LANL

TA 09 (09-013 MDAM) Sampling data

M E M O R A N D U M

TO: Steve Yanicak, NMED DOE OB Site POC

THROUGH: John Parker, Technical Support Program Manager

FROM: Tim Michael, Technical Support Task Leader

DATE: April 19, 1996

SUBJECT: Sampling and Analysis Plan, Split sampling of environmental restoration verification sampling at LANL ER site 9-013 (MDA-M).

PURPOSE:

NMED DOE Oversight Bureau (DOE OB) staff, Chris Hanlon-Meyer, plans to collect eight split samples of soil within 10' by 10' cells or exposure units as defined in the expedited cleanup plan for the above-mentioned site.

The primary purpose of this DOE OB split sampling is to perform independent analyses of soil samples for selected Appendix 9 metals and total uranium. Secondary objectives are to independently verify LANL sampling results and to evaluate LANL sampling procedures.

This expedited cleanup is the largest and most expensive undertaken by LANL thus far. The site was visited by the NMED Water and Waste Management Division Director as well as the DOE OB Support Staff Program Manager. Also, the sampling is designed in part to confirm that no hazardous or radioactive materials are present at concentrations which pose unacceptable risks.

ESTIMATED COST:

Total estimated cost for laboratory analytical work for six soil samples is $1000.00 Two staff members will spend approximately eight hours at the site.

3340

TABLE 1 - Analytical Parameters.

Parameter	Method	Container	Preservative	Est. cost Per sample
Pb	6020	1x8oz g	4^0 C	16.00
As	7060	1x8oz g	4^0 C	16.00
Ba	6020	1x8oz g	4^0 C	16.00
Be	6010	1x8oz g	4^0 C	16.00
Hg	7470	1x8oz g	4^0 C	16.00
Sr	6020	1x8oz g	4^0 C	16.00
Uranium total	6020	1x8oz g	4^0 C	16.00
Sample digestion				16.00
			TOTAL (per sample)	$128.00

TABLE 3 - List of Containers and Preservatives

Parameter	Container	Preservative	Total Containers
Metals & Uranium total	1x8oz g	4^0 C	8

SITE HISTORY:
LANL ER site 9-013, Material Disposal Area M (MDA-M) is a surface dump for construction debris and other solid wastes. Metal and debris, generated during removal of Old Anchor Sites East and West and construction of the present TA-8 and -9 facilities (1948-65) have been flashed, to remove any high explosives, and deposited over the surface of the site. Nonhazardous waste from construction of other sites within the Laboratory was also disposed of at the site from 1960 to 1965. Other wastes that were visible prior to the implementation of the expedited cleanup include chemical containers (glass and metal), paint cans, detonation wires, and asbestos. The disposal area has been inactive since 1965. The contaminant of concern that LANL used to drive the cleanup is lead.

PROCEDURES:
Samples will be collected by LANL staff. The samples will

then be split and placed in DOE OB sample containers under direct oversight of DOE OB staff. Samples will be field-screened for radioactivity before leaving the site. NMED samples will be analyzed for 40 CFR Part 264, selected Appendix 9 metals and total uranium. Analytical data quality level will be at EPA level IV; that is, analyses will be performed using SW-846 procedures or other equivalent methods by Analytical Technologies Inc.(ATI) using rigorous QA/QC procedures. Samples will be hand delivered to; chain-of-custody will be from the DOE OB sampler to ATI Sample Receiving.

The EC Task Leader, Ray Brewer, will be on site during the sampling and is the LANL contact (phone 665-7590, mobile 699-1408). Sampling will be conducted by LANL technicians. Site workers must have 40 hour Hazardous Waste operations training; NMED DOE OB staff have this training. Access will be gained by contacting the Task Leader at the TA-8/9 gate. A Health and Safety Plan has been prepared by LANL. The plan will be signed by NMED DOE OB staff and a copy will be maintained in the project file.

cc: Maria Ortiz, Financial Specialist
AIP/LANL Program File (OU 1157)

c:\wpwin\lanl\samplans\395mdam.sam Cjhm 4/19/96

PROJECT#:5/9/96 13(s)

NAME: Chris Hanlon-Meyer
PHONE: 505-827-1536
DATE COLLECTED:May 9, 1996

FY95 STANDARD PROCEDURES FOR ALL PROJECTS

1) For ***metals analyses***, please note that any water samples marked 'total metals' or 'totals' have been preserved with HNO_3 *but not filtered*. Any water samples marked 'dissolved metals' or 'dissolved' have not been preserved with HNO_3 *but will require filtering and preservation at the lab except where noted. Please run the same analysis* on totals and dissolved water samples to yield analytical results for *total metals* and *dissolved metals*. ***See the chain-of-custody and attached list*** for the desired suite of analytes from each sample:

2) ***For rad analysis***, please do the following, *filter all water samples at the lab* and ***see chain-of-custody and attached list*** for desired suite of analytes from each sample:

3) For water samples labeled for ***Water Quality*** or ***Inorganics*** analysis, ***Please filter the samples*** in the laboratory, see attached list for desired analytes:

ALWAYS REFER TO CHAIN-OF-CUSTODY OR OTHER INCLUDED ATTACHMENTS FOR ANY SPECIAL INSTRUCTIONS

TOTAL METALS LIST

SAMPLE ID: 108, 78, 60, 45, 26, 22, 10, 161

Arsenic
Barium
Beryllium
Mercury
Lead
Strontium
Uranium total

AnalyticalTechnologies,Inc.
225 COMMERCE DRIVE
FORT COLLINS, CO
80524
(303) 490-1511
(303) 490-1522 FAX
1 (800) 443-1511

Chain of Custody

DATE 5-9-96 PAGE 1 OF 1

ACCESSION NUMBER:

PROJECT MANAGER: Chris Hanlon-Meyer
COMPANY: NMED DOE OB
ADDRESS:

SAMPLER: Chris Hanlon-Meyer
505-827-1536 PHONE NUMBER
505-827-1545 FAX NUMBER

SAMPLE ID	SAMPLE DATE	SAMPLE TIME	MATRIX	LAB ID
108	5-9-96	9.20	soil	
78	5-9-96	9.30	soil	
60	5-9-96	9.40	soil	
45	5-9-96	10:00	soil	
26	5-9-96	10:15	soil	
22	5-9-96	10:30	soil	
10	5-9-96	10:45	soil	
161	5-9-96	10:55	soil	

ANALYSIS REQUESTED

SAMPLE ID	9070/9071 — Oil & Grease	418.1 — TRPH	8015 Mod. — Gasoline	8015 Mod. — Diesel	8015/8020 — Gasoline/BTEX	8020 — BTEX	8240 — GC/MS VOC's	8270 — GC/MS SVOC's	8080 — Pesticides/PCB's	8080 — PCB Only	8310 — PNA's	8150 — Herbicides	8140 — OP Pesticides	TOX — EOX — TX	Total Metals: Pb, As, Ba, Be, Hg, Se, U, Tot.	TCLP:	Gross Alpha	Gross Beta	Radium 226	Radium 228	Tritium	Strontium	% Moisture							Number of Containers
108															X															1
78															X															1
60															X															1
45															X															1
26															X															1
22															X															1
10															X															1
161															X															1

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NUMBER: 5996 13(s)	TOTAL NUMBER OF CONTAINERS	
PROJECT NAME: MDA-M	CHAIN OF CUSTODY SEALS Y/N	
PURCHASE ORDER NUMBER:	SEALS INTACT? Y/N/NA	
TAT: ☐ STANDARD ☐ RUSH DUE:	RECEIVED GOOD COND./COLD	

SAMPLE DISPOSAL: ☐ HAZ WASTE $5.00 ☐ RAD CHEM $15.00 ☐ RETURN

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

5-9-96 Sampling @ [illegible]
met Sammy Greene @ [illegible]
@ 9:00 / Brian [illegible] Conrad
[illegible]
[illegible] @ [illegible] 9:10
to gate meet by Albert day
cell 108
209 cpm [illegible] pancake probe
Meter (Alnas) [illegible]
Cal Date: 4-10-96

8 samples will be taken

@ cells 108, 78, 60, 45, 36, 22, 10
and cinder pile 164, 5 and 161 + 152

Surface soil samples will be
collected by using a deconed
stainless steel hand auger
to break up soil. Soil will be
mixed in hole + collected.
B/g readings will be taken
@ each cell prior to sampling.

5/9/96 Cont'd
Camp @ MWR - M

Cell 108 9:20am Sample collected by Albert Dye
B/g 209 cpm marked on lid with flag
[illegible], clay loam, Subangular
Blocky, entire cell is compacted
by heavy vehicles. HE spot test negative

LANL ~~did~~ is
[illegible] spot tested @ each
[illegible] grosser
[illegible] after our sample
[illegible] Albert test
[illegible] soil prior to sampling.

Cell 78 9:30am Sample collected
B/g 238 cpm by Albert Dye
HE spot test negative
~~[illegible]~~ Cell is in middle of road
used to haul off waste bulldozer
[illegible] Stinnett
Darker than Cell 108 Loamy clay
glass, metal, charred material found
in cell. - nail screw, glass, wire insulator

5/9/96 Cont'd
Sample [illegible] M

Cell 60 9:40am Cell sampled by
Albert Dye
B/g 238 cpm HE spot test negative
~~Sand~~ Clay loam, Brown tinted
some charred soil near sample
point. ~~[illegible]~~ W/in cell is
a small drainage trench
Sample is taken just out of trench.

Cells are marked w/stake
@ SE corner of cell. Sample
point is located by taking
3 paces to NW from stake
toward center of cell.

Cell 45 10:00am Sampled by Albert Dye
B/g 225 cpm HE spot test negative
loamy Clay, Brown/tan
Cell is slightly compacted from
heavy vehicle traffic

[illegible] scanned

MDA-MS comp

Cell 26 10:[illegible]a

Bg 181 cpm Albert Dye Sampled

cell is slightly [illegible]

[illegible] Soil [illegible]

Brownish Red.

HE spot test negative

Cell [illegible] 10:30

Albert Dye [illegible]

Bg [illegible] cpm HE spot test negative

[illegible] edge of Road used

by heavy machinery, Brownish tan

Cell 10 10:45 ~~10:30~~ Albert Dye Sampled

HE spot test

Bg 297 cpm

Soil Brownish Black

Soil is not compacted but soil [illegible]

Disturbed

59.9 [illegible]

MDA-M[illegible] Comp. 10:55a ~~10:50a~~

Center of 161, 162, 164, 165

Bg 198 cpm

Albert Dye [illegible]

HE spot test negative

this Sample [illegible]

Satellite [illegible] to North

of Main MDA by ≈ 1/4 mile

Cell is w/in pond [illegible] pines

Soil [illegible] Brownish Black tan

silty clay Sand.

