	LG
	Fluoranthene	ND	mg/kg	0.330	12/05/92	LG
	Fluorene	ND	mg/kg	0.330	12/05/92	LG
	1-Methylnaphthalene	ND	mg/kg	0.330	12/05/92	LG
	2-Methylnaphthalene	ND	mg/kg	0.330	12/05/92	LG
	Naphthalene	ND	mg/kg	0.330	12/05/92	LG
	Phenanthrene	ND	mg/kg	0.330	12/05/92	LG
	Pyrene	ND	mg/kg	0.330	12/05/92	LG
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	12/05/92	LG
Sample:50408 - PD4						
2795	Dioxins and Furans, Solids					
	Tetrachlorodibenzofurans	ND	mg/kg	0.00007	12/08/92	SUB
	Tetrachlorodibenzo-p-dioxins	ND	mg/kg	0.00008	12/08/92	SUB
	Pentachlorodibenzofurans	0.00146	mg/kg	0.00011	12/08/92	SUB
	Pentachlorodibenzo-p-dioxins	ND	mg/kg	0.00014	12/08/92	SUB
	Hexachlorodibenzofurans	0.0135	mg/kg	0.00024	12/08/92	SUB
	Hexachlorodibenzo-p-dioxins	0.00776	mg/kg	0.00023	12/08/92	SUB
	Heptachlorodibenzofurans	0.0789	mg/kg	0.0002	12/08/92	SUB
	Heptachlorodibenzo-p-dioxins	0.189	mg/kg	0.00023	12/08/92	SUB
	Octachlorodibenzofurans	0.0717	mg/kg	0.00038	12/08/92	SUB
	Octachlorodibenzo-p-dioxins	0.675	mg/kg	0.0003	12/08/92	SUB
	Total Dioxins and Furans	1.04	mg/kg	0.00038	12/08/92	SUB
	Total 2,3,7,8-Tetrachlorodibenzo-p-	0.00290	mg/kg (4)	0.00008	12/08/92	SUB
6721	Polynuclear Aromatics, GC/MS, SW					
	Acenaphthene	ND	mg/kg	0.330	12/04/92	LG
	Acenaphthylene	ND	mg/kg	0.330	12/04/92	LG

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.

GSAI Group: 9060

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:50408 - PD4						
6721	Polynuclear Aromatics, GC/MS, SW					
	Anthracene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(a)anthracene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(b)fluoranthene	0.340	mg/kg	0.330	12/04/92	LG
	Benzo(k)fluoranthene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(ghi)perylene	ND	mg/kg	0.330	12/04/92	LG
	Benzo(a)pyrene	ND	mg/kg	0.330	12/04/92	LG
	Chrysene	0.430	mg/kg	0.330	12/04/92	LG
	Dibenzo(a,h)anthracene	ND	mg/kg	0.330	12/04/92	LG
	Fluoranthene	ND	mg/kg	0.330	12/04/92	LG
	Fluorene	ND	mg/kg	0.330	12/04/92	LG
	1-Methylnaphthalene	ND	mg/kg	0.330	12/04/92	LG
	2-Methylnaphthalene	ND	mg/kg	0.330	12/04/92	LG
	Naphthalene	ND	mg/kg	0.330	12/04/92	LG
	Phenanthrene	0.900	mg/kg	0.330	12/04/92	LG
	Pyrene	1.70	mg/kg	0.330	12/04/92	LG
	Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.330	12/04/92	LG

(1) Reported as toxicity equivalents.

(2) Reported as toxicity equivalents.

(3) Reported as toxicity equivalents.

(4) Reported as toxicity equivalents.

ND - Not detected at the limit of quantitation

Respectfully Submitted,
Reviewed and Approved by:

T. L. Lomis for

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 112
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 9488
Date Reported: 02/04/93
Date Received: 01/18/93

