8606-01-05

NUS CORPORATION
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[redacted]

PROJECT FOR PERFORMANCE OF REMEDIAL RESPONSE ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCE FACILITIES—ZONE 1

NUS CORPORATION
SUPERFUND DIVISION

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R-585-7-6-48

A FIELD TRIP REPORT FOR PORTSMOUTH DAY CARE CENTER PREPARED UNDER

TDD NO. F3-8606-01
EPA NO.
CONTRACT NO. 68-01-6699

FOR THE

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

AUGUST 8, 1986

NUS CORPORATION
SUPERFUND DIVISION

DRAFT

SUBMITTED BY	REVIEWED BY	APPROVED BY
"Non-Responsive-Based on Revised Scope"		
ENVIRON. TECHNICIAN	ASSISTANT MANAGER	MANAGER, FIT III

Disclaimer: This report has been prepared for the U.S. Environmental Protection Agency (EPA) under Contract No. 68-01-6699. The content does not necessarily reflect the views and policies of EPA nor does the mention of trade names or common products constitute endorsement by EPA.

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SECTION 1

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1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-6699. This specific report was prepared in accordance with Technical Directive Document No. F3-8606-01 for the Portsmouth Day Care Center site located in Portsmouth, Virginia.

1.2 Scope Of Work

NUS FIT III was tasked to conduct a sampling and provide technical support at the Portsmouth Day Care Center site.

1.3 Summary

The subject site is an active day care center located in Portsmouth, Virginia. FIT III was tasked to accompany and assist EPA personnel during emergency sampling at the site. Earlier on-site soil sample analysis had revealed levels of up to 2,000 ppm of lead.

The purpose of this sampling was to determine if an imminent threat to human health exists at the site and to attempt to document a past release from the nearby Abex Corporation site, a potential National Priorities List candidate.

The analytical results from this sampling can be found in section 3 of this report.

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SECTION 2

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2.0 FIELD TRIP REPORT

2.1 Summary

On June 11, 1986, FIT III members "non responsive based on revised scope" [redacted] accompanied and assisted EPA personnel during emergency sampling at the Portsmouth Day Care Center. A total of 20 soil samples and 8 wipe samples were collected at various locations selected by EPA personnel.

2.2 Persons Contacted

2.2.1 Prior to Field Trip

Darius Ostrauskas
U.S. EPA
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19107
(215) 597-6488

2.2.2 At the Site

Robin Aitken
U.S. EPA
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19107
(215) 597-6679

Darius Ostrauskas
U.S. EPA
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19107
(215) 597-6488

Lisa Clark
Virginia Health Department
Bureau of Hazardous Waste Management
11th Floor, Monroe Building
101 North 14th Street
Richmond, VA 23219
(804) 225-2667

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EPA Number

2.3 **SAMPLE LOG**

Site Name Portsmouth Day Care Center

TRAFFIC REPORTS Organic	Inorganic	High Hazard	SAMPLING LOCATION	PHASE	SAMPLE DESCRIPTION	DATE	TIME	pH	COMMENTS/OBSERVATIONS	LABORATORY
	MCF 199		Soil 1	Sol	Low Conc. Solids	6/11/86	0910		Rocky Mountain Lab	Analytical
	MCF 200		Soil 2	Sol			0915			
	MCD757		Soil 3	Sol			0920			
	MCD758		Soil 4	Sol			0925			
	MCD759		Soil 5	Sol			0930			
	MCD760		Soil 6	Sol			0935			
	MCD761		Soil 7	Sol			0940			
	MCD762		Soil 8	Sol			0943			
	MCD763		Soil 9	Sol			0945			
	MCD764		Soil 10	Sol			0948			
	MCD765		Soil 11	Sol			0953			
	MCD766		Soil 12	Sol			0958			
	MCD767		Soil 13	Sol			1005			
	MCD768		Soil 14	Sol			1015			
	MCD366		Soil 15	Sol			1020			
	MCD666		Soil 16	Sol			1025			
	MCD667		Soil 17	Sol			1030			
	MCD668		Background Soil #1	Sol			1130			
	MCD669		Background Soil #2	Sol			1150			
	MCD670		Blank	Sol	↓	↓	1230			

TDD Number E3-8606-01
EPA Number

2.3 SAMPLE LOG

Site Name Portsmouth Day Care Center

TRAFFIC REPORTS Organic	Inorganic	High Hazard	SAMPLING LOCATION	PHASE	SAMPLE DESCRIPTION	DATE	TIME	pH	COMMENTS/OBSERVATIONS	LABORATORY
			Wipe 1		North - left sill	6/11/86	0950			CRL
			Wipe 2		North - left sill		1012			Metals Only
			Wipe 3		Door ledge		1020			
			Wipe 4		Westside Air Cond		1039			
			Wipe 5		Westside Canopy		1046			
			Wipe 6		East side Sill		1100			
			Wipe 7		Blank		1115			
			Wipe 8		Background - Windowledge		1150			

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2.4 Site Observations

- The HNU background reading was .2 ppm; no readings above background were recorded.
- The site property is approximately 100 by 200 feet in size.
- The entire property is fenced.
- All sample locations were chosen by Darius Ostrauskas, the EPA representative.
- The mini-alert was set at 1 X; no readings above background were recorded.
- Samples were collected in areas of bare soil.
- Wipe samples were selected and obtained by EPA personnel.

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2.5 PHOTOGRAPH LOG

Photo 1 -
Soil 1

Photo 2 and 3 -
Soil 2

TDD No. F3-8606-01
Portsmouth Day Care Center

R.P. 1
Photo 1

Soil 1

6/11/86

0910

"Non-Responsive-Based on Revised Scope"

[redacted]

TDD No. F3-8606-01
Portsmouth Day Care Center

Soil 2

6/11/86

TDD No F3-8606-01
Portsmouth Day Care Center

R.P. 2
Photo 2

Soil 2

6/11/86

0920

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 4-
Soil 3

Photo 5 -
Soil 4

TDD No F3-8606-01
Portsmouth Day Care Centers

R1P4
Photo 4

Soil 3

6/8/84

0920

"Non-Responsive-Based on Revised Scope"

[redacted]

TDD No F3-8606-01
Portsmouth Day Care Centers

R1P5
Photo 5

Soil 4

6/11/84

0920

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 6 -
Soil 5

Photo 7 -
Soil 6

TDD No F3-8606-01
Portsmouth Day Care Center

R1 P6
Photo 6

Soil 5

6/11/86

"Non-Responsive-Based on Revised Scope"

[redacted]

0930

Photo 6 -
Soil 5

TDD No F3-8606-01
Portsmouth Day Care Center

R1 P7
Photo 7

Soil 6

6/11/86

"Non-Responsive-Based on Revised Scope"

[redacted]

0935

Photo 7 -
Soil 6

Photo 8 -
Soil 7

Photo 9 -
Soil 8

TDD No. F3-8606-01
Portsmouth Day Care Centers

R1 P8
Photo 8

Soil 7

6/6/84

"Non-Responsive-Based on Revised Scope"

[redacted]

0940

Photo 8 -
Soil 7

TDD No F3-8606-01
Portsmouth Day Care Center

R1 P9
Photo 9

Soil 8

6/6/84

"Non-Responsive-Based on Revised Scope"

[redacted]

0943

Photo 9 -
Soil 8

Photo 10 -
Soil 9

Photo 11 -
Soil 10

TDD No F3-8606-01
Portsmouth Day Care Center

R_1P_{10}
Photo 10

Soil 9

4/11/86

"Non-Responsive-Based on Revised Scope"

[redacted]

0945

TDD No F3-8606-01
Portsmouth Day Care Center

R_1P_{11}
Photo 11

Soil 10

6/11/86

"Non-Responsive-Based on Revised Scope"

[redacted]

0950

Photo 12 -
Soil 11

Photo 13 -
Soil 12

TDD No F3-8606-01
Portsmouth Day Care Center

R1 P12
Photo 12

Soil 11

6/11/84

0955

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 12 -
Soil 11

TDD No F3-8606-01
Portsmouth Day Care Center

R2 P1
Photo 13

Soil 12

6/11/84

1000

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 13 -
Soil 12

Photo 14 -
Soil 13

Photo 15 -
Soil 14

TDD No F3-8606-01
Portsmouth Day Care Center

R_2P_2
Photo 14

Soil 13

6/11/84

"Non-Responsive-Based on Revised Scope"

[redacted]