Figure 4.1 Sample Locations

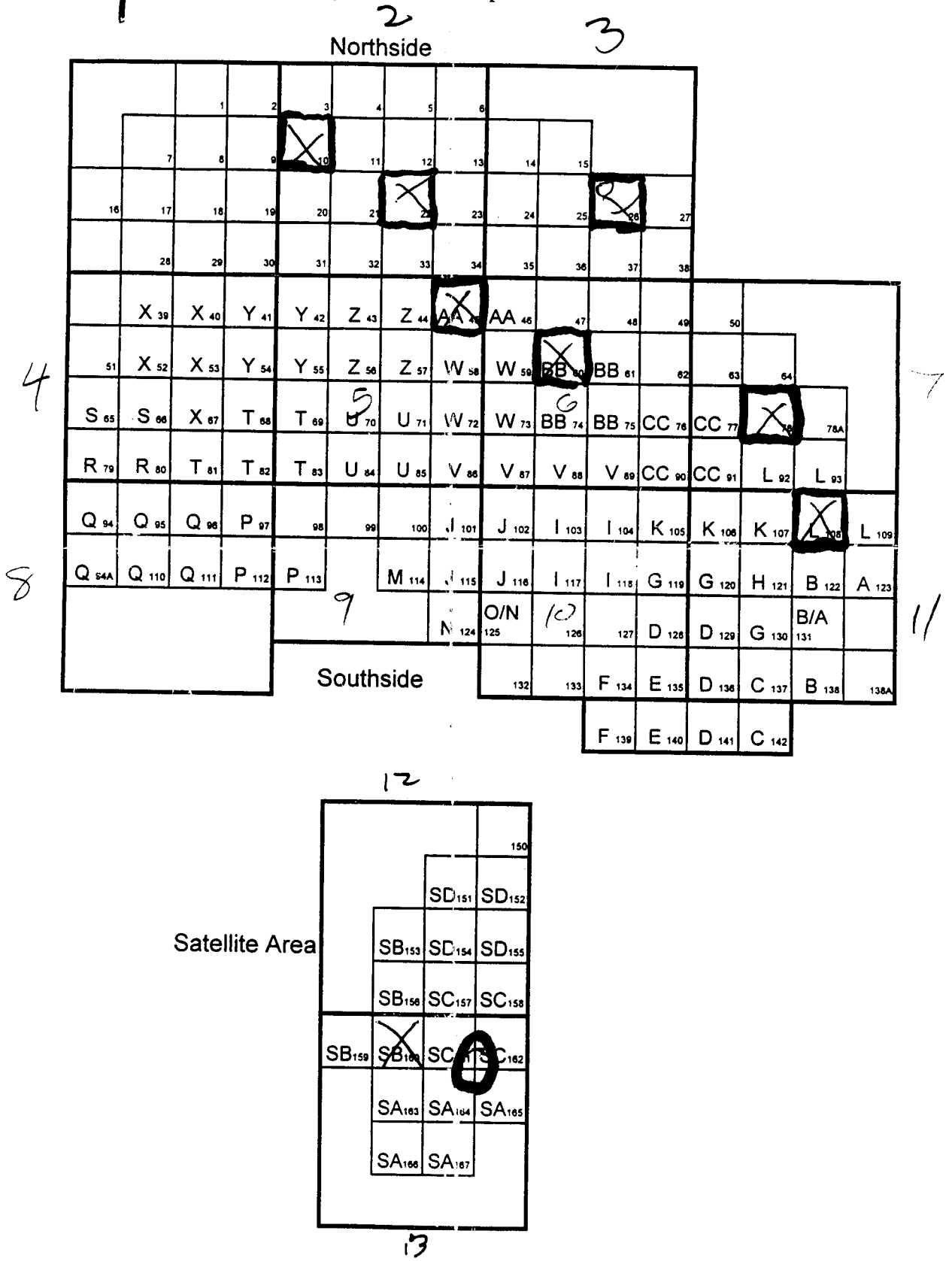
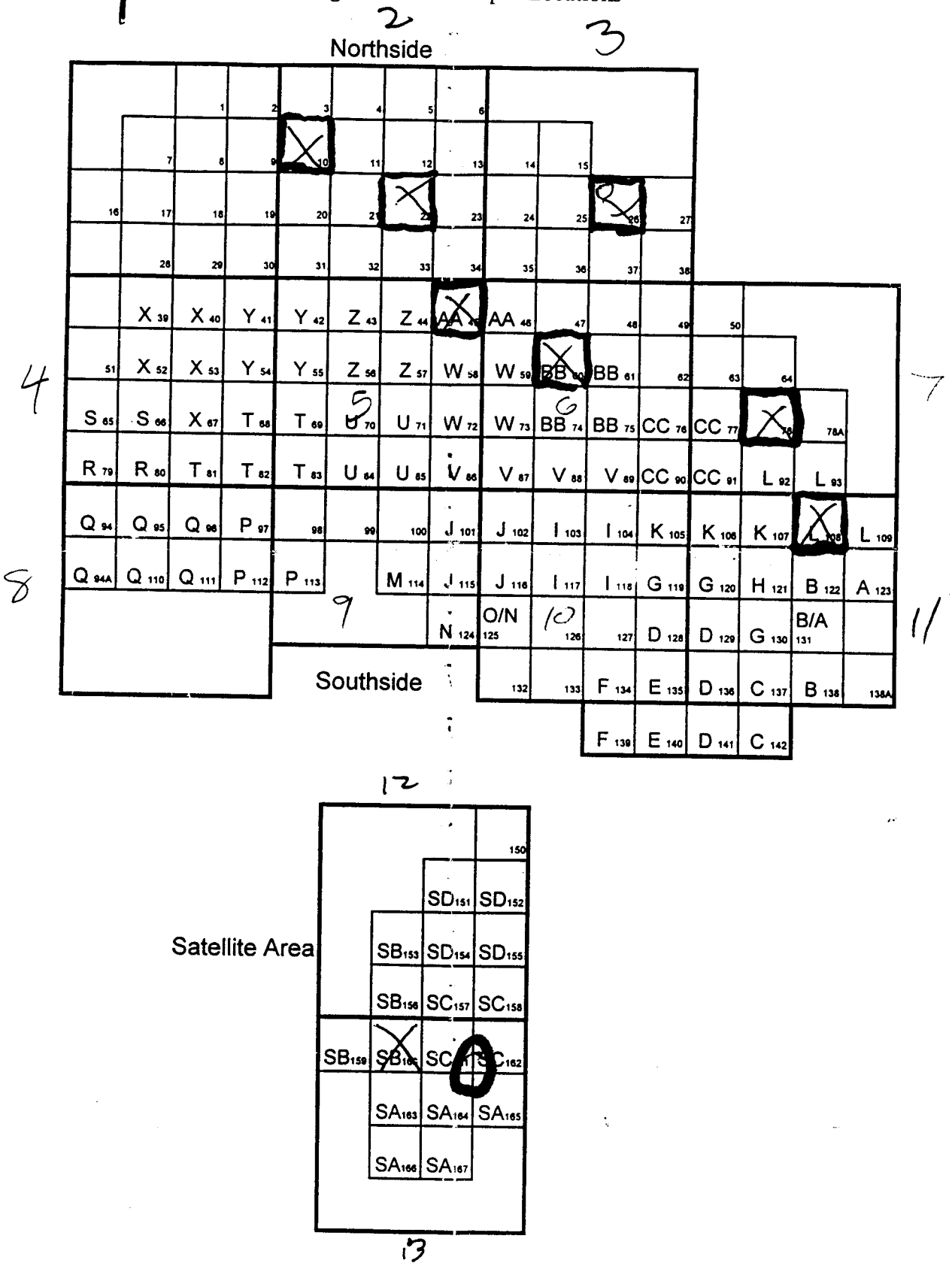


Figure 4.1 Sample Locations



PARAGON ANALYTICS, INC.

225 Commerce Drive ◆ Fort Collins, CO 80524 ◆ (800) 443-1511 ◆ (970) 490-1511 ◆ FAX (970) 490-1522

Bill To

American Environmental Network
2709-D Pan American Freeway
Albuquerque NM 87107

Date	Invoice #	PO #	Terms	Due Date	Proj. Mgr.	Assession	Client ID#
5/23/96	1559		2% 10 Net 30	6/22/96	Lance St...	96-05-068	NMED

DESCRIPTION	QTY	RATE	AMOUNT
Total Metals	8	103.00	824.00
Total Uranium by KPA	8	40.00	320.00
Client discount 3%		-34.32	-34.32
Sample Disposal	8	5.00	40.00
NMED ID #: 5996 13 (S)			

COPY

Total $1,149.68

An Employee Owned Small Business

PARAGON ANALYTICS, INC.
225 Commerce Drive ◆ Fort Collins, CO 80524 ◆ (800) 443-1511 ◆ (970) 490-1511 ◆ FAX (970) 490-1522

May 23, 1996

Mr. Chris Hanlon-Meyer
c/o Mr. Michael Dale
New Mexico Environmental Department - DOE Oversight
PO Box 1663, MSJ993
Los Alamos, NM 87545

RE: PAI Workorder: 96-05-068
NMED Project Name: Not Submitted
NMED Project Number: MDA-M-5996 13(S)

Dear Mr. Hanlon-Meyer:

Eight soil samples were received from New Mexico Environmental Department on May 10, 1996. The samples were scheduled for Total Metals, and Isotopic Uranium by KPA analysis. The results for these analyses are contained in the enclosed report.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions, please call.

Sincerely,

Paragon Analytics, Inc.
Lance Steere
Senior Project Manager

LS/drb

Enclosures

Paragon Analytics, Inc.

Radiochemistry Case Narrative
Total uranium in soil by KPA

NMED

MDA-M-5996 13(S)

Client ID	Paragon ID	Client ID	Paragon ID
108	96-05-068-01	78	96-05-068-02
60	96-05-068-03	45	96-05-068-04
26	96-05-068-05	22	96-05-068-06
10	96-05-068-07	161	96-05-068-08

1. This report consists of 8 soil samples received by Paragon on 5/10/96.

2. These samples were prepared according to Paragon Analytics, Inc. procedure PAI SOP741FC4.

3. The samples were analyzed for the presence of total uranium according to Paragon Analytics, Inc. procedure PAI SOP747FC2. The analyses was completed on 5/17/96.

4. For samples having total uranium less than our detection limit (1ug/L) and showing intensity below 9000, the R^2 or lifetime values might be outside the control limits. For these samples, considering all the parameters, the best result obtained is accepted.

5. No further problems were encountered with either the client samples or the associated quality control samples. All other quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

B. pirasteh — 5/20/96

BAHMAN PIRASTEH
SENIOR CHEMIST

Date

Terry G. Killian — 5/23/96

Radiochemistry Final Data Review

Date

RADIOCHEMISTRY DATA PACKAGE CONTENTS CHECKLIST

ANALYTICAL TECHNOLOGIES, INC.

TOTAL URANIUM ANALYSIS DATA PACKAGE

ITEM	DATA PACKAGE LOCATION (SECTION)
Sample Results	Section 2
Quality Assurance Sample Results	Section 3
Instrument Raw Data, including Current Calibration Data	Section 5
Standards Documentation	Section 8
Calibration Verification Data	Section 10

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PARAGON ANALYTICS, INC.

Radiochemistry Data Package

Section 2

SAMPLE RESULTS SUMMARY

DRAFT

TOTAL URANIUM ANALYSIS RESULTS SUMMARY

By Laser-Induced Kinetic Phosphorimetry

Lab Name: Paragon Analytics, Inc.

Date Collected: 05/09/96

Client Name: NMED

Date Analyzed : 05/17/96

Client Project ID: MDA-M-5996 13(S)

Sample Matrix : Soil

Lab Sample ID Series: 96-05-068

Client Sample ID	Lab Sample ID	Total Uranium (ug/g)
108	05-068-01	2.62 ± 0.35
78	05-068-02	3.79 ± 0.51
60	05-068-03	2.86 ± 0.39
45	05-068-04	4.15 ± 0.56
26	05-068-05	3.47 ± 0.47
22	05-068-06	4.15 ± 0.56
10	05-068-07	3.10 ± 0.42
161	05-068-08	2.14 ± 0.29
Blank	05-068-B1	0.10 ± 0.01
Duplicate	05-068-D1	3.44 ± 0.46

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for details of TPU determinations.

Remarks:

Sample 96-05-068-D1 is a duplicate of 96-05-068-01.

00000 BP

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

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Section 3

QC RESULTS SUMMARY

TOTAL URANIUM BLANK SPIKE RESULTS SUMMARY

By Laser-Induced Kinetic Phosphorimetry

Lab Name: Paragon Analytics, Inc.

Date Collected: 05/15/96

Client Name: NMED

Date Analyzed : 05/17/96

Client Project ID: MDA-M-5996 13(S)

Sample Matrix : Soil

Lab Sample ID Series: 96-05-068

Lab Sample ID	Spike Conc. (ug/g)	Rep't Conc. (ug/g)
96-05-068-S1	238 ± 36	215 ± 30

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for details of TPU determinations.

PAI sets control limits for KPA Uranium measurements as follows:
Blank Spike Control Limits = Known (μ) ± 0.15 * μ.

Matrix Spike Control Limits = Known (μ) + Native Concentration ± 0.25 * (μ + Native Concentration).

PAI uses these control limits for all KPA Uranium measurements

Acceptance Range for spike samples is the known value ± the control limits stated above. The reported value, without the uncertainty, should be compared to that range.

TOTAL URANIUM MATRIX SPIKE RESULTS SUMMARY

By Laser-Induced Kinetic Phosphorimetry

Lab Name: Paragon Analytics, Inc.

Date Collected: 05/09/96

Client Name: NMED

Date Analyzed : 05/17/96

Client Project ID: MDA-M-5996 13(S)

Sample Matrix : Soil

Lab Sample ID Series: 96-05-068

Lab Sample ID	Known Conc. (ug/g)	Rep't Conc. (ug/g)
96-05-068-M1	241 ± 60	255 ± 35

Reported Uncertainties are the Estimated Total Propagated Uncertainties (2σ). See PAI SOP 743FC for details of TPU determinations.