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order:
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:52177 - D-1NS Fines						
0111	Moisture	6.6	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	2,000	mg/kg	640	02/02/93	LG
Sample:52178 - D-1NS Coarse						
0111	Moisture	4.9	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	180	mg/kg	80.0	02/01/93	LG
Sample:52179 - D-2S Fines						
0111	Moisture	6.5	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	1,400	mg/kg	800	02/01/93	LG
Sample:52180 - D-2S Coarse						
0111	Moisture	2.6	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	230	mg/kg	160	02/01/93	LG
Sample:52181 - D-3S PD-1 Fines						
0111	Moisture	17.1	%	0.1	01/19/93	RM
Sample:52182 - D-3S PD-1 Coarse						
0111	Moisture	4.0	%	0.1	01/19/93	RM
Sample:52183 - W-1 Feed						
0111	Moisture	12.1	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids					
	Pentachlorophenol	660	mg/kg	200	02/02/93	LG
Sample:52184 - D-4S PD-1 Feed						
0111	Moisture	10.7	%	0.1	01/19/93	RM
Sample:52185 - D-4S PD-1 Fines						
0111	Moisture	9.5	%	0.1	01/19/93	RM

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9488

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:52186 - D-4S PD-1 Coarse						
0111	Moisture	3.9	%	0.1	01/19/93	RM
Sample:52187 - D-5S Feed						
0111	Moisture	8.6	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids Pentachlorophenol	1,700	mg/kg	640	02/02/93	LG
Sample:52188 - D-5S Fines						
0111	Moisture	11.9	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids Pentachlorophenol	1,600	mg/kg	640	02/03/93	LG
Sample:52189 - D-5S Coarse						
0111	Moisture	6.1	%	0.1	01/19/93	RM
1197	Priority Pollutant Acids, Solids Pentachlorophenol	590	mg/kg	200	02/02/93	LG

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust

Melanie L. D'Aoust
Project Manager

GULF STATES ANALYTICAL, INC.
5450 Northwest Central Drive, Suite 110
Houston, Texas 77092, (713) 690-4444, FAX (713) 690-5646

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc.
16300 Katy Freeway, Suite 300
Houston, TX 77094-1609

GSAI Group: 9487
Date Reported: 02/04/93
Date Received: 11/23/92

Attn: Mr. Ron Grimes
Project: Arkwood

Purchase Order: 92-17
Project No.: 92-17

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:50405 - PD1						
1145	Arsenic by Furnace AA, Solids	1.3	mg/kg	1.0	01/22/93	HT
0144A	Antimony by ICP, Solids	ND	mg/kg	4	02/02/93	HT
0146A	Barium by ICP, Solids	40	mg/kg	10	02/02/93	HT
0147A	Beryllium by ICP, Solids	0.7	mg/kg	0.5	02/02/93	HT
0149A	Cadmium by ICP, Solids	ND	mg/kg	0.5	02/02/93	HT
0151A	Chromium by ICP, Solids	12.3	mg/kg	2.0	02/02/93	HT
0155A	Lead by ICP, Solids	32	mg/kg	20	02/02/93	HT
0166A	Silver by ICP, Solids	ND	mg/kg	1	02/02/93	HT
0525A	Thallium by ICP, Solids	ND	mg/kg	50	02/02/93	HT
0159	Mercury by Cold Vapor AA, Solids	ND	mg/kg	0.25	01/25/93	JW
Sample:50406 - PD2						
1145	Arsenic by Furnace AA, Solids	1.6	mg/kg	1.0	01/22/93	HT
0144A	Antimony by ICP, Solids	ND	mg/kg	4	02/02/93	HT
0146A	Barium by ICP, Solids	38	mg/kg	10	02/02/93	HT
0147A	Beryllium by ICP, Solids	ND	mg/kg	0.5	02/02/93	HT
0149A	Cadmium by ICP, Solids	ND	mg/kg	0.5	02/02/93	HT
0151A	Chromium by ICP, Solids	12.4	mg/kg	2.0	02/02/93	HT
0155A	Lead by ICP, Solids	25	mg/kg	20	02/02/93	HT
0166A	Silver by ICP, Solids	ND	mg/kg	1	02/02/93	HT
0525A	Thallium by ICP, Solids	ND	mg/kg	50	02/02/93	HT
0159	Mercury by Cold Vapor AA, Solids	ND	mg/kg	0.25	01/25/93	JW
Sample:50407 - PD3						
1145	Arsenic by Furnace AA, Solids	1.3	mg/kg	1.0	01/22/93	HT
0144A	Antimony by ICP, Solids	ND	mg/kg	4	02/02/93	HT
0146A	Barium by ICP, Solids	27	mg/kg	10	02/02/93	HT
0147A	Beryllium by ICP, Solids	ND	mg/kg	0.5	02/02/93	HT
0149A	Cadmium by ICP, Solids	ND	mg/kg	0.5	02/02/93	HT
0151A	Chromium by ICP, Solids	11.6	mg/kg	2.0	02/02/93	HT
0155A	Lead by ICP, Solids	ND	mg/kg	20	02/02/93	HT
0166A	Silver by ICP, Solids	ND	mg/kg	1	02/02/93	HT
0525A	Thallium by ICP, Solids	ND	mg/kg	50	02/02/93	HT
0159	Mercury by Cold Vapor AA, Solids	ND	mg/kg	0.25	01/25/93	JW
Sample:50408 - PD4						
1145	Arsenic by Furnace AA, Solids	1.3	mg/kg	1.0	01/22/93	HT