1005

TDD No F3-8606-01
Portsmouth Day Care Center

R_2P_3
Photo 15

Soil 14

6/11/84

"Non-Responsive-Based on Revised Scope"

[redacted]

1015

Photo 16 -
Soil 16

Photo 17 -
Soil 17

TDD No F3-8606-01
Portsmouth Day Care Center

R3P5
Photo 16

Soil 16

6/11/96

1025

"Non-Responsive-Based on Revised Scope"

[redacted]

TDD No F3-8606-01
Portsmouth Day Care Center

R3P4
Photo 17

Soil 17

6/11/96

1030

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 18 -
Panorama of southern position of building

Photo 19 -
Panorama of southern portion of building

TDD No F3-8606-01
Portsmouth Day Care Center

$R_3 P_2$
Photo 18

Pan of Southern Portion of Building

6/11/84

1115

"Non-Responsive-Based on Revised Scope"

[redacted]

TDD No. F3-8606-01
Portsmouth Day Care Center

$R_3 P_3$
Photo 19

Pan of Southern Portion of Building

6/11/84

1115

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 20 -
Playground area

Photo 21 -
Background soil no. 1 Lincoln and
Third Avenue

TDA No F3-8606-01
Portsmouth Day Care Center

$R_3 P_4$
Photo 20

Playground Area

6/11/84

1120

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 20 -
Playground area

TDA No. F3-8606-01
Portsmouth Day Care Center

$R_3 P_4$
Photo #21

Background Soil #1
Lincoln and 3rd Ave's

6/11/84

1135

"Non-Responsive-Based on Revised Scope"

[redacted]

Photo 21 -
Background soil no. 1 Lincoln and
Third Avenue

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SECTION 3

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3.0 LABORATORY DATA

3.1 Sample Data Summary

GLOSSARY

Data Summary Footnotes

In the data summary which follows, data qualifier code letters are associated with these definitions:

◊ This concentration reported by laboratory, but evidence to doubt presence of compound/element (may or may not be present).

J Approximate value; detected below limit of accurate quantitation.

[ ] Value is greater than or equal to the instrument detection limit, but less than the contract required reporting limit.

UF The material was analyzed for, but was not detected. The associated numerical value is the estimated sample quantitation limit.

F The associated numerical value is an estimated quantity because quality control criteria were not met. (See Quality Assurance Review for specifics as to magnitude or direction of variability or bias.)

R Quality Control indicates that data are unusable (compounds may or may not be present). Resampling and/or reanalysis is necessary for verification.

N Evidence for presence of material is presumptive (tentative identification).

H Suspected Unreliable Result: Even though data validation criteria have been met, this result may still be suspect because false positives are a frequent problem with this particular compound or method of analysis. To prove validity, corroboration with additional analytical results or supporting information would be recommended.

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TDD Number f3-8606-01

EPA Number

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☐ Organic ☒ Inorganic

Site Name Portsmouth Day Center

Date of Sample 6-17-86

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Remarks
MCF199	soil #1	Sol	mg/kg	1790			[43]			[2270]	6.5		62	2860	268	[402]	
MCF200	soil #2	Sol	mg/kg	4990		8.2	[64]			[1670]	9.7		54	4030	219	[433]	
MCD757	soil #3	Sol	mg/kg	4880		6.7	108			3030	10		82	4310	299	[433]	
MCD758	soil #4	Sol	mg/kg	2700			[31]			[802]	8.6		32	3080	121	[428]	
MCD759	soil #5	Sol	mg/kg	2620			[40]			[732]	8.4		67	3150	278	[275]	
MCD760	soil #6	Sol	mg/kg	3150			[48]			[1140]	10		62	3360	185	[376]	
MCD761	soil #7	Sol	mg/kg	680			[10]			[264]	[3.3]		[6.6]	1040	28	[158]	
MCD762	soil #8	Sol	mg/kg	1930			119			[734]	15		38	2450	312	[235]	
MCD763	soil #9	Sol	mg/kg	852			[16]			[522]	5.2		18	1250	65		
MCD764	soil #10	Sol	mg/kg	3090			126			[1230]	15		55	5370	381	[289]	
MCD765	soil #11	Sol	mg/kg	10,000		[5.1]	[80]			[2170]	29	[5.3]	39	19900	97	6840	
MCD766	soil #12	Sol	mg/kg	6070			[103]			3560	7.9		17	2890	193	[442]	
MCD767	soil #13	Sol	mg/kg	7200			[59]			[2340]	20	[4.6]	39	15300	108	5780	
MCD768	soil #14	Sol	mg/kg	5190			[49]			[1480]	6.4		14	2250	62	[442]	

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

ORIGINAL (Red)

TDD Number F3-8606-01

EPA Number

SA[redacted]E DA[redacted]MMA[redacted]

TARGET COMPOUNDS

☐ Organic ☒ Inorganic

Site Name Portsmouth Gay Center

Date of Sample 6-17-86

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc	Cyanide	Percent Solids (%)	Remarks
MCF199	Soil # 1	Sol	mg/kg	60	0.2	[5.2]	[320]					31◇	[14]	620		98%	
MCF200	Soil # 2	Sol	mg/kg	58	0.4	[6.2]	[380]					27◇	[9]	172		97%	
MCD757	Soil # 3	Sol	mg/kg	58	0.3	[7.3]	[404]					37◇	[21]	249		97%	
MCD758	Soil # 4	Sol	mg/kg	44	0.2	[4.3]	[407]					25◇	[13]	89		98%	
MCD759	Soil # 5	Sol	mg/kg	46	0.2	[6.3]						37◇	[20]	681		97%	
MCD760	Soil # 6	Sol	mg/kg	54	0.1	[6.5]	[370]					30◇	[8]	188		98%	
MCD761	Soil # 7	Sol	mg/kg	10								25◇	[68]	35		99%	
MCD762	Soil # 8	Sol	mg/kg	28		[6]						28◇	[12]	212		99%	
MCD763	Soil # 9	Sol	mg/kg	17	0.1	[3.7]						27◇	[5.2]	62		98%	
MCD764	Soil # 10	Sol	mg/kg	46	0.1	[4.2]	[296]					24◇	[13]	337		98%	
MCD765	Soil # 11	Sol	mg/kg	435	0.2	[18]	7720			[419]◇		29◇	41	173		99%	
MCD766	Soil # 12	Sol	mg/kg	41	0.4	[6.2]	538					29◇	[12]	139		95%	
MCD767	Soil # 13	Sol	mg/kg	341		[11]	5870			[366]◇		31◇	37	302		97%	
MCD768	Soil # 14	Sol	mg/kg	28		[4.8]	[672]					[20]◇	[11]	59		95%	

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

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SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☐ Organic ☒ Inorganic

TDD Number F3-8606-01
EPA Number

Site Name Portsmouth Day Center
Date of Sample 6-17-86

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Remarks
MCD366	Soil #15	SOL	mg/kg	4680			[40]			[1140]	[5.1]		[8.6]	2050	29	[392]	
MCD666	Soil #16	SOL	mg/kg	6280		[5.2]	313			4140	13		51	63550	727	[731]	
MCD667	Soil #17	SOL	mg/kg	5240		6.1	428		3.5	8710	22		99	38600	1350	[828]	
MCD668	Background soil 1	SOL	mg/kg	11900		7.1	[65]			[1290]	18		17	7540	61	[1020]	
MCD669	Background soil 2	SOL	mg/kg	4300		8.6	115			[2200]	11		26	4120	255	[415]	
MCD670	Field blank	SOL	mg/kg														

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

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[redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

TDD Number F3-8606-01

EPA Number

[redacted]LED [redacted]UM[redacted]
TARGET COMPOUNDS

☐ Organic ☒ Inorganic

Site Name Portsmouth Gaseous Diffusion Center

Date of Sample 6-17-86

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Tin	Vanadium	Zinc	Cyanide	Percent Solids (%)	Remarks
MC0666	Soil # 15	SOL	mg/kg	17		[4.9]	[496]					[18] ◇	[9.5]	68		94%	
MC0666	Soil # 16	SOL	mg/kg	106	0.8	[9.4]	[829]			[480] ◇		42 ◇	[21]	602		97%	
MC0667	Soil # 17	SOL	mg/kg	293	1.0	[13]	[797]			[571] ◇		348 ◇	[23]	1400		98%	
MC0668	Background soil 1	SOL	mg/kg	24		[7.2]	[734]			[551] ◇		27 ◇	28	50		98%	
MC0669	Background soil 2	SOL	mg/kg	56	0.8	[7.4]	[543]			[469]		29 ◇	[12]	304		93%	
MC0670	Field blank	SOL	mg/kg									[13]				100%	

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

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3.2 Quality Assurance Review

3.2.1 Inorganic Data: Lab Case 6079

3.2.1.1 Introduction

The findings offered in this report area based on a general review of all available inorganic laboratory data, blank analysis results, matrix spike and duplicate results, calibration data, and ICP interference data.