PAI sets control limits for KPA Uranium measurements as follows:
Blank Spike Control Limits = Known (μ) ± 0.15 * μ.

Matrix Spike Control Limits = Known (μ) + Native Concentration ± 0.25 * (μ + Native Concentration).

PAI uses these control limits for all KPA Uranium measurements

Acceptance Range for spike samples is the known value ± the control limits stated above. The reported value, without the uncertainty, should be compared to that range.

Remarks:

Sample 96-05-068-M1 is a matrix spike of 96-05-068-03.

BP

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

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Section 4

INDIVIDUAL SAMPLE RESULTS

Due to the nature of Total Uranium reports, individual report pages are not provided. Thus, the individual sample results data may be found in the summary section of this data package.

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 5

RAW DATA

5

Calibration

Range: LOW

Background Measured Concentration	Intercept	Intensity 584 Uncert.	% Disc.	Intensity	Lifetime	R2
+ 1 UG/L	1.14E+04	106.85	-1.19E+00	8880	247.4785	.9997
+ 5 UG/L	5.76E+04	240	1.45	44657	246.0045	.9999
+ 10 UG/L	1.12E+05	334.33	-5.79E-01	86192	251.4101	1
+ 25 UG/L	2.74E+05	523.15	4.78E-02	208285	244.0504	.9999
+ 50 UG/L	5.23E+05	722.94	-2.85E-03	204019	251.5526	1

Zero Point Included.

Y=-1.94E+01X2+1.14E+04X +151.603

Calibration

Range: HIGH

Background Measured Concentration	Intercept	Intensity 8 Uncert.	% Disc.	Intensity	Lifetime	R2
+ 25 ug/L	4511.28	67.17	3.37	3438	254.2903	.9998
+ 50 ug/L	8901.38	94.35	-4.67E-01	6750	252.3363	.9997
+ 100 ug/L	1.78E+04	133.35	-1.53E+00	13495	245.8296	.9999
+ 200 ug/L	3.61E+04	190.02	-5.27E-02	27913	251.0449	1
+ 500 ug/L	8.85E+04	297.43	-6.01E-01	68690	251.9146	1
+ 800 ug/L	1.41E+05	375.35	0.72	107190	245.1582	.9999
+ 1000 ug/L	1.72E+05	414.98	-2.91E-01	132797	247.676	.9999

Zero Point Included.

Y=-1.10E-02X2+183.977X -2.28E+02

Sample ID 1000 PPB CCV
Description #228 B
Ref. Ratio .885
Laser Pulses 1000
Lifetime 291 + .268 us
R2 1
Integrated 2685724
Range: HIGH

Date/Time 05/17/96/08:40:15
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 135743 (t= 52 us)
Conc 981.38184 + 30.15 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 981.382 + 30.15 ug/L

BP 5/17/96

Sample ID 8000 PPB CCV
Description #229 A
Ref. Ratio .89
Laser Pulses 1000
Lifetime 302 + .396 us
R2 1
Integrated 2259194
Range: HIGH

Date/Time 05/17/96/08:42:43
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 111390 (t= 52 us)
Conc 790.33075 + 24.2994 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 790.331 + 24.299 ug/L

BP 5/17/96

Sample ID 5000 PPB CCV
Description #229 B
Ref. Ratio .899
Laser Pulses 1000
Lifetime 304 + .55 us
R2 .9999
Integrated 1430433
Range: HIGH

Date/Time 05/17/96/08:46:03
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 70344 (t= 52 us)
Conc 488.88385 + 15.0592 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 488.884 + 15.059 ug/L

Sample ID 200 PPB CCV
Description #229 C
Ref. Ratio .9
Laser Pulses 1000
Lifetime 313 + .342 us
R2 .9999
Integrated 594352
Range: HIGH

Date/Time 05/17/96/08:49:26
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 28898 (t= 52 us)
Conc 195.34398 + 6.0097 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 195.344 + 6.01 ug/L

Sample ID 100 PPB CCV
Description #229 D
Ref. Ratio .893
Laser Pulses 1000
Lifetime 317 + .615 us
R2 .9998
Integrated 303657
Range: HIGH

Date/Time 05/17/96/08:51:41
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 14612 (t= 52 us)
Conc 98.88776 + 3.0484 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 98.888 + 3.048 ug/L

Sample ID 50 PPB CCV
Description #229 E
Ref. Ratio .897
Laser Pulses 1000
Lifetime 307 + .771 us
R2 .9997
Integrated 144152
Range: HIGH

Date/Time 05/17/96/08:56:28
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 7104 (t= 52 us)
Conc 48.69638 + 1.504 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 48.696 + 1.504 ug/L

Sample ID 50 PPB CCV
Description #229 E
Ref. Ratio .926
Laser Pulses 1000
Lifetime 304 + .194 us
R2 1
Integrated 4473890
Range: LOW

Date/Time 05/17/96/08:58:30
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 218757 (t= 247 us)
Conc 49.55606 + .5581 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 49.556 + .558 UG/L

Sample ID 25 PPB CCV
Description #229 F
Ref. Ratio .9
Laser Pulses 1000
Lifetime 312 + 1.018 us
R2 .9995
Integrated 74143
Range: HIGH

Date/Time 05/17/96/09:05:14
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 3590 (t= 52 us)
Conc 25.26157 + .7829 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 25.262 + .783 ug/L

Sample ID 25 PPB CCV
Description #229 F
Ref. Ratio .928
Laser Pulses 1000
Lifetime 302 + .49 us
R2 1
Integrated 4383915
Range: LOW

Date/Time 05/17/96/09:07:33
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 215336 (t= 52 us)
Conc 24.50417 + .276 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 24.504 + .276 UG/L

Sample ID 10 PPB CCV
Description #229 G
Ref. Ratio .92
Laser Pulses 1000
Lifetime 315 + .209 us
R2 1
Integrated 2153072
Range: LOW

Date/Time 05/17/96/09:10:08
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 103103 (t= 52 us)
Conc 11.33327 + .1279 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 11.333 + .128 UG/L

Sample ID 5 PPB CCV
Description #229 H
Ref. Ratio .926
Laser Pulses 1000
Lifetime 316 + .536 us
R2 .9999
Integrated 961422
Range: LOW

Date/Time 05/17/96/09:13:12
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 45901 (t= 52 us)
Conc 4.98474 + 5.70E-02 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.985 + 5.70E-02 UG/L

BP

Sample ID 1 PPB CCV
Description #229 I
Ref. Ratio .925
Laser Pulses 1000
Lifetime 315 + .618 us
R2 .9998
Integrated 203499
Range: LOW

Date/Time 05/17/96/09:14:34
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 9888 (t= 52 us)
Conc 1.0407 + 1.20E-02 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.041 + 1.20E-02 UG/L

Sample ID 0 PPB CCV
Description MILLI-Q WATER
Ref. Ratio .927
Laser Pulses 1000
Lifetime 411 + 24.697 us
R2 .8657
Integrated 3664
Range: LOW

Date/Time 05/17/96/09:16:06
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 128 (t= 52 us)
Conc 2.01E-03 + 1.17E-04 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.01E-03 + 1.17E-04 UG/L

Sample ID 25 PPB CCV
Description #230 F 2ND SOURCE
Ref. Ratio .937
Laser Pulses 1000
Lifetime 299 + .231 us
R2 1
Integrated 4257117
Range: LOW

Date/Time 05/17/96/09:19:49
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 209981 (t= 52 us)
Conc 23.9821 + .2707 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 23.982 + .271 UG/L

Sample ID 100 PPB CCV
Description #230 D 2ND SOURCE
Ref. Ratio .916
Laser Pulses 1000
Lifetime 276 + .412 us
R2 .9999
Integrated 261704
Range: HIGH

Date/Time 05/17/96/09:22:14
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 13805 (t= 52 us)
Conc 96.27168 + 2.9637 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 96.272 + 2.964 ug/L

Sample ID 25 PPB CCV
Description #229 F
Ref. Ratio .904
Laser Pulses 1000
Lifetime 304 + .972 us
R2 .9996
Integrated 71287
Range: HIGH

Date/Time 05/17/96/09:31:44
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 3529 (t= 52 us)
Conc 24.88696 + .7714 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 24.887 + .771 ug/L

Sample ID 25 PPB CCV
Description #229 F
Ref. Ratio .921
Laser Pulses 1000
Lifetime 296 + .671 us
R2 .9998
Integrated 4311351
Range: LOW

Date/Time 05/17/96/09:34:58
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 214127 (t= 52 us)
Conc 24.53947 + .2858 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 24.539 + .286 UG/L

Sample ID 96-05-068-01
Description 108
Ref. Ratio .929
Laser Pulses 1000
Lifetime 215 + 1.023 us
R2 .999
Integrated 727320
Range: LOW

Date/Time 05/17/96/09:36:35
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 48233 (t= 52 us)
Conc 5.45204 + 7.75E-02 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.452 + 7.75E-02 UG/L

BP

Sample ID 96-05-068-02
Description 78
Ref. Ratio .922
Laser Pulses 1000
Lifetime 152 + 4.048 us
R2 .9705 low
Integrated 288545
Range: LOW

dilute X

Date/Time 05/17/96/09:39:05
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 33678 (t= 52 us)
Conc 2.93815 + .2027 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.938 + .203 UG/L

Sample ID 96-05-068-02
Description 78
Ref. Ratio .926
Laser Pulses 1000
Lifetime 275 + .934 us
R2 .9995
Integrated 134659
Range: LOW

✓

Date/Time 05/17/96/10:07:44
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 7083 (t= 52 us)
Conc .77205 + 9.42E-03 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 7.721 + 9.42E-02 UG/L

Sample ID 96-05-068-03
Description 60
Ref. Ratio .919
Laser Pulses 1000
Lifetime 195 + 1.194 us
R2 .9984 low
Integrated 536114
Range: LOW

dilute X

Date/Time 05/17/96/10:11:41
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 38803 (t= 52 us)
Conc 4.44018 + 7.39E-02 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.44 + 7.39E-02 UG/L

Sample ID 96-05-068-03
Description 60
Ref. Ratio .922
Laser Pulses 1000
Lifetime 296 + 1.069 us
R2 .9994
Integrated 113645
Range: LOW

✓

Date/Time 05/17/96/10:16:13
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 5692 (t= 52 us)
Conc .60697 + 7.41E-03 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 6.07 + 7.41E-02 UG/L

Sample ID 96-05-068-04
Description 45
Ref. Ratio .924
Laser Pulses 1000
Lifetime 158 + 1.319 us
R2 .997 low
Integrated 552167
Range: LOW

dilute X

Date/Time 05/17/96/10:19:39
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 49708 (t= 52 us)
Conc 5.85867 + .1381 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.859 + .138 UG/L

Sample ID 96-05-068-04
Description 45
Ref. Ratio .927
Laser Pulses 1000
Lifetime 302 + .875 us
R2 .9996
Integrated 163232
Range: LOW

✓

Date/Time 05/17/96/10:21:21
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 8124 (t= 52 us)
Conc .8624 + 1.03E-02 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 8.624 + .103 UG/L

Sample ID 96-05-068-05
Description 26
Ref. Ratio .916
Laser Pulses 1000
Lifetime 142 + 1.436 us
R2 .9956 low
Integrated 409713
Range: LOW

dilute X

Date/Time 05/17/96/10:25:06
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 40532 (t= 52 us)
Conc 4.93245 + .1483 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.932 + .148 UG/L

BP

Sample ID 96-05-068-05
Description 26
Ref. Ratio .924
Laser Pulses 1000
Lifetime 294 + .905 us
R2 .9996
Integrated 137002
Range: LOW

✓

Date/Time 05/17/96/10:26:53
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 7031 (t= 52 us)
Conc .73967 + 8.86E-03 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 7.397 + 8.86E-02 UG/L

Sample ID 96-05-068-06
Description 22
Ref. Ratio .916
Laser Pulses 1000
Lifetime 152 + 1.233 us
R2 .9972 low
Integrated 518550
Range: LOW

dilute X

Date/Time 05/17/96/10:39:18
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 47686 (t= 52 us)
Conc 5.75106 + .1358 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.751 + .136 UG/L