ANALYSIS SUMMARY REPORT

ERM-Southwest, Inc. GSAI Group: 9487

Test	Analysis	Results as Received	Units	Limit of Quantitation	Date Extracted/ Analyzed	Analyst
Sample:50408 - PD4						
0144A	Antimony by ICP, Solids	ND	mg/kg	4	02/02/93	HT
0146A	Barium by ICP, Solids	37	mg/kg	10	02/02/93	HT
0147A	Beryllium by ICP, Solids	ND	mg/kg	0.5	02/02/93	HT
0149A	Cadmium by ICP, Solids	ND	mg/kg	0.5	02/02/93	HT
0151A	Chromium by ICP, Solids	9.9	mg/kg	2.0	02/02/93	HT
0155A	Lead by ICP, Solids	ND	mg/kg	20	02/02/93	HT
0166A	Silver by ICP, Solids	ND	mg/kg	1	02/02/93	HT
0525A	Thallium by ICP, Solids	ND	mg/kg	50	02/02/93	HT
0159	Mercury by Cold Vapor AA, Solids	ND	mg/kg	0.25	01/25/93	JW
Sample:50613 - ICS RR Ditch Sludge						
0111	Moisture	43.3	%	0.1	01/19/93	BWH

ND - Not detected at the limit of quantitation

Respectfully Submitted,
Reviewed and Approved by:

Melanie L. D'Aoust
Project Manager

APPENDIX 1.

GALBRAITH LABORATORIES, INC. ANALYTICAL REPORTS

Contents:

1)	February 1, 1993	CORRECTED REPORT Samples Z-1121 through Z-1125
2)	February 4, 1993	LETTER REPORT Sample Z-7838
3)	February 9, 1993	LETTER REPORT Sample Z-6979

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Mr. Tom McGowan
Four Nines, Inc.
125 East Trinity Place, Suite 249
Decatur, Georgia 30030

February 1, 1993

Received: Dec. 10th

Corrected Report

Dear Mr. McGowan:

Analysis of your compounds gave the following results:

Your #,	Our #,	Analyses,	As Received,	Dry Basis,
PDF Composite	Z-1121	Ultimate Analysis:		
		% Moisture	18.05	
		% Carbon	0.97	1.18
		% Hydrogen	2.34	0.41
		% Kjeldahl Nitrogen	0.036	0.044
		% Chlorine	0.025	0.030
		% Sulfur	0.016	0.019
		% Ash	77.63	94.73
		% Fluorine	0.0016	0.0019
		Proximate Analysis:		
		% Moisture	18.05	
		% Ash	77.63	94.73
		% Volatile Matter	4.32	5.27
		% Fixed Carbon	0.00	0.00
		Sulfur Forms:		
		% Sulfate Sulfur	0.0022	0.0027
		BTU/pound	115	140
		% Oil & Grease	0.087	0.106
		Bulk Density, g/ml	1.737	
		Fusion Temperature of Ash:		
			Oxidizing,	Reducing,
		Initial Deformation	2700 ° F+	2700° F
		H/W	Out of range	2700° F+
		1/2 H/W	Out of range	Out of range
		Fluid Temperature	Out of range	Out of range

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Your #,	Our #,	Analyses,	
PDF Composite ASH	Z-1122	% SiO_2	84.89
		% Fe_2O_3	4.29
		% Al_2O_3	10.54
		% CaO	0.47
		% MgO	0.48
		% Na_2O	0.047
		% K_2O	0.57
		% SO_3	0.019