3.2.1.2 Qualifiers

It is recommended that this data package be utilized only with the following qualifier statements:

- All positive sample results for sodium are questionable.
- All positive results for tin are questionable except sample MCD667.

The aforementioned results were designated questionable because there is evidence to doubt the presence of these compounds (they may or may not be present.) Generally, these data are best used to demonstrate that substantially greater levels of environmental contamination do not exist in the above sample results.

- The actual detection limit for selenium in sample MCF 199 may be substantially higher then reported.
- Although there is no reason to suggest that any sample results are questionable, it was not possible to verify the results for arsenic, selenium, and thallium due to insufficient documentation. Similarly, it was not possible to verify that results within five times of the instrument detection limit are not artifactual.

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3.2.1.3 Findings

- Field and/or laboratory blank analysis revealed the presence of sodium and tin at sufficient levels to question the aforementioned sample results.

- The matrix spike result for selenium in sample MCF199 exhibited a zero recovery.

- The laboratory did not include absorbance in the raw data for arsenic, selenium, and thallium, only final concentrations. Therefore, errors resulting from conversion to final concentration could not be ascertained. Additionally, low-level results could not be verified since field and laboratory blanks were reported in the same manner and results which are just below instrument detection limits were not provided in the raw data.

3.2.1.4 Summary

The text of this report has been formulated to address only those problem areas which affect the application of the data to the investigation. The attached quality assurance review has identified blank contamination, poor matrix spike result, and insufficient documentation as the primary areas of concern. Please see the attached Support Documentation appendix for specifics on this report.

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Report prepared by Anthony N. Enweze _____ Date: July 18, 1986
(215) 887-9510

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APPENDIX A

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1. COST CENTER:	REM/FIT ZONE CONTRACT TECHNICAL DIRECTIVE DOCUMENT (TDD)	2. NO.: F3-8606-01
ACCOUNT NO.:		

3. PRIORITY:	4. ESTIMATE OF TECHNICAL HOURS:	5. EPA SITE ID:	6. COMPLETION DATE:	7. REFERENCE INFO.:
[x] HIGH [ ] MEDIUM [ ] LOW	200		2 wks. after QA	[x] YES [ ] NO [ ] ATTACHED [x] PICK UP
	4A. ESTIMATE OF SUBCONTRACT COST:	5A. EPA SITE NAME: Portsmouth Day Care Center Portsmouth, VA		

8. GENERAL TASK DESCRIPTION: Perform sampling at the subjet site.

9. SPECIFIC ELEMENTS:

1.) Review background information.
2.) Collect samples at locations selected by D. Ostrauskas during on-site recon.
3.) Provide sampling equipment, glassware, and packaging equipment needed to assist D. Ostrauskas in the collection and shipping of samples.
4.) Take and ship samples according to standard protocol.
5.) Darius Ostrauskas will coordinate all lab arrangements.
6.) Prepare and submit field trip report, including QA'd data results.
7.) All work on this project to be performed according to: WP-SI-1, Rev.1

10. INTERIM DEADLINES:

11. DESIRED REPORT FORM: FORMAL REPORT [x] LETTER REPORT [ ] FORMAL BRIEFING [ ]

OTHER (SPECIFY): State Code 051 County Code 740

12. COMMENTS: Coordiante all activities with Darius Ostrauskas

13. AUTHORIZING RPO: (SIGNATURE)

14. DATE:

15. RECEIVED BY: [ ] ACCEPTED [ ] ACCEPTED WITH EXCEPTIONS [ ] REJECTED

(CONTRACTOR RPM SIGNATURE)

16. DATE:

Sheet 1 White – FITL Copy
Sheet 2 Canary – DPO Copy
Sheet 3 Pink – Contracting Officer's Copy (Washington, D. C.)
Sheet 4 Goldenrod – Project Officer's Copy (Washington, D. C.)

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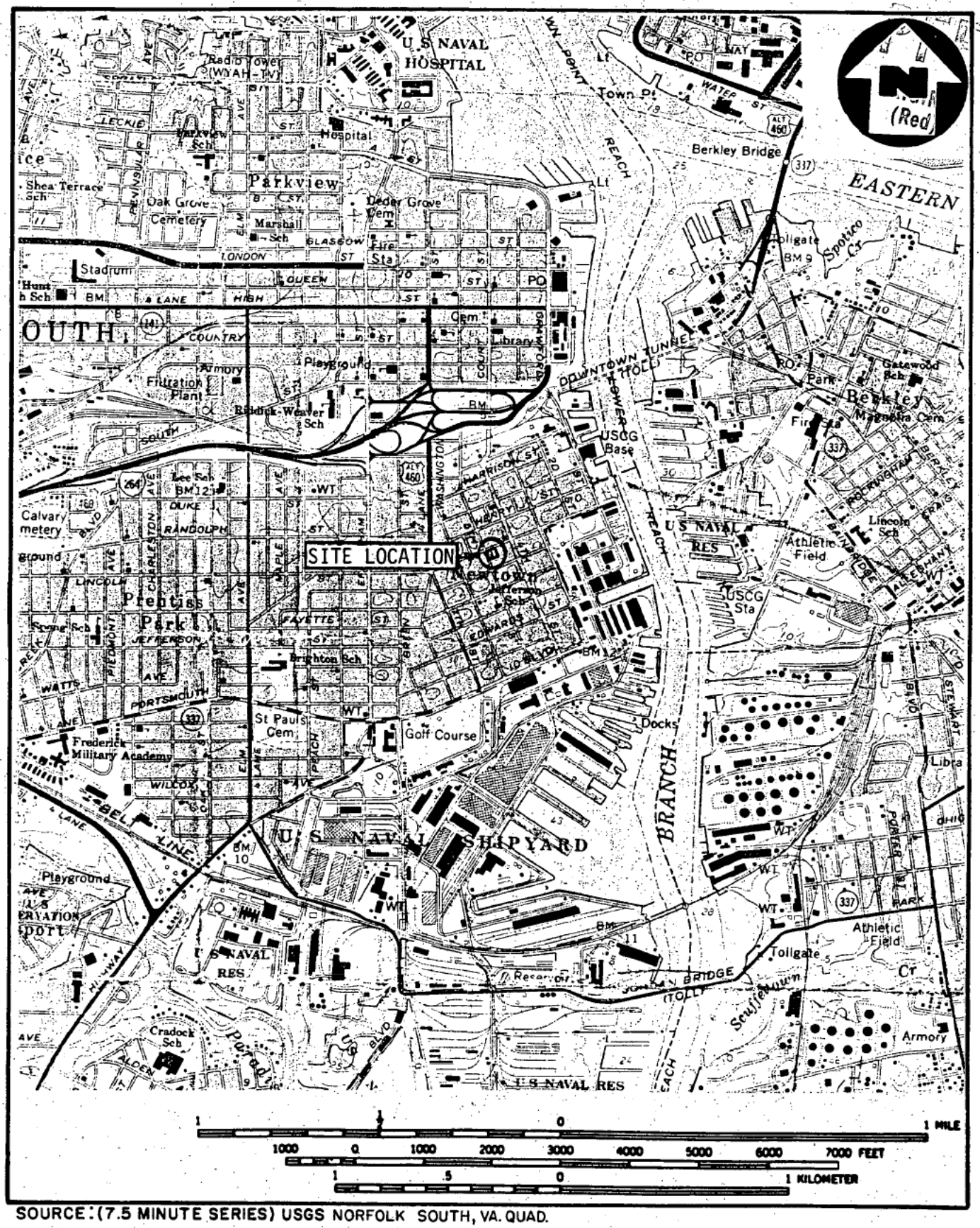
(Red)

APPENDIX B



SOURCE: (7.5 MINUTE SERIES) USGS NORFOLK SOUTH, VA. QUAD.