Sample ID 96-05-068-06
Description 22
Ref. Ratio .925
Laser Pulses 1000
Lifetime 299 + .773 us
R2 .9997
Integrated 156244
Range: LOW

✓

Date/Time 05/17/96/10:41:20
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 7829 (t= 52 us)
Conc .83371 + 9.83E-03 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 8.337 + 9.83E-02 UG/L

Sample ID 96-05-068-07
Description 10
Ref. Ratio .921
Laser Pulses 1000
Lifetime 176 + 1.107 us
R2 .9983 low
Integrated 479641
Range: LOW

dilute X

Date/Time 05/17/96/10:45:40
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 38029 (t= 52 us)
Conc 4.47495 + 8.03E-02 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.475 + 8.03E-02 UG/L

Sample ID 96-05-068-08
Description 161
Ref. Ratio .919
Laser Pulses 1000
Lifetime 148 + 1.324 us
R2 .9966 low
Integrated 269266
Range: LOW

dilute X

Date/Time 05/17/96/10:47:46
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 25080 (t= 52 us)
Conc 3.0652 + 7.99E-02 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.065 + 7.99E-02 UG/L

Sample ID 96-05-068-07
Description 10
Ref. Ratio .916
Laser Pulses 1000
Lifetime 303 + 1.01 us
R2 .9995
Integrated 122438
Range: LOW

✓

Date/Time 05/17/96/10:51:35
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 6062 (t= 52 us)
Conc .64098 + 7.74E-03 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 6.41 + 7.74E-02 UG/L

Sample ID 96-05-068-08
Description 161
Ref. Ratio .922
Laser Pulses 1000
Lifetime 306 + 1.462 us
R2 .999
Integrated 84422
Range: LOW

✓

Date/Time 05/17/96/10:53:03
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 4198 (t= 52 us)
Conc .43406 + 5.58E-03 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 4.341 + 5.58E-02 UG/L

BP
0000

Sample ID 96-05-068-M1
Description Matrix Spike
Ref. Ratio .907
Laser Pulses 1000
Lifetime 199 + 1.011 us
R2 .9989 low
Integrated 747297
Range: HIGH

dilute X

Date/Time 05/17/96/10:54:54
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 52291 (t= 52 us)
Conc 385.05493 + 12.4394 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 385.055 + 12.439 ug/L

Sample ID 96-05-068-M1
Description Matrix Spike
Ref. Ratio .904
Laser Pulses 1000
Lifetime 302 + .68 us
R2 .9998
Integrated 156695
Range: HIGH

✓

Date/Time 05/17/96/10:56:33
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 7677 (t= 52 us)
Conc 53.63824 + 1.6547 ug/L
Dilution Factor 10 mL/mL

FINAL RESULT 536.382 + 16.547 ug/L

Sample ID 96-05-068-D1
Description Duplicate
Ref. Ratio .926
Laser Pulses 1000
Lifetime 194 + .79 us
R2 .9993 low
Integrated 607062
Range: LOW

dilute X

Date/Time 05/17/96/11:02:43
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 43318 (t= 52 us)
Conc 5.07832 + 7.08E-02 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.078 + 7.08E-02 UG/L

Sample ID 96-05-068-D1
Description Duplicate
Ref. Ratio .914
Laser Pulses 1000
Lifetime 304 + .461 us
R2 .9999
Integrated 133874
Range: LOW

✓

Date/Time 05/17/96/11:06:28
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 6638 (t= 52 us)
Conc .70113 + 8.00E-03 UG/L
Dilution Factor 10 mL/mL

FINAL RESULT 7.011 + 8.00E-02 UG/L

Sample ID 96-05-068-B1
Description Blank
Ref. Ratio .911
Laser Pulses 1000
Lifetime 332 + 2.821 us
R2 .9969
Integrated 44630
Range: LOW

✓

Date/Time 05/17/96/11:15:03
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 2233 (t= 52 us)
Conc .20715 + 3.12E-03 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT .207 + 3.12E-03 UG/L

Sample ID 96-05-068-S1
Description Blank Spike
Ref. Ratio .901
Laser Pulses 1000
Lifetime 289 + .216 us
R2 .9999
Integrated 1264848
Range: HIGH

✓

Date/Time 05/17/96/11:17:21
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 64585 (t= 52 us)
Conc 450.59442 + 13.8522 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 450.594 + 13.852 ug/L

Sample ID 25 PPB CCV
Description #229 F
Ref. Ratio .891
Laser Pulses 1000
Lifetime 295 + .713 us
R2 .9998
Integrated 69881
Range: HIGH

✓

Date/Time 05/17/96/11:19:54
Cal Y=-1.10E-02X2+183.977X-2.28E+02
Intensity 3429 (t= 52 us)
Conc 25.04385 + .7733 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 25.044 + .773 ug/L

BJ

00107

Sample ID 25 PPB CCV
Description #229 F
Ref. Ratio .907
Laser Pulses 1000
Lifetime 294 + .327 us
R2 1
Integrated 4286788
Range: LOW

Date/Time 05/17/96/11:21:41
Cal Y=-1.94E+01X2+1.14E+04X+151.603
Intensity 215498 (t= 52 us)
Conc 24.57856 + .2768 UG/L
Dilution Factor 1 mL/mL

FINAL RESULT 24.579 + .277 UG/L

BP

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 6

QUALITY ASSURANCE SUMMARY REPORTS

6

There are no Quality Assurance Summary Reports
included in this data package.

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 7

LABORATORY BENCH SHEETS

7

TOTAL URANIUM BY KPA SOIL

ANALYST.GE/BP

Prep. Date:S. 5/15/96

Prep. Date:C .5/15/96

Count Date:

Instrument Pipet: C-002

Uraplex Pipet:C-001

DI Pipettor: RS0004

Balance#:13

SOP Used:741FC4

ATI-W.O.#	Initial Mass (g)	Dig.Vol. (ml)	Aliq. (ml)	Dilution Factor	Remarks
96-05-068-01	0.2078	100	1.0	1	
96-05-068-02	0.2038	100	1.0	10	
96-05-068-03	0.2115	100	1.0	10	
96-05-068-04	0.2076	100	1.0	10	
96-05-068-05	0.2126	100	1.0	10	
96-05-068-06	0.2007	100	1.0	10	
96-05-068-07	0.2074	100	1.0	10	
96-05-068-08	0.2032	100	1.0	10	
96-05-068-D1	0.2039	100	1.0	10	DUP. OF 96-05-068-01
96-05-068-M1	0.2100	100	1.0	10	MATRIX SPIKE OF 96-05-068-03
96-05-068-B1	NA	100	1.0	1	
96-05-068-S1	0.2100	100	1.0	1	

* MATRIX SPIKE IS SPIKED WITH THE SAME STANDARD AND VOLUME AS BLANK SPIKE.

Spike Std ID	Act./ml	Spike Vol (ml)	Pipet No.
186	50 UG/ML	1.0	RS-009

Spike Witness: SY 5/15/96

Reviewed by: BP 5/20/96

SAMPLE CONDITION FORM

METHOD KPA - T.U. MATRIX Soil EXT. DATE 5-15-96 TECH GE

WORK ORDER #	SAMPLE #	SAMPLE CONDITION	SAMPLE ODOR
96-05-068	01	fine soil (yellow-brown)	
	02	fine soil brown-black Loam - some pebbles	
	03	fine Soil (yellow-brown)	
	04	fine Soil (very fine powder)	
	05	fine Soil clay - Loam	
	06	fine Soil clay - Loam	
	07	fine Soil (brown-grey)	
	08	fine Soil	
	d_1	dupl. of 96-05-068-01	
	M_1	QC matrix spike of 96-05-068-03	
	B_1		
	S_1		

Spike u - 186 - 1 ml 5/15

AFI FAM 831 PC

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 8

STANDARDS TRACEABILITY DOCUMENTS

8

ATI PO # 0145
rec'd 11-06-95

PLASMA CHEM CORP

CERTIFICATE OF ANALYSIS

URANIUM

Catalog # : D92012
Description : 1000ug/ml U in 2% HNO3
Lot # : S5J92N14

The following information is provided for your records. Should you have any questions please refer to the above referenced lot number.

The starting material used to prepare this standard was:

Uranium (IV,VI) Oxide
U3O8

Lot # : 92N-J4140
Purity : 99.998%
Assay : 84.50%
Trace Impurities:
Si 5-10ppm
Fe,Mg 4-8ppm each

The standard was then stoichiometrically prepared using electronic grade acids, 18 megohm double de-ionized water, re-calibrated (by weight) Class A glassware and packaged in pre-cleaned bottles.

The resulting solution standard was assayed via Classical Wet Assay Method: EDTA TITRATION

NIST TRACEABILITY: EDTA standardized against SRM 928 Lead Nitrate
Method corroborated against SRM 3164 U spectrometric solution.

ACTUAL ASSAY OF STANDARD: 1000ug/ml (+/- 0.5% relative)

The resulting solution standard was verified on ICP at 385.958nm.

Certificate : COA922
P.O.# : 51320
Date : NOV 03 1995

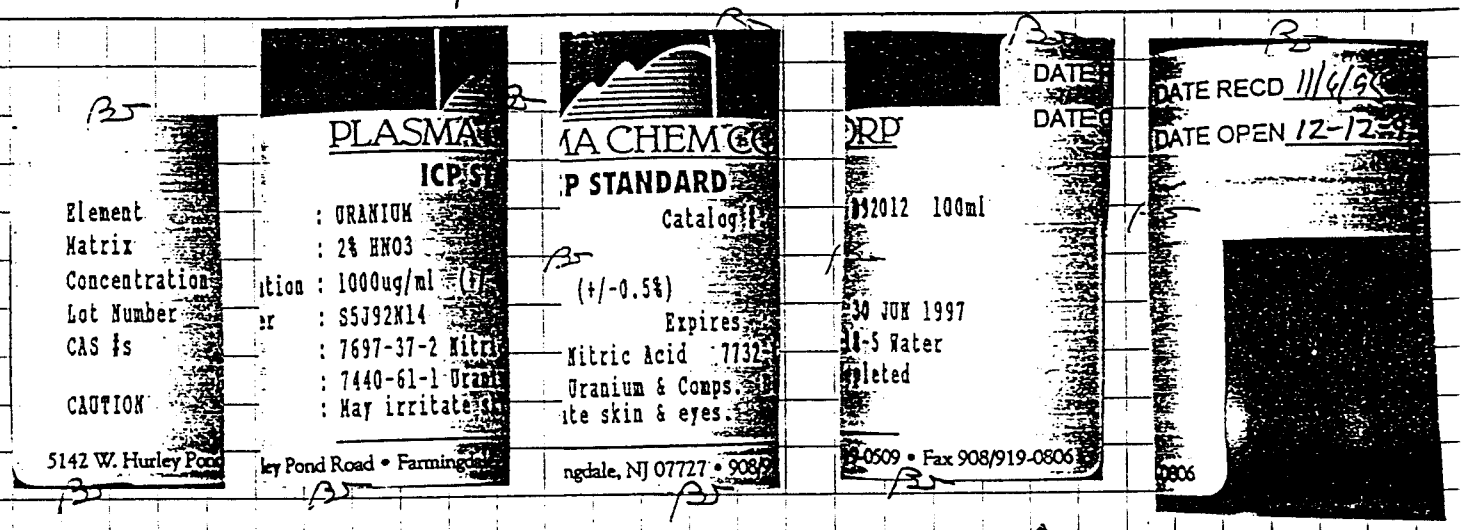
Expiration: 30 JUN 1997

Authorized Signature: Susan C. Tymwich
Title : President

5142 W Harbor Pond Road • Farmingdale, NJ 07727 • 908/919-0509 • Fax 908/919-0806

PROJECT KPA U Primary Std - First Source

Continued From Page



PSO #145 DCB

Vendor: Plasma Chem Corp.

see attached copy of certificate

1/2/96

MM

Continued on Page

Read and Understood By

Robert Jump — Signed — 12-12-95 — Date

Terry McKillin — Signed — 1/2/96 — Date

P.O. Box 30188
Charleston, SC 29417
TEL: (803) 556-3411
FAX: (803) 769-7399

ATID # 00101

HIGH-PURITY STANDARDS

Certificate of Analysis

Uranium

Lot # 490125

Source	Source Purity	Acid	Standard Concentration
Uranium Oxide	99.968%	HNO_3, 2%	1000 ± 3 µg/mL

This spectrometric standard solution has been prepared from high-purity reference materials. Subboiled high-purity acid has been used to place the materials in solution and to stabilize the standard. The matrix is nitric acid as stated above in 18 megaohm deionized water. The reference materials have been assayed by optical emission spectrometry and atomic absorption spectrometry and are certified to contain less than 300 µg/g total impurities.