Your #,	Our #,	Analyses,	As Received,	Dry Basis,
Clar-Bot. Composite	Z-1123	Ultimate Analysis:		
		% Moisture	29.81	
		% Carbon	0.67	0.96
		% Hydrogen	3.31	<0.5
		% Kjeldahl Nitrogen	0.020	0.028
		% Chlorine	0.011	0.016
		% Sulfur	0.010	0.014
		% Ash	68.02	96.91
		% Fluorine		<0.0018
		Proximate Analysis:		
		% Moisture	29.81	
		% Ash	68.02	96.91
		% Volatile Matter	2.14	3.05
		% Fixed Carbon	0.03	0.04
		Sulfur Forms:		
		% Sulfate Sulfur	0.0018	0.0025
		BTU/pound	53	76
		% Oil & Grease	0.064	0.091
		Bulk Density, g/ml	1.793	
		Fusion Temperature of Ash:		
			Oxidizing,	Reducing,
		Initial Deformation	2700 ° F+	2700° F+
		H/W	Out of range	Out of range
		1/2 H/W	Out of range	Out of range
		Fluid Temperature	Out of range	Out of range
		Duplicate Analysis:		
		% Moisture	29.46	

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Your #,	Our #,	Analyses,	As Received,	Dry Basis,
ICS-RR	Z-1124	Ultimate Analysis:		
Ditch Sludge		% Moisture (KF)	32.27	
Composite		% Carbon	8.92*	13.18
		% Hydrogen	4.96*	2.03
		% Kjeldahl Nitrogen	0.096	0.142
		% Chlorine	1.32	1.95
		% Sulfur	0.15	0.22
		% Ash	57.17	84.41
		% Fluorine	0.009	0.013
		Proximate Analysis:		
		% Moisture	32.27	
		% Ash	57.17	84.41
		% Volatile Matter	7.52	11.10
		% Fixed Carbon	3.04	4.49
		Sulfur Forms:		
		% Sulfate Sulfur	0.0013	0.0018
		BTU/pound	1850	2731
		% Oil & Grease	0.126*	0.186
			0.127*	0.188
		Bulk Density, g/ml	1.638	
		Fusion Temperature of Ash:		
			Oxidizing,	Reducing,
		Initial Deformation	2600° F	2640° F
		H/W	2620° F	2660° F
		1/2 H/W	2680° F	2700° F+
		Fluid Temperature	2700° F	Out of range

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Mr. McGowan
Page 4
February 1, 1993

Your #,	Our #,	Analyses,	As Received,	Oil Layer,
MW-10	Z-1125	Ultimate Analysis:		
		% Moisture	93.70	
		% Carbon	5.42**	86.06
		% Hydrogen	11.09**	10.82
		% Kjeldahl Nitrogen	0.0032*	
		% Chlorine	0.063**	0.913
		% Sulfur	0.049*	1.50
		% Sulfur	0.095**	
		% Ash		0.040
		% Fluorine	0.0029*	
		Proximate Analysis		
		% Moisture		2.76
		% Ash		0.040
		% Ash (Water layer)	0.093*	
		% Ash	0.090**	
		Sulfur Forms:		
		Sulfate Sulfur (water layer)	<.5 mg/liter	
		ppm Sulfate Sulfur	6**	94
		BTU/pound	1247**	
		BTU/pound		19062
		BTU/pound (water layer)	85	
		mg/liter Oil & Grease	2896*	
		Specific Gravity, g/ml	0.9945*	

*Grab sample taken, on as received basis.
**Calculated Value.

Sincerely yours,

GALBRAITH LABORATORIES, INC.