SITE LOCATION MAP
PORTSMOUTH DAY CARE CENTER

SCALE 1:24000

FIGURE 1

NUS CORPORATION

A Halliburton Company

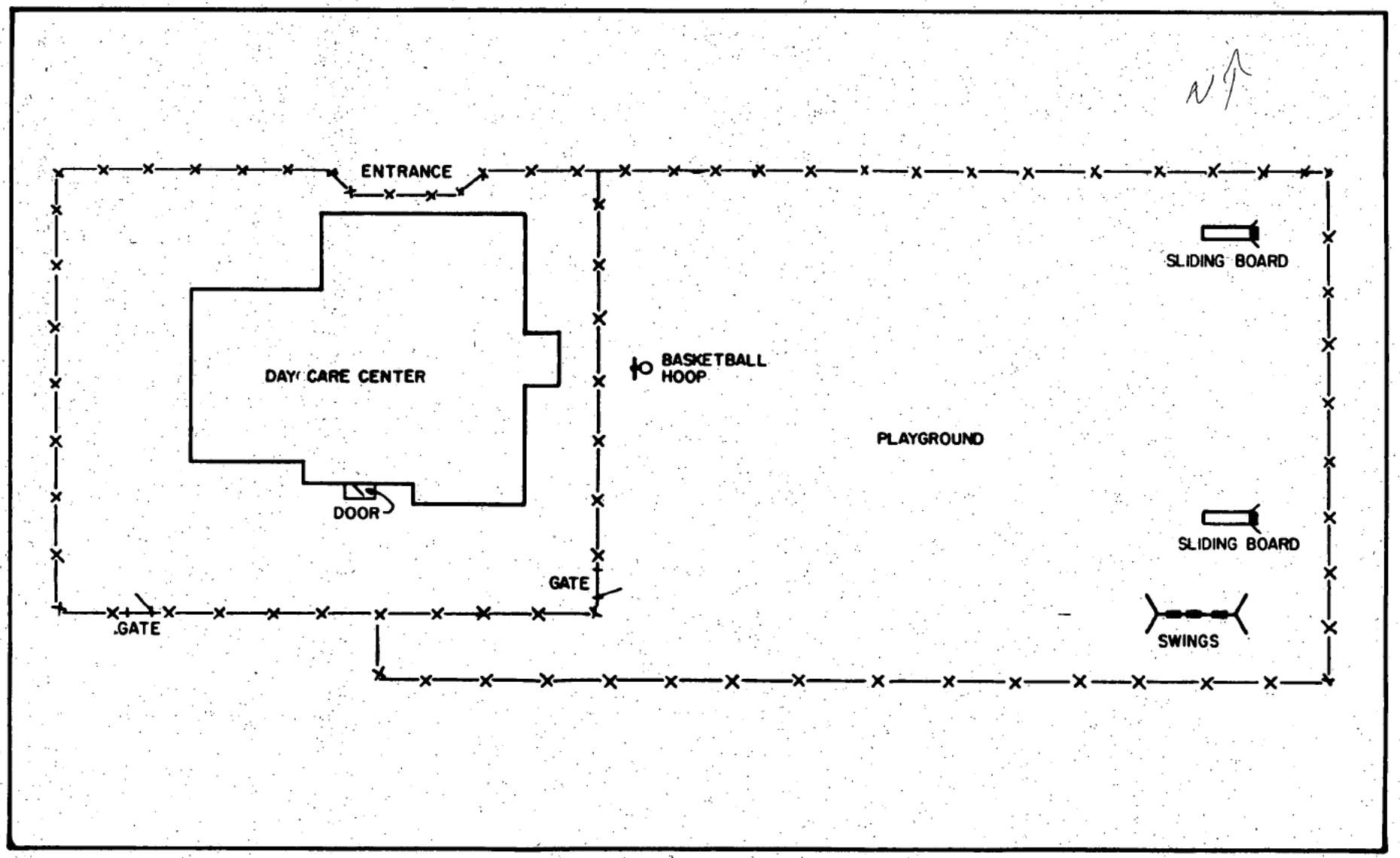
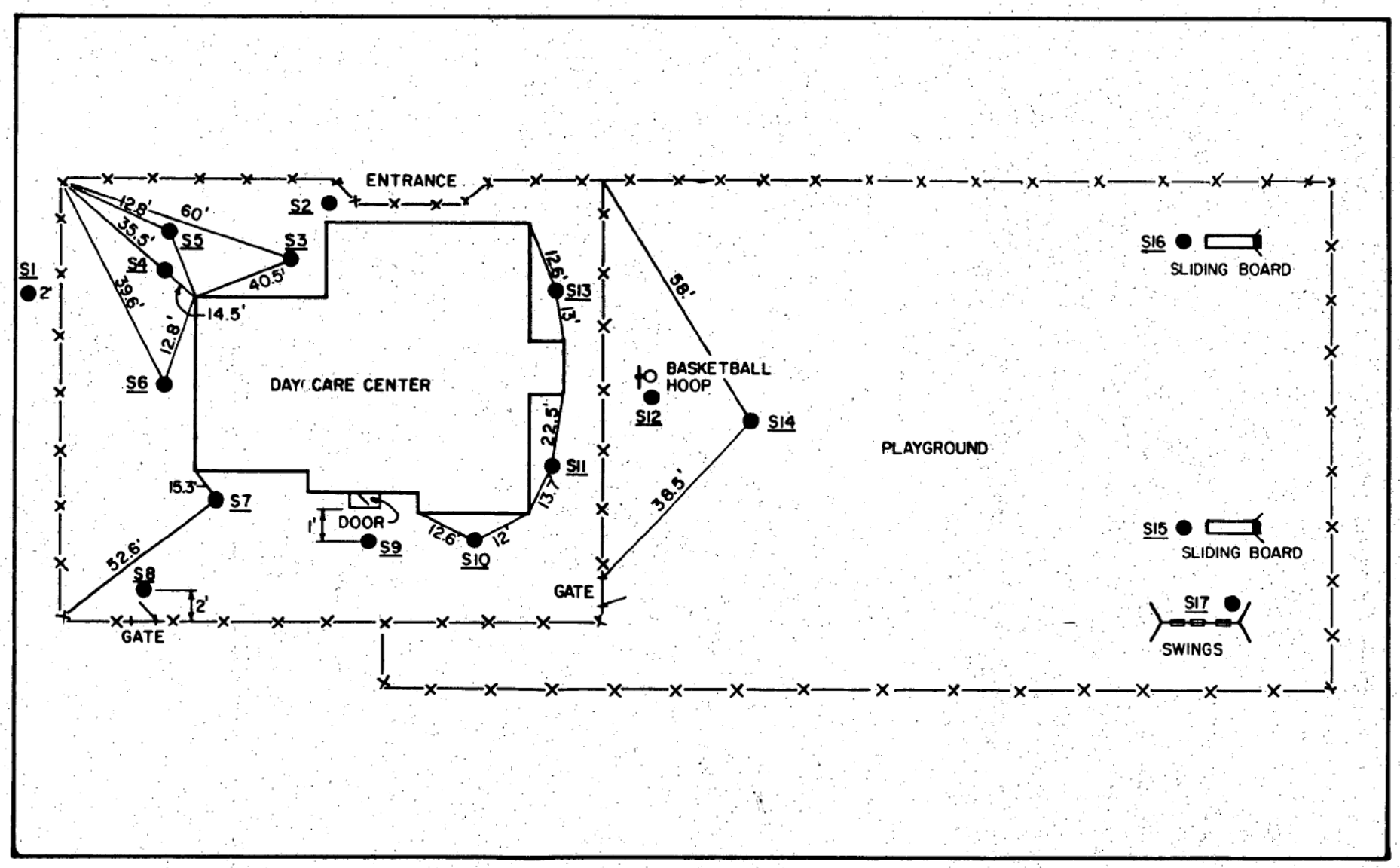


FIGURE – 2

SITE SKETCH
PORTSMOUTH DAY CARE CENTER
(NO SCALE)