The standard has been prepared gravimetrically by weighing the reference material to 5 significant figures. Volumetric glassware has been calibrated gravimetrically to 5 significant figures.

The Standard Concentration has been certified by spectrometric analysis against an independent source which is traceable to National Institute of Standards and Technology, Standard Reference Material No. 3164

This standard is valid for one year from the shipping date provided the solution is kept tightly capped and stored under normal laboratory conditions.

Std was verified on 12/15/95 and expiration date was extended to January 1997.

Theodore C Rains BP

1-3-96

Theodore C. Rains
President

00007

5.0 mL of 1000 mg/mL U Standard (ID: ATI-000101) was volumetrically transferred to a 100 mL volumetric flask. The flask was brought to volume w/ 1.6 N HNO_3 prepared with Milli Q water.

Resulting Solution 50 mg/mL

Balance used to calibrate pipet #13
Pipet # RS-014
Solution delivered to KPA Country for verification

1.24.95 [illegible]

verified BP 2-1-95 with analyzing 3 sep. 0.5 mL aliq. diluted 100 fold.

BP 2-1-95

Continued on Page

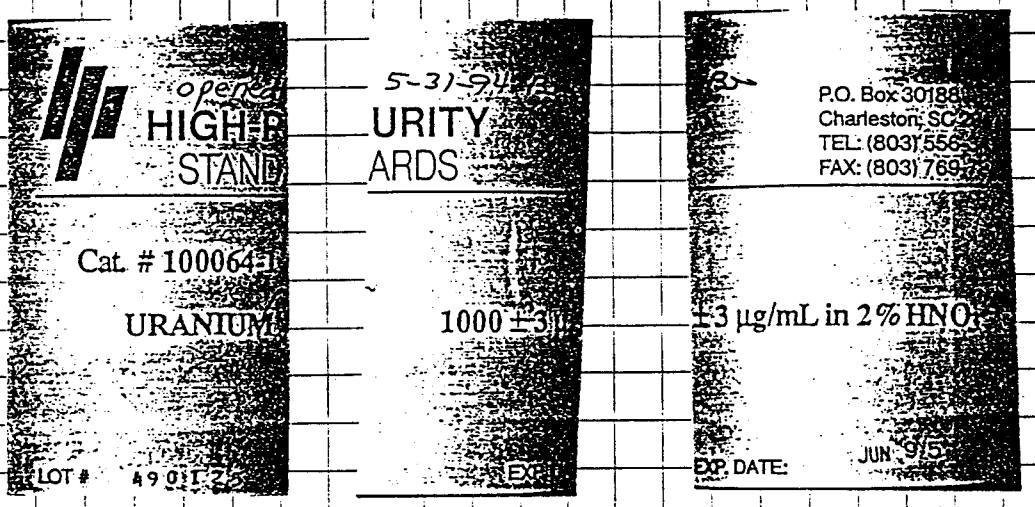
Read and Understood By

Signed | Date | Signed | Date

#227

52 Notebook No. 921

PROJECT KPA U Primary Std (2nd Source) Continued From Page



Vendor: High-Purity Standards

std was verified on 12/15/95 and expiration date was extended to Jan, 1997

TM 1/2/96

Continued on Page

Read and Understood By

Robert Jump — Signed — 12-12-95 — Date

Terry M Killian — Signed — 1/2/96 — Date

#228

PROJECT KPA U Intermediate Stds

Notebook No. 921

Continued From Page

Interm Std ID	Interm std conc (mg/L)	Interm std vol (mL) (final vol)	Parent Std ID	Parent std conc (mg/L)	Parent Std vol (mL)	Pipet ID
228A	50	100	#226	1000	5	RS-003
228B	1	100	#226	1000	0.1	RS-001
228C	10	100	#227	1000	1.0	RS-0013

All intermediate standards were diluted in 0.6 N HNO_3. Aliquots of parent std were pipetted into tared polypropylene bottles and brought to final volume gravimetrically (density of 0.6 N HNO_3 measured as $\frac{101.54 g}{100 mL}$.)

The 0.6 N HNO_3 was prepared with Milli-Q DI water

Stds verified per dilutions #229 & #230

1/2/96

TM

Continued on Page

Read and Understood By

Signed 12-12-95 Date

Signed 1/2/96 Date

#229

PROJECT KPA U Working Stds - 1st Source

Notebook No. 921

Continued From Page

These working stds were prepared by pipetting aliquots of intermediate std into a tared polypropylene bottle and diluting to volume gravimetrically using 0.6 N HNO_3. (density of 0.6 N HNO_3 measured as 101.54g / 100 mL)

RS 12/12

1st source working stds

RS 12/12

working std ID:	working std conc (ug/L)	working std vol (mL)	parent std conc (mg/L)	parent std ID:	parent std vol (mL)	pipet ID:
# 229 A	800	500	50	# 228 A	8.00	RS-003
# 229 B	500	500	50	# 228 A	5.00	RS-003
# 229 C	200	500	50	# 228 A	2.00	RS-0013
# 229 D	100	500	50	# 228 A	1.00	RS-0013
# 229 E	50	500	50	# 228 A	0.50	G-004
# 229 F	25	500	50	# 228 A	0.25	AB-001
# 229 G	10	500	50	# 228 A	0.10	RS-001
# 229 H	5	500	1	# 228 B	2.50	RS-003
# 229 I	1	500	1	# 228 B	0.50	G-004
# 229 J	0.5	500	1	# 228 B	0.25	AB-001
# 229 K	0.1	500	1	# 228 B	0.05	RS-004

RS 12/12

Values verified with previous calibration and with second source #230. TM 1/2/96

TM 1/2/96

Continued on Page

Read and Understood By

Robert Ramos — Signed — 12-12-95 — Date

Terry Mattin — Signed — 1/2/96 — Date

#230

Notebook No. 921

PROJECT KPA U Working Stds — 2nd Source

Continued From Page

Stds prepared by pipetting aliquots of intermediate std into tared polypro. bottle + diluting to volume w/ 0.6 N HNO_3 gravimetrically (density 0.6 N HNO_3 = 101.54 g / 100 mL)

2nd source working stds

RJ

working std ID:	working std conc (ug/L)	working std vol (mL)	parent std conc (mg/L)	parent std ID:	parent std vol (mL)	pipet ID:
# 230 A	800	100	10	# 228 C	8.00	RS-003
# 230 B	500	100	10	# 228 C	5.00	RS-003
# 230 C	200	100	10	# 228 C	2.00	RS-0013
# 230 D	100	100	10	# 228 C	1.00	RS-0013
# 230 E	50	100	10	# 228 C	0.50	G-004
# 230 F	25	100	10	# 228 C	0.25	AB-001
# 230 G	10	100	10	# 228 C	0.10	RS-001
# 230 H	5	100	10	# 228 C	0.05	RS-004
# 230 I	1	100	0.2	# 230 C	0.50	G-004
# 230 J	0.5	100	0.2	# 230 C	0.25	AB-001
# 230 K	0.1	100	0.2	# 230 C	0.05	RS-004

RJ 12/12

RJ 12/12

Values verified with previous calibration and new calibration using 1st source #229.

TM 1/2/96

TM 1/2/96

Continued on Page

Read and Understood By

Robert Jump — Signed — 12-12-95 — Date

Signed — 1/2/96 — Date

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 9

CHAIN OF CUSTODY

9

AnalyticalTechnologies, Inc.
225 COMMERCE DRIVE
FORT COLLINS, CO
80524
(303) 490-1511
(303) 490-1522 FAX
1 (800) 443-1511

Chain of Custody

DATE 5-9-96 PAGE 1 OF 1

ACCESSION NUMBER: 9605068

PROJECT MANAGER: Chris Hanlon-Meyer
COMPANY: NMED DOE OB
ADDRESS:

SAMPLER: Chris Hanlon-Meyer
505-827-1536 PHONE NUMBER
505-827-1545 FAX NUMBER

ANALYSIS REQUESTED

SAMPLE ID	SAMPLE DATE	SAMPLE TIME	MATRIX	LAB ID	9070/9071 — Oil & Grease	418.1 — TRPH	8015 Mod. — Gasoline	8015 Mod. — Diesel	8015/8020 — Gasoline/BTEX	8020 — BTEX	8240 — GC/MS VOC's	8270 — GC/MS SVOC's	8080 — Pesticides/PCB's	8080 — PCB Only	8310 — PNA's	8150 — Herbicides	8140 — OP Pesticides	TOX — EOX — TX	Total Metals: Pb, As, Ba, Be, Hg, Se, U Total	TCLP:	Gross Alpha	Gross Beta	Radium 226	Radium 228	Tritium	Strontium	% Moisture							Number of Containers
108	5-9-96	9:20	soil	01															X															1
78	5-9-96	9:30	soil	02															X															1
60	5-9-96	9:40	soil	03															X															1
45	5-9-96	10:00	soil	04															X															1
26	5-9-96	10:15	soil	05															X															1
22	5-9-96	10:30	soil	06															X															1
10	5-9-96	10:45	soil	07															X															1
161	5-9-96	10:55	soil	08															X															1

TOX

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NUMBER: 5996 13(s)	TOTAL NUMBER OF CONTAINERS	
PROJECT NAME: MDA-M	CHAIN OF CUSTODY SEALS Y/N	
PURCHASE ORDER NUMBER:	SEALS INTACT? Y/N/NA	
TAT: ☐ STANDARD ☐ RUSH DUE:	RECEIVED GOOD COND./COLD	

SAMPLE DISPOSAL: ☐ HAZ WASTE $5.00 ☐ RAD CHEM $15.00 ☐ RETURN

Comments: (*) NOT Relinquished By client

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company: Fedex	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: 3.**
Signature: Time:	Signature: Time: 230	Signature: Time:
Printed Name: Date:	Printed Name: Date: 5/10/96	Printed Name: Date:
Company: Fedex	Company: Paragon	Company:

DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

Paragon Analytics - Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT

CLIENT: NMED

SHIPPING CONTAINER #: Cooler

WORKORDER NO. 96-05-068 INITIALS: DD DATE: 5/10/96

1.	Does this project require special handling according to NEESA, Level 3, or CLP protocols? If yes, complete a. and b. a. Cooler Temperature_____ b. Lot No's._____ c. Airbill Number _____		Yes	(No)
2.	Are custody seals on the cooler intact? If so, how many 2	N/A	(Yes)	No
3.	Are custody seals on sample containers intact?	(N/A)	Yes	No
4.	Is there a Chain of Custody (COC) or other representative documents, letters or shipping memos?		(Yes)	No
5.	Is the COC complete? Relinquished: Yes___ No ✓ Requested Analysis: Yes ✓ No___		~~(Yes)~~	~~(No)~~
6.	Is the COC in agreement with the samples received? No. of Samples: Yes ✓ No___ Sample ID's: Yes ✓ No___ Matrix: Yes ✓ No___ No. of Containers: Yes ✓ No___		(Yes)	No
7.	Are the samples preserved correctly?	(N/A)	Yes	No
8.	Is there enough sample? If so, are they in the proper containers?		(Yes)	No
9.	Are all samples within holding times for the requested analyses?		(Yes)	No
10.	Were the sample received on ice?	N/A	(Yes)	No
11.	Were all sample containers received intact? (not broken or leaking, etc.)		(Yes)	No
12.	Are samples requiring no headspace, headspace free?	(N/A)	Yes	No
13.	Do the samples require quarantine?		Yes	(No)
14.	Do samples require ATI disposal?		(Yes)	No
15.	Did the client return any unused bottles?		Yes	(No)

Describe "NO" items (except No's 1, 13, &14): (5) - Not Relinquished

Was the client contacted? Yes____ No____

If yes, Date:____ Name of person contacted:____

Describe actions taken or client instructions:____

Group Leader's Signature: [signature] Date: 5-10-96

Cooler Temperature: -1°C

ATI FRM 201FC5 (2/21/96)