Gail R. Hutchens
Exec. Vice-President

GRH/gh:sla

cc: Ron Grimes
Peter Williamson

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Mr. Tom McGowan
Four Nines, Inc.
125 East Trinity Place, Suite 249
Decatur, Georgia 30030

February 4, 1993

Received: Feb. 4th

Dear Mr. McGowan:

Analysis of your compounds gave the following results:

Your #,	Our #,	Analyses,	
Master Composite Ash	Z-7838	% SiO_2	83.09
		% Al_2O_3	9.01
		% Fe_2O_3	3.92
		% CaO	0.38
		% MgO	0.32
		% K_2O	0.57
		% Na_2O	0.24
		% SO_3	0.81

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Your # Master Composite Ash

Our #, Z-7838

Procter Density*

Test No.	1.	2.	3.	4.	5.
Water Content, %	23.3	25.0	27.0	29.3	31.6
Wet Density - PCF	101.7	105.5	111.0	114.0	114.0
Dry Density - PCF	82.5	85.2	87.4	88.2	86.6

Maximum Density, Dry Soil, PCF 88.3
Optimum Moisture, Content % 29.0

* See enclosed graph.

Sincerely yours,

GALBRAITH LABORATORIES, INC.

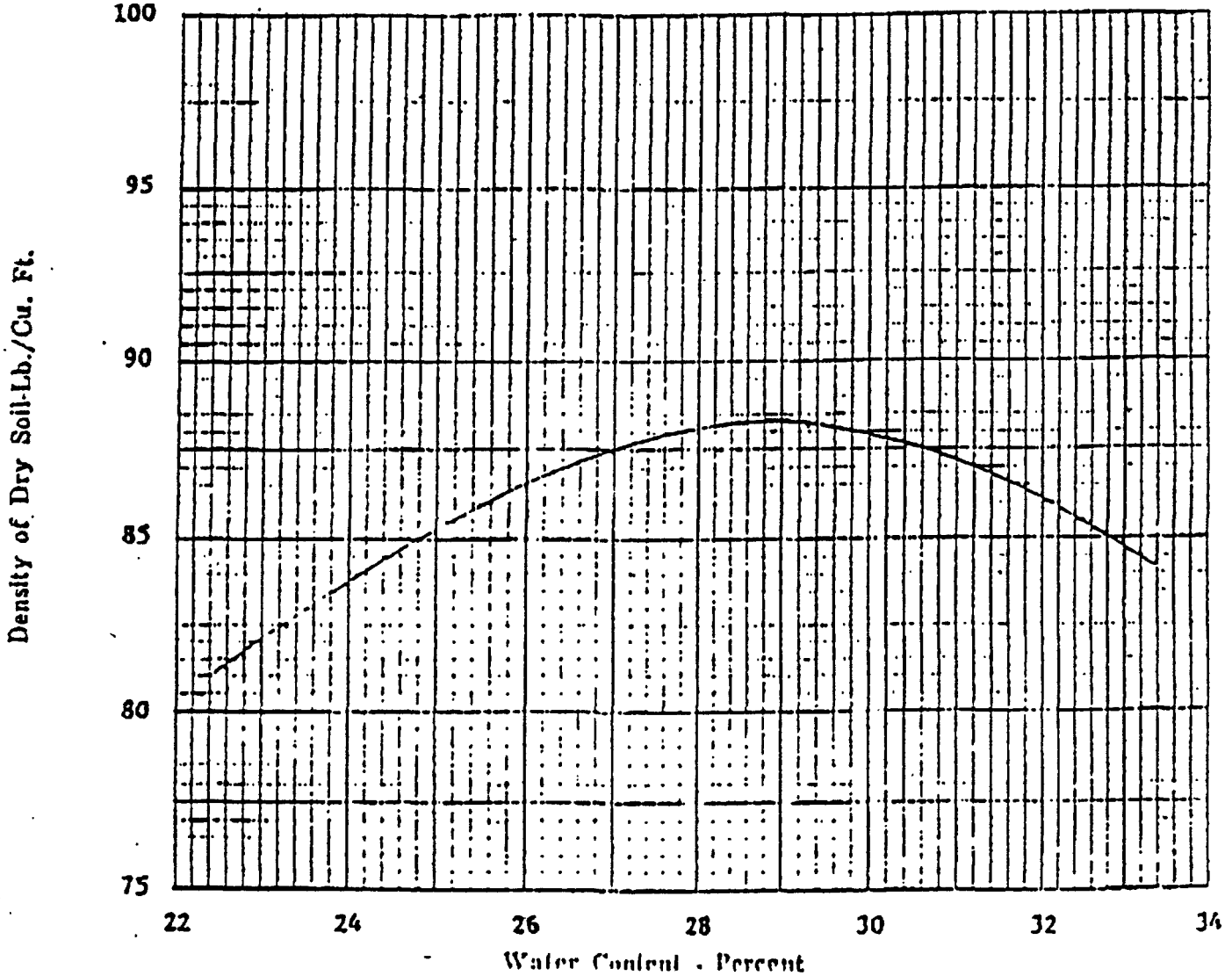
Gail R. Hutchens
Exec. Vice-President

GRH/gh:sla

Trial No.	1	2	3	4	5	6
Water Content, %	23.3	25.0	27.0	29.3	31.6	
Wet Density-PCF	101.7	105.5	111.0	114.0	114.0	
Dry Density-PCF	82.5	85.2	87.4	88.2	86.6	

Maximum Density, Dry Soil, PCF 88.3

Optimum Moisture Content, % 29.0



Z-7838 Master Composite Ash Proctor Density

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Mr. Tom McGowan
Four Nines, Inc.
125 East Trinity Place, Suite 249
Decatur, Georgia 30030

February 9, 1993

Received: Jan. 29th

Dear Mr. McGowan:

Analysis of your sample gave the following results:

Your #,	Our #,	Analyses,	As Received,	Dry Basis,
Master Composite	Z-6979	Ultimate Analysis:		