NUS CORPORATION
A Halliburton Company

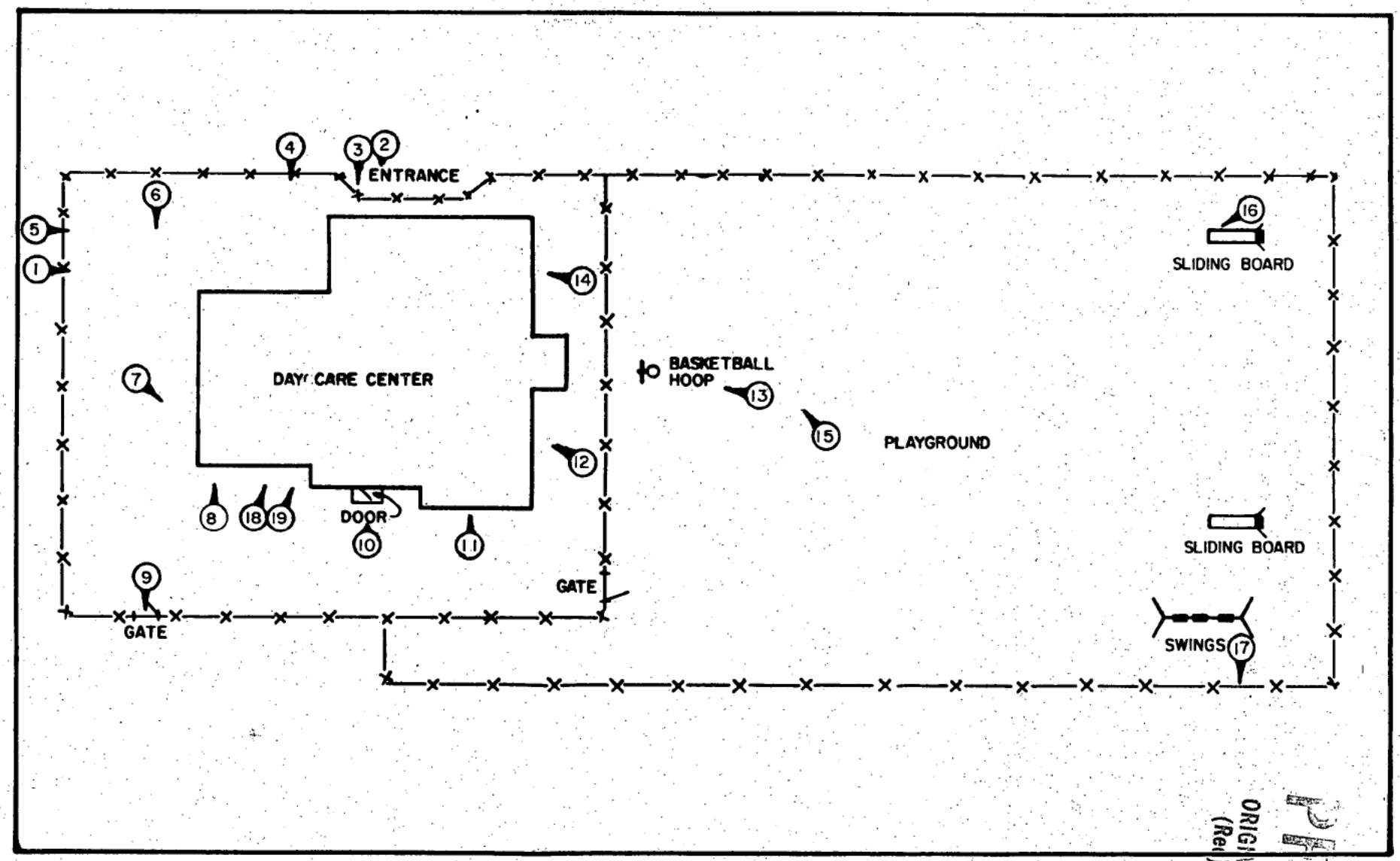


SAMPLE LOCATION MAP
PORTSMOUTH DAY CARE CENTER
(NO SCALE)

FIGURE -3

ORIGINAL (Red)

NUS CORPORATION
A Halliburton Company



ORIGINAL (Red)

FIGURE -4

PHOTO LOCATION MAP
PORTSMOUTH DAY CARE CENTER
(NO SCALE)

NUS CORPORATION
A Halliburton Company

PFL
ORIGINAL
(Red)

APPENDIX C

PROJECT NAME: Portsmouth Gas Center
TDD NO: F3-8606-01

EPA SITE NO.:
REGION: III

PFC

ORIGINAL (Red)

QUALITY ASSURANCE REVIEW OF INORGANIC ANALYTICAL DATA PACKAGE

Case No.: 6079
Contract No.: 68-01-7068
Contract Laboratory: RMA Laboratory
Applicable IFB No.: WA84-J092
Reviewer: ANTHONY N. ENWEZE
Review Date:

Applicable Sample No's.: MCF199, MCF200, MCD757, MCD758, MCD759, MCD760, MCD761, MCD762, MCD763, MCD764, MCD765, MCD766, MCD767, MCD768, MCD769, MCD366, MCD666, MCD667, MCD668, MCD669, and MCD670.

The inorganic analytical data for this case has been reviewed. The quality assurance evaluation is summarized in the following table:

Reviewer's Evaluation*	Fraction			
	TASK I ICP or AA METALS	TASK II FURNACE AA METALS	TASK II COLD VAPOR AA MERCURY	TASK III CYANIDE
Acceptable			✓	
Acceptable with exception(s)	✓ 1,	✓ 2, 3,		N/R
Questionable				
Unacceptable				

* Definitions of the evaluation score categories are listed on next page.

This evaluation was based upon an analysis of the review items indicated below:

- ≠● DATA COMPLETENESS
- ≠● BLANK ANALYSIS RESULTS
- ● MATRIX SPIKE RESULTS
- ≠● DUPLICATE ANALYSIS RESULTS
- ○ STANDARD ADDITIONS RESULTS
- ≠◒ QUANTITATIVE CALCULATIONS
- ≠● INITIAL CALIBRATION VERIFICATION
- ≠● CONTINUING CALIBRATION VERIFICATION
- ≠● INTERFERENCE QC RESULTS
- ≠● DETECTION LIMITS RESULTS
- ≠● INSTRUMENT SENSITIVITY REPORTS

Data review forms are attached for each of the review items indicated above.

≠ No errors noted, no form attached.
◒ Spot Check performed.

N/R - Not Required.

Comments:
1) Please see blank analysis results (contamination)
2) Please see matrix spike recovery (detection limit)
3) Please see text (insufficient documentation)

DATA EVALUATION SCORE CATEGORIES

PFE

ORIGINAL (Red)

ACCEPTABLE: Data is within established control limits, or the data which is outside established control limits does not affect the validity of the analytical results.

ACCEPTABLE WITH EXCEPTION(S): Data is not completely within established control limits. The deficiences are identified and specific data is still valid, given certain qualifications which are listed below.

QUESTIONABLE: Data is not within established control limits. The deficiences bring the validity of the entire data set into question. However, the data validity is neither proved nor disproved by the available information.

UNACCEPTABLE: Data is not within established control limits. The deficiences imply the results are not meaningful.

DATA COMPLETENESS	CONC./MATRIX	60/60													
	TRAFFIC REPORT # MC	F199	F200	D757	D758	D759	D760	D761	D762	D763	D764	D765	D766	D767	D76
	LAB I.D. #														
FIELD QC	BLANK														
	DUPLICATE	✓													
	SPIKE	✓													
TASK I: ICAP OR AA: METALS	RAW DATA	✓													
	TAB. RESULTS	✓													
	TAB. D.L.'s	✓													
	QA FORM	✓													
	ICAP INTER. QC	✓													
	INSTR. SENS.	✓													
TASK II: FURNACE AA: METALS	RAW DATA	✓													
	TAB. RESULTS	✓													
	TAB. D.L.'s	✓													
	QA FORM	✓													
	INSTR. SENS.	✓													
TASK II: COLD VAPOR AA: MERCURY	RAW DATA	✓													
	TAB. RESULTS	✓													
	TAB. D.L.'s	✓													
	QA FORM	✓													
	INSTR. SENS.	✓													
TASK III: CYANIDE	RAW DATA	✓													
	TAB. RESULTS	✓													
	TAB. D.L.'s	✓													
	QA FORM.	✓													
	INSTR. SENS.	✓													
OTHER (SPECIFY):	RAW DATA														
	TAB. RESULTS														
	TAB. D.L.'s														
	QA FORM														
	INSTR. SENS.														
OTHER (SPECIFY):	RAW DATA														
	TAB. RUSULTS														
	TAB. D.L.'s														
	QA FORM														
	INSTR. SENS.														