PARAGON ANALYTICS, INC.
Radiochemistry Data Package

Section 10

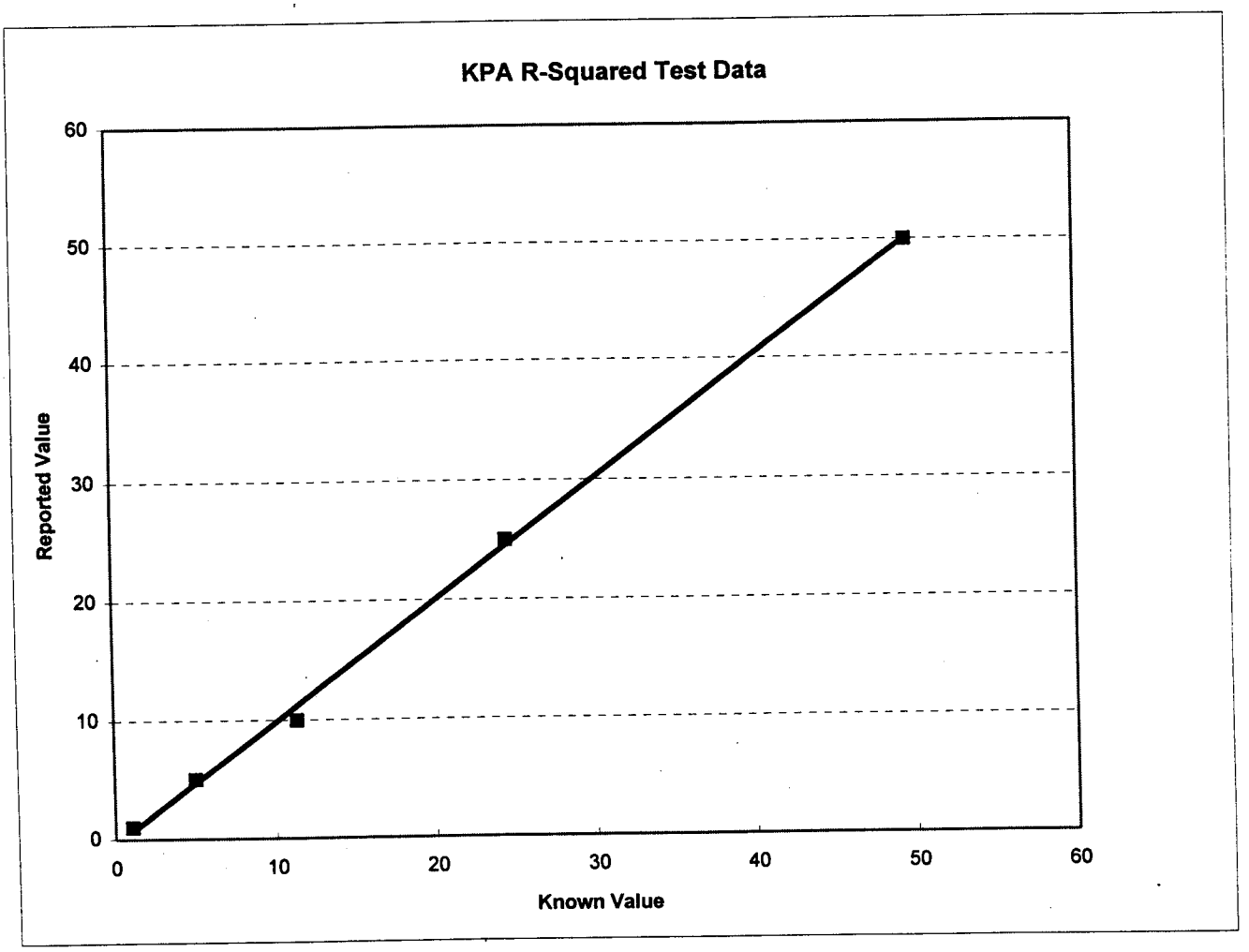
ADDITIONAL SUPPORTING DOCUMENTATION

10

KPA Calibration Verification Data (Low)
5/17/96

Known Value ug/l	Reported Value ug/l
1	1.041
5	4.985
10	11.333
25	24.504
50	49.556

Regression Output	
Constant	0.4139495
Std Err of Y Est	0.744322
R Squared	0.9989201
No. of Observations	5
Degrees of Freedom	1
X Coefficient(s)	0.9818599
Std Err of Coef.	0.0186384



r:\narr\RSQUARE5.XLS

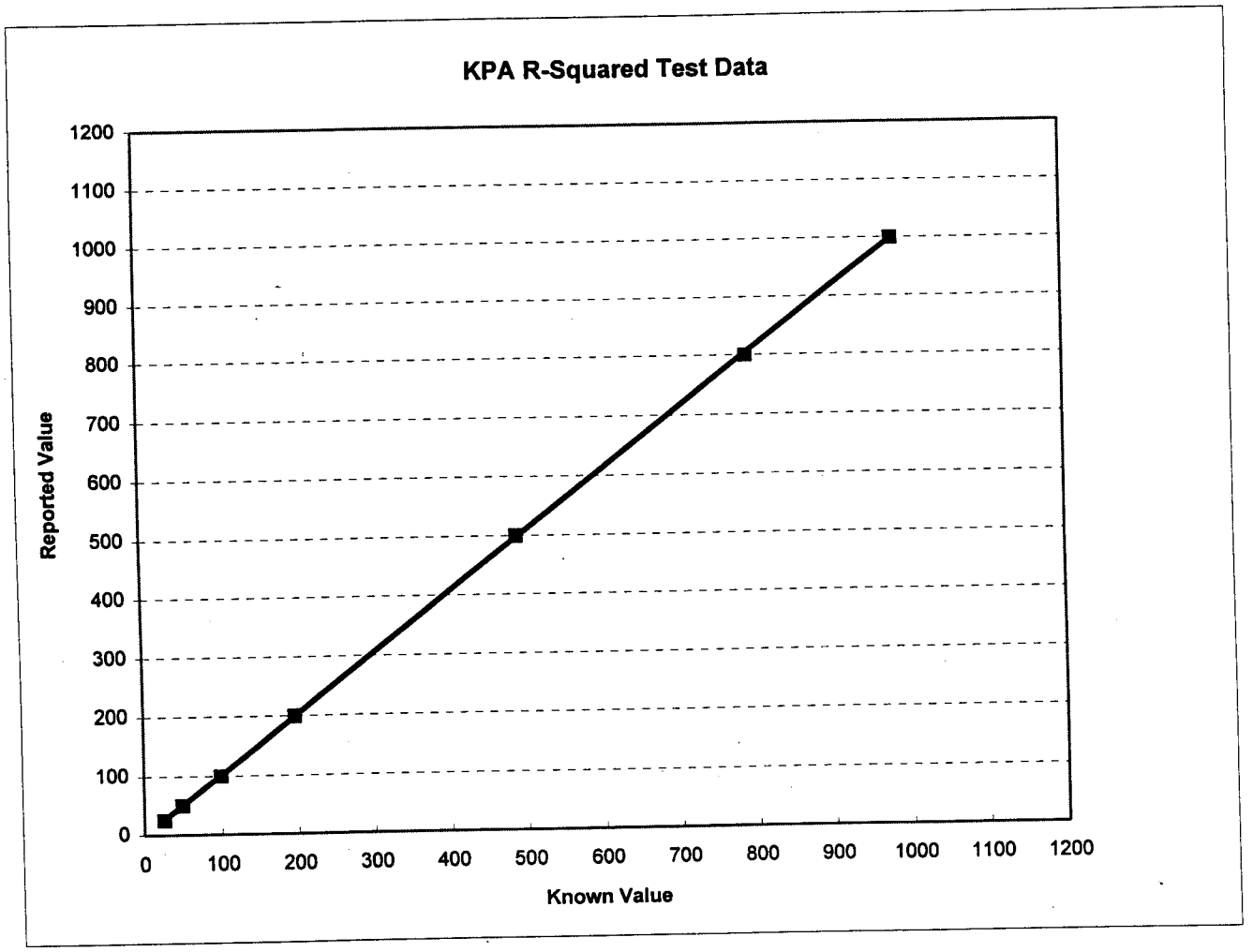
BP

000007

KPA Calibration Verification Data (High)
5/17/96

Known Value ug/l	Reported Value ug/l
25	25.262
50	48.696
100	98.888
200	195.344
500	488.884
800	790.331
1000	981.382

Regression Output	
Constant	-0.231121
Std Err of Y Est	2.3382931
R Squared	0.9999693
No. of Observations	7
Degrees of Freedom	1
X Coefficient(s)	0.9833289
Std Err of Coef.	0.0024367



r:\narr\RSQHIGH7.XLS

BP

PARAGON ANALYTICS, INC.
225 Commerce Drive ◆ Fort Collins, CO 80524 ◆ (800) 443-1511 ◆ (970) 490-1511 ◆ FAX (970) 490-1522

REPORT OF ANALYSIS

DETERMINATION OF METALS BY INDUCTIVELY COUPLED PLASMA, TRACE ANALYZER AND ATOMIC ABSORPTION

PAI WO# 96-05-068
Project Name: MDA-M-5996 13(S)

Prepared for:

New Mexico Environmental Dept.
Attn: Chris Hanlon-Meyer

May 22, 1996

TABLE OF CONTENTS:

Section 1: Case Narrative
Section 2: Chain of Custody
Section 3: Inorganic Qualifiers
Section 4: Sample Results
Section 5: Summary Report Forms
Section 6: Supporting Raw Data

Appendix A: Digestion Bench Sheets
Appendix B: Non conformance and Corrective Action Reports

Section 1: Case Narrative

1.1 Sample Logistics

All samples were received cool and intact on the dates shown on the FORM I's. The chain of custody reports follow this narrative in Section 2.

1.2 Analysis of Metals

These samples were analyzed using a Thermo Jarrell Ash 61 (conventional ICAP), a Thermo Jarrell Ash 61E (ICAP Trace Analyzer) and a Leeman PS200 cold vapor atomic absorption analyzer and reported using method 6010 protocols for the ICPs and method 7471 for mercury.

The client's project name is used for the SDG No. on the report pages. Due to limitations of our Ward software, the project name was truncated. The full project name is MDA-M-599 13(S).

Due to the limitations of our Ward software, some mercury values appear as 0.0, where this occurs the actual value is hand entered.

For Mercury, the ICB is also the preparation blank, therefore the run chronology will show the same time for both.

The batch quality control sample for this Work Order is client sample ID 108 (PAI # 96-005-068-01).

A five fold serial dilution was performed on sample 108 to evaluate potential matrix effects. Beryllium results in the diluted sample did not agree within 10% with the undiluted sample results. Results for this element are flagged with an "E" indicating a potential matrix effect. The concentration of beryllium in the diluted and undiluted samples were close to the reporting limit (CRDL). This may have contributed to the greater than 10% difference in the final results.

Barium results for sample 108 on the Form I are from the initial analysis on May 15th. Barium results in the 'sample' column on the post digestion spike page are from the analysis on May 17th which includes the barium post spike.

Please see the qualifier page for an explanation of the 'B', 'U', 'N' and 'F' qualifiers.

CERTIFICATION

Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete, and correct within the limitations of the methods employed.