		% Moisture	23.46	
		% Carbon	1.78	2.32
		% Hydrogen	2.83	0.29
		% Kjeldahl Nitrogen	0.034	0.045
		% Chlorine	0.088	0.115
		% Sulfur	0.033	0.043
		% Ash	72.32	94.49
		% Fluorine	0.0044	0.0058
		Proximate Analysis		
		% Moisture	23.46	
		% Ash	72.32	94.49
		% Volatile Matter	4.22	5.51
		% Fixed Carbon	0.00	0.00
		Sulfur Forms:		
		% Sulfate Sulfur	0.0022	0.0029

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Your #,	Our #,	Analyses,	As Received,	Dry Basis,
Master Composite	Z-6979	BTU/pound	264	345
		% Oil and Grease	0.036	0.047
		Bulk Density, g/ml	1.809	

Fusion Temperature of Ash:

	Oxidizing,	Reducing,
Initial	2660° F	2680° F
H/W	2700° F+	2700° F+
1/2 H/W	Out of range	Out of range
Fluid Temperature	Out of range	Out of range

Duplicate Analyses	As Received,	Dry Basis,
%Carbon	2.13	2.78
%Hydrogen	3.35	0.97
%Chlorine	0.089	0.116
%Oil & Grease	0.035	0.046

Sincerely yours,

GALBRAITH LABORATORIES, INC.

Gail R. Hutchens

Gail R. Hutchens
Exec. Vice-President

GRH/gh:sla

cc: Ron Grimes
Peter Williamson

GALBRAITH LABORATORIES, INC.

PHONE 615/546-1335 FAX 615/546-7209

Mr. Tom McGowan
Four Nines, Inc.
125 East Trinity Place, Suite 249
Decatur, Georgia 30030

February 22, 1993

Received: Jan. 28th
PO#: Project 92-17

Dear Mr. McGowan:

Analysis of your compounds gave the following results:

Your #,	Our #,	Analyses,	
Master Composite Ash	Z-6532	% SiO_2	80.80
		% Al_2O_3	7.01
		% Fe_2O_3	3.15
		% CaO	0.34
		% MgO	0.32
		% K_2O	0.43
		% Na_2O	0.070
		% SO_3	0.088
Master Composite		Z-6531	Cancel

Sincerely yours,

GALBRAITH LABORATORIES, INC.

Gail R. Hutchens
Exec. Vice-President

GRH/cb:bc
cc: Ron Grimes
ERM Southwest, Inc.