DFE
ORIGINAL

COMMENTS:

DATA COMPLETENESS	CONC./MATRIX	lo/sol												
	TRAFFIC REPORT # MC	D366	D666	D667	D668	D669	D670							
	LAB I.D. #													
FIELD QC	BLANK						✓							
	DUPLICATE													
	SPIKE													
TASK I: ICAP OR AA: METALS	RAW DATA	✓												
	TAB. RESULTS	✓												
	TAB. D.L.'s	✓												
	QA FORM	✓												
	ICAP INTER. QC	✓												
	INSTR. SENS.	✓												
TASK II: FURNACE AA: METALS	RAW DATA	✓												
	TAB. RESULTS	✓												
	TAB. D.L.'s	✓												
	QA FORM	✓												
	INSTR. SENS.	✓												
TASK II: COLD VAPOR AA: MERCURY	RAW DATA	✓												
	TAB. RESULTS	✓												
	TAB. D.L.'s	✓												
	QA FORM	✓												
	INSTR. SENS.	✓												
TASK III: CYANIDE	RAW DATA	✓												
	TAB. RESULTS	✓												
	TAB. D.L.'s	✓												
	QA FORM.	✓												
	INSTR. SENS.	✓												
OTHER (SPECIFY):	RAW DATA													
	TAB. RESULTS													
	TAB. D.L.'s													
	QA FORM													
	INSTR. SENS.													
OTHER (SPECIFY):	RAW DATA													
	TAB. RUSULTS													
	TAB. D.L.'s													
	QA FORM													
	INSTR. SENS.													

COMMENTS:

BLANK ANALYSIS RESULTS

TASK	TYPE	CONC	MATRIX	SAMPLE #	SOURCE OF H_2O	CONTAMINANTS (CONCENTRATION / DETECTION L
All	Laboratory Blank low/solid			Prep. Blank	RMA Laboratory	Calcium (29.4mg/kg/5000) Iron (17.3mg/kg/) Potassium (48.2mg/kg/5000) Sodium (298mg/kg/5000) Tin (16.4mg/kg/)
All	Field Blank low/solid			MC0670	NUS Corporation	Calcium (31.5 mg/kg/5000) 2 Magnesium (11.4 mg/kg/) 2 Potassium (18.4 mg/kg/5000) 2 Sodium (35 mg/kg/5000) 2 Tin (13 mg/kg/) 1

ORIGINA
(Red)

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WI
SAMPLE ANALYTICAL DATA SUMMARY.

COMMENTS:

(1) RESULT REPORTED BY LABORATORY AND CONFIRMED BY REVIEWER.

(2) RESULT INFERRED FROM RAW DATA

Form V

Q.C. Report No. 56071

SPIKE SAMPLE RECOVERY

00029 PFE

ORIGINAL (Red)

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-20-86

CASE NO. 6079/2328C
EPA Sample No. MCF199
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spike Added (SA)	%R[1]
Metals:					
1. ALUMINUM	75-125	1870	1760	NR	
2. ANTIMONY	75-125	213	13U	250	85
3. ARSENIC	75-125	22	5U	20	110
4. BARIUM	75-125	901	[42]	1000	86
5. BERYLLIUM	75-125	23	0.5U	25	92
6. CADMIUM	75-125	26	2.5U	25	104
7. CALCIUM	75-125	[2230]	[2220]	NR	
8. CHROMIUM	75-125	99	6.4	100	93
9. COBALT	75-125	242	3.5U	250	97
10. COPPER	75-125	189	60	125	103
11. IRON	75-125	3840	2800	NR	
12. LEAD	75-125	513	262	250	100
13. MAGNESIUM	75-125	[369]	[394]	NR	
14. MANGANESE	75-125	300	58	250	97
15. MERCURY	75-125	0.6	~~0.4~~ 0.2	0.5	80
16. NICKEL	75-125	244	[5.1]	250	96
17. POTASSIUM	75-125	[413]	[314]	NR	
18. SELENIUM	75-125	2.5U	2.5U	5	0 R
19. SILVER	75-125	21	1.5U	25	84
20. SODIUM	75-125	327U	327U	NR	
21. THALLIUM	75-125	24	5U	25	96
22. TIN	75-125	270	30	250	96
23. VANADIUM	75-125	266	[14]	250	101
24. ZINC	75-125	878	608	250	108
Other:					
Cyanide	75-125				

[1] %R = [(SSR - SR)/SA] x 100
"R"- out of control

Comments: (1) The actual detection limit for selenium in sample MCF199 may be higher than reported.

Form VI

PFE 000030

Q.C. Report No. 56071

DUPLICATES

ORIGINAL (Red)

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-20-86

CASE NO. 6079/2328C
EPA Sample No. MCF199D
Lab Sample ID No. -
Units mg/kg

Matrix SOIL

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. ALUMINUM		1760	1870	6.1
2. ANTIMONY		13U	13U	NC
3. ARSENIC		5U	5U	NC
4. BARIUM		[42]	[48]	NC
5. BERYLLIUM		0.5U	0.5U	NC
6. CADMIUM		2.5U	2.5U	NC
7. CALCIUM		[2220]	[2470]	NC
8. CHROMIUM		6.4	7.3	13
9. COBALT		3.5U	3.5U	NC
10. COPPER		60	64	6.5
11. IRON		2800	2590	7.8
12. LEAD		262	260	0.77
13. MAGNESIUM		[394]	[360]	NC
14. MANGANESE		58	59	1.7
15. MERCURY		0.2	0.2	0
16. NICKEL		[5.1]	[4.8]	NC
17. POTASSIUM		[314]	[364]	NC
18. SELENIUM		2.5U	2.5U	NC
19. SILVER		1.5U	1.5U	NC
20. SODIUM		327U	327U	NC
21. THALLIUM		5U	5U	NC
22. TIN		30	28	6.9
23. VANADIUM		[14]	[15]	NC
24. ZINC		608	571	6.3
Other:				
% Solids		98	97	1.0
Cyanide				

X Out of Control

[1] To be added at a later date.

[2] RPD = [|S-D|/((S+D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

ALL RECOVERIES ARE ACCEPTABLE.

Initial Calibration Verification and Continuing Calibration Verification

PFE ORIGINAL (Red)

Documentation indicates calibrations were performed and checked every ten samples: Yes ✓ N

Exceptions: _____

Calibrations and verifications were all within the control limits specified in

WA84-J092 : Yes ✓ N

Outliers are listed below:

Parameter	Acceptable Range (%)	Calibration Identifier	% of True Value	Comments

Interference QC Results

Documentation indicates interference QC samples were run before and after every ten samples: Yes ✓

Exceptions: _____

Interference QC results were all within the control limits specified in

WA84-J092 : Yes ✓ N

Exceptions:

Parameter	Acceptable Range (%)	Calibration Identifier	% of True Value	Comments
				Please see the next page for ICP interference check tabulation

Form IV

Q.C. Report No. 56071

PFE 00028

ORIGINAL (Red)

ICP INTERFERENCE CHECK SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO 6079/2328C

DATE 6-20-86

Check Sample I.D. INT CHK

Check Sample Source EMSL-LV

Units mg/L

Compound	Control Limits[1] Mean	Control Limits[1] Std. Dev.	True[2]	Initial Observed	Initial %R	Final Observed	Final %R
Metals:							
1. ALUMINUM			503	422	84	431	86
2. ANTIMONY				0.026U		0.026U	
3. ARSENIC				0.029U		0.029U	
4. BARIUM			0.47	0.43	91	0.43	91
5. BERYLLIUM			0.46	0.47	102	0.43	93
6. CADMIUM			0.96	0.94	98	1	104
7. CALCIUM			499	519	104	515	103
8. CHROMIUM			0.98	0.9	92	0.89	91
9. COBALT			0.48	0.48	100	0.47	98
10. COPPER			0.51	0.5	98	0.49	96
11. IRON			198	186	94	183	92
12. LEAD	4.7	0.14	4.6	4.7	100	4.8	102
13. MAGNESIUM			497	525	106	541	109
14. MANGANESE			0.52	0.54	104	0.53	102
15. MERCURY							
16. NICKEL			0.91	0.89	98	0.87	96
17. POTASSIUM				0.54U		0.54U	
18. SELENIUM							
19. SILVER			0.99	0.96	97	1	101
20. SODIUM				5.4		7.1	
21. THALLIUM							
22. TIN				0.016U		0.016U	
23. VANADIUM			0.47	0.48	102	0.47	100
24. ZINC			0.95	0.9	95	0.92	97
Other:							

[1] Mean value based on n = 37.

[2] True value of EPA ICP Interference Check Sample or contractor standard.