Lance Steere for:

Don Gipple
Lab Manager

SECTION 2: Chain of Custody

AnalyticalTechnologies,Inc.
225 COMMERCE DRIVE
FORT COLLINS, CO
80524
(303) 490-1511
(303) 490-1522 FAX
1 (800) 443-1511

Chain of Custody

DATE 5-9-96 PAGE 1 OF 1

ACCESSION NUMBER: 9605068

PROJECT MANAGER: Chris Hanlon-Meyer
COMPANY: NMED DOE OB
ADDRESS:
SAMPLER: Chris Hanlon-Meyer
505-827-1536 PHONE NUMBER
505-827-1545 FAX NUMBER

ANALYSIS REQUESTED

SAMPLE ID	SAMPLE DATE	SAMPLE TIME	MATRIX	LAB ID	9070/9071 — Oil & Grease	418.1 — TRPH	8015 Mod. — Gasoline	8015 Mod. — Diesel	8015/8020 — Gasoline/BTEX	8020 — BTEX	8240 — GC/MS VOC's	8270 — GC/MS SVOC's	8080 — Pesticides/PCB's	8080 — PCB Only	8310 — PNA's	8150 — Herbicides	8140 — OP Pesticides	TOX — EOX — TX	Total Metals: Pb, As, Ba, Be, Hg Sr, U Total	TCLP:	Gross Alpha	Gross Beta	Radium 226	Radium 228	Tritium	Strontium	% Moisture							Number of Containers
108	5-9-96	9:20	soil	01															X															1
78	5-9-96	9:30	soil	02															X															1
60	5-9-96	9:40	soil	03															X															1
45	5-9-96	10:00	soil	04															X															1
26	5-9-96	10:15	soil	05															X															1
22	5-9-96	10:30	soil	06															X															1
10	5-9-96	10:45	soil	07															X															1
161	5-9-96	10:55	soil	08															X															1

TOX

PROJECT INFORMATION
PROJECT NUMBER: 5996 13(5)
PROJECT NAME: MDA-M
PURCHASE ORDER NUMBER:
TAT: ☐ STANDARD ☐ RUSH DUE:

SAMPLE RECEIPT
TOTAL NUMBER OF CONTAINERS
CHAIN OF CUSTODY SEALS Y/N
SEALS INTACT? Y/N/NA
RECEIVED GOOD COND./COLD

SAMPLE DISPOSAL: ☐ HAZ WASTE $5.00 ☐ RAD CHEM $15.00 ☐ RETURN

Comments: (*) NOT Relinquished By client

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company: Fedex	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: 3.**
Signature: Time:	Signature: Time: 230	Signature: Time:
Printed Name: Date:	Printed Name: Date: 5/10/96	Printed Name: Date:
Company: Fedex	Company: Parsons	Company:

DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC • Pink - ORIGINATOR

SECTION 3: Inorganic Qualifiers

DRAFT

Laboratory Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- C (Concentration) qualifier -- A "B" is entered if the reported value was obtained from a reading that was less than the Reporting limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected a "U" is entered.

- Q qualifier -- Specified entries and their meanings are as follows:

  E - The reported value is estimated because of the presence of interference. An explanatory note may be included under Comments on the Cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if the problem is an isolated one.)

  M - Duplicate injection precision was not met.

  N - Spiked sample recovery not within control limits. Associated data is flagged.

  F - Relative percent difference between the matrix spike and matrix spike duplicate was outside acceptance limits. Because of the failure of both the RPD and the %R for the spike duplicate a post spike was analyzed to evaluate matrix interference.

  * - Duplicate analysis not within control limits. Associated data is flagged.

- M (Method) qualifier --
  - "P" for ICP, Trace or conventional
  - "AV" for Automated Cold Vapor AA
  - " " where no data has been entered
  - "NR" if the analyte is not required to be analyzed

SECTION 4: Sample Results

DRAFT

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

10

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-07

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic__	3.1			P_
7440-39-3	Barium___	197		N	P_
7440-41-7	Beryllium	0.94		E	P_
7439-92-1	Lead_____	17.7			P_
7439-97-6	Mercury__	0.03	B		AV
7440-24-6	Strontium	21.6			P_

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

DRAFT

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

108

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-01

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.9			P
7440-39-3	Barium	152		N	P
7440-41-7	Beryllium	1.0		E	P
7439-92-1	Lead	17.7			P
7439-97-6	Mercury	0.05			AV
7440-24-6	Strontium	26.4			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

000003

DRAFT
CJH 6-19-96

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

161

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-08

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.1			P
7440-39-3	Barium	57.5		N	P
7440-41-7	Beryllium	0.43	B	E	P
7439-92-1	Lead	13.6			P
7439-97-6	Mercury	0.02	B		AV
7440-24-6	Strontium	11.0			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN 3/90

000010

U.S. EPA - CLP

DRAFT

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

22

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-06

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.2			P
7440-39-3	Barium	189		N	P
7440-41-7	Beryllium	0.71		E	P
7439-92-1	Lead	43.3			P
7439-97-6	Mercury	0.26			AV
7440-24-6	Strontium	27.0			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

DRAFT

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

26

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-05

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.5			P
7440-39-3	Barium	161		N	P
7440-41-7	Beryllium	0.70		E	P
7439-92-1	Lead	31.3			P
7439-97-6	Mercury	0.17			AV
7440-24-6	Strontium	26.5			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

000012

U.S. EPA - CLP

DRAFT CGHh 6/19/96

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

45

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-04

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic__	3.3			P
7440-39-3	Barium___	182		N	P
7440-41-7	Beryllium	0.86		E	P
7439-92-1	Lead____	22.9			P
7439-97-6	Mercury__	0.05			AV
7440-24-6	Strontium	25.0			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN 3/90

DRAFT
6-19-96

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

60

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-03

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	112		N	P
7440-41-7	Beryllium	0.90		E	P
7439-92-1	Lead	14.5			P
7439-97-6	Mercury	0.02	B		AV
7440-24-6	Strontium	23.6			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN 3/90

000014

DRAFT
6-19-96

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

78

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Lab Sample ID: S068-02

Level (low/med): LOW__ Date Received: 05/10/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	290		N	P
7440-41-7	Beryllium	0.60		E	P
7439-92-1	Lead	239			P
7439-97-6	Mercury	0.47			AV
7440-24-6	Strontium	38.1			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: TAN_____ Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN 3/90

SECTION 5: Summary Report Forms

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.:10____

SOW No.: ILM02.1

EPA Sample No.	Lab Sample ID
_10_____	_S068-07_____
_108_____	_S068-01_____
_108D_____	_S068-01D_____
_108DS_____	_S068-01DS_____
_108S_____	_S068-01S_____
_161_____	_S068-08_____
_22_____	_S068-06_____
_26_____	_S068-05_____
_45_____	_S068-04_____
_60_____	_S068-03_____
_78_____	_S068-02_____

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Initial Calibration Source: PLASMACHEM__

Continuing Calibration Source: PLASMACHEM__

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Arsenic	250.0	258.99	103.6	500.0	505.72	101.1	504.47	100.9	P
Barium	250.0	250.22	100.1	500.0	494.99	99.0	500.03	100.0	P
Beryllium	250.0	260.09	104.0	500.0	510.44	102.1	513.00	102.6	P
Lead	250.0	250.92	100.4	500.0	489.70	97.9	504.59	100.9	P
Mercury	5.0	5.42	108.4	5.0	5.49	109.8	5.47	109.4	AV
Strontium	500.0	511.80	102.4	1000.0	1010.16	101.0	1001.49	100.1	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Initial Calibration Source: PLASMACHEM__

Continuing Calibration Source: PLASMACHEM__

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Arsenic				500.0	476.45	95.3	505.83	101.2	P
Barium				500.0	456.04	91.2	511.39	102.3	P
Beryllium				500.0	491.65	98.3	506.10	101.2	P
Lead				500.0	481.43	96.3	494.35	98.9	P
Mercury									NR
Strontium				1000.0	994.92	99.5	962.86	96.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Initial Calibration Source: PLASMACHEM__

Continuing Calibration Source: PLASMACHEM__

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Arsenic				500.0	505.03	101.0			P
Barium				500.0	500.76	100.2			P
Beryllium				500.0	501.59	100.3			P
Lead				500.0	493.73	98.7			P
Mercury									NR
Strontium				1000.0	970.75	97.1			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Initial Calibration Source: PLASMACHEM__

Continuing Calibration Source: PLASMACHEM__

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Arsenic									NR
Barium	250.0	250.21	100.1	500.0	506.94	101.4	508.10	101.6	P
Beryllium									NR
Lead									NR
Mercury									NR
Strontium									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

3
BLANKS

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Arsenic	2.3	U	2.3	U	2.3	U	2.3	U	0.230	U	P
Barium	0.5	B	-0.1	B	0.4	B	-0.5	B	-0.026	B	P
Beryllium	0.4	B	0.2	U	0.2	B	-0.7	B	-0.040	B	P
Lead	1.1	B	0.9	U	0.9	U	0.9	U	0.090	U	P
Mercury	0.05	U	0.05	U	0.05	U			0.008	U	AV
Strontium	0.9	B	0.5	U	0.5	U	0.9	B	0.050	U	P

U.S. EPA - CLP

3
BLANKS

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Arsenic			2.3	U	2.3	U					P
Barium			0.6	B	-0.9	B					P
Beryllium			-0.4	B	-0.8	B					P
Lead			0.9	U	-0.9	B					P
Mercury											NR
Strontium			0.6	B	0.6	B					P

FORM III - IN 3/90

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U.S. EPA - CLP

3
BLANKS

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Arsenic											NR
Barium	0.5	B	0.2	B	-0.2	B					P
Beryllium											NR
Lead											NR
Mercury											NR
Strontium											NR

FORM III - IN 3/90

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No: _____ SDG No.: 10____

ICP ID Number: TJA 61E 2___ ICS Source: HIGH PURITY_

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Arsenic								
Barium		500		491.3	98.3		495.0	99.0
Beryllium		500		492.9	98.6		481.5	96.3
Lead		1000		929.4	92.9		930.4	93.0
Mercury								
Strontium								

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No: _____ SDG No.: 10____

ICP ID Number: TJA 61E 2___ ICS Source: HIGH PURITY_

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Arsenic								
Barium		500		498.9	99.8		504.4	100.9
Beryllium								
Lead								
Mercury								
Strontium								

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

108DS

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL__ Level (low/med): LOW___

% Solids for Sample: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	80-120	196.3580		4.9110		200.00	95.7		P
Barium	80-120	437.5150		151.9620		200.00	142.8	N	P
Beryllium	80-120	6.0950		1.0060		5.00	101.8		P
Lead	80-120	66.1690		17.6960		50.00	96.9		P
Mercury	80-120	0.8833		0.0470		0.83	100.8		AV
Strontium	80-120	76.4000		26.3910		50.00	100.0		P

Comments:

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

108S

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL__ Level (low/med): LOW___

% Solids for Sample: 100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	80-120	194.2610		4.9110		200.00	94.7		P
Barium	80-120	354.7470		151.9620		200.00	101.4		P
Beryllium	80-120	6.0050		1.0060		5.00	100.0		P
Lead	80-120	65.0680		17.6960		50.00	94.7		P
Mercury	80-120	0.8683		0.0470		0.83	99.0		AV
Strontium	80-120	75.5720		26.3910		50.00	98.4		P

Comments:

U.S. EPA - CLP

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

108A

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Matrix (soil/water) : SOIL__ Level (low/med): LOW___

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Added (SA)	%R	Q	M
Arsenic									NR
Barium		3614.75		1573.32		2000.0	102.1		P
Beryllium									NR
Lead									NR
Mercury									NR
Strontium									NR

Comments:

FORM V (Part 2) - IN 3/90

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

108D

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: MDA-M-

Matrix (soil/water): SOIL_ Level (low/med): _LOW__

% Solids for Sample: 100.0 % Solids for Duplicate: _100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic	1.0	4.9110		4.0660		18.8		P
Barium		151.9620		146.2830		3.8		P
Beryllium	0.5	1.0060		0.9240		8.5		P
Lead		17.6960		19.5170		9.8		P
Mercury	0.0	0.0470		0.0387		19.4		AV
Strontium		26.3910		25.1590		4.8		P

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

108DS

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Matrix (soil/water): SOIL_ Level (low/med): _LOW__

% Solids for Sample: 100.0 % Solids for Duplicate: _100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		194.2610		196.3580		1.1		P
Barium		354.7470		437.5150		20.9	F	P
Beryllium		6.0050		6.0950		1.5		P
Lead		65.0680		66.1690		1.7		P
Mercury		0.8683		0.8833		1.7		AV
Strontium		75.5720		76.4000		1.1		P

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Solid LCS Source: ERA 229_____

Aqueous LCS Source: _____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Arsenic				75.4	78.7		37.1	112.0	104.4
Barium				106.0	104.9		74.3	139.0	99.0
Beryllium				51.0	51.4		11.7	90.3	100.8
Lead				53.5	56.0		28.1	75.9	104.7
Mercury				1.5	1.5		0.4	2.4	100.0
Strontium				109.0	106.9		46.3	173.0	98.1

U.S. EPA - CLP

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

108L

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

Matrix (soil/water): SOIL_ Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Arsenic	49.11		47.25	B	3.8		P
Barium	1519.62		1529.35		0.6		P
Beryllium	10.06		8.95	B	11.0	E	P
Lead	176.96		184.35		4.2		P
Mercury							NR
Strontium	263.91		266.25		0.9		P