6100 Hillcroft, Houston, Texas 77081

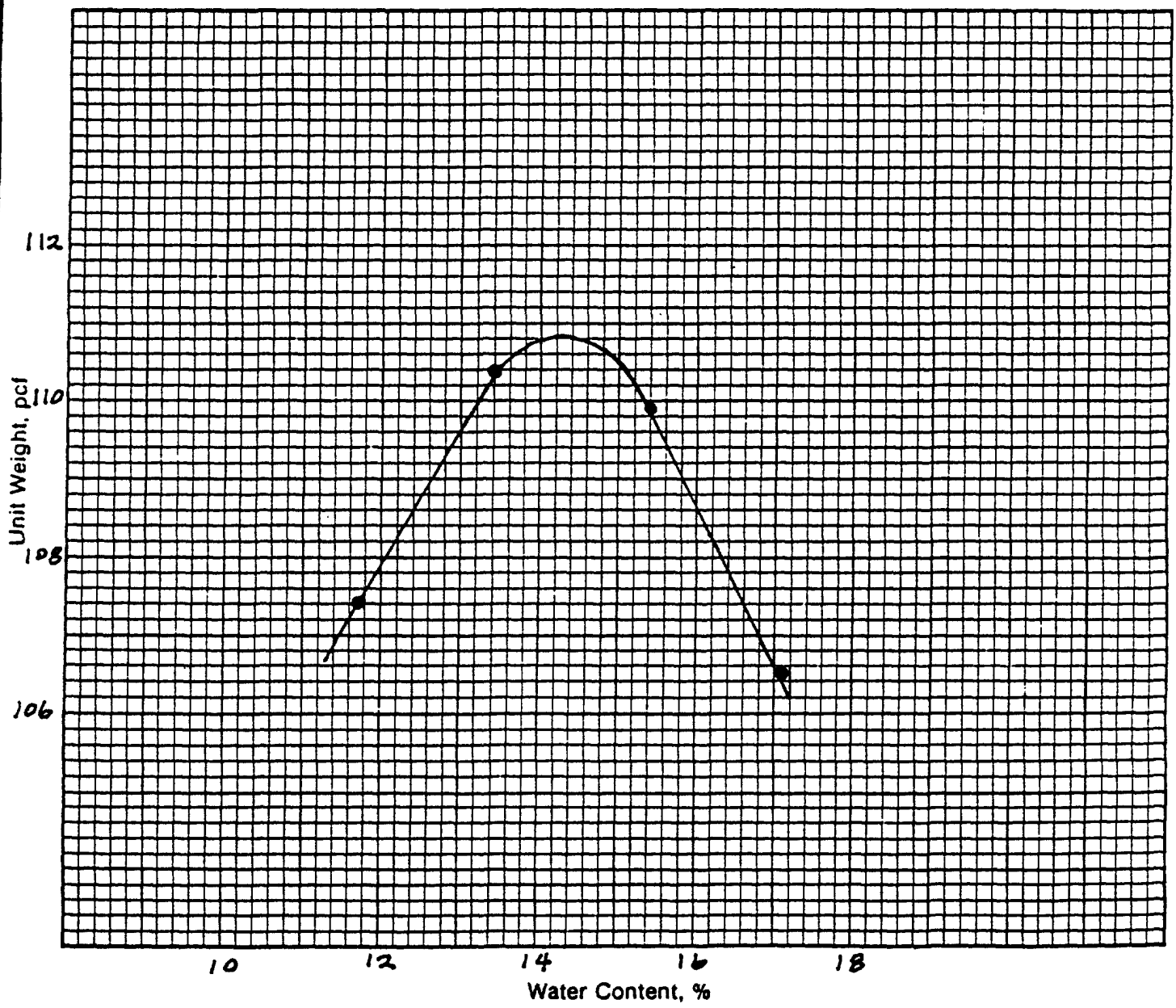
FUGRO ◻ McClelland

OPTIMUM MOISTURE / DENSITY RELATIONSHIP OF SOIL

Project : 92-17
Client : ERM Southwest, Inc
Test Method : ASTM D 698
Sample Location : Arkwood
Material : Br Sa clay w/ fine gravel

Date : 2/1/93
Job No. : 0401-1100
Report No. : ———

Optimum Water Content (%) : 14.2
Max. Unit Dry Weight (pcf) : 110.8
Liquid Limit (%) : ——
Plastic Limit (%) : ——
Plasticity Index : ——



Reported By: Kenneth W Hill
Date : 2-2-93

Geotechnical
Construction Materials

THE ABOVE TEST RESULTS APPLY ONLY TO THE ITEMS TESTED.
THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE APPROVAL OF FUGRO-McCLELLAND.

04.02.02
1/89