ALL RECOVERIES ARE ACCEPTABLE

PFE

ORIGINAL
(Red)

Detection Limits Results

Detection limits were reported for all samples analyzed: Yes ✓ No ___

Exceptions: _____

Detection limits were less than or equal to the required detection limits specified in WA84-5092. Yes ✓ No ___

Exceptions: _____

Instrument Sensitivity Reports

Instrument sensitivity reports were documented for all parameters:

Yes ✓ No ___

Comments: _____

Other Remarks Concerning this Case:

PPL
ORIGINAL
(Red)

APPENDIX D

Form I

00003

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MCF199

ORIGINAL (Red)

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	1790	P	13.	MAGNESIUM	[402]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	60	P
3.	ARSENIC	5.1U	F	15.	MERCURY	0.2	CV
4.	BARIUM	[43]	P	16.	NICKEL	[5.2]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	[320]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[2270]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	6.5	P	20.	SODIUM	333U	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.1U	F
10.	COPPER	62	P	22.	TIN	31	P
11.	IRON	2860	P	23.	VANADIUM	[14]	P
12.	LEAD	268	P	24.	ZINC	620	P

Cyanide NR

Percent Solids (%) 98

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JML

Form I

PFE

00004

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

ORIGINAL (Red)

EPA Sample No.
MCF200

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	4990	P	13.	MAGNESIUM	[433]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	58	P
3.	ARSENIC	8.2	F	15.	MERCURY	0.4	CV
4.	BARIUM	[64]	P	16.	NICKEL	[6.2]	P
5.	BERYLLIUM	0.52U	P	17.	POTASSIUM	[380]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[1670]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	9.7	P	20.	SODIUM	337U	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.2U	F
10.	COPPER	54	P	22.	TIN	27	P
11.	IRON	4030	P	23.	VANADIUM	[19]	P
12.	LEAD	219	P	24.	ZINC	172	P

Cyanide NR Percent Solids (%) 97

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JML

Form I

PFE

00005

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

ORIGINAL (Red)

EPA Sample No. MCD757

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	4880	P	13.	MAGNESIUM	[433]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	58	P
3.	ARSENIC	6.7	F	15.	MERCURY	0.3	CV
4.	BARIUM	108	P	16.	NICKEL	[7.3]	P
5.	BERYLLIUM	0.52U	P	17.	POTASSIUM	[404]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	3030	P	19.	SILVER	1.5U	P
8.	CHROMIUM	10	P	20.	SODIUM	337U	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.2U	F
10.	COPPER	82	P	22.	TIN	37	P
11.	IRON	4310	P	23.	VANADIUM	[21]	P
12.	LEAD	299	P	24.	ZINC	249	P

Cyanide NR

Percent Solids (%) 97

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JML

Form I

PFE

00006

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

ORIGINAL (Red)

EPA Sample No. MCD758

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	2700	P	13.	MAGNESIUM	[428]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	44	P
3.	ARSENIC	5.1U	F	15.	MERCURY	0.2	CV
4.	BARIUM	[31]	P	16.	NICKEL	[4.3]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	[407]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[802]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	8.6	P	20.	SODIUM	333U	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.1U	F
10.	COPPER	32	P	22.	TIN	25	P
11.	IRON	3080	P	23.	VANADIUM	[13]	P
12.	LEAD	121	P	24.	ZINC	89	P

Cyanide NR

Percent Solids (%) 98

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JML

Form I

PFE

00007

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

ORIGINAL (Red)

EPA Sample No. MCD759

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	2620	P	13.	MAGNESIUM	[275]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	46	P
3.	ARSENIC	5.2U	F	15.	MERCURY	0.2	CV
4.	BARIUM	[40]	P	16.	NICKEL	[6.3]	P
5.	BERYLLIUM	0.52U	P	17.	POTASSIUM	279U	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[732]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	8.4	P	20.	SODIUM	337U	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.2U	F
10.	COPPER	67	P	22.	TIN	37	P
11.	IRON	3150	P	23.	VANADIUM	[20]	P
12.	LEAD	278	P	24.	ZINC	681	P

Cyanide NR

Percent Solids (%) 97

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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ORIGINAL (Red)

00008

EPA Sample No. MCD760

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	3150	P	13.	MAGNESIUM	[376]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	54	P
3.	ARSENIC	5.1U	F	15.	MERCURY	0.1	CV
4.	BARIUM	[48]	P	16.	NICKEL	[6.5]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	[370]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[1140]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	10	P	20.	SODIUM	333U	P
	COBALT	3.6U	P	21.	THALLIUM	5.1U	F
10.	COPPER	62	P	22.	TIN	30	P
11.	IRON	3360	P	23.	VANADIUM	[18]	P
12.	LEAD	185	P	24.	ZINC	188	P

Cyanide NR

Percent Solids (%) 98

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

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00009

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PFE
ORIGINAL

EPA Sample No.
MCD761

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	680	P	13.	MAGNESIUM	[158]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	10	P
3.	ARSENIC	5.1U	F	15.	MERCURY	0.1U	CV
4.	BARIUM	[10]	P	16.	NICKEL	3U	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	274U	P
6.	CADMIUM	2.5U	P	18.	SELENIUM	2.5U	F R
7.	CALCIUM	[264]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	[3.3]	P	20.	SODIUM	330U	P
9.	COBALT	3.5U	P	21.	THALLIUM	5.1U	F
10.	COPPER	[6.6]	P	22.	TIN	25	P
11.	IRON	1040	P	23.	VANADIUM	[6.8]	P
12.	LEAD	28	P	24.	ZINC	35	P

Cyanide NR

Percent Solids (%) 99

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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ORIGINAL (Red)

EPA Sample No. MCD762

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	1930	P	13.	MAGNESIUM	[235]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	28	P
3.	ARSENIC	5.1U	F	15.	MERCURY	0.1u	CV
4.	BARIUM	119	P	16.	NICKEL	[6]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	274U	P
6.	CADMIUM	2.5U	P	18.	SELENIUM	2.5U	F R
7.	CALCIUM	[734]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	15	P	20.	SODIUM	330U	P
9.	COBALT	3.5U	P	21.	THALLIUM	5.1U	F
10.	COPPER	38	P	22.	TIN	28	P
11.	IRON	2450	P	23.	VANADIUM	[12]	P
12.	LEAD	312	P	24.	ZINC	212	P

Cyanide NR

Percent Solids (%) 99

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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703/557-2490 FTS: 8-557-2490

EPA Sample No. MCD763

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	852	P	13.	MAGNESIUM	151U	P
2.	ANTIMONY	13U	P	14.	MANGANESE	17	P
3.	ARSENIC	5.1U	F	15.	MERCURY	0.1	CV
4.	BARIUM	[16]	P	16.	NICKEL	[3.7]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	277U	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[522]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	5.2	P	20.	SODIUM	333U	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.1U	F
10.	COPPER	18	P	22.	TIN	27	P
11.	IRON	1250	P	23.	VANADIUM	[5.2]	P
12.	LEAD	65	P	24.	ZINC	62	P

Cyanide NR

Percent Solids (%) 98

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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ORIGINAL (Red)

EPA Sample No. MCD764

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	3090	P	13.	MAGNESIUM	[289]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	46	P
3.	ARSENIC	5.1U	F	15.	MERCURY	0.1	CV
4.	BARIUM	126	P	16.	NICKEL	[4.2]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	[296]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[1230]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	15	P	20.	SODIUM	333U	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.1U	F
10.	COPPER	55	P	22.	TIN	24	P
11.	IRON	5370	P	23.	VANADIUM	[13]	P
12.	LEAD	381	P	24.	ZINC	337	P

Cyanide NR

Percent Solids (%) 98

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703/557-2490 FTS: 8-557-2490

EPA Sample No. MCD765

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	10000	P	13.	MAGNESIUM	6840	P
2.	ANTIMONY	13U	P	14.	MANGANESE	435	P
3.	ARSENIC	[5.1]	F	15.	MERCURY	0.2	CV
4.	BARIUM	[80]	P	16.	NICKEL	[18]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	7720	P
6.	CADMIUM	2.5U	P	18.	SELENIUM	2.5U	F R
7.	CALCIUM	[2170]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	29	P	20.	SODIUM	[419]	P
9.	COBALT	[5.3]	P	21.	THALLIUM	5.1U	F
10.	COPPER	39	P	22.	TIN	29	P
11.	IRON	19900	P	23.	VANADIUM	41	P
12.	LEAD	97	P	24.	ZINC	173	P