U.S. EPA - CLP

10
Instrument Detection Limits (Quarterly)

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

ICP ID Number: _____ Date: 04/15/96

Flame AA ID Number : LEEMAN_2____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic			10		NR
Barium			100		NR
Beryllium			5		NR
Lead			3		NR
Mercury	253.70		0.2	0.05 ug/L ~~0.0~~ K 5/20/96	AV
Strontium			10		NR

Comments:

FORM X - IN 3/90

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U.S. EPA - CLP

10
Instrument Detection Limits (Quarterly)

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

ICP ID Number: TJA_61E_2___ Date: 04/15/96

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	189.04		10	2.3	P
Barium	493.41		100	0.1	P
Beryllium	313.04		5	0.2	P
Lead	220.35		3	0.9	P
Mercury			0.2		NR
Strontium			10		NR

Comments:

U.S. EPA - CLP

10
Instrument Detection Limits (Quarterly)

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

ICP ID Number: TJA_61_2____ Date: 04/15/96

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic			10		NR
Barium			100		NR
Beryllium			5		NR
Lead			3		NR
Mercury			0.2		NR
Strontium	421.55		10	0.5	P

Comments:

U.S. EPA - CLP

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

ICP ID Number: TJA 61E 2___ Date: 04/15/96

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	___
Arsenic	189.04	0.0000000	0.0000000	0.0000000	0.0000000	
Barium	493.41	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	
Mercury						
Strontium						

Comments:

U.S. EPA - CLP

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

ICP ID Number: TJA 61 2____ Date: 01/01/96

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	___
Arsenic	193.70	0.0000000	0.0000000	0.0000000	0.0000000	
Barium	493.41	0.0000000	0.0000000	0.0000000	0.0000000	
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	
Mercury						
Strontium	421.55	0.0000000	0.0000000	0.0000000	0.0000000	

Comments:

FORM XI (Part 1) - IN 3/90

U.S. EPA - CLP

12
ICP LINEAR RANGES (QUARTERLY)

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

ICP ID Number: TJA 61E 2___ Date: 04/15/96

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Arsenic	15.00	10000.0	P
Barium	15.00	10000.0	P
Beryllium	15.00	10000.0	P
Lead	15.00	10000.0	P
Mercury			NR
Strontium			NR

Comments:

U.S. EPA - CLP

12
ICP LINEAR RANGES (QUARTERLY)

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.: 10____

ICP ID Number: TJA 61 2____ Date: 04/15/96

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Arsenic			NR
Barium			NR
Beryllium			NR
Lead			NR
Mercury			NR
Strontium	8.00	10000.0	P

Comments:

FORM XII - IN 3/90

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.:_____ SAS No.: _____ SDG No.:10____

Method: P_

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
10	05/14/96	1.00	100
108	05/14/96	1.00	100
108D	05/14/96	1.00	100
108DS	05/14/96	1.00	100
108S	05/14/96	1.00	100
161	05/14/96	1.00	100
22	05/14/96	1.00	100
26	05/14/96	1.00	100
45	05/14/96	1.00	100
60	05/14/96	1.00	100
78	05/14/96	1.00	100
LCSS	05/14/96	1.00	100
PBS	05/14/96	1.00	100

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.:_____ SAS No.: _____ SDG No.:10____

Method: AV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
10	05/16/96	0.60	100
108	05/16/96	0.60	100
108D	05/16/96	0.60	100
108DS	05/16/96	0.60	100
108S	05/16/96	0.60	100
161	05/16/96	0.60	100
22	05/16/96	0.60	100
26	05/16/96	0.60	100
45	05/16/96	0.60	100
60	05/16/96	0.60	100
78	05/16/96	0.60	100
LCSS	05/16/96	0.60	100
PBS	05/16/96	0.60	100

U.S. EPA - CLP

14
ANALYSIS RUN LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.:10____

Instrument ID Number: LEEMAN 2_____ Method: AV

Start Date: 05/16/96 End Date: 05/16/96

EPA Sample No.	D/F	Time	% R	Analytes																							
				AS	BA	BE	PB	HG	SR																		
S0	1.00	1519						X																			
S0.2	1.00	1522						X																			
S1	1.00	1524						X																			
S2	1.00	1526						X																			
S5	1.00	1529						X																			
S10	1.00	1531						X																			
ICV	1.00	1533						X																			
ICB	1.00	1536						X																			
PBS	1.00	1536						X																			
ZZZZZZ	1.00	1538																									
LCSS	1.00	1540						X																			
108	1.00	1543						X																			
108D	1.00	1545						X																			
108S	1.00	1547						X																			
108DS	1.00	1550						X																			
78	1.00	1552						X																			
60	1.00	1554						X																			
45	1.00	1556						X																			
26	1.00	1559						X																			
CCV	1.00	1601						X																			
CCB	1.00	1603						X																			
22	1.00	1605						X																			
10	1.00	1608						X																			
161	1.00	1610						X																			
CCV	1.00	1612						X																			
CCB	1.00	1614						X																			

FORM XIV - IN 3/90

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U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.:10____

Instrument ID Number: TJA 61E 2____ Method: P_

Start Date: 05/15/96 End Date: 05/15/96

EPA Sample No.	D/F	Time	% R	Analytes																							
				AS	BA	BE	PB	HG	SR																		
BLANK	1.00	1105		X	X	X	X																				
MIX	1.00	1108		X	X	X	X																				
MIX	1.00	1111																									
ZZZZZZ	1.00	1114																									
ZZZZZZ	1.00	1117																									
ICV	1.00	1121		X	X	X	X																				
ICB	1.00	1125		X	X	X	X																				
ICSA	1.00	1137		X	X	X	X																				
ICSAB	1.00	1140		X	X	X	X																				
ZZZZZZ	1.00	1145																									
ZZZZZZ	1.00	1148																									
ZZZZZZ	1.00	1151																									
ZZZZZZ	1.00	1155																									
ZZZZZZ	1.00	1158																									
ZZZZZZ	1.00	1201																									
ZZZZZZ	1.00	1203																									
ZZZZZZ	1.00	1206																									
CCV	1.00	1209		X	X	X	X																				
CCB	1.00	1213		X	X	X	X																				
ZZZZZZ	1.00	1215																									
ZZZZZZ	1.00	1218																									
PBS	1.00	1221		X	X	X	X																				
LCSS	1.00	1224		X	X	X	X																				
108	1.00	1228		X	X	X	X																				
108D	1.00	1230		X	X	X	X																				
108L	5.00	1233		X	X	X	X																				
108S	1.00	1236		X	X	X	X																				
108DS	1.00	1240		X	X	X	X																				
78	1.00	1244		X	X	X	X																				
CCV	1.00	1247		X	X	X	X																				
CCB	1.00	1250		X	X	X	X																				
60	1.00	1253		X	X	X	X																				

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.:10____

Instrument ID Number: TJA 61E 2____ Method: P_

Start Date: 05/15/96 End Date: 05/15/96

EPA Sample No.	D/F	Time	% R	Analytes																							
				AS	BA	BE	PB	HG	SR																		
45	1.00	1256		X	X	X	X																				
26	1.00	1259		X	X	X	X																				
22	1.00	1301		X	X	X	X																				
10	1.00	1304		X	X	X	X																				
161	1.00	1307		X	X	X	X																				
ZZZZZZ	1.00	1314																									
ZZZZZZ	1.00	1316																									
ZZZZZZ	5.00	1319																									
ZZZZZZ	1.00	1322																									
CCV	1.00	1331		X	X	X	X																				
CCB	1.00	1334		X	X	X	X																				
ZZZZZZ	1.00	1337																									
ZZZZZZ	1.00	1340																									
ZZZZZZ	1.00	1343																									
ZZZZZZ	1.00	1346																									
ZZZZZZ	10.00	1349																									
ZZZZZZ	10.00	1352																									
ZZZZZZ	10.00	1354																									
ZZZZZZ	10.00	1357																									
CCV	1.00	1400		X	X	X	X																				
CCB	1.00	1404		X	X	X	X																				
ZZZZZZ	1.00	1406																									
ICSA	1.00	1409		X	X	X	X																				
ICSAB	1.00	1412		X	X	X	X																				
CCV	1.00	1415		X	X	X	X																				
CCB	1.00	1426		X	X	X	X																				

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ANALYSIS RUN LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.:10____

Instrument ID Number: TJA 61E 2____ Method: P_

Start Date: 05/17/96 End Date: 05/17/96

EPA Sample No.	D/F	Time	% R	Analytes																							
				AS	BA	BE	PB	HG	SR																		
BLANK	1.00	1419			X																						
MIX	1.00	1423			X																						
MIX	1.00	1427																									
ZZZZZZ	1.00	1431																									
ZZZZZZ	1.00	1435																									
ICV	1.00	1439			X																						
ICB	1.00	1443			X																						
ICSA	1.00	1447			X																						
ICSAB	1.00	1451			X																						
ZZZZZZ	1.00	1454																									
ZZZZZZ	1.00	1458																									
ZZZZZZ	1.00	1502																									
ZZZZZZ	1.00	1506																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	10.00	1514																									
ZZZZZZ	10.00	1518																									
ZZZZZZ	10.00	1522																									
CCV	1.00	1526			X																						
CCB	1.00	1530			X																						
ZZZZZZ	10.00	1539																									
ZZZZZZ	10.00	1544																									
ZZZZZZ	10.00	1547																									
108	1.00	1549			X																						
108A	1.00	1552			X																						
ZZZZZZ	1.00	1557																									
ICSA	1.00	1600			X																						
ICSAB	1.00	1602			X																						
CCV	1.00	1605			X																						
CCB	1.00	1609			X																						

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ANALYSIS RUN LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.:10____

Instrument ID Number: TJA 61 2_____ Method: P_

Start Date: 05/16/96 End Date: 05/16/96

EPA Sample No.	D/F	Time	% R	Analytes																								
				AS	BA	BE	PB	HG	SR																			
STD-BLAN	1.00	1405							X																			
A1	1.00	1408																										
B1	1.00	1411							X																			
ZZZZZZ	1.00	1415																										
ZZZZZZ	1.00	1418																										
ICV	1.00	1421							X																			
ICB	1.00	1425							X																			
ZZZZZZ	1.00	1435																										
ICSA	1.00	1438							X																			
ICSAB	1.00	1442							X																			
CCV	1.00	1445							X																			
CCB	1.00	1449							X																			
ZZZZZZ	1.00	1452																										
ZZZZZZ	1.00	1455																										
ZZZZZZ	1.00	1459																										
ZZZZZZ	1.00	1502																										
ZZZZZZ	1.00	1505																										
ZZZZZZ	1.00	1509																										
CCV	1.00	1512							X																			
CCB	1.00	1515							X																			
PBS	1.00	1519							X																			
LCSS	1.00	1522							X																			
108	1.00	1526							X																			
108D	1.00	1529							X																			
108S	1.00	1532							X																			
108DS	1.00	1536							X																			
108L	5.00	1539							X																			
78	1.00	1542							X																			
60	1.00	1546							X																			
45	1.00	1549							X																			
CCV	1.00	1553							X																			
CCB	1.00	1556							X																			

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ANALYSIS RUN LOG

Lab Name: PARAGON_ANALYTICS_INC.___ Contract: _____

Lab Code: NA____ Case No.: _____ SAS No.: _____ SDG No.:10____

Instrument ID Number: TJA 61 2_____ Method: P_

Start Date: 05/16/96 End Date: 05/16/96

EPA Sample No.	D/F	Time	% R	Analytes																								
				AS	BA	BE	PB	HG	SR																			
26	1.00	1559																										
22	1.00	1603							X																			
10	1.00	1606							X																			
161	1.00	1610							X																			
ZZZZZZ	1.00	1613							X																			
ZZZZZZ	1.00	1616																										
ZZZZZZ	1.00	1620																										
ZZZZZZ	5.00	1624																										
ZZZZZZ	1.00	1627																										
CCV	1.00	1633																										
CCB	1.00	1637							X																			
ZZZZZZ	1.00	1640							X																			
ICSA	1.00	1644																										
ICSAB	1.00	1647							X																			
CCV	1.00	1659							X																			
CCB	1.00	1703							X																			
									X																			

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SECTION 6: Raw Data

This Section located w/ DOE OB WR office file.

APPENDIX A: Digestion Bench Sheets

This Section located w/
DOE OB WR office file.