Cyanide NR

Percent Solids (%) 99

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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EPA Sample No.
MCD766

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	6070	P	13.	MAGNESIUM	[442]	P
2.	ANTIMONY	14U	P	14.	MANGANESE	41	P
3.	ARSENIC	5.3U	F	15.	MERCURY	0.4	CV
4.	BARIUM	[103]	P	16.	NICKEL	[6.2]	P
5.	BERYLLIUM	0.53U	P	17.	POTASSIUM	[538]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	3560	P	19.	SILVER	1.6U	P
8.	CHROMIUM	7.9	P	20.	SODIUM	344U	P
9.	COBALT	3.7U	P	21.	THALLIUM	5.3U	F
10.	COPPER	17	P	22.	TIN	29	P
11.	IRON	2890	P	23.	VANADIUM	[12]	P
12.	LEAD	193	P	24.	ZINC	139	P

Cyanide NR

Percent Solids (%) 95

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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00015

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703/557-2490 FTS: 8-557-2490

EPA Sample No. MCD767

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	7200	P	13.	MAGNESIUM	5180	P
2.	ANTIMONY	13U	P	14.	MANGANESE	341	P
3.	ARSENIC	5.2U	F	15.	MERCURY	0.1u	CV
4.	BARIUM	[59]	P	16.	NICKEL	[11]	P
5.	BERYLLIUM	0.52U	P	17.	POTASSIUM	5870	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[2340]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	20	P	20.	SODIUM	[366]	P
9.	COBALT	[4.6]	P	21.	THALLIUM	5.2U	F
10.	COPPER	39	P	22.	TIN	31	P
11.	IRON	15300	P	23.	VANADIUM	37	P
12.	LEAD	108	P	24.	ZINC	302	P

Cyanide NR

Percent Solids (%) 97

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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00016

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EPA Sample No. MCD768

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C

QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	5190	P	13.	MAGNESIUM	[442]	P
2.	ANTIMONY	14U	P	14.	MANGANESE	28	P
3.	ARSENIC	5.3U	F	15.	MERCURY	0.1u	CV
4.	BARIUM	[49]	P	16.	NICKEL	[4.8]	P
5.	BERYLLIUM	0.53U	P	17.	POTASSIUM	[672]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[1480]	P	19.	SILVER	1.6U	P
8.	CHROMIUM	6.4	P	20.	SODIUM	344U	P
9.	COBALT	3.7U	P	21.	THALLIUM	5.3U	F
10.	COPPER	14	P	22.	TIN	[20]	P
11.	IRON	2250	P	23.	VANADIUM	[11]	P
12.	LEAD	62	P	24.	ZINC	59	P

Cyanide NR

Percent Solids (%) 95

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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00017

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EPA Sample No. MCD366

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	4680	P	13.	MAGNESIUM	[392]	P
2.	ANTIMONY	14U	P	14.	MANGANESE	17	P
3.	ARSENIC	5.3U	F	15.	MERCURY	0.1u	CV
4.	BARIUM	[40]	P	16.	NICKEL	[4.9]	P
5.	BERYLLIUM	0.53U	P	17.	POTASSIUM	[496]	P
6.	CADMIUM	2.7U	P	18.	SELENIUM	2.7U	F R
7.	CALCIUM	[1140]	P	19.	SILVER	1.6U	P
8.	CHROMIUM	[5.1]	P	20.	SODIUM	347U	P
9.	COBALT	3.7U	P	21.	THALLIUM	5.3U	F
10.	COPPER	[8.6]	P	22.	TIN	[18]	P
11.	IRON	2050	P	23.	VANADIUM	[9.5]	P
12.	LEAD	29	P	24.	ZINC	68	P

Cyanide NR

Percent Solids (%) 94

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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00018

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703/557-2490 FTS: 8-557-2490

EPA Sample No. MCD666

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	6280	P	13.	MAGNESIUM	[731]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	106	P
3.	ARSENIC	[5.2]	F	15.	MERCURY	0.8	CV
4.	BARIUM	313	P	16.	NICKEL	[9.4]	P
5.	BERYLLIUM	0.52U	P	17.	POTASSIUM	[829]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	4140	P	19.	SILVER	1.5U	P
8.	CHROMIUM	13	P	20.	SODIUM	[480]	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.2U	F
10.	COPPER	51	P	22.	TIN	42	P
11.	IRON	6350	P	23.	VANADIUM	[21]	P
12.	LEAD	727	P	24.	ZINC	602	P

Cyanide NR

Percent Solids (%) 97

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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EPA Sample No. MCD667

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	5240	P	13.	MAGNESIUM	[828]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	293	P
3.	ARSENIC	6.1	F	15.	MERCURY	1.0	CV
4.	BARIUM	428	P	16.	NICKEL	[13]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	[797]	P
6.	CADMIUM	3.5	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	8710	P	19.	SILVER	1.5U	P
8.	CHROMIUM	22	P	20.	SODIUM	[571]	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.1U	F
10.	COPPER	99	P	22.	TIN	348	P
11.	IRON	38600	P	23.	VANADIUM	[23]	P
12.	LEAD	1350	P	24.	ZINC	1400	P

Cyanide NR

Percent Solids (%) 98

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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EPA Sample No. MCD668

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	11900	P	13.	MAGNESIUM	[1020]	P
2.	ANTIMONY	13U	P	14.	MANGANESE	24	P
3.	ARSENIC	7.1	F	15.	MERCURY	0.1u	CV
4.	BARIUM	[65]	P	16.	NICKEL	[7.2]	P
5.	BERYLLIUM	0.51U	P	17.	POTASSIUM	[734]	P
6.	CADMIUM	2.6U	P	18.	SELENIUM	2.6U	F R
7.	CALCIUM	[1290]	P	19.	SILVER	1.5U	P
8.	CHROMIUM	18	P	20.	SODIUM	[551]	P
9.	COBALT	3.6U	P	21.	THALLIUM	5.1U	F
10.	COPPER	17	P	22.	TIN	27	P
11.	IRON	7540	P	23.	VANADIUM	28	P
12.	LEAD	61	P	24.	ZINC	50	P

Cyanide NR

Percent Solids (%) 98

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

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EPA Sample No.
MCD669

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	4300	P	13.	MAGNESIUM	[415]	P
2.	ANTIMONY	14U	P	14.	MANGANESE	56	P
3.	ARSENIC	8.6	F	15.	MERCURY	0.8	CV
4.	BARIUM	115	P	16.	NICKEL	[7.4]	P
5.	BERYLLIUM	0.54U	P	17.	POTASSIUM	[543]	P
6.	CADMIUM	2.7U	P	18.	SELENIUM	2.7U	F R
7.	CALCIUM	[2200]	P	19.	SILVER	1.6U	P
8.	CHROMIUM	11	P	20.	SODIUM	[469]	P
9.	COBALT	3.8U	P	21.	THALLIUM	5.4U	F
10.	COPPER	26	P	22.	TIN	29	P
11.	IRON	4120	P	23.	VANADIUM	[12]	P
12.	LEAD	255	P	24.	ZINC	304	P

Cyanide NR

Percent Solids (%) 93

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager JML

Form I

PFE

00022

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

ORIGINAL (Red)

EPA Sample No. MCD670

Date 6-20-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 6079/2328C
QC REPORT NO. 56071

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

1.	ALUMINUM	9.5U	P	13.	MAGNESIUM	148U	P
2.	ANTIMONY	13U	P	14.	MANGANESE	2U	P
3.	ARSENIC	5U	F	15.	MERCURY	0.1u	CV
4.	BARIUM	5.5U	P	16.	NICKEL	3U	P
5.	BERYLLIUM	0.5U	P	17.	POTASSIUM	271U	P
6.	CADMIUM	2.5U	P	18.	SELENIUM	25U	F R
7.	CALCIUM	176U	P	19.	SILVER	1.5U	P
8.	CHROMIUM	2.5U	P	20.	SODIUM	327U	P
9.	COBALT	3.5U	P	21.	THALLIUM	5U	F
10.	COPPER	1.5U	P	22.	TIN	[13]	P
11.	IRON	8U	P	23.	VANADIUM	2.5U	P
12.	LEAD	2.5U	F	24.	ZINC	1U	P

Cyanide NR

Percent Solids (%) 100

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Sample ID a) (Water Blank)
Selenium value reported at a 10x dilution

Lab Manager JML